2021 IN REVIEW
BY THE NUMBERS

**45%**
Reduction in PSPS duration as a result of 2021 mitigation measures

**73%**
Reduction in PSPS duration for the most frequently impacted circuits (FICs)*

**72%**
Reduction in scope on FICs*

**1,500**
Miles of covered conductor deployed; **700** miles of expedited grid hardening

**81,000**
Customers removed from scope through exceptions and switching protocols

**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

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6,741</td>
<td>Critical Care backup batteries deployed since program inception</td>
</tr>
<tr>
<td>2,706</td>
<td>Customers visited Community Resource Centers or Community Crew Vehicles</td>
</tr>
<tr>
<td>8.8/10</td>
<td>Satisfaction rating from CRC/CCV visitors who responded to our survey</td>
</tr>
<tr>
<td>100+</td>
<td>Virtual meetings with our communities and partners in 2021</td>
</tr>
<tr>
<td>1,600</td>
<td>CBOs received monthly information from SCE to share</td>
</tr>
<tr>
<td>124</td>
<td>Public safety partners met with us to discuss concurrent emergency policies</td>
</tr>
</tbody>
</table>

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.
### SCE 2021 PSPS ACTION PLAN

#### ACTION PLAN ACTIVITIES

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
<th>Completed</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. REDUCE</strong></td>
<td>THE NEED FOR PSPS</td>
<td>7 of 7</td>
<td>7</td>
</tr>
<tr>
<td><strong>2. EXECUTE</strong></td>
<td>PSPS EVENTS EFFECTIVELY</td>
<td>60 of 60</td>
<td>60</td>
</tr>
<tr>
<td><strong>3. MITIGATE</strong></td>
<td>THE IMPACTS OF PSPS</td>
<td>10 of 11*</td>
<td>11</td>
</tr>
<tr>
<td><strong>4. INFORM</strong></td>
<td>PARTNERS AND CUSTOMERS</td>
<td>49 of 49</td>
<td>49</td>
</tr>
<tr>
<td><strong>5. IMPROVE</strong></td>
<td>POST-EVENT REPORTING</td>
<td>5 of 5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td><strong>131</strong> of <strong>132</strong></td>
<td></td>
</tr>
</tbody>
</table>

*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

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

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

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

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

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.
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)

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

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.

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 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
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

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

*SCE Government Relations Manager/AFN specialist Dani Anderson

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

**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.
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

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
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

Preformed 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

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