



2021 WMP Update Workshop

**Vegetation Management: Inspection, Strategy and
Pilots**

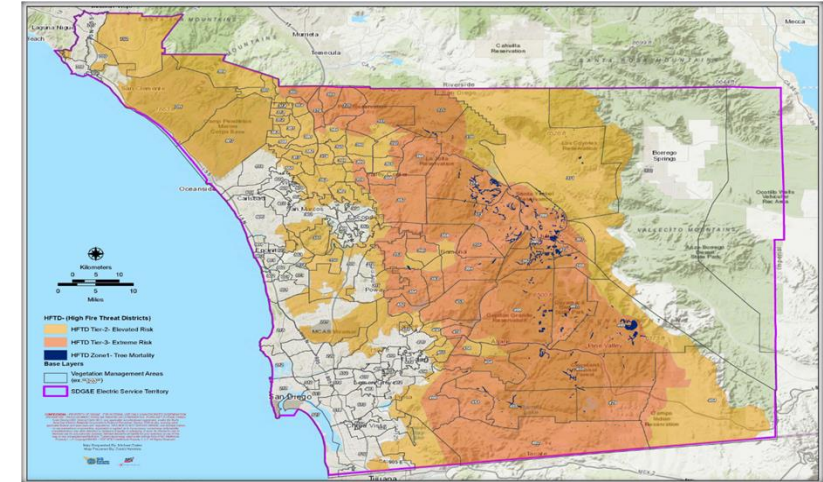
February 23, 2021

Vegetation Management Overview

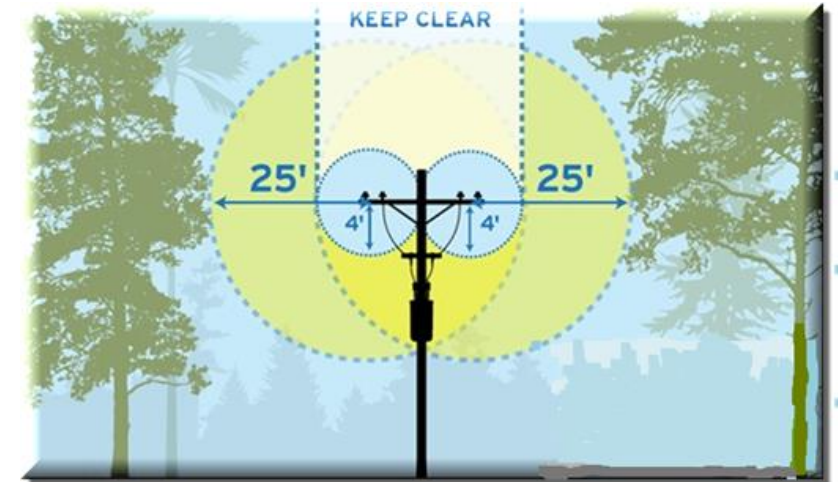


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- Tracking 457,000 inventory trees
- SDG&E Service Territory divided into 133 Vegetation Management Areas (VMA)
- Master Annual Activity Schedule
- HFTD ~54% of total system OH miles
- Maximize post-trim clearances 12 - 25ft;
Removal of all direct overhangs



2020	Trimmed	Removed
Non-HFTD	124,182	7,739
HFTD	97,304	5,245

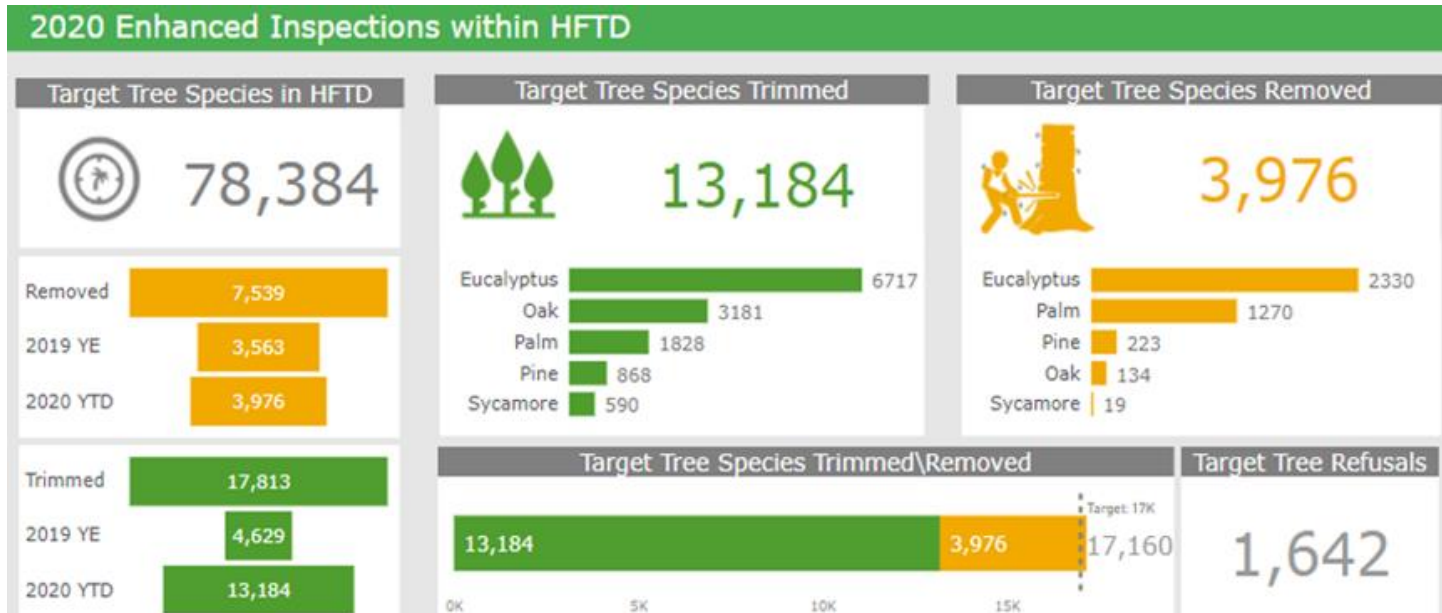


Inspection Activities



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- Four internal SDG&E Patrollers (Certified Arborists) for HFTD inspections and prevent patrols
- Additional, mid-cycle hazard tree inspection activity within HFTD
- Data collection at the individual tree level
- Continued enhanced post-trim clearances > 12ft on targeted species within HFTD were prudent in consideration of risk (failure characteristics, growth potential)
- Inspection scope increased to include all secondary-voltage facilities
- Collaboration with local colleges to develop utility arboricultural curriculum



Vegetation Management Database



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- All activities and contractors operate within the electronic workflow environment
- All data uploaded nightly to central server; viewable to all users the following day
- 2020 - Development of new electronic work management system (EPOCH). Improvements in data gathering, work efficiencies, robust asset history, detailed reporting
- Improved GIS mapping capabilities
- Accurate GPS positioning of each inventory tree
- Enhanced tree data capture for more granular analysis
- Updated information for improved customer notification and engagement



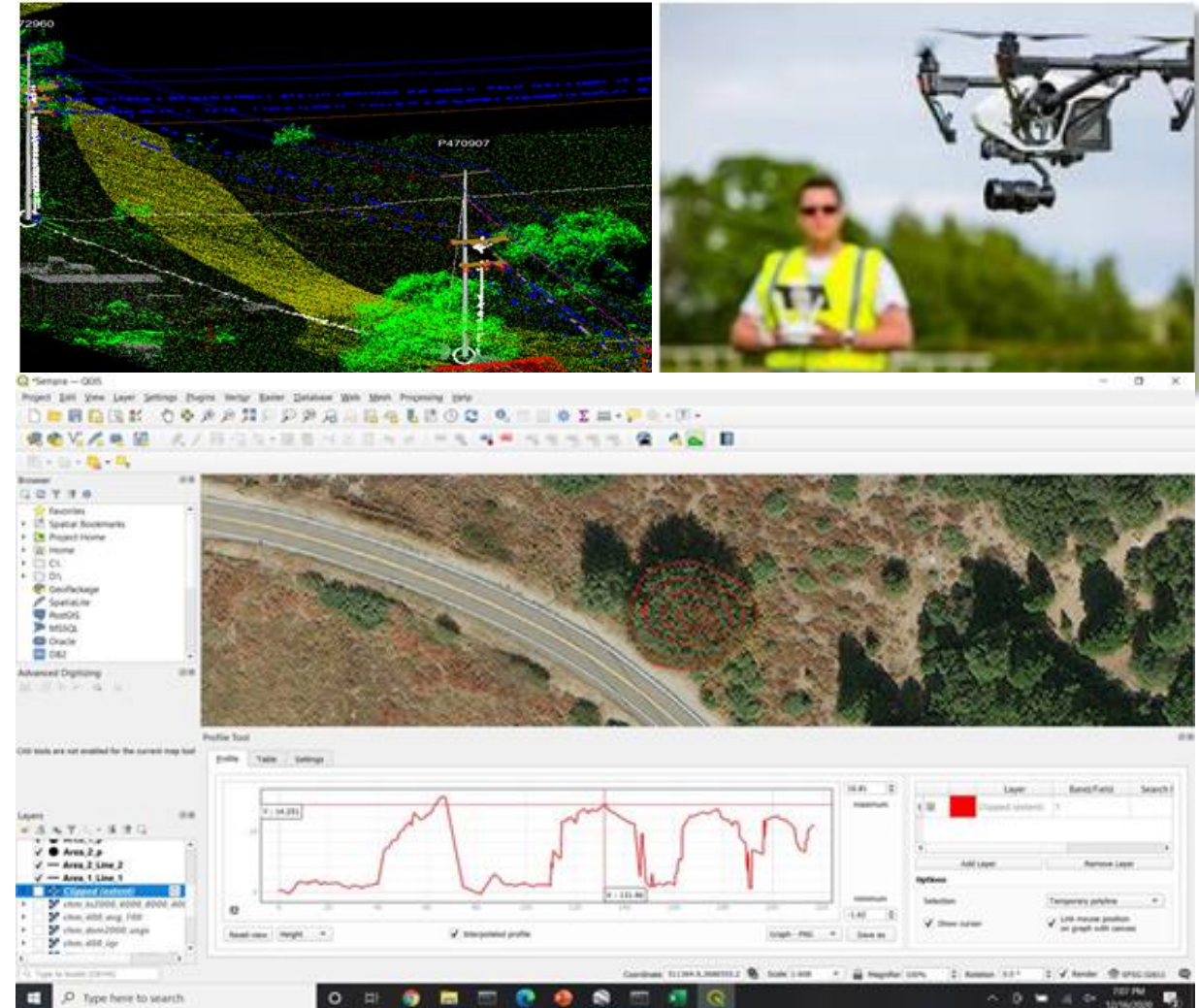
2020 Technologies



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LiDAR

- C214 Pilot to validate clearance data and inspection integration
- Using UAS (drones) to capture imagery and LiDAR for inspections and QA/QC post-construction activities: 1,289 observations in 2020
- Data will aid in predictive modeling of vegetation growth patterns, provide comprehensive GIS right-of-way inventories, and assist in identifying high fire risk areas



Satellite Imagery

- C214 Proof of Concept
- Assess vegetation height and clearance to understand the potential risk and impact on encroachment
- Higher frequency of imaging compared with LiDAR

Vegetation Risk Index

- Merging Meteorology and tree and outage data
- Engaging UCSD Supercomputing team to develop risk analysis and predictive modeling

Vegetation Management Sustainability



Committed to environmental stewardship and the initiative to reduce GHG and carbon footprint

- Tree operations include the removal of all green waste material off-site with the exception of large rounds associated with tree removal
- Upon request, chipped material is left with customers for ground cover, landscaping, etc.
- In 2020, SDG&E entered into agreement with a second 100% recyclable vendor (Agri-Services) to divert from landfill



Green Waste Diverted to Recycle	Tonnage
2019	3,500
2020	4,540

2020 Vegetation Clearance Analysis



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Vegetation contact study to determine the relationship between tree-related outage frequency and post-trim clearances (2002–2020)

- Data indicates greater clearances result in reduced outages
- SDG&E is not aware of any outage from a targeted species trimmed to 20-30' that cause an outage in the HFTD (excludes root failure fall in trees)
- From an RSE standpoint, that's going from a contact rate of .14 to zero. According to the data, if SDG&E completed this program on all targeted trees, we would reduce average veg contacts by 6.3 per year

Vegetation Risk Event Rate of Eucalyptus, Oak, Palm, Pine, and Sycamore in the HFTD (2002-2020)

