



# Oregon Wildfire & Electric Collaborative Workshop #6

## SDG&E's Holistic Approach to Mitigating Wildfire Risk

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# Discussion Topics

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- Evolution of Wildfire Mitigation
- Risk Management and Analytics
- Results and Looking Forward
- Q&A

# Evolution of Wildfire Mitigation

**Core Goal: No wildfire ignitions from SDG&E facilities**

**Focus on compliance with CPUC regulations**

- Meeting standards & regulations
- Compliance focused asset management
- Aggressive Vegetation Management
- Emergency Operations Center serves as command center

**Focus on improving integrity and reliability**

- First dedicated Fire Coordinator
- Partnership with firefighting agencies
- Increased customer communication
- Recipient of Reliability Award (beginning in 2005) for 16 consecutive years

**Focus on effective and innovative risk management**

- Aggressive system protections and infrastructure hardening
- Advanced situational awareness
- Updated operational protocols
- De-energization, if warranted, to ensure public safety
- Initiated use of risk models
- Collaborative role in policy and standards with the Regulators
- Advanced risk models including leveraging of AI
- Risk-informed rate case requests funding for additional fire mitigation activities
- Expansion of infrastructure hardening & asset management
- Firesafe 4.0

2003 Fires

2007 Fires

Today

Future

**Compliance**

**Effective Risk Management**

**Build a Better Business**

# Comprehensive Wildfire Risk Mitigation Spans a Decade

## Situational Awareness

- **Technology:**
  - Most sophisticated utility owned weather network (221 weather stations, over 100 cameras); predictive modeling
- **Tools:**
  - Fire mapping, fire potential index (FPI), big data risk analysis, Santa Ana wildfire threat index, fire reduction modeling

## Minimize Ignition

- **Infrastructure Hardening:**
  - Wood to steel (safer, more resilient grid), increased strength and conductor spacing, undergrounding, covered conductor, **reduces transmission fault rate by 83%**,
- **Aggressive Vegetation Management:**
  - Comprehensive inventory of 460,000 trees. Annual inspections and aggressive clearances. Vegetation patrols. Enhanced vegetation management
- **Operational Protocols:**
  - Public safety power shutoffs; real-time information to support cross-agency decisions, disabling reclosers, pre-staging resources and patrols

## Suppression and Outreach

- **Meteorology, Fire Coordination and Aviation**
  - Six meteorologists, five fire coordinators, contract firefighting resources, extensive drone program and the world's largest water dropping heli-tanker.
- **Emergency Operations Center:**
  - Emergency and event coordination scalable to the level of incident.
- **Stakeholder/Community Engagement:**
  - Comprehensive communications/notifications to customers, stakeholders, first responders and regulatory bodies through PSPS Portal, Safety Fairs, AFN network.



Over the last five years, **Wildfire Ignitions Decreased 34%**

**Build a Better Business**

# Risk Management at SDG&E



## Enterprise Risk Management



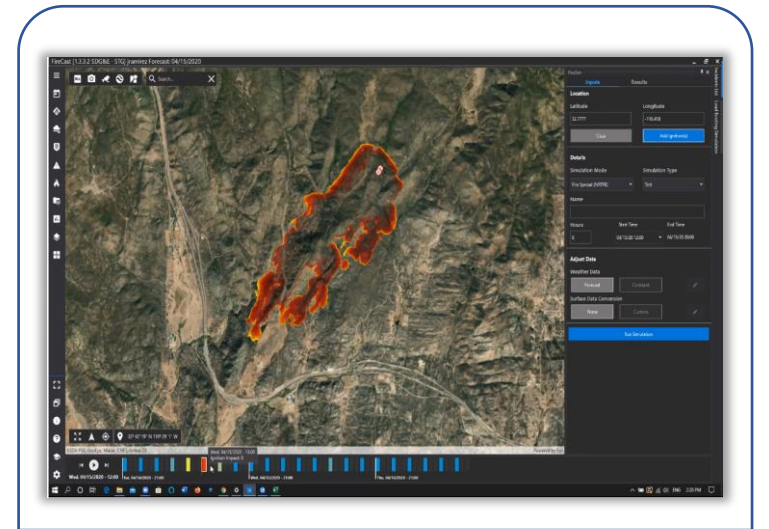
- Annual company-wide process to assess enterprise risks and informs General Rate Cases



## Risk-Based Grid Hardening (WiNGS<sup>1</sup>)



- New risk-based decision-support tool for segment risk analysis to identify mitigations to reduce wildfire and PSPS risks



## Real-time Fire Behavior Modeling (WRRM-Ops<sup>2</sup>)



- Fire simulation tool used to guide operational decisions during fire season and high fire-risk events

# Advanced Analytics: Driving Resilient Operations

*Using Artificial Intelligence (AI) combined with weather devices and data to create a more resilient electric grid*



## WIND FORECASTING MODEL

Applying AI to over a billion weather observations from 221 weather stations to inform fire mitigation and PSPS decisions with extreme precision



## Climate Vulnerability Assessment

Additional weather stations and climate vulnerability assessments to better anticipate issues on the electric system before they occur



## FIRE BEHAVIOR MODELING

Leveraging AI to create nightly simulations of over 10 million virtual wildfires across our service territory to better understand fire behavior



## REAL TIME IMAGE ANALYSIS

Using edge computing devices with built-in AI on mountaintop cameras to recognize a wildfire ignition event in real time



## OUTAGE PREDICTION

Applying AI to over 20 years of historical weather-related outage data to predict the number of outages in advance of winter storms



**221 Weather Stations**  
collecting **200,000** pieces of weather data per day



A Sempra Energy company

# Engagements With Academia



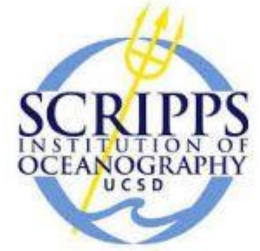
U of Arizona:  
Consulting  
projects with  
risk focus



SJSU:  
Leverage Remote  
Sensing to Enhance  
Fuel Moisture  
Assessments



U of WISC:  
Using GOES-R  
Satellite to  
Detect Wildfires



Scripps:  
Real-time Coastal  
Flood Monitoring  
and Modeling



UCLA:  
Developed  
Weather and Fire  
Potential  
Forecasting

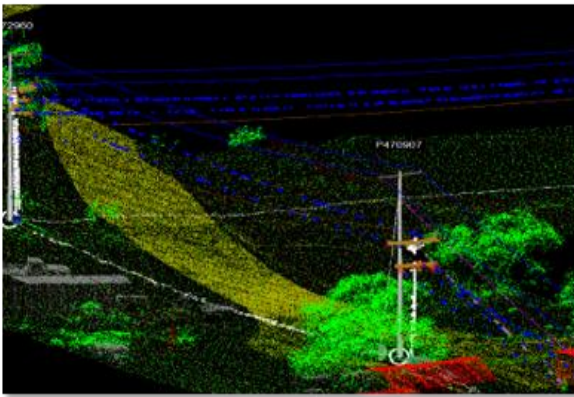


UCSD:  
Enhanced Situational  
Awareness through  
Cameras and Comms



San Diego Supercomputing Center:  
Data Sharing and Analytics

# Top Wildfire Advancements



- More **weather stations + circuit sectionalizing** switches
- **Artificial intelligence**-based predictive models
- **Falling conductor protection**, high-speed relays
- Drones: **30,000 poles assessed** in highest risk areas
- **Microgrids**
- Operational **Vegetation Risk Index**
- Most **stringent vegetation management** in California: 25' clearance
- **Portable generators** for PSPS medical baseline customers
- **PSPS app** + geo-targeted cell phone alerts
- **Wildfire Next Generation System (WiNGS)** to prioritize wildfire mitigation efforts



# Journey Toward a Better Future

## Innovation

### Fire Safe 4.0 initiative

- *Situational awareness and analytics are reducing risk*
- *Artificial intelligence-based predictive models*
- *Continued system hardening with **strategic undergrounding***
- *35% reduction in PSPS-impacted customers; accelerating grid hardening*

## Collaboration

- *With experts, communities, first responders, state agencies, other utilities*
- *Continuing fire safe council and community workshops*
- *Continued business modifications to reduce customer impacts*
- *Customer generators, sectionalizing circuits and microgrids*

## Optimization

- *Budgets allocated on risk informed and reduction basis*
- *WiNGS modeling*
- *Integrating other industry best practices to reduce risk*
- *Safety Management System*

Thank you...  
Questions?

