

Responding to Tree Mortality in the Sierras



Photo by Larry Swan, USFS

TREE MORTALITY TASK FORCE

2



State of Emergency Proclamation

Coming Up

3

- Tree Mortality what it is,
- The conditions leading up to the current situation,
- The TMTF,
- Tree Mortality in the numbers,
- Hazards, and
- Efforts.

Mariposa County March 21, 2015

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Mariposa County October 11, 2015

5





November 11, 2015 Madera/Fresno County line



Ponderosa Basin October 20, 2015



Ponderosa Basin October 20, 2015



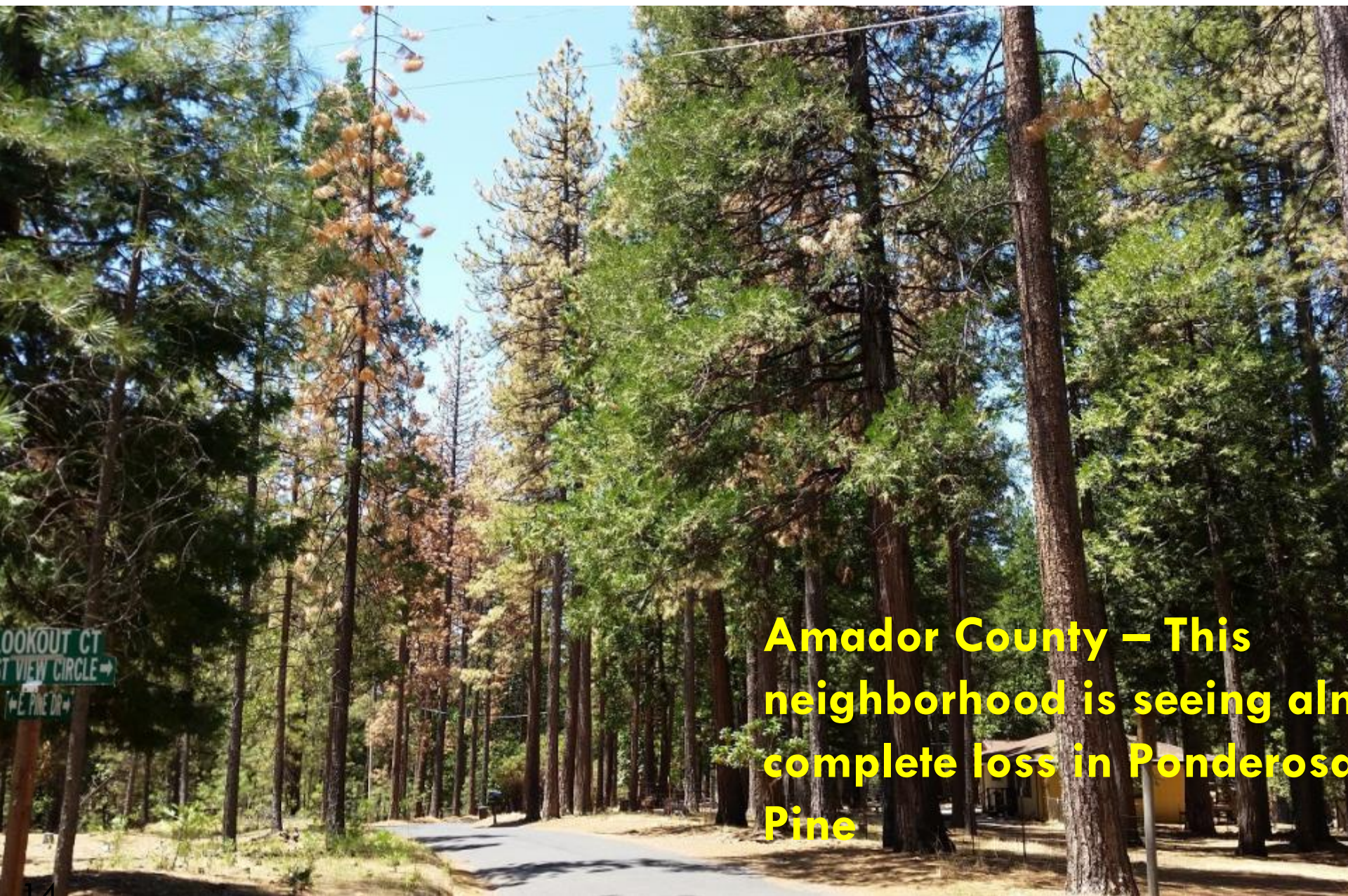








Amador County - All the pine along the road have heavy bark beetle attacks and the trees are actively fading.



Amador County – This neighborhood is seeing almost complete loss in Ponderosa Pine

HOW DID THIS
START?



Multiple Factors

16

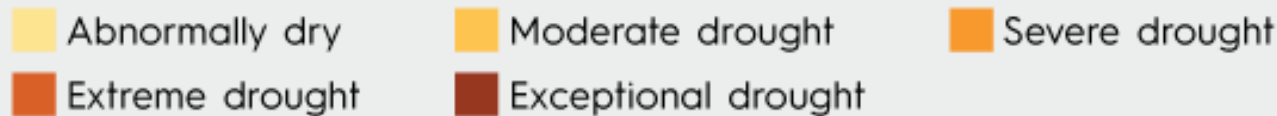
- 5 Years of Drought
- Increasing Climatic Temperatures
- Declining Snow Pack
- Unresilient, overstocked Sierran Forests

Current Trends- Five Years of Drought

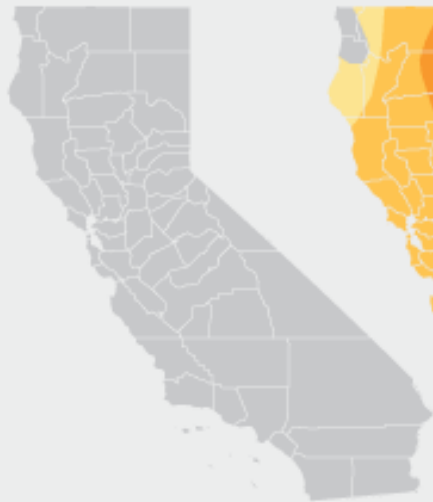
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A Record-Breaking Drought

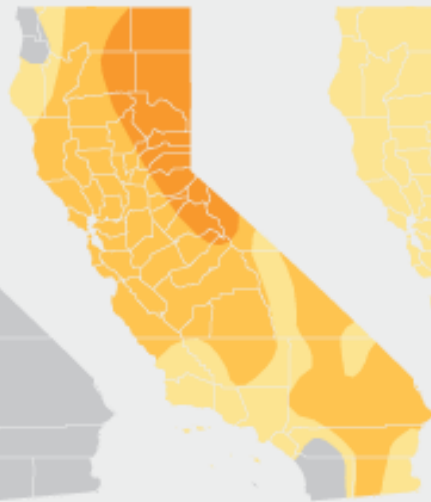
41% of the state is facing “exceptional drought” (the most severe kind).



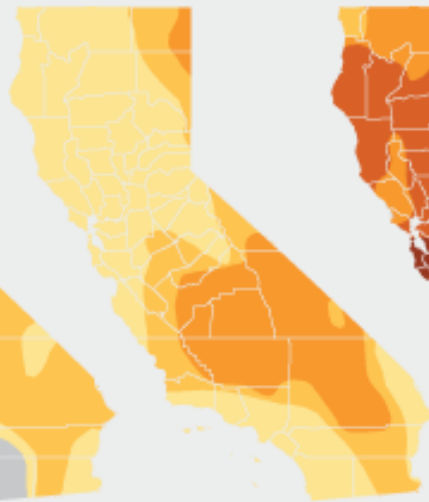
2011



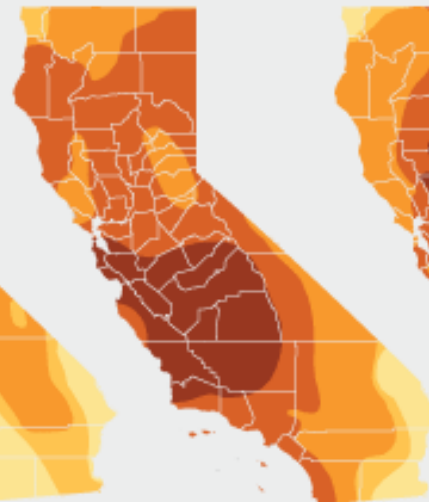
2012



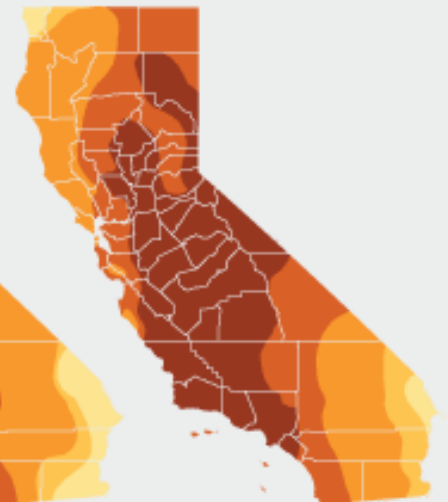
2013

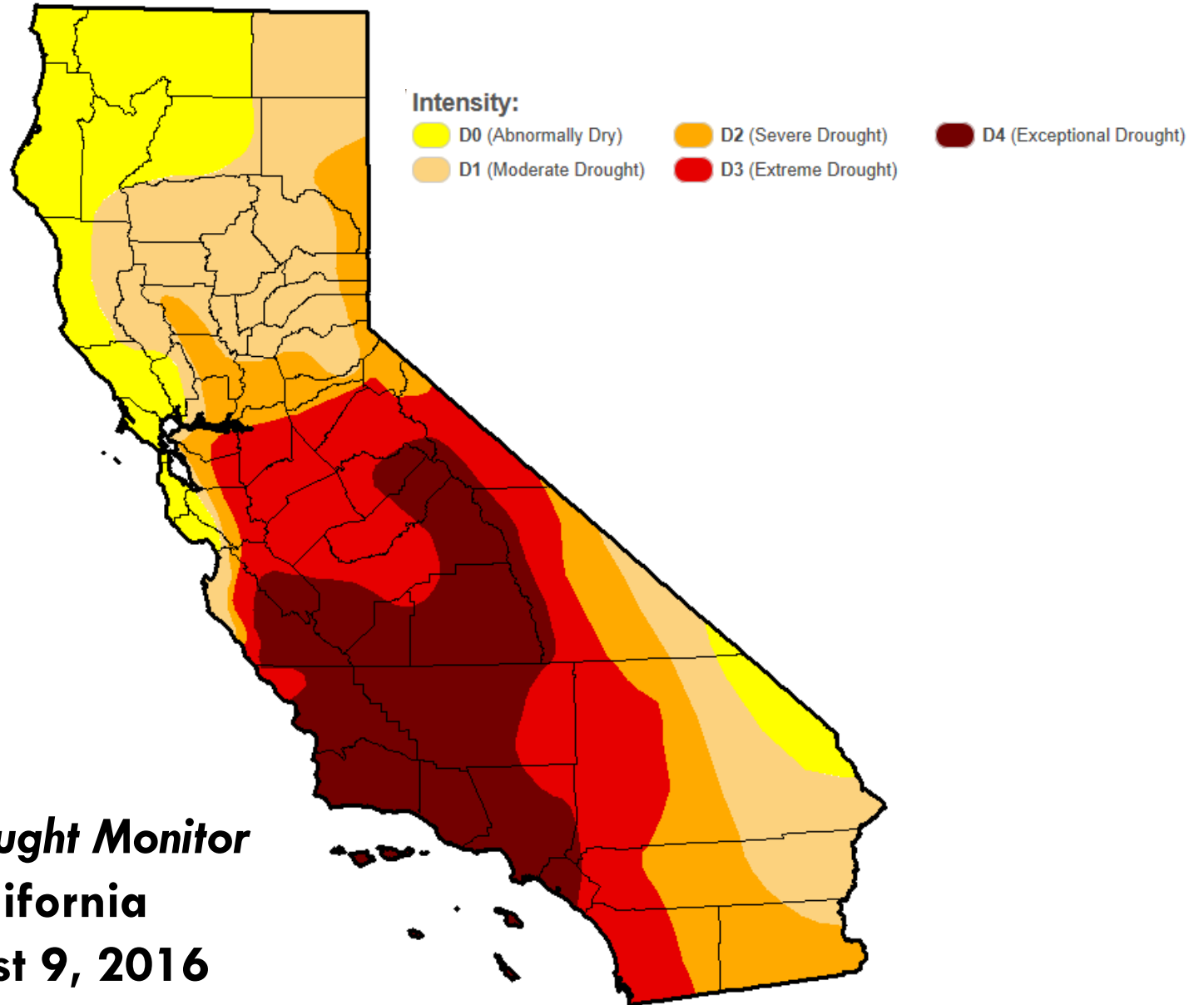


2014



2015





Top 20 Largest Wildfires

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Top 20 Largest California Wildfires

	FIRE NAME (CAUSE)	DATE	COUNTY	ACRES	STRUCTURES	DEATHS
1	CEDAR (Human Related)	October 2003	San Diego	273,246	2,820	15
2	RUSH (Lightning)	August 2012	Lassen	271,911 CA / 43,666 NV	0	0
3	RIM (Human Related)	August 2013	Tuolumne	257,314	112	0
4	ZACA (Human Related)	July 2007	Santa Barbara	240,207	1	0
5	MATILJA (Undetermined)	September 1932	Ventura	220,000	0	0
6	WITCH (Powerlines)	October 2007	San Diego	197,990	1,650	2
7	KLAMATH THEATER COMPLEX (Lightning)	June 2008	Siskiyou	192,038	0	2
8	MARBLE CONE (Lightning)	July 1977	Monterey	177,866	0	0
9	LAGUNA (POWERLINES)	September 1970	San Diego	175,425	382	5
10	BASIN COMPLEX (Lightning)	June 2008	Monterey	162,818	58	0
11	DAY FIRE (Human Related)	September 2006	Ventura	162,702	11	0
12	STATION FIRE (Human Related)	August 2009	Los Angeles	160,557	209	2
13	ROUGH (Lightning)	July 2015	Fresno	151,623	4	0
14	McNALLY (Human Related)	July 2002	Tulare	150,696	17	0
15	STANISLAUS COMPLEX (Lightning)	August 1987	Tuolumne	145,980	28	1
16	BIG BAR COMPLEX (Lightning)	August 1999	Trinity	140,948	0	0
17	HAPPY CAMP COMPLEX (Lightning)	August 2014	Siskiyou	134,056	6	0
18	CAMPBELL COMPLEX (Powerlines)	August 1990	Tehama	125,892	27	0
19	SOBERANES (Illegal Campfire)	July 2016	Monterey	125,344	68	1
20	WHEELER (Arson)	July 1985	Ventura	118,000	26	0

***Information from the Soberanes Fire will likely change until the fire is contained.

*There is no doubt that there were fires with significant acreage burned in years prior to 1932, but those records are less reliable, and this list is meant to give an overview of the large fires in more recent times.

**This list does not include fire jurisdiction. These are the Top 20 regardless of whether they were state, federal, or local responsibility.



9/22/2016

Top 20 Damaging Fires

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Top 20 Most Damaging California Wildfires

	FIRE NAME (CAUSE)	DATE	COUNTY	ACRES	STRUCTURES	DEATHS
1	TUNNEL - Oakland Hills (<i>Rekindle</i>)	October 1991	Alameda	1,600	2,900	25
2	CEDAR (<i>Human Related</i>)	October 2003	San Diego	273,246	2,820	15
3	VALLEY (<i>Under Investigation</i>)	September 2015	Lake, Napa & Sonoma	76,067	1,955	4
4	WITCH (<i>Powerlines</i>)	October 2007	San Diego	197,990	1,650	2
5	OLD (<i>Human Related</i>)	October 2003	San Bernardino	91,281	1,003	6
6	JONES (<i>Undetermined</i>)	October 1999	Shasta	26,200	954	1
7	BUTTE (<i>Under Investigation</i>)	September 2015	Amador & Calaveras	70,868	921	2
8	PAINT (<i>Arson</i>)	June 1990	Santa Barbara	4,900	641	1
9	FOUNTAIN (<i>Arson</i>)	August 1992	Shasta	63,960	636	0
10	SAYRE (<i>Misc.</i>)	November 2008	Los Angeles	11,262	604	0
11	CITY OF BERKELEY (<i>Powerlines</i>)	September 1923	Alameda	130	584	0
12	HARRIS (<i>Under Investigation</i>)	October 2007	San Diego	90,440	548	8
13	BEL AIR (<i>Undetermined</i>)	November 1961	Los Angeles	6,090	484	0
14	LAGUNA (<i>Arson</i>)	October 1993	Orange	14,437	441	0
15	ERSKINE (<i>Under Investigation</i>)	June 2016	Kern	46,684	386	2
16	LAGUNA (<i>Powerlines</i>)	September 1970	San Diego	175,425	382	0
17	HUMBOLDT (<i>Arson</i>)	June 2008	Butte	23,344	351	4
18	PANORAMA (<i>Arson</i>)	November 1980	San Bernardino	23,600	325	3
19	TOPANGA (<i>Arson</i>)	November 1993	Los Angeles	18,000	323	0
20	49ER (<i>Illegal Debris Burning</i>)	September 1988	Nevada	33,700	312	0

**Structures" include homes, outbuildings (barns, garages, sheds, etc) and commercial properties.

**This list does not include fire jurisdiction. These are the Top 20 regardless of whether they were state, federal, or local responsibility.



7/8/2018

Beetle Reproduction

21

Warmer winters allows bark beetles to reproduce year-round
Winter Snow Pack

March 2010



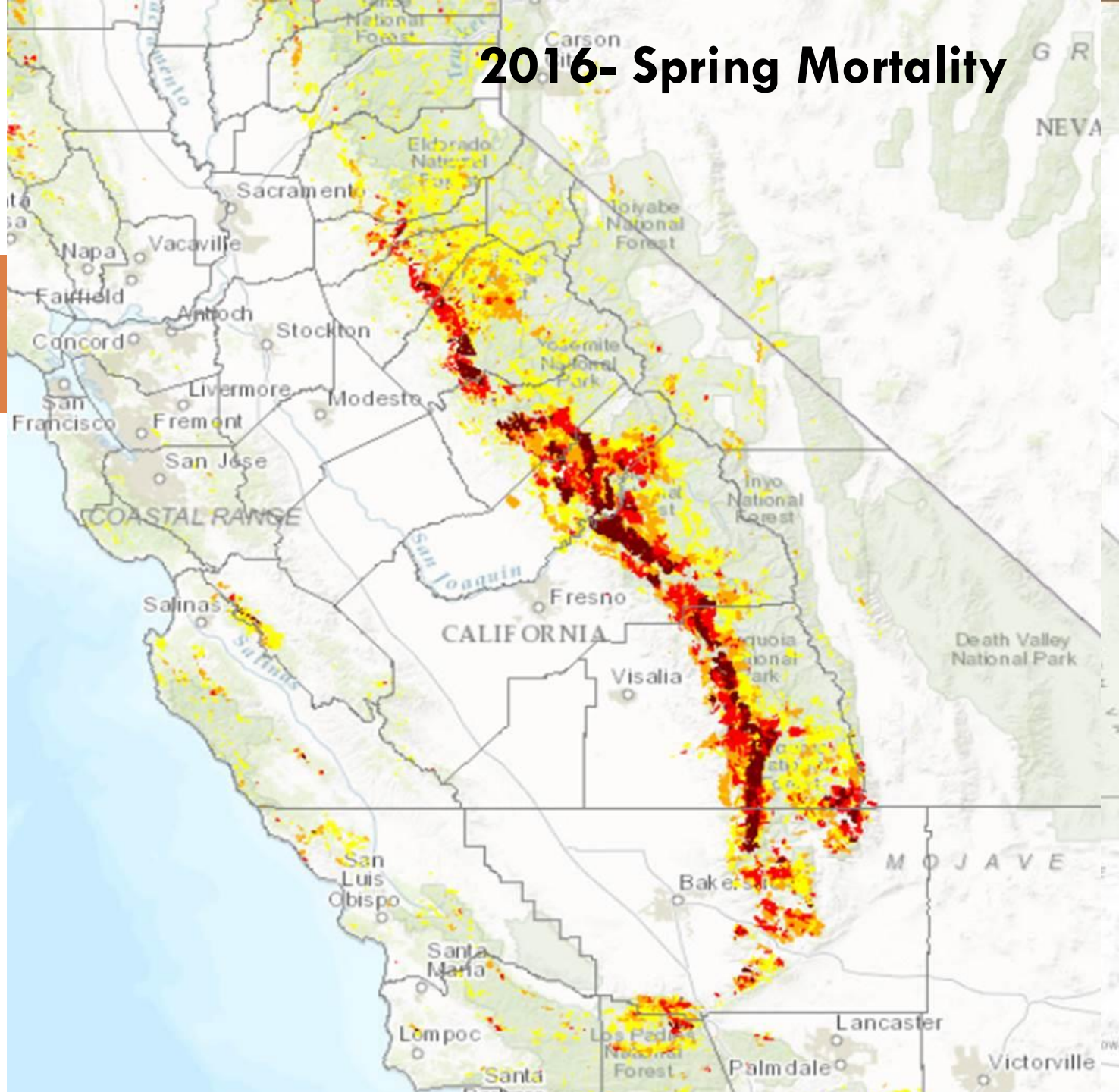
March 2015



“Drought & Water Year: 2016” from DWR

2016- Spring Mortality

22



Current Trends- Mortality Expansion

23

- 2014- 3.3 million
 - 2015- 29 million statewide, 40 million since 2010
 - 2016 (Spring)- 26 million additional dead trees and counting!
- 

Current Situation

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- Estimated 66 Million DEAD trees since 2010
- 5.5 million Hazardous trees to be removed
 - 2/3 on Forest Service Land
 - 1/3 on Private lands

TREE MORTALITY NORTHERN FRESNO COUNTY



MAY 2015

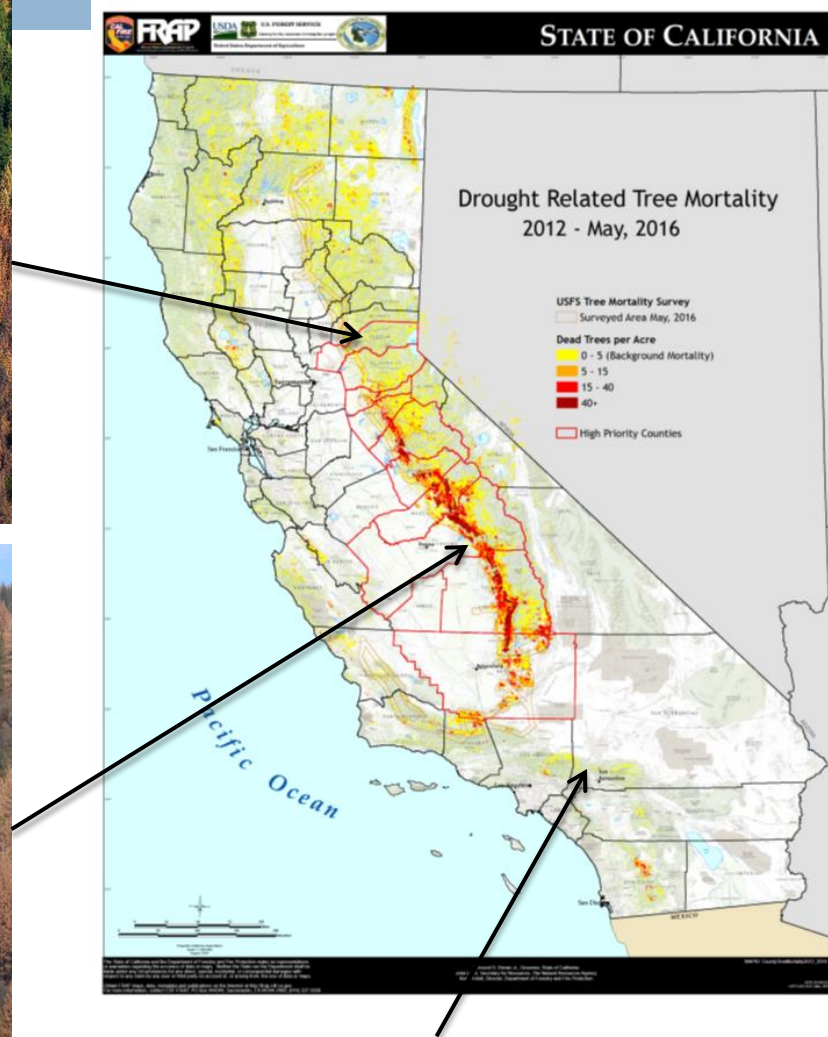


FEBRUARY 2016



Epidemic proportions

25



Lake Arrowhead

Costs of Tree Mortality Emergency

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- \$2.8 billion estimated cost to remove
- \$562 million USFS
(approximately \$150/tree)
- \$2.2 billion non-USFS
(average \$1,200/tree)



Hazards of Dead & Dying Trees

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- **Changing forest conditions.**
- **Initial increase in fire behavior**
- **Structural weakness**



CAL FIRE's MMU-Bass lake FFS.
October 2016

**Growing, year round life safety
threat.**



TREE MORTALITY TASK FORCE

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- October 30, 2015 -
Proclamation of a State of
Emergency Executive Order
- November 16, 2015 – First
TMTF meeting in Sacramento

Executive Department

State of California

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PROCLAMATION OF A STATE OF EMERGENCY

WHEREAS the State of California is experiencing record drought conditions, which have persisted for the last four years; and

WHEREAS on January 17, 2014, I proclaimed a State of Emergency to exist throughout the State of California due to severe drought conditions; and

WHEREAS a lack of precipitation over the last four years has made trees in many regions of California susceptible to epidemic infestations of native bark beetles, which are constrained under normal circumstances by the defense mechanisms of healthy trees; and

WHEREAS these drought conditions and resulting bark beetle infestations across broad areas have caused vast tree mortality in several regions of the state, with the United States Forest Service estimating that over 22 million trees are dead and that tens of millions more are likely to die by the end of this year; and

WHEREAS recent scientific measurements suggest that the scale of this tree die-off is unprecedented in modern history; and

TREE MORTALITY TASK FORCE

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FORMATION

19 DIRECTIVES

7 WORKING GROUPS

80 ENTITIES

10 COUNTIES



Proclamation Directives by WG



Tree Mortality October 30, 2105 Emergency Proclamation Directive

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Directives	TMF Working Groups					
	Mapping & Monitoring	Public Outreach	Regulations	Resource Allocation	Bioenergy	Market Development
1 The Department of Forestry and Fire Protection, the California Natural Resource Agency, the California Department of Transportation, and the California Energy Commission shall immediately identify areas of the State that represent high hazard zones for wildfire and falling trees using best available science and geospatial data.						
2 State agencies, utilities, and local governments to the extent required by their existing responsibilities to protect the public health and safety, shall undertake efforts to remove dead or dying trees in these high hazard zones that threaten power lines, roads and other evacuation corridors, critical community infrastructure, and other existing structures. Incidental vegetation such as shrubs that restrict access for safe and efficient removal of the dead and dying trees also may be removed. The Department of Forestry and Fire Protection shall issue emergency guidelines setting forth the relevant criteria, and the California Conservation Corps shall assist government entities in implementing this directive to the extent feasible.						
3 The Department of Forestry and Fire Protection shall identify potential storage locations for removed trees across impacted areas in partnership with federal agencies and local jurisdictions.						
4 The California Department of Transportation shall formally request immediate assistance through the Federal Highway Administration's Emergency Relief Program, Title 23, United States Code section 325, in order to obtain federal assistance for removal of dead and dying trees that are adjacent to highways.						
5 Department of General Services will identify state facilities, and the California Department of Transportation shall identify highway and road corridors, where woodchips produced from dead trees can be used as mulch.						
6 The Governor's Office of Emergency Services and the Department of Forestry and Fire Protection shall work with the impacted counties to distribute portable equipment across the high hazard zones so that isolated communities can remove and process wood waste locally where appropriate.						
7 The California Air Resources Board and the California Department of Forestry and Fire Protection shall work together and with federal land managers and the United States Environmental Protection Agency to expand the practice of prescribed burns, which reduce fire risk and avoid significant pollution from major wildfire, and increase the number of allowable days on a temporary basis to burn tree waste that has been removed in high hazard areas.						
8 The California Public Utilities Commission shall utilize its authority to extend contracts on existing forest bioenergy facilities reaching feedstock from high hazard zones.						
9 The California Public Utilities Commission shall take expedited action to ensure that contracts for new forest bioenergy facilities that receive feedstock from high hazard zones can be executed within six months, including initiation of a targeted renewable auction mechanism and consideration of adjustments to the BioMat Program defined pursuant to Public Utilities Code section 399.20. No later than six months after the BioMat program begins, the California Public Utilities Commission shall evaluate the need for revisions to the program to facilitate contracts for forest bioenergy facilities.						
10 California Public Utilities Commission shall prioritize facilitation of interconnection agreements for forest bioenergy facilities in high hazard zones, and shall order the use of expedited mediation or other alternative dispute resolution processes when conflicts delay development of projects.						
11 The California Energy Commission shall prioritize grant funding from the Electric Program Investment Charge for woody biomass-to-energy technology development and deployment, consistent with direction from the California Public Utilities Commission.						
12 The California Department of Forestry and Fire Protection, the California Energy Commission, and other appropriate agencies shall work with land managers to estimate biomass feedstock availability, storage locations, and volumes that may be available for use as bioenergy feedstock at existing and new facilities.						
13 The California Department of Forestry and Fire Protection and the California Energy Commission shall work with bioenergy facilities that accept forest biomass from high hazard zones to identify potential funds to help offset higher feedstock costs.						
14 The California Department of Resources Recycling and Recovery and the California Department of Forestry and Fire Protection will work with affected counties and existing wood product markets to determine the feasibility for expanded wood products markets in California.						
15 For purposes of carrying out directives 1, 2, and 5 through 8, Division 13 (commencing with section 23000) of the Public Resources Code and regulations adopted pursuant to that Division are hereby suspended. This suspension applies to any action taken by state agencies, and for actions taken by local agencies where the state agency with primary responsibility for implementing the directive concurs that local action is required, as well as for any necessary permits of approvals required to complete these actions.						
16 In order to ensure that equipment and services necessary for emergency response can be procured quickly, the provisions of the Government Code and the Public Contract Code applicable to state contracts, including, but not limited to, advertising and competitive bidding requirements, are hereby suspended as necessary to carry out this Proclamation. Approval by the Department of Finance is required prior to the execution of any contract entered into pursuant to these directives.						
17 For purposes of this Proclamation, Chapter 3.5 (commencing with section 11340) of Part 1 of Division 3 of the Government Code is suspended for the development and adoption of regulations or guidelines needed to carry out the provisions in this Order. Any entity levying regulations or guidelines pursuant to this directive shall conduct a public meeting on the regulations and guidelines prior to adopting them.						
18 The Office of Emergency Services shall provide local government assistance as appropriate under the authority of the California Disaster Assistance Act, California Government Code section 8680 et. seq. and California Code of Regulations, title 19, section 2900 et seq.						
19 State agencies shall actively monitor tree removal efforts directed by this Proclamation to assess their effectiveness in protecting forest health and strengthening forest resilience.						

Reporting Date: 12/16/2024



TMTF Participating Entities



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Governor's Office	CA Conservation Corps	FEDERAL	CA Cattlemen's Association
CAL FIRE	State Parks	NRCS	Pacific Forest Trust
Cal OES	Cal Volunteers	USFS	The Nature Conservancy
CAL EPA	Governor's Office of Business and Economic Development	Bureau of Indian Affairs	CA Council of Land Trusts
CA Air Resources Board	Department of Insurance	USDA Rural Development	CA Association of Resource Conservation Districts
Natural Resources Agency	Department of Industrial Relations	Bureau of Land Management	CAL Chiefs
Protection	Department of Public Health	National Park Service	Center for Biological Diversity
Sierra Nevada Conservancy	Water Resources Control Board	TRIBAL	Association
CalRecycle	LOCAL	Tule River Tribe	CA Fire Safe Council
Office of Planning and Research	Nevada County	Tuolumne Band of Mewuk Indians	National Fish & Wildlife Foundation
Government Operations Agency	Placer County	NGO	Bioenergy Assoc of CA
Department of Finance	Amador County	CA State Association of Counties	CA Biomass Energy Alliance
CA Public Utilities Commission	Calaveras County	Rural County Representatives of California	CA Forest Biomass WG
CA Energy Commission	Tuolumne County	Sierra Forest Legacy	UTILITIES/ENERGY
Development Agency	Mariposa County	Council	PG&E
Agriculture	Madera County	Sierra Pacific Industries	SDG&E
CalTrans	Fresno County	CA Licensed Foresters Association	SMUD
Department of Fish and Wildlife	Tulare County	American Forest Foundation	Southern California Edison
Department of General Services	Kern County	National Forest Foundation	Northern CA Power Agency
Department	Buena Vista Biomass Power	Forest Landowners of CA	IHI Power Services Corp.
Dinuba Energy	Phoenix Energy	CA Forestry Association	Independent Energy Producers

Chairs: CAL FIRE Director Pimlott, OES Director Ghilarducci & Gov Office Gomez

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Task Force Leaders:

Gabriel Schultz

Rick Carr

Liaison Officers

CSAC

RCRC

CAL FIRE

7 Working Groups:

Forest Health and Resilience

Mapping and Monitoring

Public Outreach

Regulations

Resource Allocation

Utilization- Bioenergy

Utilization- Market
Development



TREE MORTALITY TASK FORCE



In Response to the State of
Emergency Proclamation

Incident Action Plan

2016





Work of the Taskforce

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- **Implement the Governor's Proclamation**
- **Statewide Taskforce efforts:**
 - ▣ **Provide coordination among agencies/entities**
 - ▣ **Establish and focus efforts on High Hazard Zones (HHZs)**
 - ▣ **Identify funding sources**
 - ▣ **Reduce regulatory impediments**
 - ▣ **Provide public education.**
 - ▣ **Expand the use of bioenergy**
 - ▣ **Identify potential storage/utilization sites**
 - ▣ **Distribute equipment across counties**
 - ▣ **Work to identify and promote wood markets**
- **Core to this effort is local organizations**

Counties and Local TMTF Structures

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- Counties are encouraged to gather and share resources, address regulatory oversight, and discuss facilitation of the tree removal plan
- Individuals/Agencies to consider:
 - ▣ County Supervisors with significant mortality within district, County Administrative Officer, County OES, County Roads Dept, CAL FIRE and/or County Fire, USFS, Fire Safe Councils, Utilities, Caltrans, Cal OES, Sheriff's Office, Local Tribal Leaders, etc.

Counties and Local TMTF Structures (Cont)

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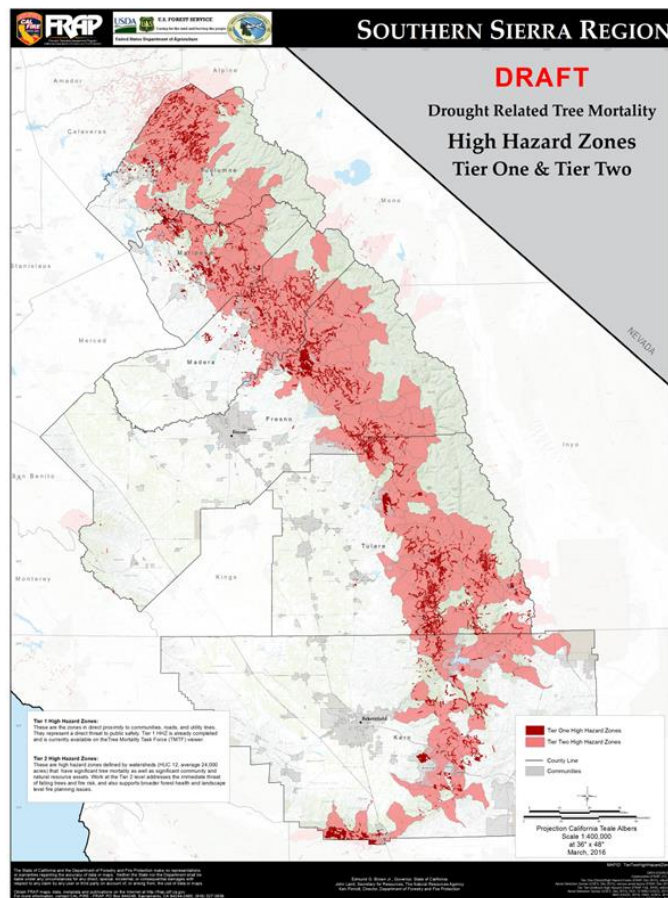
- Counties and local structures have developed :
 - ▣ Declaration of Local Emergency
 - ▣ County wide level of significance
 - ▣ Local coordination team
 - ▣ Hazard tree removal plan
 - ▣ Policy direction for tree mortality



Working Group Breakdowns

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□ Mapping and Monitoring –



HIGH HAZARD ZONES (MAP)

(Tier 1): These are high hazard zones that are in close proximity to communities, roads, and utility lines. They represent a direct threat to public safety. Tier 1 HHZ is already completed and is currently available on the TMTF viewer.

(Tier 2): These are high hazard zones that are defined by watersheds (HUC 12) that have significant tree mortality, combined with community and natural resource assets. Work at the Tier 2 level supports broader forest health and landscape level fire planning issues.



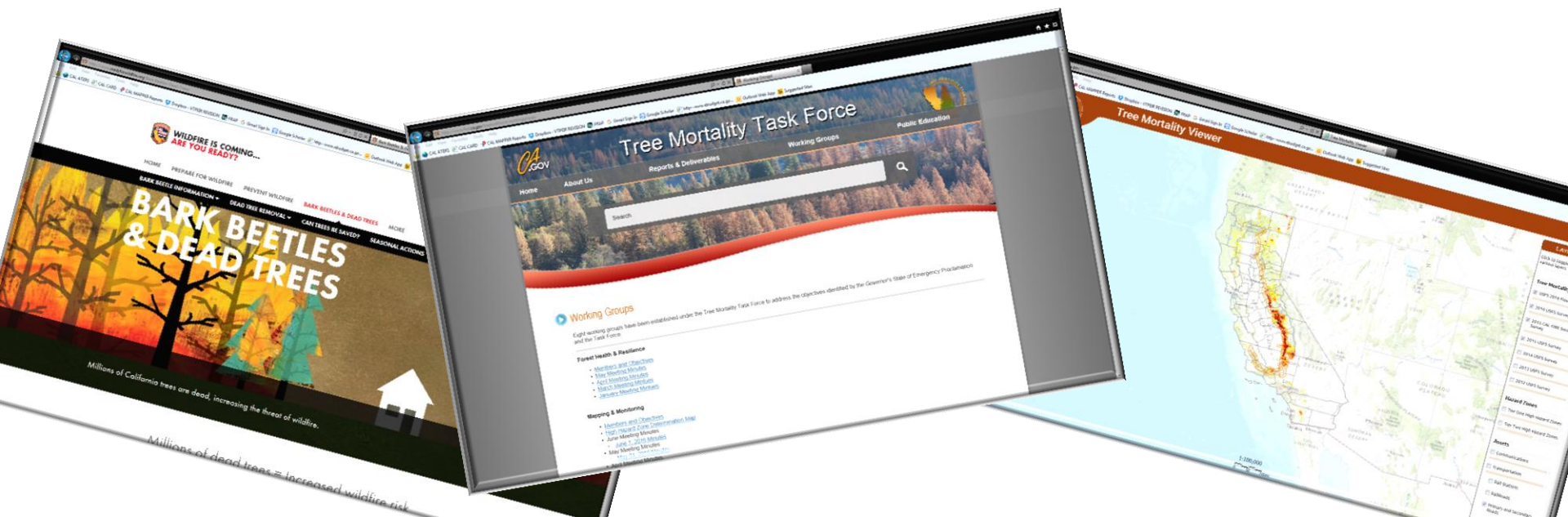
Working Group Breakdowns

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□ Public Outreach

▣ Websites

- www.treetaskforce.org or www.fire.ca.gov/treetaskforce/ (Internal)
- www.prepareforbarkbeetle.org or [www.readyforwildfire.org/Bark Beetles Risk](http://www.readyforwildfire.org/Bark_Beetles_Risk) (Public)
- Tree Mortality Viewer Overview <http://egis.fire.ca.gov/TreeMortalityViewer/>



Working Group Breakdowns



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□ Regulations—

- ▣ Support identification of storage locations for removed trees.
- ▣ Coordinate with the Resource Allocation Group and Bioenergy Group on distribution and location of portable equipment across high hazard zones.







Working Group Breakdowns

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□ Resource Allocation –

- Coordinate efforts with local entities to remove dead or dying trees in high hazard zones that threaten power lines, roads and other evacuation corridors, critical community infrastructure, and other existing structures.

TREE MORTALITY TASK FORCE EQUIPMENT	
Type: Chipper Make: Morbark Model: Beever M18RX	
Type: Track Chipper Make: Bandit Industries Model: 250XP Track	
Type: Sawmill Make: Wood-Mizer Model: LT70 Super Hydraulic	
Type: Air Burners, Inc Make: Air Curtain Burner Model: S-220 Portable Firebox	
January 22, 2016	

TREE MORTALITY TASK FORCE EQUIPMENT	
Type: Excavator (for Masticating) Make: Caterpillar Model: 323F	
Type: Mulching Head (for Cat 323E Excavator) Make: RDM Series Model: 52EX	
Type: Compact Track Loader Make: Caterpillar Model: 299D2 XHP	
Type: Wheel Loader Make: Caterpillar Model: 938M	
January 22, 2016	



Working Group Breakdowns

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□ *Utilization - Bioenergy –*

- ▣ Extend contracts on existing forest bioenergy facilities receiving feedstock from high hazard zones (CPUC).
- ▣ Prioritize grant funding from the Electric Program Investment Charge for woody biomass-to-energy technology, consistent with direction from CPUC (CEC).
- ▣ Work with land managers to estimate biomass feedstock availability, storage locations, and volumes that may be available for use as bioenergy feedstock at existing and new facilities.
- ▣ Identify and develop new energy technologies for biomass (e.g. biofuels, etc).
- ▣ Create and expand markets for bioenergy by-products (e.g. biochar, heat, etc).

Working Group Breakdowns



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□ *Utilization – Market Development–*

- ▣ Determine the feasibility for expanded wood product markets in California.
- ▣ Provide for highest and best use of wood products.
- ▣ Identify and develop new technologies for biomass products (laminated wood products, etc.)
- ▣ Identify rules or regulations which may block the development of a utilization market.

Working Group Breakdowns



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□ *Forest Health & Resilience—*

- ▣ Evaluate resource impacts associated with the removal of trees.
- ▣ Monitor forest health and resilience as a result of tree removal efforts.
- ▣ Provide guidelines for how to achieve long-term forest health and resilience.
- ▣ Develop a reforestation plan to reforest the areas destroyed by bark beetles.
- ▣ Seed collection: Work and coordinate to expand the collection of seed from those seed zones impacted from this mortality.

Current Support/Funding Options

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- Cal OES
 - ▣ California Disaster Assistance Act (CDAA)
- Other areas to explore –
 - ▣ CAL FIRE
 - Greenhouse Gas Reduction Fund
 - SRA/TM Grants
 - Ca Forest Improvement Program (CFIP)
 - ▣ CA Fire Safe Council
 - ▣ NRCS
 - ▣ Resource Conservation Districts (RCDs)
 - ▣ Local Fire Safe Councils
 - ▣ PG&E



CAL FIRE Efforts

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- ❑ **State and local Taskforce involvement**
- ❑ **80,000 hours of staff time to mortality**
- ❑ **Redirected or focused \$10.2 million to mortality**
 - ❑ **Equipment**
 - ❑ **Tree removal projects**
 - ❑ **HHZ mapping**
 - ❑ **Public education**

Action Items – Looking ahead

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- **Utilization and Market Exploration**
 - ▣ **Outlet for Trees Being Cut**
 - **Sawmills full**
 - **Bioenergy contract extensions (CPUC)**
 - **Export Markets**
 - **Storage sites**
- **Increased funding opportunities**
 - ▣ **Seek additional Federal support**

Options for dead trees

51

- ❑ Lumber from dead trees viable for only 3-4 months
- ❑ Feedstock
- ❑ Export
- ❑ Firewood
- ❑ Shavings
- ❑ Chips








YOU'RE INVITED!



North Fork Community Power Bioenergy Facility
Groundbreaking Ceremony
Thursday November 3, 2016
11:00 AM – 1:00 PM
Old Mill Site, 34000 Koso Nobe Rd North Fork, CA 93643

The first half of the event will be devoted to the groundbreaking, with the second half devoted to brief site tours and a mixer with refreshments

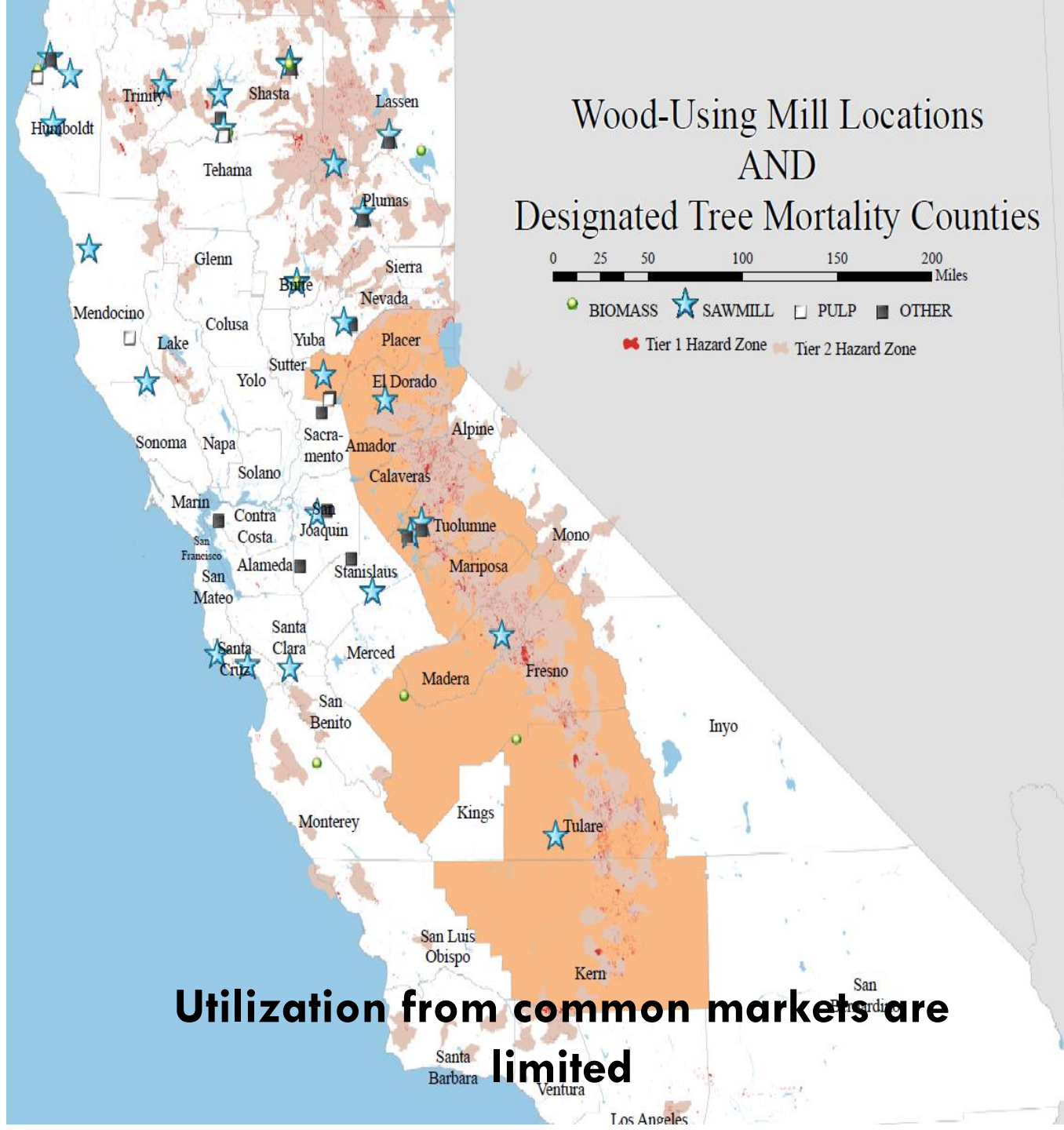
Participants are recommended to wear closed-toed shoes and bring layers in case of inclement weather. Hard hats are suggested. Please RSVP by emailing Project Manager Justine Reynolds at juss.reynolds@gmail.com with your name and number of participants.



Wood-Using Mill Locations AND Designated Tree Mortality Counties

0 25 50 100 150 200 Miles

BIOMASS SAWMILL PULP OTHER
Tier 1 Hazard Zone Tier 2 Hazard Zone



Utilization from common markets are limited

HAZARD TREE REMOVAL EFFORTS









Log Sort Yards

57

- Madera County-Oakhurst.
- One of the first Log Sort yards
 - ▣ 24 months since problem noticed
- One of 6 PG&E Log Sort Yards





With limited outlets, safe storage of material on a county level has been a focus.





Lake Arrowhead in 2003

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Lake Arrowhead- 2016

62



CLOSING COMMENTS

63

- We have never seen an event which will so profoundly impact the forests of California and its associated resources including
 - water,
 - wildlife,
 - fire regimes,
 - public safety,
 - forest products,
 - recreation, and
 - their associated economics.
- These impacts will be felt for decades.

TREE MORTALITY NORTHERN FRESNO COUNTY



MAY 2015



FEBRUARY 2016



Cooperation & Collaboration

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