

# Wildfires, Vegetation Management and Powerlines



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# Comprehensive Program to Reduce Fire Risk

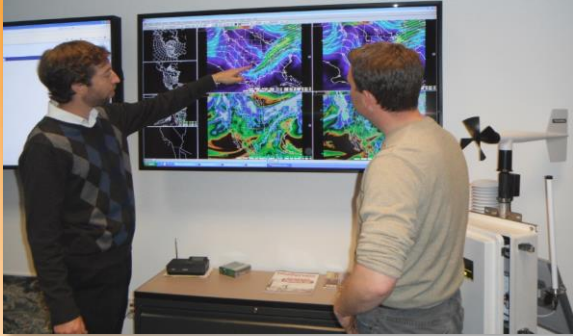
- Extensive engineering changes (more stringent design criteria, use of fire-resistant materials, use of state-of-the-art equipment)
- Weather monitoring and forecasting
- Aggressive vegetation management program
- Expanded QA/QC inspection and repair program
- Escalating operational changes coincident with conditions
- Far reaching community outreach and involvement
- Pole Replacements – FiRM, Cleveland National Forest, Wood to Steel





# Reducing Wildfire Risks

## Meteorologists and Fire Coordination



Air Support Contract



## Wood to Steel Conversion



Contracted Fire Fighters



## Vegetation Management



Mobile Fire Trailers

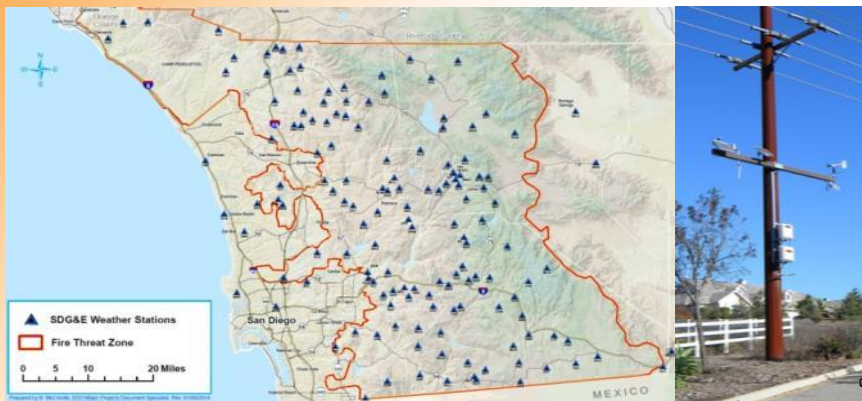


## Updated Operational Procedures

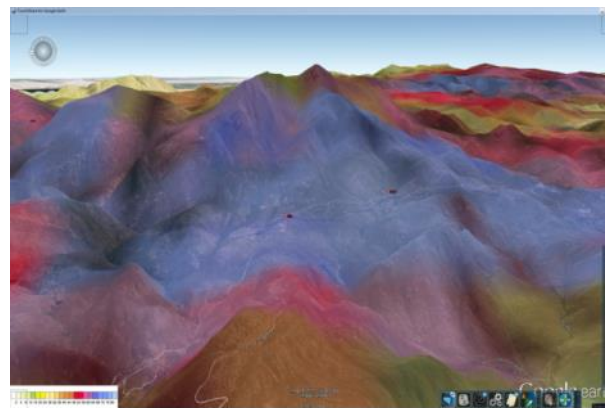
<p><b>Normal Condition</b> Fire Potential Index 1-11 Fuel and weather conditions are no longer conducive to significant fire growth. Based on fire indices and Fire Coordinator / Meteorologist Recommendation</p>	<p><b>Elevated Condition</b> Fire Potential Index 12-14 The burn environment of a specific area or district has become conducive for a large wildfire within the SDG&amp;E service territory.</p>	<p><b>Extreme Condition</b> Fire Potential Index 15 and above An extreme operating condition will be declared when the burn environment of a specific area or district has become conducive for a catastrophic wildfire within the SDG&amp;E service territory.</p>	<p><b>Red Flag Condition (NWS)</b> RFW: Relative Humidity ≤ 15%, with sustained winds ≥ 25 mph and/or frequent gusts ≥ 35 mph (duration ≥ 6 hours) Declared by NWS</p>
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# Situational Awareness Enhancements through Community Collaborations and Big Data

- SDG&E Weather Station Network: largest utility weather network in the world delivering unsurpassed real-time decision support



- State-of-the-Art Forecasting System: Provides superior understanding of weather and vegetation moisture supporting proactive emergency operations



- Mountain top camera network allows for real time monitoring of hazardous conditions providing updated intelligence



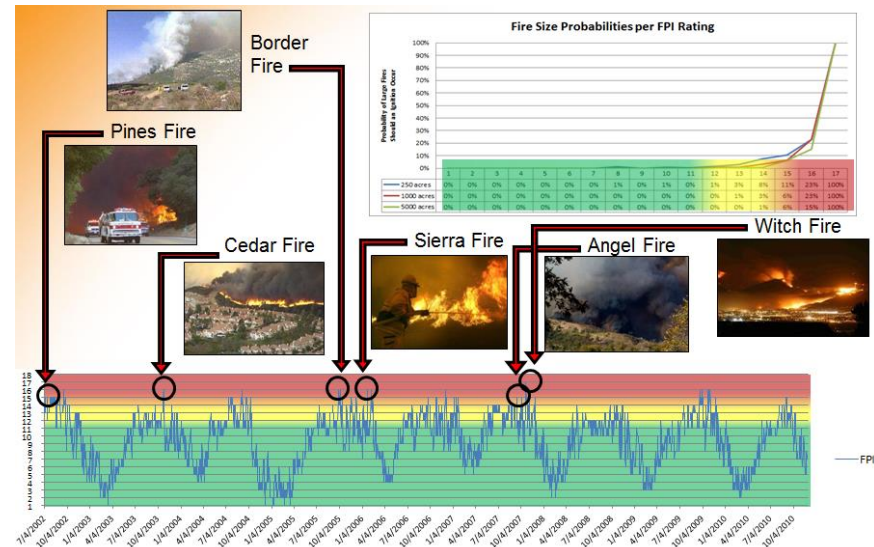
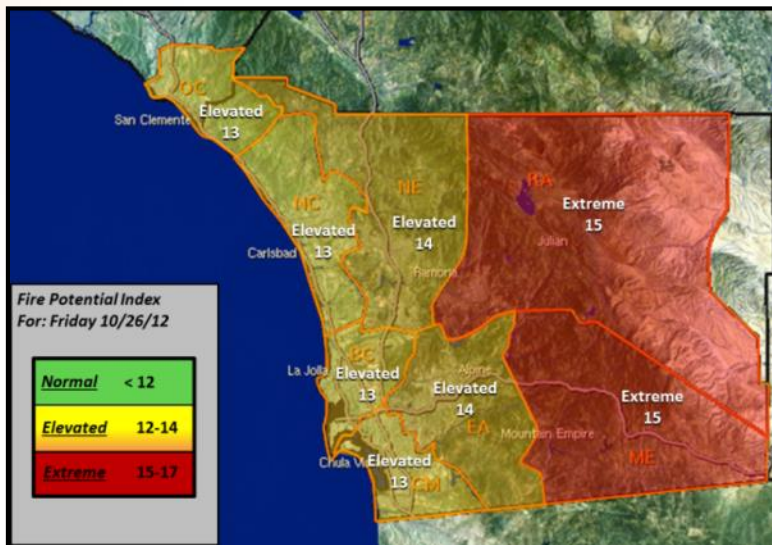
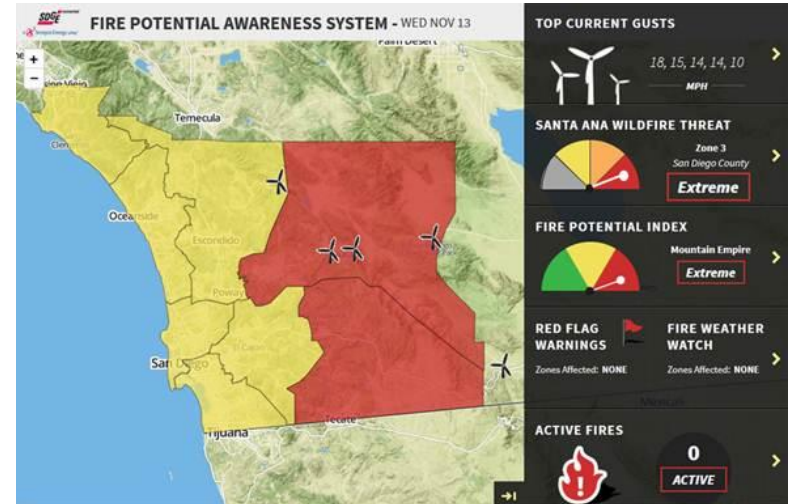
- Collaboration with key stakeholders in the local fire community increasing data sharing





The Fire Potential Index is a planning and decision support tool designed to reduce the risk of a wildfire while improving efficiency and reliability

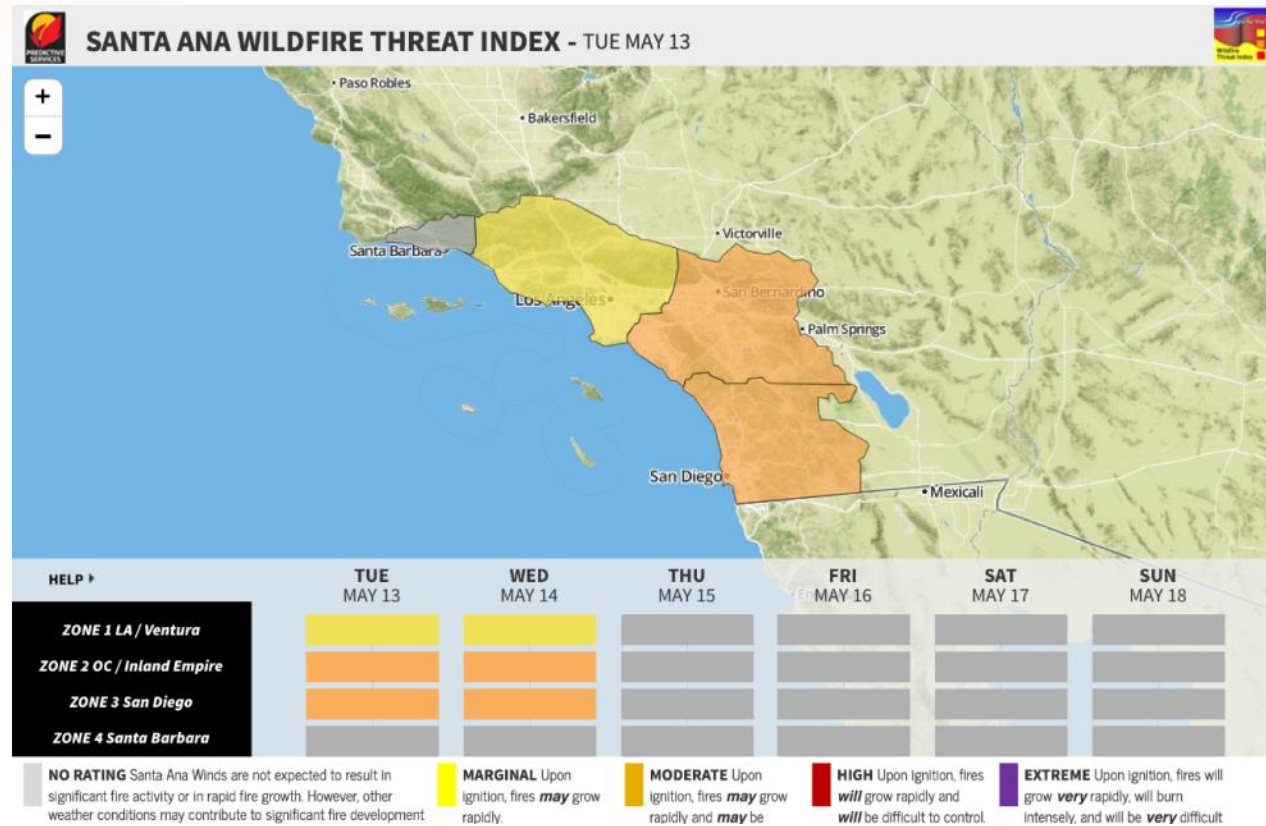
	Thu 10/25	Fri 10/26	Sat 10/27	Sun 10/28	Mon 10/29	Tue 10/30	Wed 10/31	Thu 11/01
ME	Normal 11	Extreme 15	Elevated 13	Elevated 12	Normal 11	Normal 11	Normal 11	Normal 10
RA	Normal 11	Extreme 15	Elevated 13	Elevated 12	Normal 11	Normal 11	Normal 11	Normal 10
EA	Normal 10	Elevated 14	Elevated 12	Normal 11	Normal 11	Normal 10	Normal 10	Normal 10
NE	Normal 10	Elevated 14	Elevated 12	Normal 11	Normal 11	Normal 10	Normal 10	Normal 10
OC	Normal 10	Elevated 13	Normal 11	Normal 11	Normal 10	Normal 9	Normal 9	Normal 9
NC	Normal 10	Elevated 13	Normal 11	Normal 11	Normal 10	Normal 9	Normal 9	Normal 9
BC	Normal 10	Elevated 13	Normal 11	Normal 11	Normal 10	Normal 9	Normal 9	Normal 9
CM	Normal 10	Elevated 13	Normal 11	Normal 11	Normal 10	Normal 9	Normal 9	Normal 9

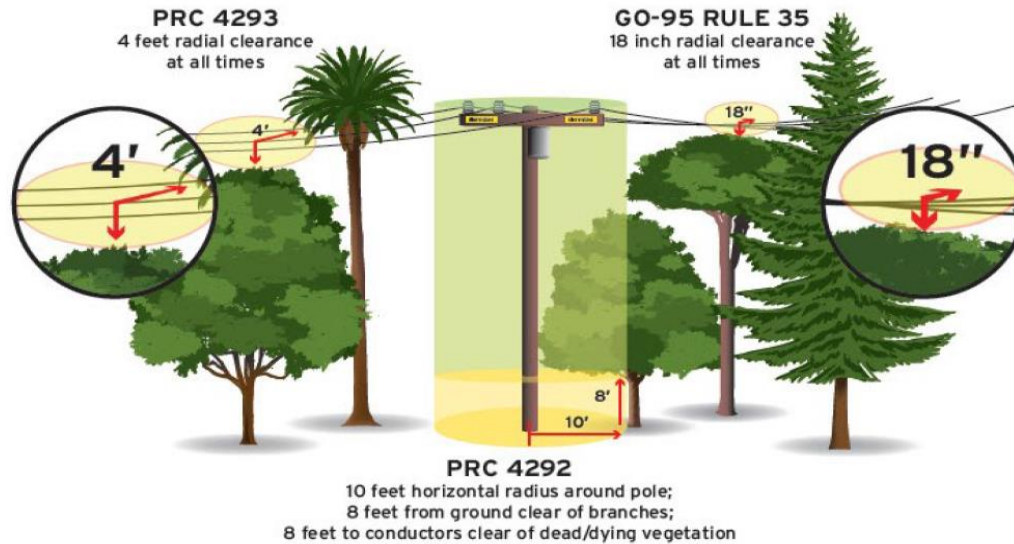




**Our Mission:** Develop a tool to mitigate risks associated with extreme fire potential during Santa Ana Winds.

**Our Vision:** To provide a decision support tool to fire agencies and the general public to increase public safety and overall preparedness.

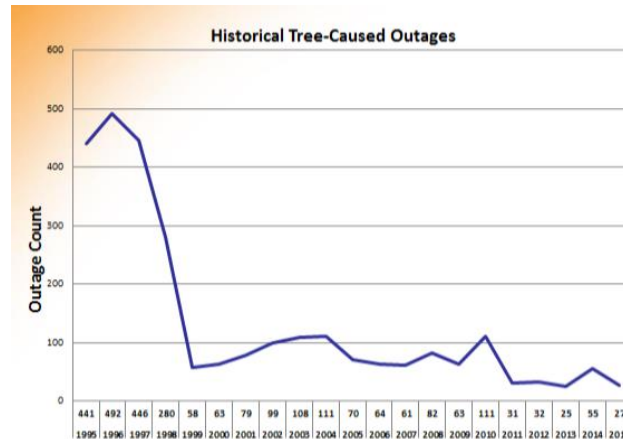




- SDG&E Vegetation Management maintains a comprehensive database of over 464,000 trees that could impact our system.
- Includes tree location, species, growth rates and pruning history.
- This program has resulted in drastic decreases in tree-related outages on the system.

**1995:**  
411 outages

**2015:**  
27 outages





# Vegetation Management Components – Records Management

- SDG&E Vegetation Management utilizes a computerized work management system to record all vegetation management.
- Vegetation Management maintains an inventory of approximately 464,000 trees, which are inspected annually by a contractor force of Certified Arborists.
- Any tree identified as a hazard (dead, dying, diseased, leaning, structurally unsound, etc.) is entered into the system during the pre-inspection activity.
- After the work is issued to the trim contractor, hazard trees are abated by removing the portion of the crown that could impact the lines or the tree is removed completely.
- Each inspection and trim work activity is maintained in the database as a historic record that includes when the work was performed.
- Upon completion of the pre-inspection and tree trim/removal activities, an audit is performed by a separate contractor on a representative sample of the work.





## Vegetation Management Components – Customer Refusals

- SDG&E Vegetation Management has a specific process to track and record customer refusals.
- The process involves multiple communications with the customer, including contact by the tree crew, crew supervisor, and SDG&E Foresters.
- If not initially resolved, SDG&E will send the customer a certified letter outlining the applicable safety and compliance issues, and notifying the customer that SDG&E will need to perform the required work.
- If the issue cannot be resolved, SDG&E may contact law enforcement to assist with a forced trim.
- Vegetation management work is generally completed without substantial delay.



SDG&E is not waiting to improve its electric system to minimize fire risks. Using state of the art modelling, mapping and prioritizing techniques, SDG&E has initiated the Fire Risk Management Project, or FiRM. The FiRM project addresses fire risk by hardening overhead distribution circuits in the Fire Threat Zone (FTZ). The work includes:

- Reconductoring
- Pole replacements
- Undergrounding overhead facilities
- Equipment installation or removal
- New or upgrading technology



The work is prioritized based on fire risk, values at risk, and public safety. The FiRM Analysis Team is a technical advisory team that also continuously looks at failures in the system and makes project recommendations and new technology recommendations.

- 7,200 poles located in the High Risk Fire Area (HRFA) were replaced in 2014 and 2015.
- Phase 2 of FiRM will address the 30,000 poles between 2015 and 2018.
- Phase 3 of FiRM will address the remaining approximately 40,000 poles after 2018.

Cleveland National Forest project would replace 150 miles of wood poles with steel poles as well as undergrounding portions of existing lines and removals from service and reconductoring of certain line segments.



## Proactive Operational and Developmental Measures

- Turn-off automatic reclosing
- Mobilizing crews to pre-determined locations
- De-energize for safety when necessary
- Staging of washing rigs and fire crews to pre-determined locations
- Prior to and throughout the event, SDG&E provides situational awareness and forecasts to CAISO



- Coordinate with neighboring utilities for potential support
- Take operational actions as needed to optimize power flows in coordination with the CAISO
- For major events, the CAISO will declare a system emergency where they may suspend code of conduct and allow out of market sales to stabilize system

***Thank You***

Questions?

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