

# PUBLIC SAFETY POWER SHUTOFF

SCE 2021 Performance

February 25, 2022



SOUTHERN CALIFORNIA  
**EDISON**<sup>®</sup>

# 2021 IN REVIEW

## BY THE NUMBERS



**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



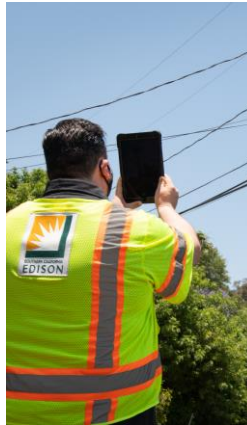
**81,000**

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

## BY THE NUMBERS

**6,741**

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Critical Care backup  
batteries deployed  
since program  
inception

**2,706**

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Customers visited  
Community Resource  
Centers or Community  
Crew Vehicles

**8.8/10**

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

**100+**

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Virtual meetings with  
our communities and  
partners in 2021

**1,600**

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CBOs received  
monthly information  
from SCE to share

**124**

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Public safety partners  
met with us to discuss  
concurrent emergency  
policies

# SCE 2021 PSPS ACTION PLAN

## ACTION PLAN ACTIVITIES

		ACTIVITIES COMPLETED		
<b>1. REDUCE</b>	THE NEED FOR PSPS	7	of	7
<b>2. EXECUTE</b>	PSPS EVENTS EFFECTIVELY	60	of	60
<b>3. MITIGATE</b>	THE IMPACTS OF PSPS	10	of	11*
<b>4. INFORM</b>	PARTNERS AND CUSTOMERS	49	of	49
<b>5. IMPROVE</b>	POST-EVENT REPORTING	5	of	5
		<b>131</b>	<b>of</b>	<b>132</b>

\*The final outstanding activity is a microgrid pilot project in Rialto that is scheduled to be completed by 3/31/22

# 2020-2021 ACTIVATION COMPARISON

## UNWEIGHTED COMPARISON

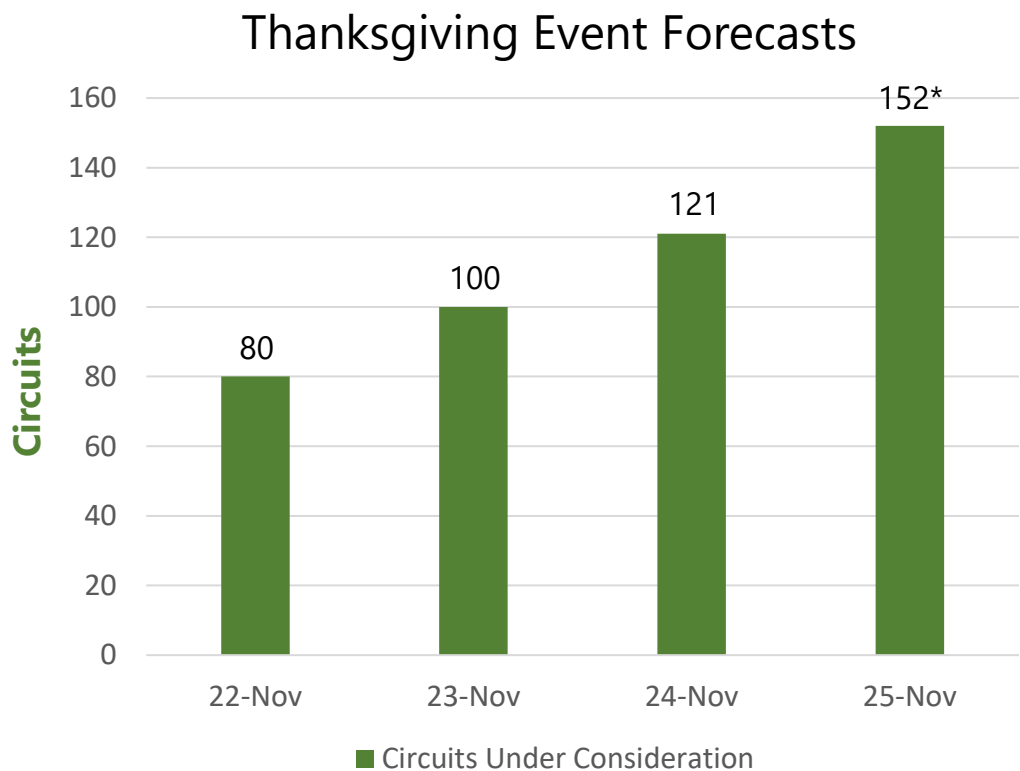
ACTIVATION STATS	PSPS Activations	# Customers De-energized	# Circuits De-energized	Customer Minutes of Interruption (CMI)
2020 Fire Season	13	~348k	584	~388M
2021 Fire Season	9	~85k	124	~105M
IMPROVEMENT	↓31%	↓76%	↓79%	↓73%

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.

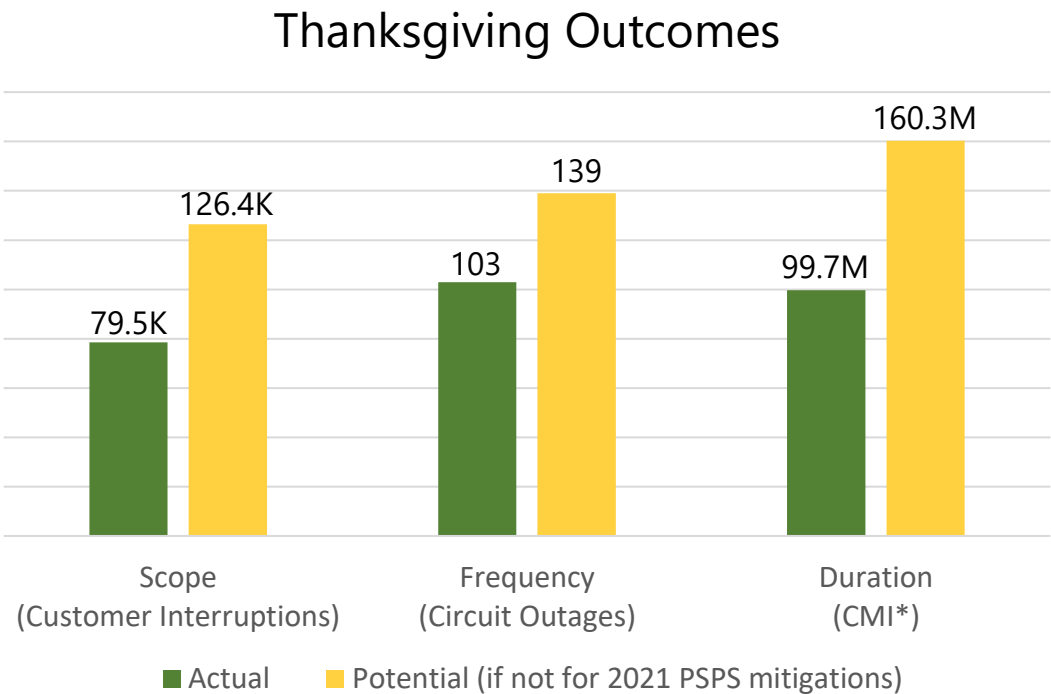
# 2021 THANKSGIVING ACTIVATION

## AN EXTREME WIND EVENT

Peak winds exceeded early forecasts and reached 89 mph in multiple areas -- rapidly increasing the intensity and scale of the event.



\* Circuit count does not include downstream circuits and is different from circuit count in the post-event report.



\*Customer Minutes of Interruption

# REDUCING PSPS

## GRID HARDENING AND CIRCUIT SEGMENT EXCEPTIONS

### 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

### Opportunity for Improvement

Thanksgiving event impacted more non-FIC than FIC circuits.

### 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.



# EXECUTING PSPS EFFECTIVELY

## FORECASTING AND MODELING



Inspection photos show tree branches that had fallen onto insulated wires (covered conductors). Power remained safely on for customers in the Idyllwild area of Riverside County-November 25, 2021.

### 2021 Achievements

- Increased granularity of models from 2km to 1 km to improve specificity of forecasting
- Developed machine learning models for 64 weather station locations to increase forecasting accuracy
- Acquired weather model data from European Centre for Medium-Range Weather Forecasts
- Updated FPI thresholds from 12 to 13 in most HFRA zones and most circumstances
- Extended weather forecasting capability to 7-day forecast horizon

### Opportunity for Improvement

- Increase forecast accuracy and granularity
- Refine fire spread modeling to include suppression and buildings destroyed

### 2022 Activities

- Develop ~500 additional machine-learning weather models
- Develop models to estimate live fuel moisture for additional vegetation types



# EXECUTING PSPS EFFECTIVELY

## AUTOMATION AND OPERATIONS

### 2021 Achievements

#### Automation

Completed implementation for :

- Creation of MCL/POC list
- Customer notification App
- LNO notification App
- Publication of impacted customer count to sce.com

#### Operations

- Refined virtual EOC tools and concepts to optimize performance
- Integration with IPEMS (internal dashboard)

### Opportunities for Improvement

#### Automation

- Incremental operational complexity outmatched legacy communication systems and led to delayed or missed notifications

#### Operations

- Significant disparity between count of customers notified and customers de-energized during the Thanksgiving event.
- Slow restoration for customers during the Thanksgiving event.

### 2022 Activities

#### Automation

- Complete end-to-end automation
- Train and practice to accelerate Foundry adoption
- Develop centralized data platform to support system integration
- Enhance and increase in-event situational awareness for IMT
- Connect in-event and post-event data flow for post-event reporting

#### Operations

- Provide business rules and additional training to speed air ops response and right-size field staffing
- Continue Foundry/ IPEMS integration
- Evaluate a notification buffer to account for forecast bias and minimize de-energization with short or no notice

# MITIGATING IMPACTS OF PSPS

## CUSTOMER CARE PROGRAMS

### 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

#### 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



Thanksgiving Day, 2021

### 2021 Achievements

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

### Opportunities for Improvement

- Improve resource planning, staffing and logistics for customer care
- Solicit feedback through PSPS Working Groups and other meetings

### 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

# MITIGATING IMPACTS OF PSPS

## ACCESS & FUNCTIONAL NEEDS CUSTOMER OUTREACH

### 2021 Achievements

- Increased Medical Baseline (MBL) customer enrollment accounts by 8.8%\*
- Enabled e-signatures for MBL applications
- Launched new dedicated AFN Liaison officer role
- Expanded escalated notification attempts, up to in-person visits, to MBL customers
- Partnered with 211 to offer services to AFN customers
- Created dedicated AFN webpage
- Provided ASL for PSPS briefings

### Opportunities for Improvement

- Increase collaboration with CBOs
- Expand accessible communications



SCE Government Relations Manager/AFN specialist Dani Anderson

### 2022 Activities\*\*

Enhance AFN outreach and support by:

- Collaborating with the Hospital Association of Southern California to increase MBL program enrollment
- Engaging with the Joint IOU Statewide AFN Advisory Council to reach clients of Council agencies
- Leveraging and expanding relationship with 1,600 CBOs to amplify outreach and increase MBL, CARE, FERA enrollment
- Providing accessible communication for individuals who are Deaf, Blind, Deaf-Blind, and Hard of Hearing
- Enhancing partnerships with food banks and providing food support for customers who have been de-energized
- Continuing support for 211 referrals

\*Represents enrollments at the service account level from December 31, 2020 to December 31, 2021.

\*\*AFN activities are further detailed in the SCE AFN plan filed on Jan. 31, 2022.

# INFORMING PARTNERS AND CUSTOMERS

## NOTIFICATIONS AND POST-EVENT REPORTING



### 2021 Achievements

- Updated notification language based on customer research
- Updated notification cadence to provide more timely information
- Revised PSPS post-event report structure

### Opportunity for Improvement

#### Notifications

- Significant number of delayed or missed notifications for de-energization during the Thanksgiving PSPS events

#### Post-event reporting:

- Data reporting discrepancies impeded accurate post event reporting for Thanksgiving event.

### 2022 Activities

- Evaluate alternative processes for calculating and sharing typical restoration times
- Conduct qualitative research with customers who received PSPS notifications in 2021 to identify enhancement opportunities
- Fully automate in-event/post-event data flows for more accurate and timely reporting

# INFORMING PARTNERS AND CUSTOMERS

## MARKETING AND PARTNER AND COMMUNITY OUTREACH

### 2021 PARTNER AND COMMUNITY ENGAGEMENT

**11** COMMUNITY MEETINGS

**15** POWER TALKS WEBINARS

**13** COUNTY EMERGENCY MANAGEMENT MEETINGS

**8** CRITICAL INFRASTRUCTURE SECTOR WORKSHOPS

**16** PSPS WORKING GROUP & ADVISORY BOARD MEETINGS

**134** LOCAL AND TRIBAL GOVERNMENTS ENGAGEMENTS

### 2021 Achievements

- Conducted more than 100 meetings with communities and partners
- Generated >832 million media impressions
- Sent newsletters to all HFRA and non-HFRA customers to provide emergency awareness messaging

### Opportunity for Improvement

- Provide public and stakeholders with detailed information on grid hardening to reduce the use of PSPS
- Collect and incorporate stakeholder feedback to enhance engagement

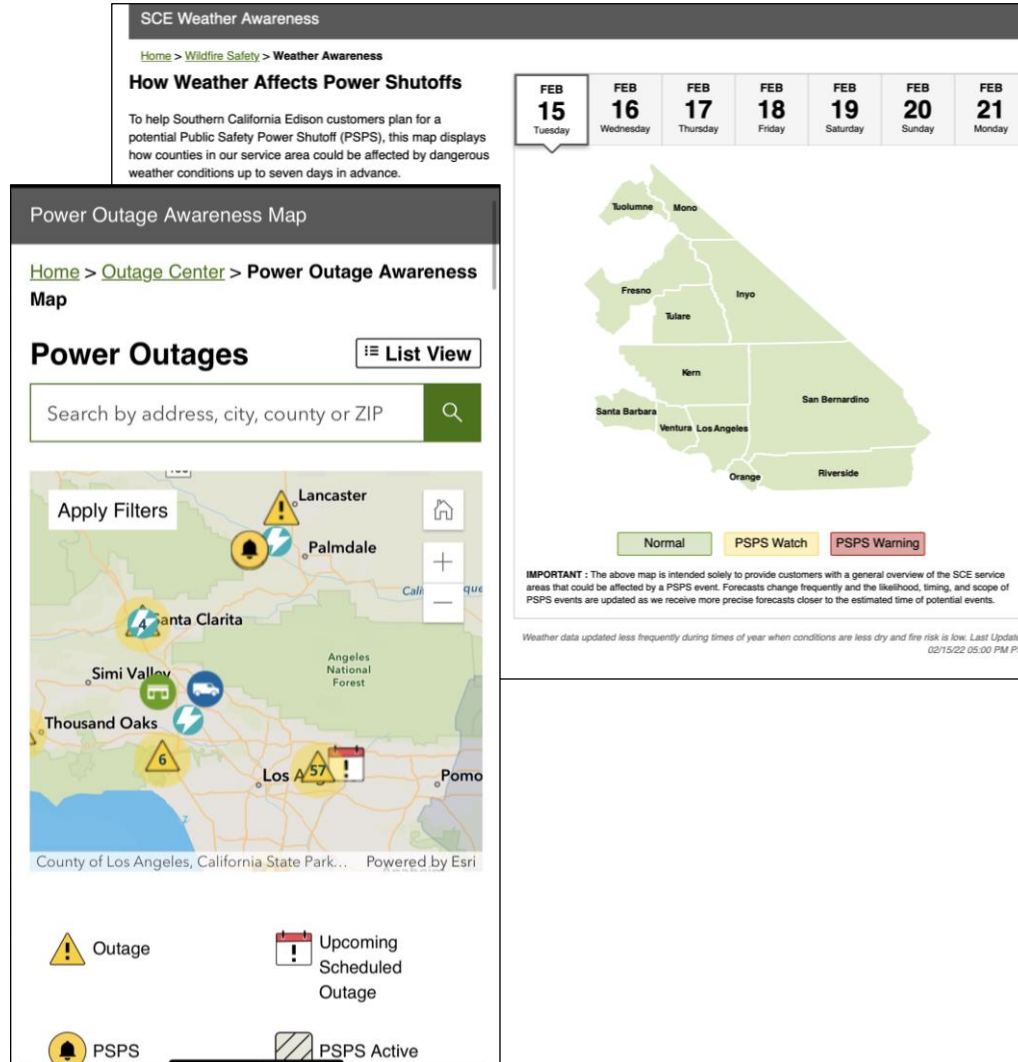
### 2022 Activities and Mitigations

- Continue advertising and outreach activities
- Send PSPS newsletter for customers residing in HFRA and non-HFRA
- Continue work with telecom carriers to support cell phone resiliency during de-energizations in remote areas
- Continue to host community meetings for customers in high fire risk areas, including one specifically for ASL audiences



# INFORMING PARTNERS AND CUSTOMERS

## SCE.COM IMPROVEMENTS



### 2021 Achievements

- Developed consolidated outage maps
- Added ability to search for PSPS status at a specific address
- Provided status and locations of EV charging stations near active PSPS events
- Allowed searching for CRCs/CCVs and EV charging stations by address
- Developed weather awareness page to display 7-day weather forecast

### Opportunities for Improvement

- Engage in customer research to identify areas for improvement
- Improve de-energization status reporting through automation

### 2022 Activities

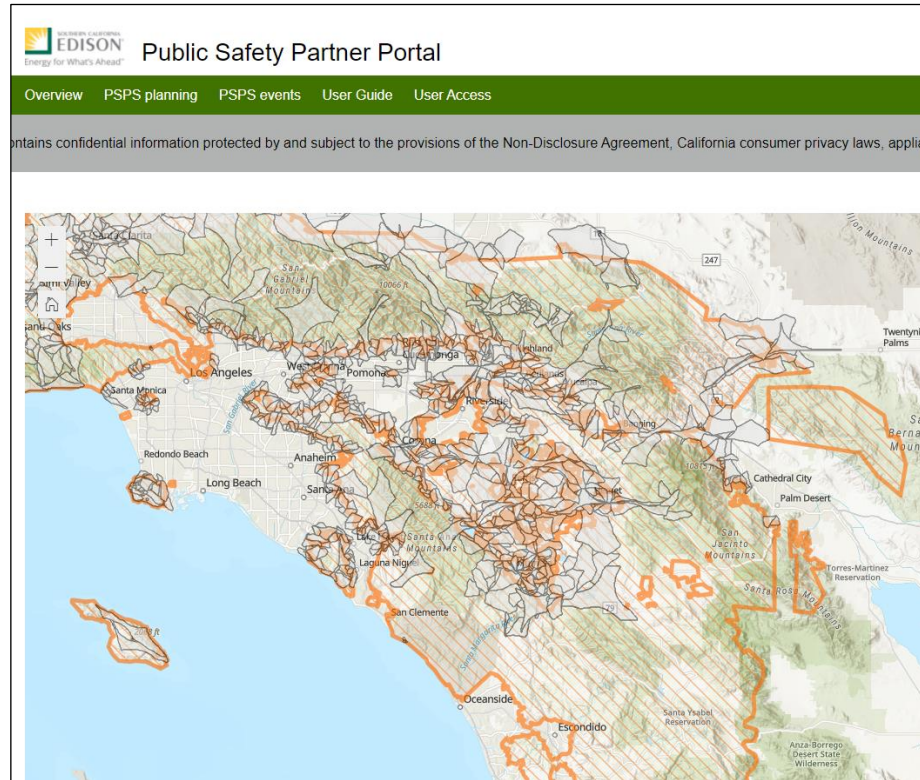
Implement new features:

- Search for PSPS status using a meter number
- Fire satellite-detection radar maps
- Interactive weather maps
- Sign-up for PSPS alerts during new service turn-on



# INFORMING PARTNERS AND CUSTOMERS

## PUBLIC SAFETY PARTNER PORTAL



### 2021 Achievements

- Launched new Public Safety Partner Portal
- Registered 600+ users
- Offered weekly office hours to support users

### Opportunities for Improvement

- Continue sign-up efforts for qualified public safety partners and Critical Facilities & Infrastructure customers
- Update program offerings based on Joint IOU PSPS Working Group benchmarking

### 2022 Activities

- Enhance Portal features and functionality:
  - Introduce inactive event feature for continued access to data post-event
  - Increase snapshots of event archive (from 2x/day to 4x/day)
  - Add option to download all event data in a single-click to replicate REST service functionality
  - Provide option to adjust frequency of automated e-mail updates
- Gauge interest/needs for an All-Hazards Portal

# 2022 PLANNING SUMMARY

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

Reduce the Use of PSPS	<ul style="list-style-type: none"><li>• Continue grid hardening and circuit exception activities</li><li>• Evaluate 2021 most-impacted circuits for grid hardening prioritization</li></ul>
Execute PSPS Events Effectively	<ul style="list-style-type: none"><li>• Develop ~500 additional machine-learning weather models</li><li>• Complete end-to-end process and system automation</li><li>• Conduct monthly trainings and exercises to prepare for activation</li></ul>
Mitigate the Impacts of PSPS	<ul style="list-style-type: none"><li>• Build out CRC availability through staffing and logistics</li><li>• Continue to refine customer care programs</li><li>• Expand programs and outreach for AFN customers</li></ul>
Inform Partners and Customers	<ul style="list-style-type: none"><li>• Improve customer and partner notification accuracy and timeliness through automation</li><li>• Build customer resiliency through distribution of 2022 preparedness newsletter</li><li>• Continue community and partner meetings</li></ul>
Improve Post Event Reporting	<ul style="list-style-type: none"><li>• Fully automate in-event/post-event data flows for more accurate and timely reporting</li></ul>



**THANK YOU.**



# APPENDIX





# VEGETATION MANAGEMENT

## PREPARING FOR FIRE SEASON



*Vegetation management, Claremont*

### 2021 Achievements

Vegetation management activities, including pruning and removing vegetation, reduce threats of vegetation and airborne foreign objects contacting power lines

- **~1.5 million trees** in right-of-way areas inspected and **~50% pruned or removed**
  - **~10,000 palm trees** posing potential blow-in or grow-in hazards removed
  - **~130,000 trees** outside rights-of-way assessed for hazards and more than **3,000 trees** removed or pruned

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### 2022 Activities and Mitigations

- Inspect **~1.5M** trees within HFRA for adequate clearances
- Assess **~300** circuits in HFRA for hazard trees
- Inspect **~900** circuits in HRFA for dead and dying trees

# ANNUAL INSPECTIONS

## PREPARING FOR FIRE SEASON



### 2021 Achievements

Performed annual inspections **beyond compliance requirements** for over **160,000 distribution** and **16,000 transmission** structures to evaluate for fire season risk

- **170,000+** distribution ground and aerial inspections
- **19,000+** transmission ground and aerial inspections
- **50%** of distribution circuits inspected via infrared technology
- **1,000+** transmission HFRA circuit miles inspected via infrared and corona scanning technology

Performed inspections in Areas of Concern both in the summer and the fall, that included

- **31,500+** distribution ground and aerial inspections
- **3,400+** transmission ground and aerial inspections
- **11,000** poles brushed

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### 2022 Activities and Mitigations

- **150,000+** distribution ground and aerial inspections, including 10,000 inspections driven by compliance requirements
- **16,000+** transmission ground and aerial inspections, including 2,600 inspections driven by compliance requirements
- **50%** of distribution circuits were inspected via infrared technology
- **1,000+** of transmission HFRA circuit miles were inspected via infrared and corona scanning technology
- Summer and fall Area-of-Concern inspections will be performed again based on real-time fire risk