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Resilience Across Climate-Vulnerable Backcountry Populations: Anticipating Extreme Fire Weather and Providing Resources During De-Energization

Brian D'Agostino, Director – Fire Science & Climate Adaptation, SDG&E

August 8, 2019

Executive Summary

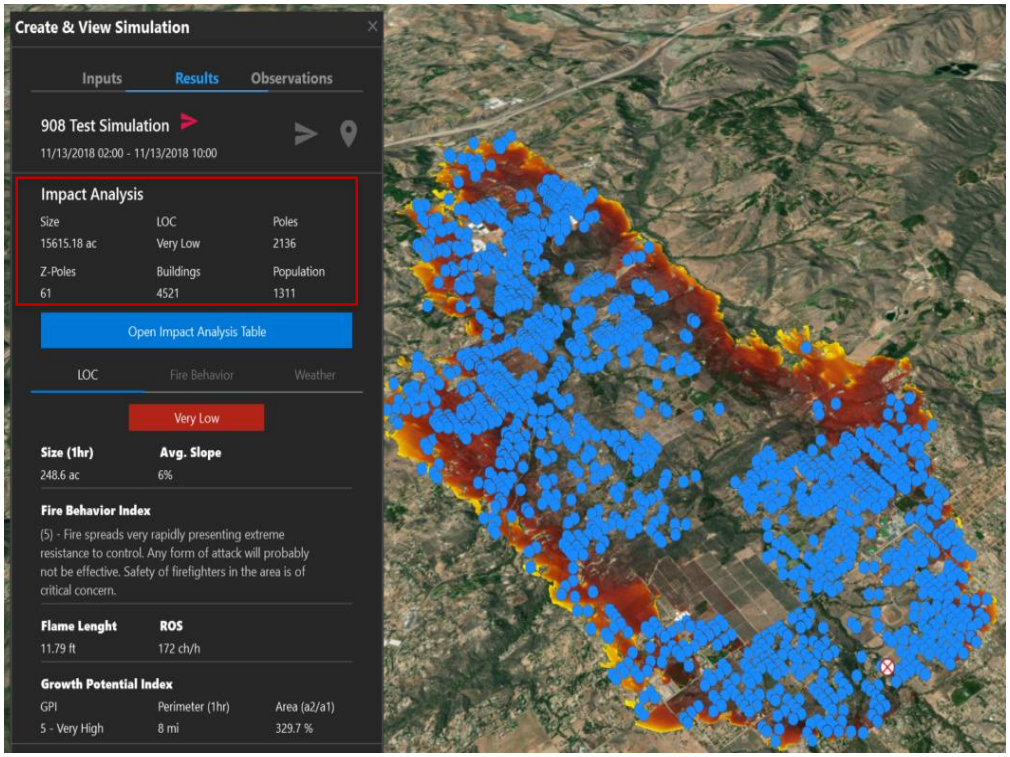
The purpose of this presentation is to provide an overview of SDG&E's enhancements since last fire season that will help provide community resilience and mitigate wildfire risk and improve community and stakeholder awareness

- Significant work has occurred in the implementation of SDG&E's Wildfire Mitigation Plan
- New tools to enhance operational decision making
  - Weather technology enhancements
  - New vegetation risk index
  - New inspection technology
- Additional hardening programs have been implemented
- Enhanced stakeholder awareness events and customer notifications

Weather Technology Enhancements

SDG&E continues to integrate big data, artificial intelligence and advanced analytics into meteorological operations through the analysis of additional data including tree trimming records and outage history

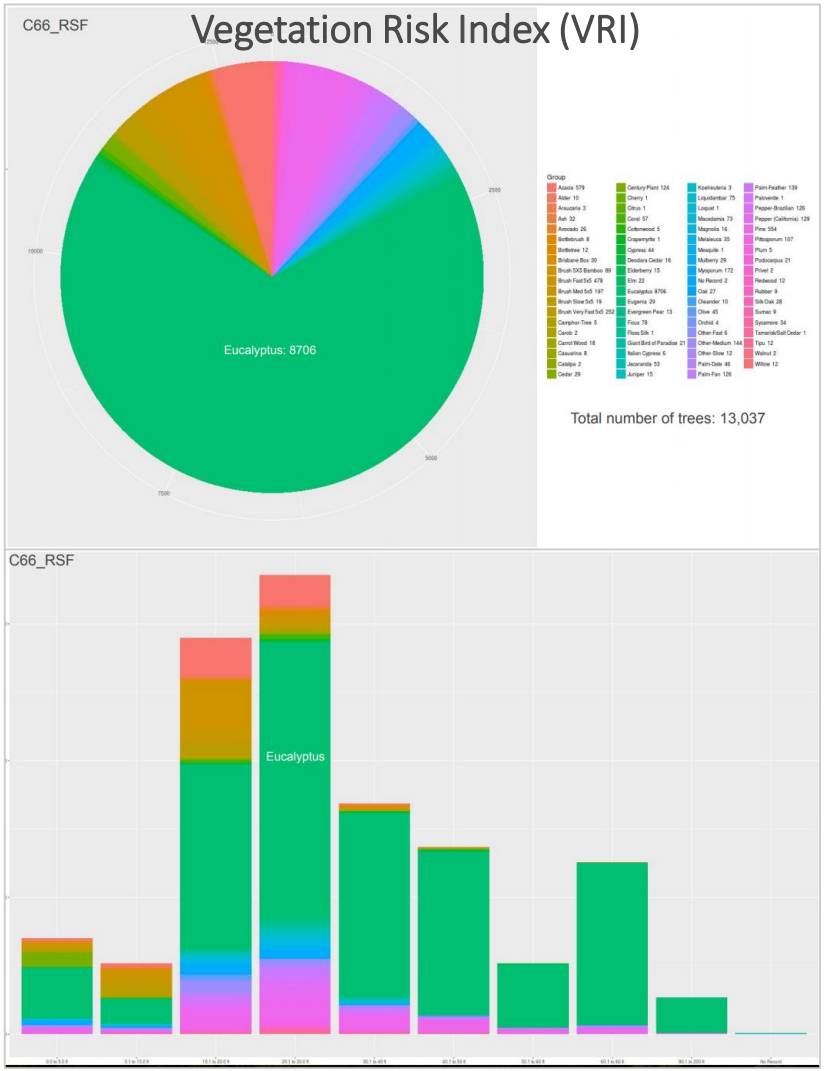
- Weather network is being upgraded to install additional stations in the Wildland Urban Interface (WUI) and enable 10-second data to support emergency operations
- SDG&E's fire behavior models have been synched with census data to further define the highest risk areas with respect to population density and structures
- SDG&E's Fire Potential Index has been upgraded to include more granular weather data from internal super computing program



Improved Operational Decision Making Tools

SDG&E's Fire Scientists and Vegetation Managers have developed a new Vegetation Risk Index (VRI) to support decision making and improve operations during periods of high fire danger

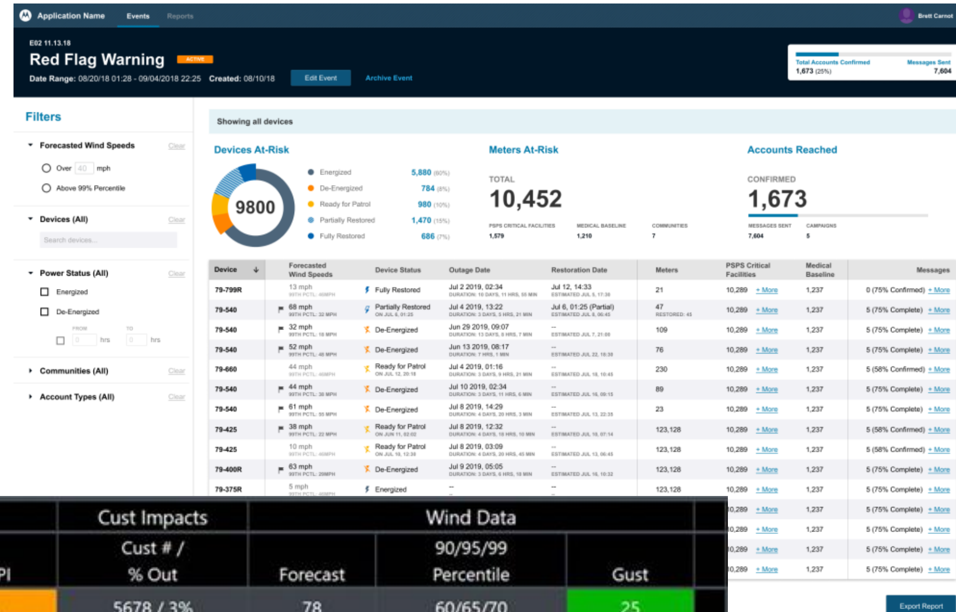
- The new tool quantifies the risk associated with vegetation by analyzing:
  - Total number of trees in the vicinity of a circuit
  - Height of trees
  - Tree species
  - Historical tree related outages
- Key benefits:
  - Assist in operational decisions during fire weather events
  - Prioritize vegetation management efforts
  - Enable more data-driven enhanced vegetation management program



Improved Operational Decision Making Tools

Upgraded Situational Awareness Dashboards have been developed to support decision making

- Situational Awareness Dashboards include:
  - Circuit-level vegetation risk
  - Historical wind information including the identification of the 95th and 99th percentile wind speeds
  - Customer communication analytics



ID Data					Cust Impacts	Wind Data		
Anemometer	VRI	Circuit	Tie Line	Sub/Dist/FPI	Cust # / % Out	Forecast	90/95/99 Percentile	Gust
Santa Ysabel North	X	220,221,222	625	ST/NE/14	5678 / 3%	78	60/65/70	25
School House Canyon	X	67,68,69	625	ST/NE/14	5678 / 3%	78	60/65/70	25
West Rancho Bernardo	N	220,221,222	625	ST/NE/14	5678 / 3%	78	60/65/70	25
School House Canyon	X	67,68,69	625	ST/NE/14	5678 / 3%	78	60/65/70	25
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New Infrastructure Hardening Programs

Infrastructure enhancements will reduce the risk of catastrophic wildfires

Pole Risk Mitigation + Engineering (PRiME)

- Documented pole loading calculations for all poles in SDG&E's service territory (starting in HFTD)
- Leverages improved methodologies including LiDAR[1] imaging, PLS-CADD[2] modeling software, and weather data to perform pole loading assessments of SDG&E's service territory
- Poles requiring construction activities will be remediated as they are identified
- The team replaced over 375 poles in 2019[3] and plans to remediate ~700 by year-end
- Additional ~1,700 poles targeted in 2020

Wire Safety Enhancement (WiSE)

- Targeted replacement of small conductor in the Wildland Urban Interface and coastal canyon areas
- Rebuilding overhead infrastructure to fire hardened construction standards
- 9 circuits targeted in 2019

1) Light Detection and Ranging (LiDAR)
2) Power Line Systems – Computer Aided Design and Drafting (PLS-CADD)
3) As of June 2019

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Increased Stakeholder Awareness

SDG&E has conducted several community events to promote wildfire preparedness, resiliency and safety

- **Open Houses |** Six events across high risk fire areas to educate customers and promote community preparedness
- **Wildfire Resiliency Fairs |** Three events with several community partners :
  - Feeding San Diego
  - Fire Safe Councils
  - SD County Animal Services
  - San Diego Food Bank
  - SD Humane Society
  - Sheriff Departments
  - Sunrise Power Link Grant Program (Alpine Fair)
  - 2-1-1 San Diego
  - American Red Cross
  - Cal-Fire
  - California Highway Patrol
  - Community Emergency Response Team
  - Cleveland National Forest
  - County OES[1]
- **Operation Fire Safe |** A company and community-wide event to enhance wildfire preparedness will take place August 7

1) San Diego County Office of Emergency Services (County OES)

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New CPUC Requirements | Customer Notifications

New requirements have been incorporated into processes and technologies

Notifications for the following audiences:

- Affected Customers
- Access and Functional Needs (AFN) Populations
- Critical Businesses + Utilities
- Public Safety Partners + First Responders
- Cal OES[1], Cal FIRE + CPUC[2]

SDG&E Website

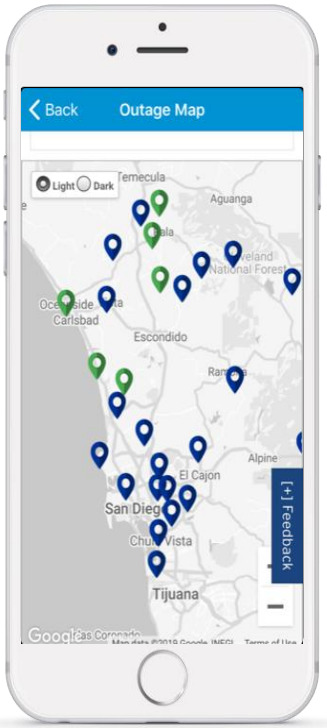
- Public Safety Power Shutoff dedicated web page during events

Communication Channels in Multiple Languages

- Email
- Text
- Phone

Joint IOU Message Coordination with Cal OES[1]

- Direct GIS feed made available sharing PSPS information with Cal OES[1]



Outage notifications delivered in 8 languages

- English
- Mandarin
- Cantonese
- Korean
- Vietnamese
- Tagalog
- Spanish
- Russian

1) California Office of Emergency Services (Cal OES)
2) California Public Utilities Commission (CPUC)