

APPENDIX A – FORMS AND ADDITIONAL INFORMATION

All forms and additional information listed below are located on the PG&E network at the following location:

<S:\Operations\Wildfire Response Materials\Wildfire Response Guide>

#	Document Name
2.1	Incident Report Form
2.2	Task Force Lead – Tailboard
2.3	Strike Team Lead – Tailboard
2.4	PSC Wildfire Tailboard
3.1	Daily Schedule – Template
3.2	Report Out Email – Template
3.3	Daily Contractor Roster Check In-Out
3.4	USFS Marketing Guidelines
3.5	Wildfire Tree Marking Guidance
3.6	Debris Management – Tailboard
3.7	Wildfire Felling - Cleanup BMP Tailboard
3.8	Assessing Fire Damaged Trees
3.9	Quality Control Plan - Template
5.1	Wildfire On-Boarding Tailboard
5.2	Wildfire Smoke – Tailboard
5.3	Smoke Prevention use of Masks or Respirators
5.4	Heat Illness Prevention – Tailboard
5.5	Burned Out Stumps – Tailboard
5.6	Fatigue – Tailboard
5.7	Contractor Qualifications and Training Form
6.1	Customer Outreach Team Matrix
6.2	Wildfire Q&A
6.3	Delivery Method and Material
6.4	Customer Fire Letter Template
6.5	Defensible Space Brochure
6.6	Emergency Work Communications
6.7	Emergency Work Notice – Written
6.8	Emergency Work Notice
6.9	Know Your Overhead
7.1	Environmental BMPs
7.2	Environmental BMPs (Spanish)
7.3	Cultural Resources
8.1	VM Tree Crew Charging Guidelines
8.2	CWA Request – Approval Process Flow Chart
8.3	Major Emergency CWA Request Form
8.4	Invoice Process Flow Chart
8.5	Contractor CWA and Invoice Guidance
8.6	Contractor Capital Charging Justification Form
9.1	WWRP – CWA Addendum
9.2	Utility Exemption Form
9.3	WWRP – Customer Authorization Form
9.4	WWRP – Customer Letter
9.5	WWRP – Pamphlet

VEGETATION MANAGEMENT INCIDENT REPORT FORM

* Use for VM investigations to report the details of all vegetation-related fires.

* DO NOT USE FOR ROUTINE OUTAGE INVESTIGATION

* CONFIDENTIAL REPORT: FOR USE BY PG&E ATTORNEYS ONLY

1. GENERAL INFORMATION

Type of Incident	FIRE: Significant <input type="checkbox"/> Non-Significant <input type="checkbox"/> CPUC EIR <input type="checkbox"/> LE-38 <input type="checkbox"/>		
Report Numbers	ILIS Outage #	EIR #	Law-Claims #

Date & Time Reported: Date _____ Time _____	Date & Time of Incident: Date _____ Time _____
VM Investigator name: _____	Telephone number: (____) _____
Company name: _____	VM Division: _____
GPS coordinates: Lat. _____ Long. _____	Fire agency name: _____
Fire agency: CAL FIRE <input type="checkbox"/> USFS <input type="checkbox"/> Other <input type="checkbox"/>	
Fire responsibility area: LRA <input type="checkbox"/> SRA <input type="checkbox"/> FRA <input type="checkbox"/>	

Customer name: _____	Telephone number: (____) _____
Customer address: _____	Location of Incident: _____
City and County: _____	Nearest cross street: _____
Circuit/Facility: _____	SSD: _____ Voltage: _____
Primary <input type="checkbox"/> Secondary <input type="checkbox"/>	Tree wire present <input type="checkbox"/>
Construction type: _____	

2. TREE INFORMATION

Incident location found: <input type="checkbox"/> YES <input type="checkbox"/> NO	
Tree species: _____	DBH: _____ Height: _____
Tree condition: Dead <input type="checkbox"/> Alive <input type="checkbox"/>	Complete failure <input type="checkbox"/> Partial failure <input type="checkbox"/>
Current tree to conductor clearance: _____	Last prescribed clearance: _____
Date last inspected: _____	Inspection company: _____
Date last worked: _____	Tree company: _____
Planned next inspection: _____	Work request #: _____

3. VM INVESTIGATION (Attach copies of appropriate documentation)

Describe incident in detail (Attach sketch/photos/map):	
Was evidence secured by: PG&E <input type="checkbox"/> Contractor <input type="checkbox"/> Fire agency <input type="checkbox"/>	Describe type of evidence secured (branch, photos, etc) _____
Fire size: _____	Fire-suppression operations: Ground <input type="checkbox"/> Air <input type="checkbox"/>

LIMIT DESCRIPTION TO FACTS. DO NOT SPECULATE.

Describe vegetation-related incident and/or outage: _____

Describe vegetation condition: _____

3. VM INVESTIGATION (continued)

Identify any Property Damage or Injury: _____

4. SUBJECT POLE INFORMATION (PRC 4292 events)

VM pole number: _____	Subject pole tag shape: _____
Date last cleared: _____	VC company: _____
Does pole appear to be in compliance? <input type="checkbox"/>	Non-exempt equipment type: _____
Comments: _____	VMA/VMN? <input type="checkbox"/>

5. SUBJECT POLE INFORMATION (Joint Pole events)

Joint pole: Yes <input type="checkbox"/> No <input type="checkbox"/>	Joint pole number: _____
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6. THIRD PARTY INFORMATION

Third party: Caused <input type="checkbox"/> Injury <input type="checkbox"/>	
Third party name: _____	Telephone number: (____)_____
Third party address: _____	
Third party response: _____	

Witness name: _____	
Witness address: _____	Telephone number: (____)_____
Witness comments: _____	

7. VM CONTRACTOR INVOLVED EVENTS

Was a VM contractor involved in this incident? <input type="checkbox"/>	PG&E VM Contractor Caused? <input type="checkbox"/>
Contractor name: _____	Contract employee name: _____
Contractor response: _____	

8. ADDITIONAL INFORMATION

Case number: _____ <i>(Keep copies of cases received during investigation.)</i>	
EC Tag(s) #: _____	LE 38 Number: _____
LE 38 issued? <input type="checkbox"/>	Number: _____
Citation issued? <input type="checkbox"/>	Contact Information: _____
Comments: _____	



Task Force Wildfire Tailboard



During wildfire events the Task Force lead position will be called to perform tactical assignments. This tailboard provides the key field responsibilities of this position.

Tree Marker:

Tree marking is implemented by local Pre-Inspection companies as well as professional services. For smaller events in lower elevation oak woodlands, local pre-inspection resources can be exclusively used. Events that have burned merchantable timberlands it is highly recommended that professional services registered professional foresters or their technicians are utilized.

Loggers or Tree Crews:

For larger magnitude incidents that have burned merchantable timber, it is highly recommended that professional loggers are used to fell the timber. This will help ensure the timber is felled in a way that is conducive to traditional logging, making it safer and more efficient.

Pole and ROW Pre-treat Crews:

If sufficient time permits to prevent damage of the facilities in front of a fire; crews may be assigned to apply fire resistant material to wood structures and clear defensible space around poles and in ROWs. M&C will make determination and request support through VM for defensible space.

Protection methods:

Pole pre-treatment:

- ☐ Fire resistant chemical are applied to the base of wooden poles to prevent pole ignition from direct flames or radiant heat.

Vegetation clearing / fuel reduction

- ☐ Forest fuels around the poles and in the utility right-of-way are reduced using these methods:
 - Hand crews remove limbs to reduce ladder fuels, preventing fire from getting into tree canopies, and reducing the volume of fuel / vegetation in the ROW.
 - Mastication equipment grinds the vegetation at ground level to create defensible space in the ROW and around poles.
- ☐ Clear defensible space around wood structures and in the ROW using these methods:
 - Vegetation Control personnel.
 - Tree Crew personnel.
- ☐ Specialized equipment used for mastication, timber felling, etc.

Roads:

- ☐ Roads blocked by tree felling must be reopened immediately upon completion of felling.
- ☐ Roads or skid trails opened up for PG&E vehicles or equipment use must be properly drained upon completion of vehicle or heavy equipment use.
- ☐ Inlet or outlet ends of drainage structures damaged by PG&E vehicles or equipment must be restored as close to its original condition as possible.

Timber falling practices reviewed at Agency Pre-work meeting.

- ☐ Use a Humboldt undercut and level back cut, so the log end is square, in locations where felled trees may be commercially logged.
- ☐ Leave stumps less than 1 ft. tall, measured from the uphill side. If safety requires a higher stump, the stump must be re-cut to 12" after the tree is felled. Exceptions to this are obvious metal, fences, gates etc.
- ☐ Fall trees parallel to each other where feasible. Avoid falling on-top of and across other trees.
- ☐ Fall trees toward roads or skid-trails so that logs can be skidded more easily.
- ☐ Fall trees to minimize breakage. Avoid hitting stumps and rocks.
- ☐ Fall trees away from watercourses, lakes, or structures unless required for safety reasons.
- ☐ If a tree must be felled across a watercourse, "bridge" the log perpendicular to the watercourse.
- ☐ Avoid falling fire damaged trees from the burned area into the "green" or unburned area, as this can create a path for a new fire start
- ☐ Avoid falling fire damaged trees into areas where they can be ignited by hot materials on the ground. If this can't be avoided, then immediately remove tree from the "hot" area.
- ☐ Monitor and patrol hot areas for fire ignition where trees were dropped. Suppression equipment (tank trailer, water tender, and backpack pump) may be required by VM Field Liaison.
- ☐ Trees is felled across a watercourse must have all limbs and tops removed from the watercourse immediately and placed outside the high water mark.
- ☐ Leave the trunks un-bucked, out to the top, if possible. This allows the logger to choose the preferred log lengths when salvage logging occurs.
- ☐ Slash generated from falling operations within 100 feet of a public road must be lopped and scattered, removed, or chipped.
- ☐ Heavy equipment must not cross watercourses without prior approval by a VPM.
- ☐ Review all PG&E facilities in the proximity of the fire and identify protection opportunities.



Strike Team Wildfire Tailboard



During wildfire events the Strike Team lead position will be called to perform tactical assignments. This tailboard provides the detail for Tree Marking and Felling field work responsibilities of this position.

Tree marking field work:

- ☐ Paint mark and tally trees by species and two inch Diameter class. Use USFS Marking Guidelines (Appendix #8) for Fire-Injured Trees in California v. 2011.
- ☐ Mark all burned and hazard trees that could reach the line for removal with a painted X.
- ☐ Mark immediate or priority removal trees to accommodate M&C and GC (General Construction) crews with a Painted X and a circle around it.
- ☐ Mark trees that need to be topped or just need a portion of the canopy removed with two dots.
- ☐ Supervise tree marking crews at one Forester per five Hazard Tree Inspectors.
- ☐ Quality control check of tree marking crew. Need process to data collection and communication.
- ☐ Issuance of Corrective Actions and documentation of completion.
- ☐ Conduct archaeological field survey while tree marking and flag known or newly found arch sites for falling and equipment avoidance.
- ☐ If work needed in arch sites contact CRS to monitor during work.
- ☐ Flag stream zones, leach fields, water lines, foundations, sensitive locations for falling and equipment avoidance.
- ☐ Determine immediate and future logging equipment need.
- ☐ Coordinate with VPM to procure felling/logging crew.

Tree felling field work:

- ☐ Show potential arch sites to CRS.
- ☐ Daily Incident Command Morning Briefings with USFS (generally at fire camp) - usually attended by VPM and PG&E M&C Incident commander.
- ☐ Daily tailboard with M&C and GC incident commander to prioritize tree felling.
- ☐ Determine tree felling/logging crew priorities and communicate out.
 - All burned trees that could reach the line immediate are priority removal trees to accommodate M&C crews.
 - Mechanical harvester in high stem counts.
- ☐ Daily tailboard with tree falling/ logging crews in support of operational plan.
 - Safety
 - Post-Wildfire Tailboard
 - BMPs review - equipment, refueling, tree falling near watercourses
 - Sensitive sites- show on ground
 - Customer Concerns or issues
- ☐ Quality control felling / equipment activities near sensitive sites, breakage and directional felling to skidding lead. Data capture can identify acute or systemic problems and promote course correction early.



Wildfire Tailboard

Professional Service Contractor (PSC) responsibilities



In wildfire events in timberland areas, PG&E will call on the PSC to evaluate and manage removal of burned trees along the affected power lines after the fire passes by. The purpose for using a PSC is to

- Ensure protection of sensitive resources
- Conduct tree removal activities to comply with Forest Practice Rules
- Conduct tree removal activities to facilitate subsequent merchantable timber salvage operations

Before field work

- Confirm communication and chain of command protocol
- Obtain fire perimeter maps and electric line maps
- Notify Cultural Resource Specialist (CRS) of fire & provide fire perimeter and electric line maps
- Request CRS conduct office records check
- Obtain fire area access permission from lead agency- CalFire, BLM, USFS

Required Equipment for field work

- Leather boots
- Nomex pants & jacket (best option), or Flame Resistant (FR) pants and shirt, if hot spots exist
- Leather gloves
- Hardhat
- Dusk masks
- Shovel, Backpack pump

Tree marking field work

1. Paint mark and tally trees by species and 2" dia. class. Use USFS Marking Guidelines for Fire-Injured Trees in California v. 2011
2. Mark all burned and hazard trees that could reach the line with a painted X.
3. Mark immediate or priority removal trees to accommodate Maint. & Const. (M&C) and General Const. (GC) crews with a Painted X and a circle around it.
4. Supervise tree marking crew (ACRT, Davey, WECL, etc.) at one Forester per five Hazard Tree Inspectors
5. Quality control check of tree marking crew
6. Conduct archaeological field survey while tree marking
7. Flag known and newly found arch sites for falling and equipment avoidance
8. If work needed in arch sites contact CRS to monitor during work
9. Flag stream zones, leach fields, water lines, foundations, sensitive locations for falling and equipment avoidance
10. Determine immediate vs future logging equipment need
11. Coordinate with VPM to procure falling/logging crew

Tree falling field work

1. Show potential arch sites to CRS
2. Daily Incident Command Morning Briefings with USFS (generally at fire camp) - usually attended by VPM and PG&E M&C Incident commander. PSC attends if requested by VPM.
3. Daily tailboard with M&C and GC incident commander to prioritize tree falling

4. Determine tree falling/logging crew priorities, communicate out.
 - All burned trees that could reach the line VS. immediate and priority removal trees to accommodate M&C and GC crews
 - Mechanical harvester in high stem counts
5. Daily tailboard with tree falling/ logging crews
 - Safety
 - Post-Wildfire Tailboard
 - BMPs review- equipment, refueling, tree falling near watercourses
 - Sensitive sites- show on ground
 - Customer Concerns or issues
 - Operational Plan
6. Quality control- falling/equipment activities
 - near sensitive sites
 - breakage
 - directional felling to skidding lead
7. Daily Work Reports

Post-falling activities

- Insure fallers/ loggers complete cleanup
 - Re-open tree blocked roads/driveways
 - Remove falling debris from watercourses, culverts, sensitive sites
 - Install erosion control in equipment disturbed areas- water breaks, straw
- Notify landowner of completed falling/logging activities if landowner is onsite. If no landowner onsite, tack up information poster with PG&E contact number onsite.

Fire Event Daily Work Schedule – Template

Daily Routine

07:00 Daily routing reporting time (safety tailboards and work assignments handed out)

08:00 Field personnel expected to report to field work locations

10:00 Contractors provide reports from previous day's activities

Personnel and Equipment Report

Production Report

TBD Daily Operation Chief's meeting. VM Branch Director attends operations meeting to align next day priorities

15:00 Work assignments handed out for next day's work activities

To the extent possible keep crews working on the same strike team

16:30 Field personnel return

VM Branch Director, or delegate, attends IC and Operations meetings as directed.

VM Daily Email Report Out Template

Safety:

- No incidents or near hits.
- Smoke exposure, hot spots, fire direction, heat exposure

Conditions and Impact:

- 3000+ acres - 0% contained. www.fire.ca.gov/current_incidents/incidentdetails/Index/1783
- Heavy brush and steep terrain, some areas inaccessible due to very fast rate of spread
- Fire increased by 2500 acres in last 24 hours.
- 159 Customer Outages
- **Immediate Evacuation Order**
An immediate evacuation order has been issued for the entire communities of Berry Creek, Brush Creek, and Mountain House. This includes Oro Quincy Hwy from Foreman Creek north to Mountain House and all tributaries including Bald Rock Rd. Berry Creek resident are advised to evacuate south from Berry Creek to the Oroville area.

Work Performed as of 1500 hours:

- 6 UTS and 4 Trees Inc. Crews have been clearing poles and removing hazard trees that are accessible per CAL FIRE
- 5 CNU PI resources have been assessing hazard trees along the Kanaka 1101 12kV
- 1 VRC coordinating and monitoring VM work

Work Identified and Scheduled to be worked in next 24 hour period:

- Clearing of poles
- Hazard trees
- PI Assessments

PI and Tree Crew Resources:

Date, Day of the week and add note about any VM coordination with M&C crews

- xx PI Assessment (Vendor Name)
- xx Tree Crews
 - xx (Prime Vendor Name) add additional lines for each vendor.
 - xx (Subcontractor working under Prime Vendor Name).

Needs / Outstanding Request:

- State the need, if requested include to whom and the expected completion date.

VM Demobilization Plan:

- List key activities and actions required completion dates for a safe and efficient demobilization.

Vegetation Branch roles:

Role Name	Current Shift	Next Shift	Notes
VM Branch Director	Name 1	Name 2	
Deputy VBD	Name 1	Name 2	
Field Ops Manager	Name 1	Name 2	
DMS	Name 1	Name 2	
Logistics Lead	Name 1	Name 2	
Safety Branch Lead	Name 1	Name 2	
Customer Outreach	Name 1	Name 2	
Environmental Lead	Name 1	Name 2	
Task Force Lead	Name 1	Name 2	

Daily Vendor – Check In / Check Out

Date:	Discussion Lead:
Start Time:	Fire incident:
Vendor Name:	Assignment Location:
Safety Tailboards: <input type="checkbox"/> Fire Risk On-Boarding, <input type="checkbox"/> Wildfire Smoke, <input type="checkbox"/> Wildfire Hazard Tree Awareness	
Work Process <input type="checkbox"/> PSC Wildfire, <input type="checkbox"/> Falling & Cleanup BMPs, <input type="checkbox"/> BMP Large Wood Removal, Tailboards: <input type="checkbox"/> Task Force Lead, <input type="checkbox"/> Strike Team Lead	
Other Tailboards / Topics covered:	
Special Equipment needs:	

Provide document to VM Admin for daily data input to Resource Master File.

#	Name	Signature	Phone Number	Position	Check In Time	Check Out Time
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						



US Forest Service, Region 5, Forest Health Protection

May 2011 (Report # RO-11-01)

Replaces April 2009 Report # RO-09-01



Marking Guidelines for Fire-Injured Trees in California

Sheri L. Smith and Daniel R. Cluck

If you are using these marking guidelines for your post-fire restoration it is imperative that you contact your local Forest Health Protection (FHP) service area staff for review of your draft NEPA document (**before public distribution**), responses to comments and for assistance with marking guideline selection and project implementation.

Yellow pine (ponderosa and Jeffrey pine), white fir, sugar pine and incense cedar guidelines are based on: Hood, Sharon M.; Smith, Sheri L.; Cluck, Daniel R. 2010. *Predicting mortality for five California conifers following wildfire*. Forest Ecology and Management. 260: 750-762.

Red fir guidelines are based on: Hood, Sharon M.; Smith, Sheri L.; Cluck, Daniel R. 2007. *Delayed conifer tree mortality following fire in California* In: Powers, Robert F., tech. editor. Restoring fire-adapted ecosystems: proceedings of the 2005 national silviculture workshop. Gen. Tech. Rep. PSW-GTR-203, Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture: p. 261-283.

Douglas-fir guidelines are based on: Hood, Sharon M. 2008. *Delayed Tree Mortality following Fire in Western Conifers*. JFSP Final Report 05-2-1-105, US Department of Agriculture, Forest Service, Rocky Mountain Research Station, Missoula, MT. 35 p.

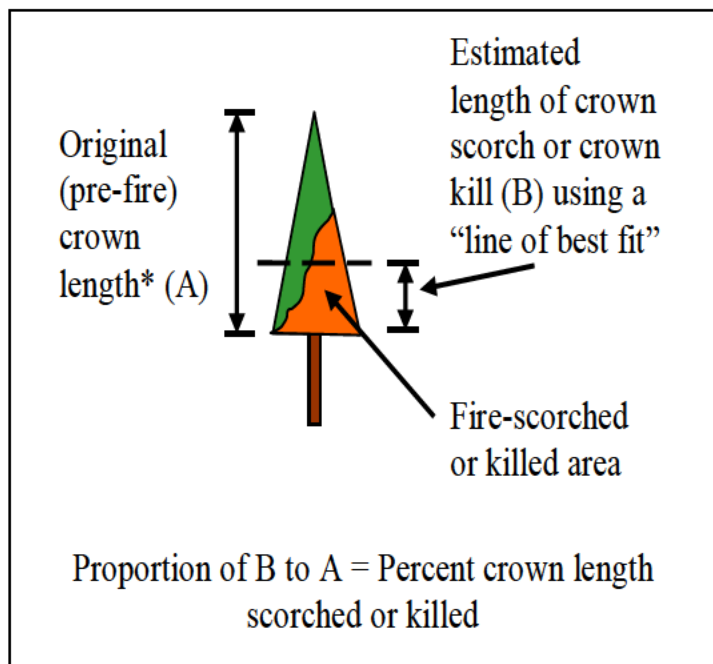
Lodgepole pine guidelines are based on: Ryan, Kevin C.; Reinhardt, Elizabeth D. 1988. *Predicting post-fire mortality of seven western conifers*. Canadian Journal of Forest Research 18: 1291-1297.

The following guidelines use percent crown length killed (and percent crown length scorched for yellow pine) or percent crown volume killed (for Douglas-fir and lodgepole pine) only or in combination with dbh, cambium kill rating and/or the presence or absence of bark beetle activity. The yellow pine, white fir, incense cedar, sugar pine and red fir guidelines are based on five year post-fire data, the Douglas-fir guidelines are based on three year post-fire data and the lodgepole pine guidelines are based on three to eight year post-fire data.

The yellow pine guidelines are separated for percent of crown length scorched and percent crown length killed. The percent crown length scorched guideline is appropriate when evaluating trees in late season fires prior to subsequent bud break (heat killing of foliage may occur with only light injury to buds and twigs and the full extent of crown kill cannot be determined until bud break occurs). The percent crown length killed guideline is appropriate when evaluating trees post-bud break. The percent crown length killed guidelines for sugar pine, incense cedar and red and white fir, or the percent crown volume killed models for Douglas-fir and lodgepole pine are appropriate any time after fire injury (all trees should be evaluated before the beginning of the second post-fire winter, preferably within the first post-fire year).

Evaluation of Crown Injury

Visually estimate the percent crown length killed (PCLK) for **white fir, red fir, incense cedar and sugar pine** to the nearest 5 percent, by standing far enough back from the tree so that the entire crown is visible. Optimum viewing of the crown is against a blue sky away from the sun.



First, determine the original crown base height. Pre-fire crown base height can be estimated by looking at the fine branch structure and needles. Branches lacking fine twigs were likely dead before the fire. Trees often have asymmetrical crown bases so, if necessary, visually "move" some of the lower branches to the other side of the crown to even out the base.

Next, determine the crown kill height by establishing a "line of best fit" (Figure 1). Crown killed areas include any brown needles, as well as any areas that have blackened fine branches. If large gaps occur in the crown (> 4 feet in length), visually "move" lower branches up to fill in these areas. Be sure to evaluate the backside of the tree if its condition cannot be determined from the original vantage point.

Figure 1. Estimating the percent crown length or scorched killed.

Evaluate **yellow pine pre-bud break** (estimating percent crown length scorched or PCLS) using this same method and the *pre-bud break* guideline (Table 3). *Crown length is a linear measurement and does not account for crown shape.*

Visually estimate the percent crown length killed (PCLK) for **yellow pine post-bud break**, to the nearest 5 percent, by looking for completely dead branches (both scorched and/or blackened). Count an entire scorched branch as part of the live crown if green needles are extending from any of its lateral shoots (Figure 2).

Visually estimate the percent crown volume killed (PCVK) for **Douglas-fir and lodgepole pine**, to the nearest 5 percent, by comparing the volumetric proportion of crown kill (brown needles and blackened fine branches) to the volume occupied by the entire pre-fire crown. *Crown volume estimates consider crown shape.*



Figure 2. Bud survival on scorched branch.

Evaluation of Crown Injury

Figures 3 and 4 illustrate the different portions of fire-injured crowns for yellow pine and white fir and provide examples of the estimated crown length scorched (for pine) and crown length killed (for both pine and fir) as percentages of the original, pre-fire crown length.

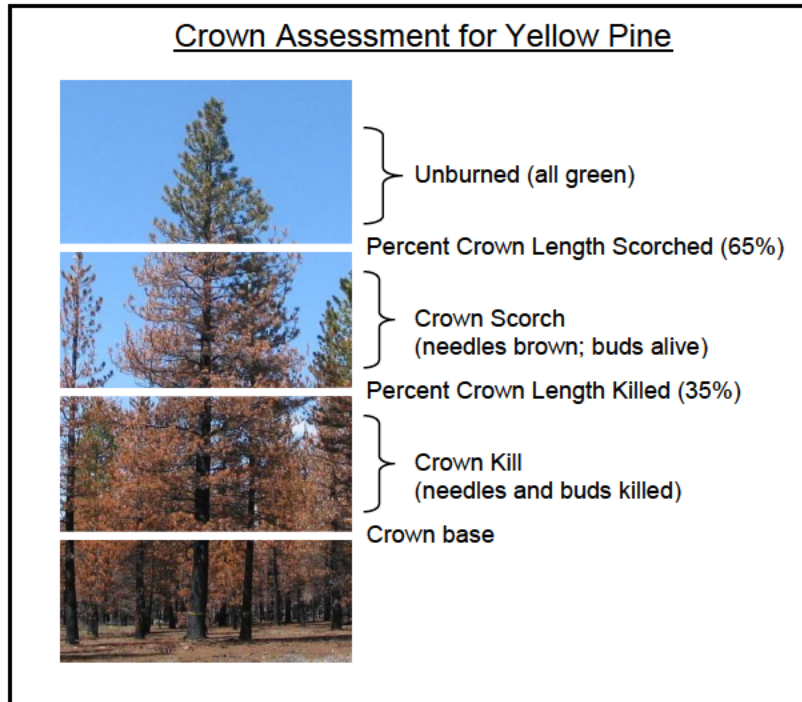


Figure 3. Crown assessment for yellow pine.

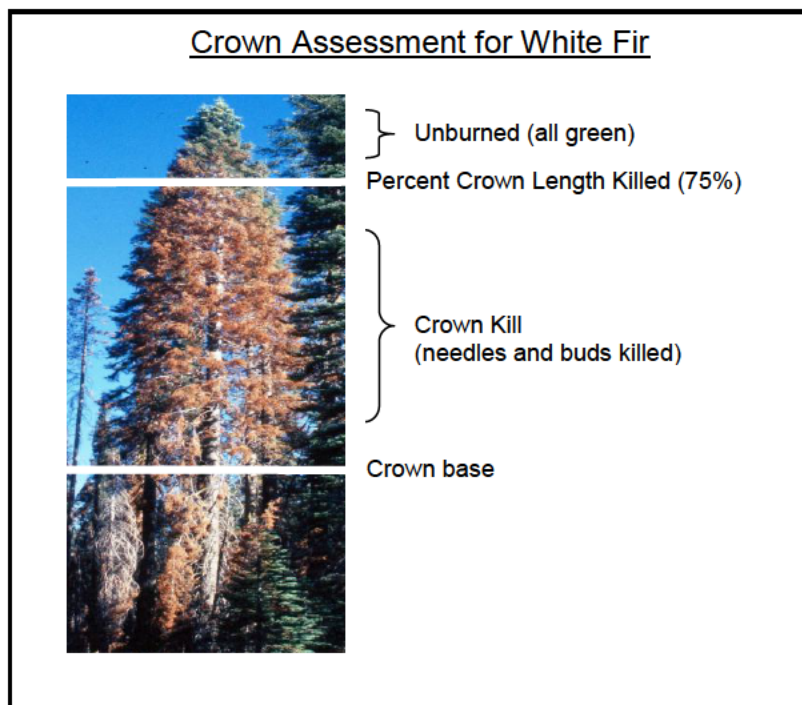
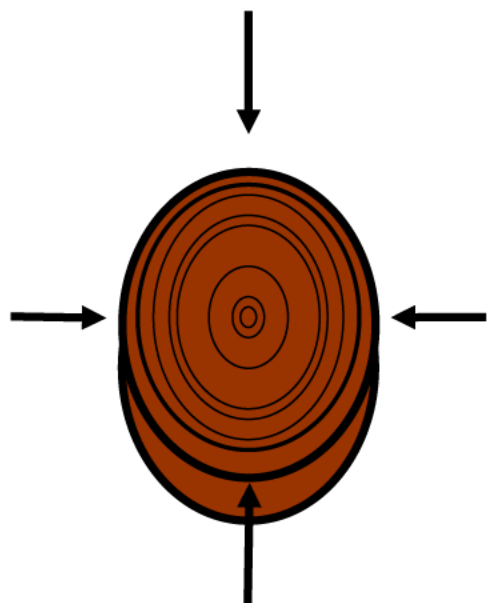


Figure 4. Crown assessment for white fir.

Evaluation of Cambium Injury



Sample cambium in as small an area as possible at 4 equally spaced locations around bole and within 3" of the ground line to minimize tree wounding (Figure 5)

Each sample is visually inspected in the field for color and condition of the tissue. Dead cambium is darker in color, often resin soaked and hard or gummy in texture. Live cambium is lighter in color, moist and rather pliable. Dead cells in the cambium zone also lose their plasticity which may allow the bark and wood to separate more easily (Ryan 1982). Add up the total number of dead samples (0 to 4) to determine the cambium kill rating (CKR). When both live and dead cambium is encountered in a sample choose the dominant condition of that sample (e.g. if more than half of the sample is dead then count it as dead).



Figure 6. Sampling cambium with a small hatchet.

Evaluation of Cambium Injury

Bark Charring as a substitute for direct cambium sampling

When salvage marking includes cambium sampling, additional time is required to assess each tree. Direct cambium sampling can be reduced by using unburned, light and deep bark char classes as a substitute (Hood et al 2008). **Moderately charred quadrants would still require direct sampling (except for lodgepole pine and Douglas-fir).** Divide the tree bole into four quadrants and assess the bark within 1 foot of ground line. Use the bark char class that best represents the majority of the area. Please refer to the following bark char descriptions (Ryan 1982) when substituting bark char classes for direct cambium sampling. Determine the CKR (0 to 4) as previously described.

Unburned or light charring – light charring has some blackened areas on the bark but unburned portions remain. These unburned portions are generally found in the bark fissures. *(Assume cambium is alive except for lodgepole pine; must directly sample lightly charred quadrants for lodgepole pine)*

Moderate charring – with moderate charring, all bark is blackened but the bark characteristics remain. *(Must directly sample to determine cambium status except for lodgepole pine and Douglas-fir; assume cambium is dead for moderately charred quadrants on lodgepole pine; assume cambium is alive for moderately charred quadrants on Douglas-fir)*

Deep charring – with deep charring, all the bark is blackened and bark characteristics are no longer discernable. *(Assume cambium is dead)*

Evaluation of Red Turpentine Beetle Activity



Figure 7. Red turpentine beetle pitch tubes.

Determine the simple presence or absence of red turpentine beetle pitch tubes (Figure 7) on yellow and sugar pine. The density or percent coverage of attacks around the bole is not a concern. The importance of this variable depends on the timing of the fire and the subsequent level of red turpentine beetle activity and is only used when significant activity is detected. FHP personnel can assist with this determination. Even though the presence of red turpentine beetle pitch tubes is used as criterion in some of the pine guidelines, it should not be used exclusively to mark trees for removal (see top of page 8).

Determining what variables to use when marking trees

Managers need to determine how much time is available for assessing each tree. The most accurate marking guidelines (requiring the most time) assess crown injury, cambium injury and red turpentine beetle (RTB) activity (for yellow and sugar pine). At a minimum, a crown injury assessment is required for all species. Assessing cambium injury and/or RTB activity (for yellow and sugar pine) requires additional time per tree but does provide a slight increase in accuracy for white fir, sugar pine and yellow pine. In general, if managers choose to only assess crown injury and the fire resulted in cambium kill ratings >2 on most trees, mortality will be under predicted. The opposite is true if the fire resulted in cambium kill ratings of ≤ 2 on most trees, as mortality will then be over predicted (this varies by tree species). Mortality could also be under or over predicted if RTB activity is not assessed (depends of level of post-fire RTB activity). Knowledge of fire behavior, pre-fire fuel conditions and post-fire RTB activity will help to determine the value of assessing for these variables.

Selecting the predicted probability of mortality (Pm) level that will meet land management objectives

The probability of mortality (Pm) levels incorporated into the guidelines are thresholds where all trees meeting or exceeding a selected Pm level are marked for removal. Providing a range of Pm levels afford land managers more options to meet post-fire management objectives. The number of trees removed from a project area will generally vary with different Pm levels; fewer trees will be marked at higher Pm levels (a more conservative mark) and more trees will be marked at lower Pm levels (a less conservative mark) (Figure 8). The exact amount of difference in the mark between Pm levels depends on the population of fire-injured trees within the project area. For example, if the project consists primarily of high severity burn areas the number of trees marked for removal will not significantly change with different Pm levels.

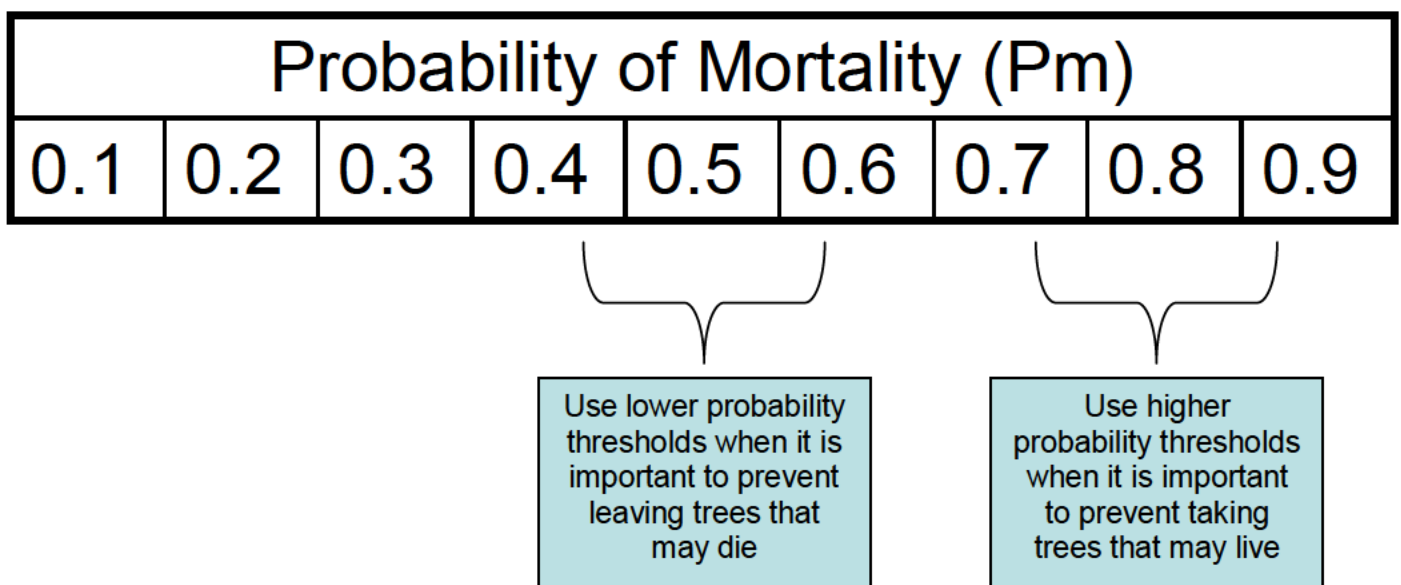


Figure 8. General recommendations based on management objectives for various Pm levels.

The selection of the Pm level should take into consideration the following factors:

- The population of fire-injured trees within the project area [can be based on vegetation burn severity maps showing low, moderate and high severity (Figure 9)]
- Management objectives and desired future conditions
- Number of harvest entries allowed
- Post-salvage fuels objectives
- Snag requirements
- Method of harvest: tractor, helicopter, cable, etc
- Economics and logistics (availability of marking crews and operators, timber values, length of contracts, etc.)
- Reforestation plans: planting and/or natural regeneration
- NEPA process
- Hazard trees
- Environmental conditions (drought, stand density, and beetle activity)

After identifying project-specific objectives, conditions and requirements, land managers should be able to determine which Pm level, or levels (more than one may be selected), will best meet their needs. Consultation with Forest Health Protection staff and other land managers that have implemented projects using these guidelines can greatly assist in making a Pm selection. It is also recommended that land managers document the rationale used to make Pm level selections for future reference.

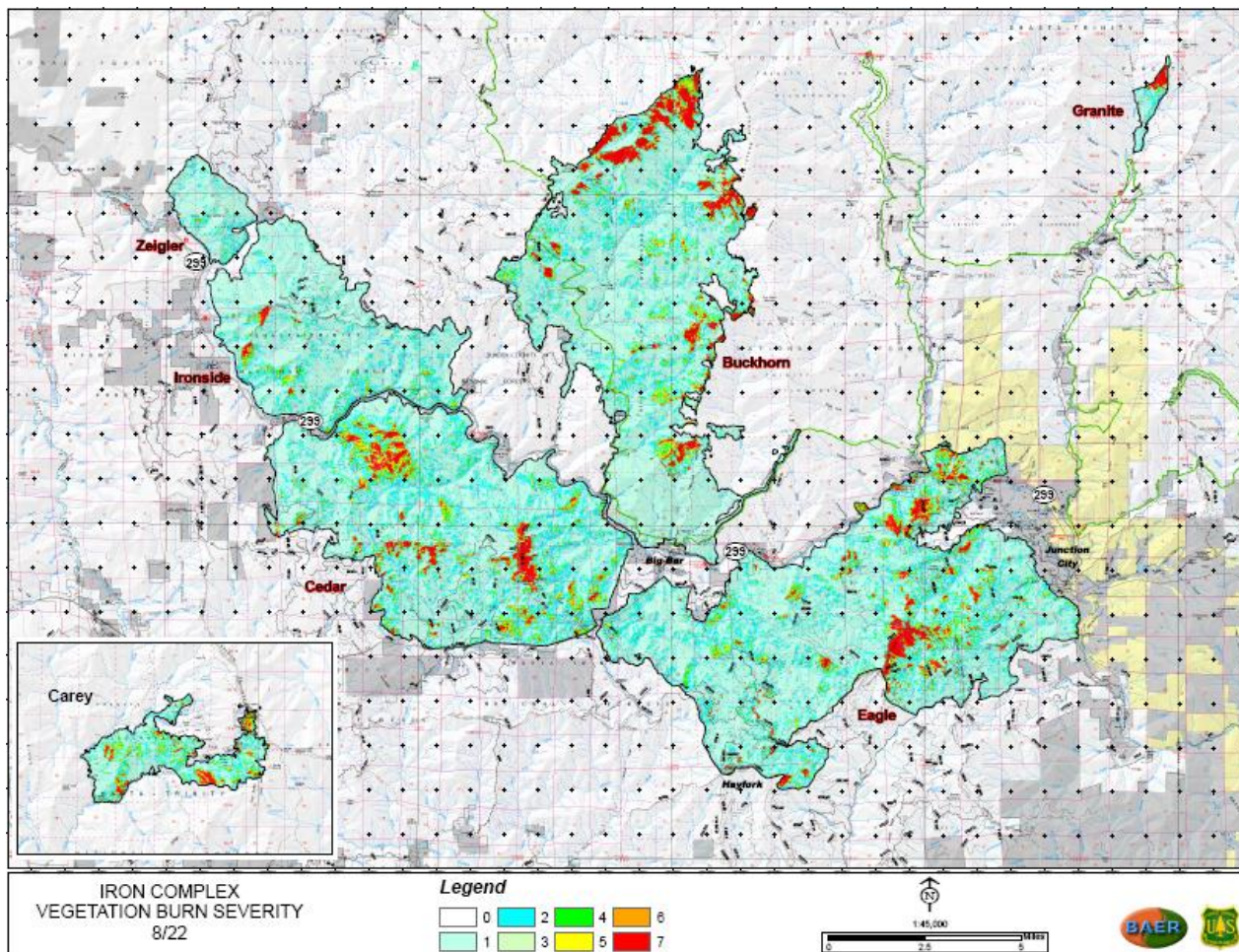


Figure 9. Vegetation Burn Severity Map.

MARKING GUIDELINES FOR FIRE-INJURED TREES

Evidence of significant bark and/or wood boring beetle activity

(Any tree meeting this criteria is predicted to die and no further assessment is required)

Trees should be marked for removal if any combination of the following factors are present over at least 1/3 of the bole circumference: 1) pitch tubes with pink or reddish boring dust associated with them (not clear pitch streamers); 2) pouch fungus conks and/or current woodpecker activity (holes into the sapwood and/or bark flaking, specifically excludes injury caused by sapsucker feeding); 3) boring dust or frass (in bark crevices, webbing along the bole, or that accumulates at the base of the trees). This specifically excludes basal attacks by the red turpentine beetle (large pitch tubes associated with coarse boring dust generally restricted to the lower 2 to 3 feet of the bole or woodpecker activity restricted to this area)* and when the above indicators are only associated with wounds, old fire scars, etc. (Cluck 2008)

*The presence or absence of red turpentine beetle pitch tubes are incorporated into the yellow pine marking guidelines in Tables 2a and 2b.

YELLOW PINE

Table 1 or Tables 2a and 2b are to be used when evaluating trees *post-bud break*.

Table 3 is used when evaluating trees *pre-bud break*.

Table 1. YELLOW PINE: percent crown length killed (PCLK) and DBH (*use post-bud break*)*

- Use Table 1 when only assessing crown injury.

Probability of mortality (Pm)	.10	.20	.30	.40	.50	.60	.70	.80	.90
DBH	Percent crown length killed (PCLK)								
10 - <30"	25	35	40	45	50	55	60	65	70
30 - 40"	--	5	10	15	25	30	40	45	60
>40 - 50"	--	--	--	5	10	15	25	30	45

Table 2a. YELLOW PINE: PCLK, DBH and red turpentine beetle pitch tubes PRESENT*

- Use Tables 2a and 2b when assessing crown injury and red turpentine beetle presence/absence
Note: Use of this guideline is appropriate when significant red turpentine beetle activity is detected. FHP personnel can assist with this determination.

Probability of mortality (Pm)	.10	.20	.30	.40	.50	.60	.70	.80	.90
DBH	Percent crown length killed (PCLK)								
10 - <30"	10	30	35	40	45	50	55	60	65
30 - 40"	--	--	--	--	--	5	10	15	25
>40 - 50"	--	--	--	--	--	--	--	5	10

YELLOW PINE (continued)

Table 2b. YELLOW PINE: PCLK, DBH and red turpentine beetle pitch tubes ABSENT*

Probability of mortality (Pm)	.10	.20	.30	.40	.50	.60	.70	.80	.90
DBH	Percent crown length killed (PCLK)								
10 - <30"	30	35	50	55	60	65	70	75	80
30 - 40"	5	10	20	25	30	40	45	55	65
>40 - 50"	--	--	--	5	10	15	25	35	45

* When the cambium kill rating (CKR) is determined for **yellow pine, post-bud break**, use the following percent crown length killed adjustments for Tables 1, 2a and 2b: For yellow pine **10 - <30" dbh**, *add* 5 percentage points when CKR = 0 or 1, *no change* when CKR = 2, and *subtract* 10 percentage points when CKR = 3 or 4. For yellow pine **>30" dbh**, *add* 5 percentage points when CKR = 0 or 1, *no change* when CKR = 2, and *subtract* 5 percentage points when CKR = 3 or 4.

Table 3: YELLOW PINE: percent crown length scorched (PCLS) and DBH (use pre-bud break)*

- Note: The red turpentine beetle guideline is not used in the pre-bud break model*

Probability of mortality (Pm)	.10	.20	.30	.40	.50	.60	.70	.80	.90
DBH	Percent crown length scorched (PCLS)								
10 - <30"	50	50	70	75	80	85	90	95	100
30 - 40"	10	25	35	40	45	55	60	70	80
>40 - 50"	--	10	15	20	30	35	40	50	65

* When the cambium kill rating (CKR) is determined for **yellow pine, pre-bud break**, use the following percent crown length scorched adjustments for Table 3: For yellow pine **10 - <30" dbh**, *add* 15 percentage points when CKR = 0, *add* 10 percentage points when CKR = 1, *no change* when CKR = 2, *subtract* 10 percentage points when CKR = 3 and *subtract* 15 percentage points when CKR = 4. For yellow pine **>30" dbh**, *add* 5 percentage points when CKR = 0, *no change* when CKR = 1, *subtract* 5 percentage points when CKR = 2, and *subtract* 10 percentage points when CKR = 3 or 4.

INCENSE CEDAR

Table 4: INCENSE CEDAR - percent crown length killed (PCLK)*

Probability of mortality (Pm)	.10	.20	.30	.40	.50	.60	.70	.80	.90
DBH	Percent crown length killed (PCLK)								
10 - 60"	65	70	75	80	85	85	90	90	95

* Cambium sampling is not recommended for incense cedar.

SUGAR PINE

Table 5: SUGAR PINE - percent crown length killed (PCLK)*

- Use Table 1 when only assessing crown injury.

Probability of mortality (Pm)	.10	.20	.30	.40	.50	.60	.70	.80	.90
DBH	Percent crown length killed (PCLK)								
10 – 60"	--	30	40	50	50	55	60	65	70

Table 6a: SUGAR PINE - PCLK and red turpentine beetle pitch tubes PRESENT*

- Use Tables 6a and 6b when assessing crown injury and red turpentine beetle presence/absence
Note: Use of this guideline is appropriate when significant red turpentine beetle activity is noted. FHP personnel can assist with this determination.

Probability of mortality (Pm)	.10	.20	.30	.40	.50	.60	.70	.80	.90
DBH	Percent crown length killed (PCLK)								
10 – 60"	--	--	--	30	40	45	55	60	65

Table 6b: SUGAR PINE - PCLK and red turpentine beetle pitch tubes ABSENT*

Probability of mortality (Pm)	.10	.20	.30	.40	.50	.60	.70	.80	.90
DBH	Percent crown length killed (PCLK)								
10 – 60"	30	45	55	60	60	65	70	75	80

* When the cambium kill rating (CKR) is determined for **sugar pine**, use the following percent crown kill adjustments for Tables 5, 6a and 6b: *Add* 5 percentage points when CKR = 0 - 3 and *subtract* 20 percentage points when CKR = 4.

WHITE FIR

Table 7. WHITE FIR: percent crown length killed (PCLK) and DBH * °

Probability of mortality (Pm)	.10	.20	.30	.40	.50	.60	.70	.80	.90
DBH	Percent crown length killed (PCLK)								
10 - 35"	50	60	65	70	75	80	80	85	90
>35 - 60"	--	35	45	50	60	65	70	75	80

* When the cambium kill rating (CKR) is determined for **white fir**, use the following percent crown kill adjustments for Table 7: *Subtract* 5 percentage points when CKR = 1 or 2, *subtract* 10 percentage points when CKR = 3 or 4 and *no change* when CKR = 0.

- ° FHP monitoring of fire-injured **white fir** revealed high levels of decay developing where significant cambium kill occurred at the root collar and on the bole. A portion of these decayed trees failed during the five-year period while still retaining green foliage. Land managers should be aware that even though true firs with high levels of cambium kill have a high probability of survival they may become hazards to people or property (Cluck 2005).

RED FIR

Table 8. RED FIR: percent crown length killed (PCLK) °

Probability of mortality (Pm)	.10	.20	.30	.40	.50	.60	.70	.80	.90
DBH	Percent crown length killed (PCLK)								
6 – 40"	--	40	45	65	70	75	80	85	95

° FHP monitoring of fire-injured **red fir** revealed high levels of decay developing where significant cambium kill occurred at the root collar and on the bole. A portion of these decayed trees failed during the five-year period while still retaining green foliage. Land managers should be aware that even though true firs with high levels of cambium kill have a high probability of survival they may become hazards to people or property (Cluck 2005).

DOUGLAS-FIR (Hood 2008)

Table 9. DOUGLAS-FIR: percent crown volume killed (PCVK), and DBH *

- This guideline uses *percent crown volume killed* (not percent crown length killed). Visually estimate the volumetric proportion of crown killed compared to the space occupied by the pre-fire crown volume to the nearest five percent (Ryan 1982).

Probability of mortality (Pm)	.10	.20	.30	.40	.50	.60	.70	.80	.90
DBH	Percent crown length killed (PCLK)								
4 – 40"	--	10	25	55	65	70	75	80	90

* When the cambium kill rating (CKR) is determined for **Douglas-fir**, use the following percent crown kill adjustments for Table 9: *Add* 5 percentage points when CKR = 0, *no change* when CKR = 1, *subtract* 5 percentage points when CKR = 2, *subtract* 10 percentage points when CKR = 3, *subtract* 20 percentage points when CKR = 4.

LODGEPOLE PINE (Ryan and Reinhardt 1988)

Table 10. LODGEPOLE PINE: percent crown volume killed (PCVK) and DBH

- This guideline uses *percent crown volume killed* (not percent crown length killed). Visually estimate the volumetric proportion of crown killed compared to the space occupied by the pre-fire crown volume to the nearest five percent (Ryan 1982).

Probability of mortality (Pm)	.10	.20	.30	.40	.50	.60	.70	.80	.90
DBH	Percent crown volume killed (PCVK)								
≤10"	-	-	-	-	-	5	30	40	55
>10 - 15"	-	-	-	-	20	35	45	55	70
>15 – 20"	-	-	-	25	35	40	50	60	70
All lodgepole pine, regardless of diameter, are predicted to die if all bole quadrants have moderate or deep char as defined by Ryan (1982) (Hood 2006).									

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Citation: Smith, S.L. and D.R. Cluck. 2011. *Marking guidelines for fire-injured trees in California*. US Forest Service, Forest Health Protection, Region 5, Susanville, CA. Report # RO-11-01. 13 p.

References:

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Appendix A: Project specific guideline example

Marking Guidelines for Fire-injured Trees: Scorch Fire Salvage Project

Guideline Objectives: *These guidelines will provide a means to identify and remove trees that were killed or severely injured as a result of fire and/or insect attack within the Scorch Fire, California Ranger District.*

These guidelines are based on the fire injured tree marking guidelines developed by Region 5 Forest Health Protection (Report #RO-11-01, Smith and Cluck, May 2011). The guideline criteria (#3) for delayed conifer tree mortality are based on the post-bud break model (% crown length killed) for yellow pine, and the white fir and red fir models (% crown length killed). A probability of mortality of 0.7 ($P_m=0.7$) was selected for this project to meet the management objectives of: 1) removing trees that were killed or that have a high probability of mortality to recover their economic value; and 2) retaining those trees that have a moderate to high probability of survival to provide forest cover as a seed source for natural regeneration and wildlife habitat. **All trees >40" dbh, regardless of condition, will be retained to provide for wildlife except when they pose a hazard to people or property.**

Note: The Smith and Cluck 2011 guidelines also discuss the evaluation of cambium injury (for yellow pine, sugar pine and white fir) for adjusting crown kill marking criteria. The Scorch Fire Salvage Project marking guidelines **DO NOT** include cambium sampling for this purpose due to the additional time required to assess individual trees and the minimal loss of accuracy incurred by dropping this variable.

Mark for removal any tree that meets the following criteria:

1. Any tree with no green needles (does not include those designated for snag retention).
2. For all species, trees should be marked for removal if any combination of boring dust or frass (in bark crevices, webbing along the bole, or that accumulates at the base of the trees), pitch tubes with pink or reddish boring dust associated with them, pouch fungus conks and/or current woodpecker activity (holes into the sapwood and/or bark flaking, specifically excludes injury caused by sapsucker feeding) is present over at least 1/3 of the bole circumference. This specifically excludes basal attacks by the red turpentine beetle on pines (large pitch tubes associated with coarse boring dust generally restricted to the lower 2 to 3 feet of the bole or woodpecker activity restricted to this area) and when the above indicators are only associated with wounds, old fire scars, etc. The presence or absence of red turpentine beetle pitch tubes will be accounted for in criteria #3.
3. Any tree that meets or exceeds the following fire-injured conifer mortality guidelines (Table 1) at the $P_m = 0.7$ level. This assessment will be made by visually estimating the percent of the original pre-fire crown length that was killed (yellow and sugar pine, white and red fir), the presence or absence of red turpentine beetle pitch tubes (yellow and sugar pine) and tree diameter (yellow pine and white fir).

Table 1: Specific criteria for marking fire-injured trees at the Pm = 0.7 level.

Yellow Pine – Red turpentine beetle absent	
DBH	Minimum % Crown Length Killed
10 - <30"	70
30 - 40"	45
Yellow Pine – Red turpentine beetle present	
DBH	Minimum % Crown Length Killed
10 - <30"	55
30 - 40"	10
Sugar Pine – Red turpentine beetle absent	
DBH	Minimum % Crown Length Killed
10-40"	70
Sugar Pine – Red turpentine beetle present	
DBH	Minimum % Crown Length Killed
10-40"	55
White fir	
DBH	Minimum % Crown Length Killed
10 - 35"	80
>35 - 40"	70
Red fir	
DBH	Minimum % Crown Length Killed
10-40"	80

References for Scorch Fire Salvage Marking Guidelines

Cluck, D.R. 2008. *Salvage Marking Guidelines for the Lassen, Plumas, Modoc and Tahoe National Forests*. US Forest Service, Forest Health Protection, Northeastern California Shared Service Area, Susanville, CA. 4 p.

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Smith, S.L. and D.R. Cluck. 2011. *Marking guidelines for fire-injured trees in California*. US Forest Service, Forest Health Protection, Region 5, Susanville, CA. Report # RO-11-01. 13 p.

VM Wildfire Tree Marking Guidance

This guidance document is for use during emergency wildfire events only.

Tree Marking Symbols:

- **P1** – Fire damaged tree that is **highly** likely to pose a threat to PG&E facilities within several days.
 - Tree removal should be prioritized in daily Tree Crew work schedule.
 - Delineate **IMMEDIATE** trees when the threat is urgency enough to warrant that PI **MUST** stay on sight to ensure no unwitting exposure to the hazard and to guide Tree Crew as quickly and safely to the site to remove the tree.
 - Contact Emergency Services for relief, if Tree Crew is not immediately available to mitigate.
- **P2** – Priority 2, are nonmerchantable fire damaged trees that are **not** highly likely to pose a threat to PG&E facilities within several days, but does require removal to mitigate the threat.
 - The vast majority of fire damaged trees are categorized with the “P2” marking.
 - These trees are **not** large enough to be merchantable timber.
 - Task Force Lead to assign work to Tree Crews during Compliance Phase.
- **PM** – Trees with the same risk level as P2s but are large enough to qualify for the Timber Program as merchantable timber.
 - Typically, these trees are conifer species with a 16-foot-long log, free of defects and 10-inches in diameter on the small end.
 - Fell these trees as whole as possible.
- **PE** – Trees with the same risk level as P2s, but removal could cause environmental issues. As such **requires** the involvement and approval from Environmental Lead before they can be felled.
 - Example are trees that when felled will **significantly** impact watercourses, riparian vegetation, and archaeological sites or could release asbestos from a burned structure.
- **FP1** – Trees with the same risk level as P1s, but to mitigate the threat the tree is to be **TRIMMED**.
 - These trees are extremely uncommon during wildfire events.
 - Example: Healthy largely undamaged tree that has some broken branches dangling above the wires by a strand of bark.
- **FP2** – Trees with the same risk level as P2s, but to mitigate the threat the tree is to be **TRIMMED**.
 - These trees are very uncommon during wildfire events.
 - Example: large fire-resistant tree that had a portion of the crown killed.
 - Consider using in conjunction with land owner’s request to keep tree.

Marking Paint Color: Florescent Green.

VM Wildfire Tree Marking Guidance

Wildfire Event PI Training: Must review “Marking Guidelines for Fire-Injured Trees in California”.

PI Required Equipment: Small Hatchet to sample and evaluate crown base cambium layer and Laser Distance Measure to determine if tree has the potential to fall on PG&E facilities.

Wildfire Wood Removal Program (WWRP):

This program has only been implemented for the large wildfire events and requires PG&E executive approval before any VM work can begin.

- **R** – Removal Mechanical Brand on cut ends of logs.
- **M** – Move Mechanical Brand on cut ends of logs.
 - Mechanical Brands are recommended to mark logs (Units) that qualify for the program, if unavailable then use paint to mark ends of logs.
 - Mechanical Brands will be purchase and stored in the North and South regional offices as part of the Wildfire GO kit materials.
 - Only mark these logs (Units) after PI reviewed with and obtained customer’s signatory authorization on the WWRP Customer Authorization form.



Debris Management Tailboard

Best Management Practices (BMPs) for Large Wood Removal



With the increased number of large trees being removed, many are now cut into merchantable log lengths, loaded on log trucks, and shipped to mills for making lumber or chips. During tree removal, crews need to be aware of watercourses cultural resources, and erosion control measures. Review the following tailboard with crews before work starts, to ensure good wood utilization, natural resource protection, and regulation compliance.

Safety

- Worker safety always takes priority over the conduct of operations.
- Review all surrounding potential hazards and targets.
- If conditions are too dangerous to fall a tree whole, take it down by the safest method.
- If the crew is not 100% confident in protecting PG&E Power lines, watercourses, archaeology sites, or other potential targets STOP WORK and seek further guidance from Crew Supervisor and PG&E.

Cal Fire Regulations

- Large wood removal is subject to Cal Fire Regulations and Forest Practice Rules, including watercourse protection, cultural resource protection, and erosion control.
- A paper copy of the Utility Exemption must be on site when work is being performed.
- A winter period operations plan is required from November 15th to April 1st.
- If any questions, immediately contact your supervisor who will contact an RPF or Cal Fire.
- All wood removal and timber operations under Utility Exemptions are subject to California Forest Practice Rules.

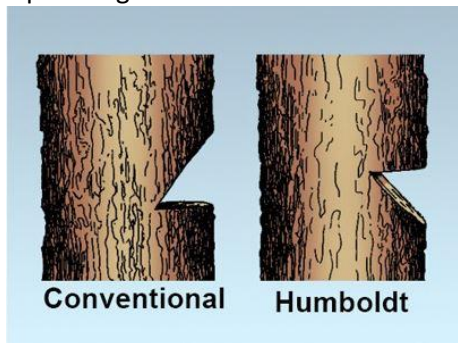
TIMBER BMPs

Fall Trees Whole: Every effort should be made to fall trees whole and leave felled trunks in a condition suitable for shipping as logs.



Photo 1: Logger falling whole tree to produce usable logs, at proper stump height

Use Humboldt Undercuts: To maximize the length of cut logs, Humboldt undercuts should be used in order to create square log ends. Conventional undercuts reduce the amount of log usable for making boards.



Photos 2,3,4- Conventional undercut compared to the Humboldt undercut

Proper Stump Height: Make your falling cuts at 12 inches height or less, as measured from the uphill side, unless additional height is required for safety reasons. If safety requires a higher stump, the stump must be immediately re-cut to 12 inches or less after the tree is felled. Exceptions to this are obvious metal, fences, gates etc. This is a CalFire requirement for logging operations.



Photo 5- Stumps cut and left too high.



Photo 6- Acceptable high stump due to a fence in the tree.

Proper log lengths: Trees that are pieced down in short lengths, or felled, then cut into short lengths, cannot be taken to the mill and lose all their value as saw logs. Where possible, leave trunks whole or cut in lengths as long as possible so log skidding equipment can drag them out.



Photo 7- Logs cut into unusable log lengths.

If cutting trees into shorter lengths is necessary, logs should be tape measured and cut to 33' 0" (preferred length), or 16' 6" (less preferred length).



Photo 8- Trees cut into usable lengths by loggers.

Flush cut knots: Be sure that limbs are cut off flush with the bark and are not protruding from the log.



Photo 9- Properly limbed logs

Stumpshot: For safety reasons, immediately cut off sharp stumpshot in areas accessible to the public.



Photo 10- Dangerous stumpshot left on stump.

Other Timber BMPs:

- Fall trees parallel to each other where feasible. Avoid falling on-top of and across other trees.
- Fall trees toward roads or skid-trails so that logs can be skidded more easily.
- Fall trees to minimize breakage. Avoid hitting stumps and rocks.
- Don't fall trees onto or across burned out building foundations

WATERCOURSE PROTECTION**Watercourse BMPs**

- All watercourses, wetlands, and riparian areas must be protected from work related damage.
- Fall trees away from watercourses unless required for safety reasons.
- If a tree must be felled across a watercourse, "bridge" the log perpendicular to the watercourse.
- If a bridged tree must be skidded, fully suspend the log during removal so it does not damage the watercourse or banks.
- If work related debris gets into a watercourse, it must be removed from the watercourse immediately and placed outside the high water mark, where it can't re-enter.
- Decking, skidding, loading, and equipment operations must be kept outside of Watercourse Protection Zones (WPZs). See Table 1 on page 10 for WPZ distances.

What is a watercourse: The following diagram and pictures will detail indicators and different watercourses you will see in the field.

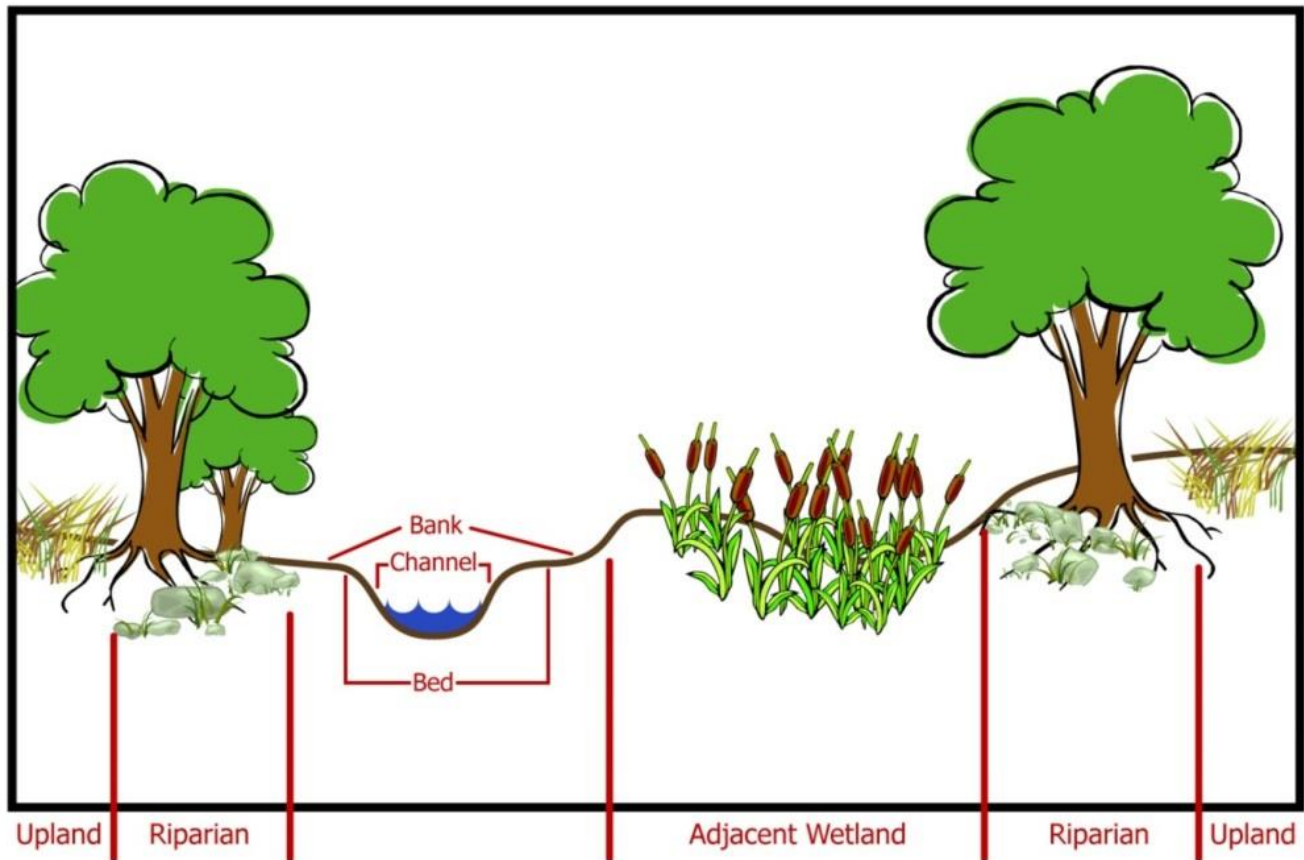


Diagram 11- Riparian, watercourse, and wetland protection areas



Photo 12- Ephemeral stream as a roadside ditch. Indicators: A natural ephemeral drainage flowed through a broad swale but was channeled into a roadside ditch when subdivision was built. Rocky channel bottom results from flash flows, no riparian vegetation or indicators of water standing for any length of time.



Photo 13- Ephemeral stream. Indicators: Only flows after a storm event. No riparian vegetation.



Photo 14- Seasonal stream. Indicators: Combination of submerged aquatic moss, willows.



Photo 15- Seasonal stream. Indicators: When dry, there may be dried moss or riparian plants on the channel bottom or edges. Water flows long enough to support aquatic life.



Photo 16- Seasonal stream. Indicators: Willows and cottonwoods, but doesn't have other low growing riparian vegetation.



Photo 17- Seasonal stream re-routed to a roadside ditch. Indicators: Has riparian vegetation and aquatic life, but channel has been straightened and runs next to road.



Photo 18- Wetlands. Indicators: Flat bottomland with high water table and short riparian vegetation. Wet area is not necessarily connected to a bed, bank, or channel.



Photo 19- Wetlands. Indicators: Flat bottomland with high water table, riparian vegetation, willows, may have nearby bed, bank, or channel.

DEFINITIONS

Watercourse: streams, rivers, flood plains, lakes, estuaries, marshes, tidelands, lagoons, wetlands, ponds, including ephemeral, seasonal, and perennial waters. It also includes ditches which are part of a natural or re-routed stream, irrigation or drainage ditches with riparian vegetation and connection to a natural watercourse.

Ephemeral watercourse: Water flows for a very short period after storm events. Riparian vegetation or aquatic life is not evident.

Seasonal watercourse: Water flows for a sufficient portion of the year to support riparian vegetation or aquatic life-amphibians or insects. This includes watercourse having a surface or subsurface flow that supports or has supported riparian vegetation. Riparian vegetation or aquatic insects are likely evident.

Perennial watercourse: Water flows most or all of the year. Riparian vegetation or aquatic life is evident.

Wetlands: Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. (40 CFR 230.3[t])

Ordinary High Water Mark (OHWM): As defined in federal regulations, the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; and/or other appropriate means that consider the characteristics of the surrounding area (33 CFR 328.3[e]).

Riparian vegetation: Terrestrial vegetation that grows beside rivers, streams, and other freshwater bodies, and that depends on these water sources for soil moisture greater than would be available from local precipitation. Examples: willow, alder, ash, cattail, rushes, reeds, vernal pool plants.

	Water Class		
Slope	Perennial	Seasonal	Ephemeral
Less than 30%	75'	50'	25'
Greater than 30%	100'	75'	50'
Equipment Buffer Distances			

Table 1- Watercourse Protection Zone equipment exclusion distances per the California Practice Rules. Watercourses are typically marked with blue and white striped flagging.

EROSION CONTROL

- If equipment use has created loose soils that can wash into watercourses, spread straw mulch over the disturbed area ASAP to 2-3 inches depth, for 20 feet out from the channel edge to stabilize the soil surface.
- Roads or skid trails on bare soils opened up for PG&E vehicles or equipment use must be properly drained upon completion of vehicle or equipment use.
- Install waterbreaks at 50 to 75 foot spacing across dirt skid trails upon completion of use to disperse flows. Waterbreaks must be cut at least 6 inches deep into the soil, with an adjacent 6 inch berm completely across the skid trail. It should flow into an area covered with natural limbs, needles, or forest debris to trap any sediment which may move.



Photo 20- Waterbreak properly constructed. Waterbreak crosses the entire width of the skid trail.



Photo 21- Ephemeral watercourse crossing in use



Photo 22- Watercourse crossing restoration detail upon work completion



Photo 23- **AVOID THIS!** Chips blown into draw bottom can wash downstream. Wood left in draw bottom can block or divert water flow.



Photo 24- **AVOID THIS!** Avoid using equipment in draw bottom. Avoid operating equipment within WPZ (25 feet of this ephemeral draw). Do not pile debris or logs in draw.

CULTURAL RESOURCE PROTECTION

All archaeological and cultural resources must be protected from damage during tree and wood removal operations. Archaeological resources are generally prehistoric, such as bedrock mortars and Indian camps. Cultural sites include more recent features such as mining ditches, foundation stones, dams, fallen structures, or other features more than 50 years old. **See PG&E Cultural Brochure, next page, for more info**

Historic Ditches



Photo 25, Historic ditch that must be avoided by equipment and falling trees



Photo 26, Historic ditch covered in snow



Wildfire Tailboard

Falling and Cleanup BMPs post Wildfire Events



Following wildfire events, tree crews may be required to fall burned trees near PG&E facilities. The local Vegetation Program Manager (VPM), or designee, will conduct a safety tailboard with the crews before work starts, to review and implement the following BMPs. The purpose is to protect natural resources and aid salvage logging operations.

Safety

- Worker safety always takes priority over the conduct of operations.
- Always use proper technique including wedges, jacks, and pulling techniques to directionally fall trees safely. As a minimum, follow OSHA approved falling standards.
- PG&E and Contractor personnel shall wear personal protective equipment as appropriate for the hazards at risk, or as required by Agency
- Monitor fire behavior and other hazards at all times. Be prepared to leave the work area if fire activity compromises safety.
- Be your brother's keeper. Ensure all crew members are alert and fit for duty before beginning work.
- Always work in teams of two or more persons, especially in remote areas.
- Review Minimum Approach Distances for energized electric lines for both Line Qualified and Non-Line Qualified Tree Crews.
- Predetermine emergency phone numbers, escape routes and drop zone.
- Establish safe working distance (usually 1 ½ times tree height) and communication method to alert people in the surrounding area prior to falling tree or limbs.
- Review all surrounding potential hazards and targets.
- If the tree faller is not 100% confident in directing the tree away from PG&E Power lines or other potential targets STOP WORK and seek further guidance from Crew Supervisor and PG&E.

Timber falling practices

- Use a Humboldt undercut and level back cut, so the log end is square, in locations where felled trees may be commercially logged.
- Leave stumps less than 1 ft. tall, measured from the uphill side. If safety requires a higher stump, the stump must be re-cut to 12" after the tree is felled. Exceptions to this are obvious metal, fences, gates etc.
- Fall trees parallel to each other where feasible. Avoid falling on-top of and across other trees.
- Fall trees toward roads or skid-trails so that logs can be skidded more easily.
- Fall trees to minimize breakage. Avoid hitting stumps and rocks.
- Fall trees away from watercourses, lakes, or structures unless required for safety reasons.
- If a tree must be felled across a watercourse, "bridge" the log perpendicular to the watercourse.
- Avoid falling fire damaged trees from the burned area into the "green" or unburned area, as this can create a path for a new fire start
- Avoid falling fire damaged trees into areas where they can be ignited by hot materials on the ground. If this cannot be avoided, the tree should be immediately removed from the hot area before it ignites.
- Don't fall trees onto or across burned out building foundations
- Where trees are dropped into hot areas, monitor and patrol work areas for fires. Appropriate suppression equipment (engine, tank trailer, water tender, backpack pump, etc.) may be required as determined by the VM Field Liaison.

- If a tree is felled across a watercourse, all limbs and tops must be removed from the watercourse immediately and placed outside the high water mark.
- Leave the trunks un-bucked, out to the top, if possible. This allows the logger to choose the preferred log lengths when salvage logging occurs.
- Slash generated from falling operations within 100 feet of a public road must be lopped and scattered, removed, or chipped.
- Heavy equipment must not cross watercourses without prior approval by a VPM.

Erosion Control

- Insure that work is in compliance with agency fire line suppression repair standards
- Apply straw mulch or chips where PG&E related vehicles or heavy equipment expose bare soils greater than 1,000 sq. ft. AND where those soils will directly discharge into a watercourse unless treated.

Roads

- Roads blocked by tree felling must be reopened immediately upon completion of felling in that area using equipment or by hand.
- Roads or skid trails opened up for PG&E vehicles or equipment use must be properly drained upon completion of vehicle or heavy equipment use.
- Inlet or outlet ends of drainage structures damaged by PG&E vehicles or equipment must be restored as close to its original condition as possible.

Archaeological Sites and Biology

- Known or newly discovered archaeological sites must be protected. Trees must be felled away from Arch sites. Vehicles and heavy equipment must not be used in Arch sites unless approved otherwise.
- Arch sites and active bird nests found during operations must be reported to the PG&E representative and avoided until a review has been conducted.

Assessing fire-damaged trees

Bruce W. Hagen

ARBORISTS ARE INCREASINGLY being called on to assess fire-damaged forest trees to determine which ones are dead or are unlikely to recover. This may be done for insurance purposes or to assist a homeowner once the insurance company has completed their assessment. Foresters may be asked to facilitate quick salvage of timber before the damaged trees are colonized by bark beetles and boring insects that lead to rapid deterioration of the wood. (Fig. 1)

Fire-damage to trees is determined by a number of factors: stand structure (distribution of trees by species and age classes), stand density, amount of woody debris on the ground, presence of ladder fuels (vegetation that can carry flames into the upper canopy), fire-intensity and duration, wind, or topography (slope). Recovery will depend on the level of leaf or needle scorching, extent of bark charring, injury to the vascular tissue, bark thickness, relative fire-resistance of the species, time of year, health, disease incidence within the stand, and local bark beetle populations. Closely spaced trees are continuous

fuels that can conduct flames more readily and with a greater intensity than trees with greater distance between them. (Fig. 2).

Fire causes tree mortality by killing the cambium just under the bark, and by scorching or consuming leaves/needles, twigs, and buds (Fig. 3). The extent of damage, however, will depend on how the fire behaved and the species involved. Damage to roots from fires that burn in deep layers of duff (organic matter and plant litter on the ground), can also contribute to mortality. Root damage is more likely when the duff is totally consumed, exposing bare, mineral soil (Figs. 4,5).

Trees that look burned or scorched (dry, brown foliage) are not necessarily dead. Exposure to lethal temperatures during a wildfire can kill (scorch) needles or leaves. The dam-



Figure 3. Fire at this site charred the stem of this young ponderosa pine and consumed nearly all of the foliage. The top most foliage is scorched and has a directional set. Photo: B. Hagen

The extent of damage will depend on how the fire behaved and the species involved.

Figure 1. (Left) One of the areas near Middletown, Lake County that burned recently. Photo: B. Hagen

Figure 2. (Right) This very dense stand of mixed conifers and oaks was totally blackened by wildfire. Photo: B. Hagen





Figure 4. (Above left) Fire has burned away all the woody debris and duff on the ground under and around the trees. All that remains of the material is the ash. Intense fires like this damage the large roots and lower trunk. Photo: B. Hagen



Figure 5. (Above right) Area of intense fire, note that all of the duff is burned down to mineral soil. These Eucalypts have been killed because the thin bark provides little protection for the underlying cambium. Photo: B. Hagen

Figure 6. (Below left) A prescribed fire of low to moderate intensity. Photo: USDA Forester Service, Region 2, Rocky Mountain Region, Bugwood.org

Figure 7. (Below right) Scorched Ponderosa pines. The probability of survival is low. Photo: B. Hagen



age is caused by hot gases rising into the canopy from a fire burning along the ground (Fig. 6). Scorched leaves typically turn reddish-brown (Fig. 7). In conifers, scorched needles usually drop within about 30 days. Needles on twigs killed by the heat are retained at least through the following winter. When scorch is severe, the heat literally bakes the needles, twigs, and buds, causing them to become permanently set in the direction of the fire's path. The damaged foliage tends to remain on the trees for a few years. Such trees do not recover. (Fig. 8)

The volume of needle scorch in the crown for thick bark species, such as Ponderosa pine (*Pinus ponderosa*)

and Jeffrey pine (*P. jeffreyi*) is often the most important factor influencing post-fire tree mortality (Fig. 9). Bud survival in these species can be much greater than for species with smaller buds. For most other species, e.g., Douglas-fir, the true firs, sugar pine, and incense-cedar; bud death and volume of needle scorch are approximately equal.

While complete crown scorch usually causes rapid tree death, many trees with partially scorched crowns survive (Fig. 10). Despite extensive leaf scorching, buds may survive, particularly if the heat is not too intense or the duration is relatively short. The surrounding needles can

Figure 8. (Below) Scorched foliage with a permanent directional set. Photo: Washington State Dept. of Natural Resources





Figure 9. (Left) Young Ponderosa pine with complete crown scorch. Their chances of survival are nil. The needles on some of the other trees were totally consumed. *Photo: B. Hagen*

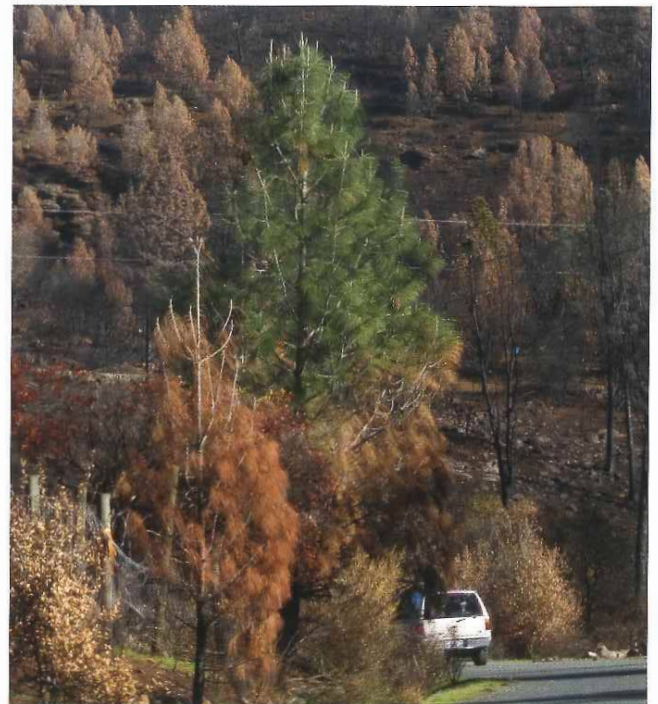


Figure 10. (Right) About $\frac{1}{3}$ of the foliage volume in this ponderosa pine (center) has been scorched and not all of the buds in the damaged areas have been killed. Chances of its survival are high, assuming the cambium on the lower trunk is still viable. *Photo: B. Hagen*

protect buds from severe scorch or burning, providing a chance for survival. Some trees, such as Ponderosa pines, with as much as 90 percent crown scorch often recover because many of the buds remain viable. Most other species are not as tolerant. In general, trees with less than 50 percent crown scorch are more likely to survive, while those with greater than

50 percent scorch are more likely to die — usually within a year or two. Trees with minor scorch, however, may die if there is extensive damage to the roots, or cambial tissue in the lower trunk.

'Crown fires', those that move from the ground into the crowns above, burn ('consume') the foliage and twigs and char the bark

(Figs. 11,12). With the exception of redwoods, blackened trees without needles do not recover, and should be removed. Hardwoods, (and redwoods) of course can sprout from latent, epicormic buds. In general, trees are killed quickly by crown fires and high-intensity fires. High-intensity fires consume most, if not all, of the forest canopy and everything on the

Figure 11. (Left) An example of a crown fire in coast live oak. Strong gusty winds and brush contributed to the fire's intensity. *Photo: Marin County Fire Department*

Figure 12. (Center) Crown fire in a Douglas fir stand.

Figure 13. (Right) Example of trunk charring. In this case the cambium was 'cooked' completely around the lower stem, resulting in girdling. *Photo: B. Hagen*



forest floor. Moderate-intensity fires burn up into the forest canopy or at least part way, consuming the foliage of many trees, but not all. They also consume a portion of the ground cover and duff. The largest and most vigorous trees typically survive. Low intensity fires commonly kill small seedlings. Saplings and pole-sized trees may be damaged, but are seldom killed. Trees larger than pole-size are quite resistant to low intensity burns.

The growth stage of a tree just prior to wildfire, can determine susceptibility to injury. Injury is typically more severe in the spring during active growth than during the dormant months. Late season fires, depending on fire intensity and behavior, are less damaging.

Bark charring refers to the blackening of the trunk, or portions thereof and branches exposed to direct flame (Fig 13). It can, depending on bark thickness, kill the inner bark and cambium. Damage to the bark and underlying tissue depends on intensity and duration of the fire, and the thickness and thermal conductivity of the outer bark. The severity of heating is usually greatest near the ground and is usually concentrated on the lee and uphill side of trees where woody fuels accumulate against the trunk.

Charring can extend well up into the crown. The greater the height of bark charring the less the chances of recovery. It is important to check the condition of the cambium before making a final assessment. The exudation of pitch from deeply charred areas provides evidence of injury to underlying tissues.

Potential for damage to the vascular tissue increases with depth of charring and height of char. Deep-charring completely around the lower stem indicates probable injury to the underlying tissues. Lower stem charring and cambial damage is more severe when fire intensity is fueled by deep layers of duff and woody debris surrounding the base of trees of all age classes. The likelihood of root damage is also much greater. This material can



Figure 14. (Left) The cavity in this large Ponderosa pine allowed both the interior and exterior wood to burn, leading to stem-failure. *Photo: Denise Britton Smith*



Figure 15. (Right) Fire damage to this hollow oak resulted in buckling of the stem. *Photo: B. Hagen*

burn for a long time, causing greater damage to the cambium, depending on tree size and bark thickness. Even trees with little crown scorch can die if the duff layer burns down to bare mineral soil and the adjacent bark is sufficiently charred. Charring alone is not a serious problem for large trees and those with thick bark, as long as the cambium is not exposed to high temperature for very long. In general, recovery is low when there is extensive charring close to the ground and more than 75 percent of the root collar cambium is dead. Trees that are completely 'girdled' by the death of cambial tissue will die.

Bark thickness varies widely among species and age classes. Young Jeffrey and Ponderosa pine can burn readily under moderate to high fire severity, but as they mature they develop a thicker bark that is more fire-resistant. Coulter pine, and big cone Douglas-fir also develop relatively thick bark as they mature. Redwoods, of course, produce thick, insulating bark and are quite fire-resistant. Douglas-fir, spruce, true fir, sugar pine, and incense cedar have relatively thin bark and are more subject to injury to the cambium.

Extent of cambial damage, rather than bark charring, is the most important indicator of mortality in small diameter classes of Ponderosa

pine—those that are partially girdled have a reasonable chance of survival. Bark charring on trees with thin bark is usually associated with cambial damage.

Trees with both heavy foliage scorching and moderate to severe cambium damage are more likely to die later from bark beetle attack than pines with only one of these types of injury. Trees that are stressed due to drought, injury, disease, insects, or mistletoe may be weak prior to a fire and unlikely to survive afterward. Insect attacks of fire-injured trees that would otherwise have survived is a major concern following wildfire.

Trees with open cavities:

Fire can burn the interior of trees with open cavities, often resulting in failures during the fire or shortly thereafter. Large old oaks are particularly susceptible to this fire damage occurring to both the exterior and interior of the tree (Figs. 14,15).

Assessment:

An initial evaluation should be made soon after a fire to identify dead or severely injured trees for immediate removal and/or salvage. A reinspection the following spring to evaluate the less severely injured trees, allows time for signs of recovery to develop.



Figure 16. The foliage of this coast live oak is scorched but the tree will recover. Photo: B. Hagen

When assessing fire-damaged trees, estimate how much of the crown is scorched. Next, determine the condition of the buds in the scorched area. If the needle bases are still green, the buds are probably still alive. Dead buds are light tan to brown inside and appear dry. There are tables for various species that list the percent of crown scorch volume and relative chance or greater of survival.

Determine the condition of the cambium under areas of deep charring on the lower trunk, root collar and any exposed portions of lateral support roots. Make small ax frills into the bark to examine the cambium layer below. If the cambium zone appears pale, green and moist, it is still viable. If it's brown and dry, the cambium is dead. Determine the extent of dead cambium tissue. If less than 50 percent of the tree's circumference is dead the tree will probably recover. If more than 75 percent of the circumference is dead, the chances of recovery are low.

Bark beetle-caused mortality:

Freshly killed or fire injured trees are very attractive to bark beetles and wood borers. Were it not for these secondary agents, many damaged trees would probably survive. Bark beetle populations build up in dead and dying trees and then move on to less damaged or even unaffected

trees. Mortality in fire-injured trees due to bark beetles occurs primarily in the first year or two following a fire. The extent and duration of this subsequent mortality depends on the size of beetle populations and vigor of the remaining trees. The beetles also carry fungi that assist in killing the tree and eventually degrade the wood. Research has shown that as much as 40 percent of Ponderosa pine trees with 50 percent or more crown scorch are likely to be killed by bark beetles.

The best way to reduce the risk of bark beetle-caused tree mortality is to remove dead and dying trees before beetle populations grow large enough to move on and attack recovering and uninjured trees. Prophylactic chemical sprays can be used to protect high value trees.

Oaks:

Trees that have had most or all of their foliage scorched or even burned off, are likely to recover if the cambium is intact. Unless the damage to the cambium is extensive they will likely leaf out the following spring (Fig. 16).

The extent of damage to the cambium is critical to survival. Light and

medium char on one side or in small patches on the trunk of the thick-barked coast live oak usually does not indicate serious injury to the cambium. Cambial damage is more likely when charring is continuous and deep, and the bark is separating from the wood or cracking (Figs. 17,18). Even though 90% of the cambium near the base of a tree may have been killed by charring, the tree is likely to recover in time.

Coast live oak, noted for its thick bark, provides good insulation for the underlying cambium. Larger diameters trees are much more resistant to high temperature fires than thin-barked small trees.

Live oaks tend to burn hotter than do blue or valley oaks, so the degree of char may be much higher in live oaks. Trees adjacent to homes or structures that burn in a fire may be exposed to extremely high temperatures and deeply charred on one side. These should be evaluated for future risk to the home if it is to be replaced. (Fig. 19)

If the bark is cracked or separating from the wood, the cambium is dead. If the bark is still intact and firmly attached, cut small patches

Figure 17. (Left) Charring to lower trunk of a blue oak. Note that the cambium appears dead. Photo: B. Hagen

Figure 18. (Right) The dead bark on this oak sapling is cracking and splitting. Photo: B. Hagen





Figure 19. (Left) Trees like these oaks have been killed or severely damaged by the intense heat from the burning structures. Photo: Denice Britton Smith

Figure 20. (Center) Example of charring that can cause kill areas of the cambium. The bark on this black oak is relatively thin and subject to fire damage. Photo: Doug McCreary, UC Cooperative Extension

Figure 21. (Right) The lower stems of these black oaks were completely charred and the cambium tissue below was dead and brown. Photo: B. Hagen

Table 1. Fire tolerance of oak species

Common name	Scientific name	Fire tolerance
blue oak	<i>Quercus douglasii</i>	tolerant of grass fires, not hot brush fires
California black oak	<i>Quercus kelloggii</i>	very sensitive to hot fires
canyon live oak	<i>Quercus chrysolepis</i>	sensitive to hot fires
coast live oak	<i>Quercus agrifolia</i>	very tolerant of hot fires due to its thick bark
Englemann oak	<i>Quercus englemanii</i>	very tolerant of hot fires
interior live oak	<i>Quercus wislizenii</i>	not very tolerant
Oregon white oak	<i>Quercus garryana</i>	tolerates low-intensity fires
valley oak	<i>Quercus lobata</i>	intolerant of most fires
Source: Standiford, R., ed. 1996. Guidelines for managing California's hardwood rangelands. Oakland: University of California Division of Agricultural and Natural Resources Publication 3368.		

Table 2. Sprouting response of oak species

Common name	Scientific name	Sprouting response
blue oak	<i>Quercus douglasii</i>	variable, not vigorous on dry sites
California black oak	<i>Quercus kelloggii</i>	vigorous
canyon live oak	<i>Quercus chrysolepis</i>	variable
coast live oak	<i>Quercus agrifolia</i>	very vigorous
Englemann oak	<i>Quercus englemanii</i>	variable
interior live oak	<i>Quercus wislizenii</i>	very vigorous
Oregon white oak	<i>Quercus garryana</i>	vigorous
Source: Standiford, R., ed. 1996. Guidelines for managing California's hardwood rangelands. Oakland: University of California Division of Agricultural and Natural Resources Publication 3368.		



Figure 22. (Upper left) These young oaks were only lightly charred but they died. Note the sprouting from their bases. Photo: Doug McCreary, UC Cooperative Extension

Figure 23. (Upper right) The main concern for these oaks is cambial damage. Oaks may survive with as little as 10 percent of the trunk circumference intact. Subsequent decay is definitely a concern if they are retained. Photo: B. Hagen

Figure 24. (Lower left) An example of fire injury to the lower side of this branch. Photo: B. Hagen

through the charred areas and check on the condition of the inner bark and cambium. If the bark is moist, spongy, and reddish-brown, pinkish, or off-white (depending on the species), significant injury is not likely. If, however, the bark is dry, hard, and yellowish-brown, severe injury is likely.

Most coast live oaks over 6 inches in diameter will survive even heavy charring conditions. Other species that are less than 6 inches in diameter are often killed by fire that causes light charring all around their bases (Fig. 20). Trees that are 6-12 inches in diameter with continuous, deep charring around their base are unlikely to survive. Trees larger than 12 inches in diameter with light charring all around their bases generally survive. Those with continuous deep charring, bark cracking or separation of bark

should be removed (Fig 21). Most oak species will re-sprout from their trunk bases (Fig. 22).

In some cases, fire can burn through the bark on the lower trunk or bottom sides of the lower scaffolds, killing patches of the vascular cambium and exposing wood to wood-decay pathogens (Figs. 23, 24). Cavities, basal scars, and branch cankers on many woodland oaks have resulted from fire injury. In some cases, fire scars may be buried under wood that has developed after the injury.

When in doubt about the injury level, wait until the following year and inspect for new growth. It is best to wait until the following growing season before pruning or removing fire-damaged oaks.

Remedial treatment for fire damaged trees involves irrigation, mulching and light fertilization.

This paper was compiled from a number of resources available online.

I want to thank Denice Britton Smith for reviewing this paper and adding insightful comments.

Some useful references:

USDA Forest Service; Pacific Northwest Region; Wallowa-Whitman National Forest; Blue Mountains Pest Management Service Center. *Factors Affecting Survival of Fire Injured Trees: A Rating System for Determining Relative Probability of Survival of Conifers in the Blue and Wallowa Mountains*, BMPMSC-03-01 November 25, 2002

Burned Oaks: Which Ones Will Survive? - ANR Catalog anrcatalog.ucanr.edu/pdf/8445.

Bruce W. Hagen

**Vegetation Management - Quality Control
Post Wildfire Assessment Activities
Fire Name: _____**

Purpose

To determine if electric transmission and primary distribution overhead lines in the Local Responsibility Areas (LRA) and/or State Responsibility Areas (SRA) and Wild lands (National Forest, BLM etc.) of areas affected by the _____ Wildfire in portions of _____ Division(s) are in compliance with General Order (G.O.) 95 Rule 35 requirements and/or Public Resource Code (PRC) 4293, and to provide relative assurance that hazard trees threatening electric overhead facilities have been identified for work. In addition, enacted mapping and work tracking systems will be substantiated.

Scope of Audit

This review will examine post _____ Wildfire assessment activities in burned areas of _____ Division(s). This review is being performed to provide relative assurance that facility protection hazard trees and trees with vegetation within the minimum distance requirements as defined in General Order (G.O.) 95 Rule 35 requirements, Public Resource Code (PRC) 4293 and/or FAC003-3 have been identified for work. Additionally, enacted mapping and work tracking systems will be substantiated.

Activities to be reviewed

- a) Verification of minimum clearance of 18" between trees and primary conductors and/or 4' for electric circuits 2.4kV to less than 72kV, on under-build, minimum distance clearance of 6' for 72kV to less than 110kV and 10' for 110kV or greater.
- b) Identification of potential facility protection hazard trees.
- c) Verify that the appropriate Environmental Specialist (ES) or Land Planner has been notified of locations where emergency facility protection hazard tree work in riparian areas has already been conducted.
- d) Mapping system.
- e) Tree Work tracking system.

Applicable Documents

- CPUC General Order 95 Rule 35 rev. 2012
- Public Resource Code Sections 4293
- FAC003-3
- Vegetation Management Facility Protection Procedure
- Vegetation Management Riparian Review Procedure
- US Forest Service, Region 5, Forest Health Protection - Marking Guidelines for Fire-Injured Trees in California
- Wildfire Checklist

Sample Selection

Random sampling is used to select audit locations and is based on the wildfire perimeter. Numbered overhead devices (Source Side Devices or SSD's) that have portions of line that flow within the wildfire perimeter are used as starting points for field reviews.

Auditor will review ten spans adjacent to each sample SSD up to 250 spans. If an SSD is outside the wildfire area, start review on the span that enters the wildfire area. Enter "SSD outside fire area" and note where field review began in comment field on datasheet. If sample SSD does not have portions of line that flow within the wildfire perimeter it shall be omitted.

Opening Meeting

Auditor will schedule an opening meeting with Vegetation Program Manager (VPM) or Branch Director (BD) prior to start of field review. The following items, but not limited to, shall be discussed:

Planning

- VPM or BD to provide a list of circuits affected by the wildfire and the corresponding Project Management Database (PMD) plan dates.
- Phone list of personnel/contractors associated with the wildfire event to be provided to the auditor.

Communication

- VPM or BD and auditor will establish how and when findings are to be communicated.
- VPM or BD and auditor will establish chain of command contact list for any imminent threat hazard trees identified by the auditor.

Safety

- VPM or BD will review all wildfire event related safety tailboards with auditor.
- A check in/check out communication system will be established for auditor.
- Sample SSD list will be reviewed with VPM or BD to ensure that:
 - The sample does not include any locations with escalated customer issues.
 - Any known access issues such as restricted or dangerous areas are communicated to the auditor.

Data Collection and Filing

Data will be recorded on field audit checklists.

- Upon completion of field review, field checklists will be signed and dated by the auditor and scanned and stored in corresponding wildfire electronic folder.
- Auditor will transfer data from field checklist to an electronic checklist, which will be stored in the wildfire electronic folder.

- Upon completion of the audit the auditor will email the VPM or BD a summary of findings and copy of completed electronic datasheet.
- Pictures of findings will be stored in corresponding wildfire electronic folder.

VPM or BD Name (Print): _____

Auditor Name (Print): _____

VPM or BD Signature: _____

Auditor Signature: _____

Audit Start Date: _____

Audit Start Date: _____

DRAFT

Fire Event Safety On-Boarding

Safety is a Company value for which we all are accountable and responsible.

All employees and Contractors must review this document prior to performing response work.

Our focus on safety as a value is essential in leading us to zero incidents.




- **Fire Risk:** Hot weather increases the risk of fire. Make sure employees know and fully understand not to idle trucks in high dry grass or brush areas. All vehicles/equipment must have the equipment to prevent/extinguish a fire. Personnel must observe all laws, rules, and regulations of fire agencies having jurisdiction over areas in which they are working. Check the Fire Index Website for your area, [Fire Index Website](#) and other useful links such as [CAL Fire Current Incidents](#), [Caltrans](#) road conditions and [PGE Weather Page](#).

- **Safety on the Fire Grounds:** Practice LCES (Lookouts Communication Escape Routes Safety Zones). Select lookouts, set up communications, choose escape routes, and select safety zones. Lookouts assess and reassess the fire environment and communicate threats to safety (either verbally, signaling or radio); crews use escape routes to safety zones. Always leave yourself an out and do not enter an area unless it is safe to do so. When staging equipment prior to starting work, plan emergency exit routes in case of fire. All crews or personnel working in or around the fire should be alert to changes in the fire environment and have the authority to initiate communication. When working near active fires, try to position yourself upwind when possible to avoid unnecessary inhalation of smoke. Make sure you are not blocking the paths of Emergency Vehicles.

Major Risks: Fire Danger, Heat Illness, Fatigue, Smoke Inhalation.

- **Heat Illness & Hydration:** Remind employees to stay hydrated. Increase water intake to at least one quart per hour. Take the necessary time to cool off. Insure that adequate shade is available. Balance water and sports drinks to insure proper electrolytes. Drink a minimum of 32 ounces of water per hour. Insure that employees have access to the required amount of water on an 8 hour shift:

Make sure that crews have the new Heat Illness Standard Onsite: [SAFE 2001S](#)

	Every Hour	8 Hour Shift			
1 Person Crew	2 bottles of water	16 bottles of water			
2 Person Crew	4 bottles of water	32 bottles of water	Importance of Hydrating.doc.docx	Caffeine Intake.doc.docx	Energy Drinks.doc.docx
3 Person Crew	6 bottles of water	48 bottles of water			
4 Person Crew	8 bottles of water	64 bottles of water			

- **Equipment:** Crews need to ensure they have their basic firefighting tools available (**One 5 gallon back pack water pump ready for use, A round point shovel with an overall length of not less than 46 inches, or McLeod, One 5 pound or more ABC rated fire extinguisher**). These items are crucial in the event of an emergency and they need to be in good working condition.
- **Trees:** Be aware if seeking shade or working around trees. High temperatures and trees affected by fires can cause the limbs/trunks to become brittle or unstable and fall. Look up and around you and if you hear cracking quickly get out from under or around the tree. Look for trees that are leaning due to fire activity. Review the [Wildfire Hazard Tree Awareness Tailboard](#).
- **Safe Driving:** Distracted driving is of high concern in the fire area. Make driving from location to location your one and only task. Check your windshield wiper blades prior to leaving the yard, as recent hot weather may have caused deterioration. Check your lights (headlights, turn signals and brake lights), tires and general vehicle condition. If area has limited visibility due to smoke, ensure that your lights are on and working properly.

Use the Smith System 5 Keys and/or defensive driving at all times while operating any vehicle. Before leaving a location, walk around the vehicle/equipment to make sure all is clear before moving it. Make sure you look under the vehicle as well as overhead to look for potential obstacles. Use care when backing up a vehicle/equipment. When possible, use a backer. Employees in the area who are not driving are expected to act as backers as needed.



Wildfire Smoke

Strategies to reduce smoke exposure

Introduction

This document is intended to assist supervisors and employees when planning work in locations with degraded air quality due to wildfires within the PG&E service territory.

Health Effects of Smoke exposure

Smoke is a complex mixture containing carbon dioxide, water vapor, carbon monoxide and particulate matter. Short term exposure to smoke generated during a wildfire can cause irritation to the nose, eyes, throat and lungs and potentially worsen chronic heart and lung diseases. Children, older adults and people with heart and lung diseases are at the greatest risk from wildfire smoke.

Recommendations to reduce smoke exposure

The following recommendations are intended to reduce employee exposure to smoke when working in areas affected by wildfires:

- Do not send employees into areas that are actively burning or have been evacuated.
- If possible, postpone routine work in areas with a Very Unhealthy or Hazardous [Air Quality Index \(AQI\)](#).
- Limit strenuous work in areas with an Unhealthy AQI. (Strenuous work is defined as work that requires heavy physical exertion and causes the individual performing the work to breathe heavily and deeply.) Having several employees perform the work, rotating employees performing the work or increasing breaks while the work is performed will reduce the work effort needed to perform the task.
- Reschedule strenuous work to the parts of the day when the AQI is better, normally earlier in the day.
- Stay indoors or in a vehicle with the air conditioning on as much as possible.
- Set the air-conditioning in vehicles to the re-circulating mode to limit intake of smoke particles in the vehicle.
- Allow employees with cardiopulmonary diseases the option not to participate in outdoor work if the AQI is listed as Unhealthy for Sensitive Groups or higher.

Employees who must work outdoors in areas with degraded air quality may voluntarily choose to wear a filtering facepiece (dust mask) respirator such as a P-100 mask. These employees must be provided with the information contained in [CCR Title 8 Section 5144, Appendix D](#). Use of any type of respirator other than filtering facepieces will require full adherence to PG&E's [Respiratory Protection Program](#).



Wildfire Smoke

Strategies to reduce smoke exposure

Resources for further information

[Air Quality Index](#)

[CDC Information on Health Effects of Wildfire Smoke](#)

[CalFire Current Fire Information](#)

[TD-1464S Fire Danger Precautions in Hazardous Fire Areas](#)

For additional information or questions please contact your local Safety Specialist.



Safety and Health Tailboard

TOPIC: Wild Fire Guidance: Use of Dust Masks and Respirators for Protection from Smoke



Topic Overview / Key Message:

This information clarifies the use of dust masks for protection from the wildfire smoke in the air. Please read and understand the information below. You all should be familiar with what the Air Quality Index (AQI) means, especially with regards to the elderly, the young and those with respiratory or heart illnesses.

Steps and Actions to Take:

Neither the CDC, nor other Public Health Agencies are recommending that healthy workers or even the general population wear surgical masks, bandannas, dust masks or respirators for large portions of the day because the AQI is in the Unhealthy, Very Unhealthy or even the Hazardous range.

- Surgical masks do not provide protection because they are designed to filter large particles and droplets coming out of the wearer's nose and mouth and do not seal to the face.
- The Hot Shield Firefighters Bandanna that some may have purchased, or other bandannas are not designed to filter the air, but act to protect the face from heat and burning particles.
- Paper dust masks are designed to filter large dust particles, not smoke.
- Disposable N-95 (or dust masks) can filter 95% of the particles larger than 0.3 microns, but not smaller smoke particles. These masks do not seal tightly to the face.
- Disposable P-100 filtering face piece respirators will filter the smoke particles, but are more uncomfortable to wear, cause a greater physical strain on the body, and also do not have a tight seal like a tight-fitting half-mask air-purifying respirator.
- Both the N-95 and P-100 filtering face pieces are respirators. If we are recommending their use for protection of our employees, a respirator program must be in place, including the medical clearance, training and fit-testing of the employees using these respirators.

Remember, to filter the air, a mask must seal tightly to the face and fit properly. Anything that breaks the seal, including beards, will cause leaks, making the mask ineffective.

The best guidance about protecting employees from wildfire smoke is:

- Do not send any employees into areas that are actively burning or have been evacuated.
- If possible, postpone routine work in areas with a Very Unhealthy or Hazardous AQI.
- Limit strenuous work in areas with an Unhealthy AQI. (Strenuous work is defined as work that requires heavy physical exertion and causes the individual performing the work to breathe heavily and deeply.) Having several employees perform the work, rotating employees performing the work or increasing breaks while the work is performed will reduce the work effort needed to perform the task.
- Reschedule strenuous work to the parts of the day when the AQI is better, normally earlier in the day.
- Take work breaks indoors, if possible.
- Set the air-conditioning in vehicles to the re-circulating mode to limit intake of smoke particles in the vehicle.

Resources of Topics and Links:

[DSO Weather Page](#) [Center for Disease Control and Prevention \(CDC\)](#)

*

Wild Fire Guidance: Use of Dust Masks and Respirators for Protection from Smoke

Attendance Sheet

Date: Click here to enter text.			Tailboard Lead: Click here to enter text.		
Time Began: Click here to enter text.			Lan Id: Click here to enter text.		
Time Ended: Click here to enter text.			Location: Click here to enter text.		
Topics Discussed (attach or identify all documents, handouts or videos provided viewed or discussed) <u>Wild Fire Guidance: Use of Dust Masks and Respirators for Protection from Smoke</u>					
Other (include a brief summary of what was discussed) Click here to enter text.					
ATTENDEES					
Print Last Name	Signature	Lan Id	Print Last Name	Signature	Lan Id

*Safety briefings meet **Cal OSHA §1509 . Injury and Illness Prevention Program**; (e) Supervisory employees shall conduct "toolbox" or "tailgate" safety meetings, or equivalent, with their crews at least every 10 working days to emphasize safety. A department may have more stringent requirements through their Standards or Procedures. Tailboard *documents* provide the facilitator with facts about topics to use during daily briefings. Tailboards may be created as a result of identifying a hazard by conducting a Job Safety Analysis (JSA)/Job Hazard Analysis (JHA).



Safety Tailboard

TOPIC: Heat Illness Prevention



Topic Overview / Key Messages:

Hot weather can affect Company employees working outside or in high temperature buildings such as power plants and compressor stations. It is important that employees are aware of the dangers of heat stress, are able to recognize the warning signs and learn to avoid the behaviors and actions that can result in heat stress.

Risks, Exposures and Preventative Steps to Take:

Seven environmental factors affect the amount of heat stress a worker faces in a hot work area:

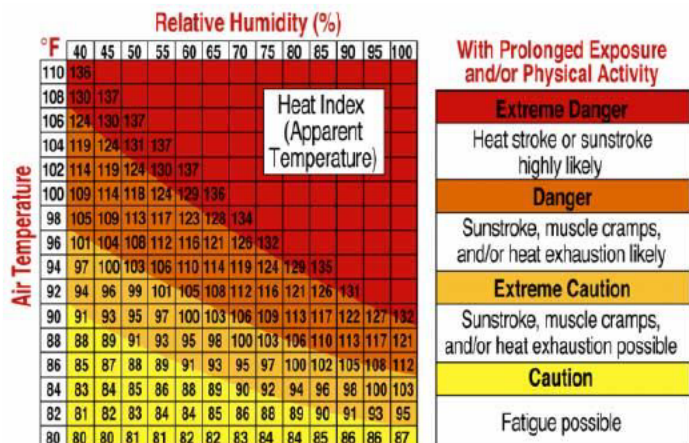
- Air temperature
- Air movement
- Workload and duration
- Direct sunlight
- Personal Protective equipment worn by employees
- Conductive heat sources such as the ground
- Relative humidity

Personal characteristics such as age, weight, fitness, medical condition and acclimatization to the heat, affect the level of stress caused by heat.

When it comes to heat illness, prevention is the best medicine

All heat illnesses are preventable as long as you take steps to protect yourself and others:

- **Stay hydrated** – In hot weather, you need to drink 16-32oz (2-4 glasses) of water per hour to replenish the fluids lost through sweat. Drink often, even if you don't feel thirsty.
- **Stay cool** – Wear cool, loose-fitting clothing when possible. Take breaks in a shaded or air conditioned area. It's essential to take preventative cool-down rests in high heat environments.
- **Observe** – Workers in high heat environments need to be closely monitored for signs of heat illness. If you see signs and symptoms of heat illness, ensure that the employee receives first aid and emergency medical services (if needed) as quickly as possible



There are five types of heat illnesses:

- **Heat Rash** is a rash of bumps or blisters caused when sweat ducts (pores) get blocked, and perspiration gets trapped under your skin.
- **Heat Cramps** are painful cramps that can occur when you overexert yourself in hot weather.
- **Heat Exhaustion** is a feeling of fatigue, faintness, dizziness or nausea that can happen when you're working hard in hot weather. Heat exhaustion can lead to more serious issues.
- **Heat Syncope** is fainting as a result of overheating.
- **Heat Stroke** – This is the most serious type of heat illness and can lead to death if not treated right away. People suffering heat stroke can no longer sweat to cool themselves down.



Safety Tailboard

TOPIC: Heat Illness Prevention



There are specific requirements we must follow to prevent heat illness:

All employees working outdoors and in conditions above 80 degrees Fahrenheit are at risk for heat illness. Insure your employees have the following required necessities:

<u>Water</u>	<ul style="list-style-type: none"> ✓ Fresh, suitably cool and potable ✓ Close to jobsite 	<ul style="list-style-type: none"> ✓ One Quart (or more) per hour per employee ✓ Reminders to drink plenty of water throughout shift
<u>Weather Monitoring</u>	<ul style="list-style-type: none"> ✓ Supervisors must monitor conditions at the site to insure shade/heat requirements are met ✓ <u>Temperature Monitoring</u> (Link) 	<ul style="list-style-type: none"> ✓ Or A dry bulb thermometer at the work site
<u>Shade</u>	<ul style="list-style-type: none"> ✓ One or more areas of shade that are open to the air or provided with ventilation or cooling ✓ Must accommodate all employees on site to sit in full posture without having physical contact ✓ Located close to the job site ✓ Readily (on-hand) available even if the temperatures have not met 80 degrees Fahrenheit ✓ Encourage cool-down breaks in the shade and monitor employee symptoms of heat illness 	
<u>High Heat</u> (95 degrees Fahrenheit + requirements)	<ul style="list-style-type: none"> ✓ Supervisors must ensure effective communication by voice, observation or electronics so employees can make contact if necessary ✓ Supervisors must ensure effective observation and monitoring of employees (one or more of the following): <ul style="list-style-type: none"> ○ Supervisor or designee observation of 20 or fewer employees ○ Mandatory buddy system ○ Regular communication with sole-employee (by radio or cell phone) ○ Other effective means of observation ✓ Designate one or more employees at worksite to call emergency medical services ✓ Remind employees throughout shift to drink water ✓ Conduct pre-shift meetings and include: <ul style="list-style-type: none"> ○ Review of high heat procedures ○ Drinking plenty of water ○ Encourage frequent cool-down rest periods 	
<u>Emergency Response Procedures</u>	<ul style="list-style-type: none"> ✓ Supervisors must ensure effective communication by voice, observation or electronics so employees can make contact if necessary ✓ Respond to signs and symptoms of possible heat illness ✓ Contacting emergency medical services ✓ Clear and precise directions are provided to EMS to the work site if called 	
<u>Training</u>	<ul style="list-style-type: none"> ✓ Employees must receive heat illness training before the exposure to risks ✓ PG&E's procedure to comply with the heat illness exposures. 	



Safety Tailboard

TOPIC: Heat Illness Prevention



Heat Illness Emergency Response

The following are the signs, symptoms and appropriate treatments for the different types of heat illnesses.

Illness	Signs and Symptoms	Treatment
Heat Rash	<ul style="list-style-type: none">A raised, blister-like red rash on the skin.	<ul style="list-style-type: none">Remove wet clothingDry the affected area
Heat Cramps	<ul style="list-style-type: none">Painful muscle spasmsMay occur during or after strenuous activity	<ul style="list-style-type: none">Slowly drink waterGently stretch the muscle for 20 seconds, followed by massage
Heat Syncope (Fainting)	<ul style="list-style-type: none">SweatingPale or flushed complexionSudden but brief loss of consciousnessBody temperature of 104°F or more	<ul style="list-style-type: none">Move to a cool areaGently move victim to supported sitting or lying on back positionElevate legsLoosen/remove excess clothingSlowly drink water (when conscious)
Heat Exhaustion	<ul style="list-style-type: none">Weakness/fatigue, giddiness, disorientation, irrational behaviorNauseaHeadachePale or flushed complexionWeak, rapid pulseDilated pupilsUnable to perform simple tasks	<ul style="list-style-type: none">Rest in a cool placeDrink water (if able)Loosen/remove excess clothingContact emergency medical services (EMS) if:<ul style="list-style-type: none">Worker vomits or cannot drink waterWorker loses consciousness
Heat Stroke	<ul style="list-style-type: none">No longer able to sweatConfusion, deliriumLoss of consciousnessHot, dry skin with red, mottled or blue complexionBody temperature of 105°F or moreRapid, shallow breathingWeak, rapid pulseSmall pupils	<ul style="list-style-type: none">Contact EMS immediatelyMove to a cool areaSoak clothing with cool waterPlace ice/cold packs on head, armpits, neckFan the victim

NOTE: Prior to contacting EMS, employees must be prepared to calmly provide details on their location (address, GPS location, room number, etc.) and the symptoms the affected employee is experiencing.













Safety Tailboard

TOPIC: Heat Illness Prevention



Available Cooling Materials:

Description	Part #	
OCCUNOMIX 940-018 - MIRACOOOL COOLING BANDANA NAVY BLUE	OCC94001	
OCCUNOMIX 940B-24 - MIRACOOOL COOLING BANDANA ASSORTED COLORS (24 EACH PER PACK) OCCUNOMIX 940-BDN - MIRACOOOL COOLING BANDANA BLUE DENIM OCCUNOMIX 940-HVO - MIRACOOOL COOLING BANDANA HI-VIZ ORANGE	OCC940ASST OCC940BDN OCC940OR	
OCCUNOMIX 955-018 - MIRACOOOL COOLING HEADBAND DELUXE NAVY BLUE	200954	
OCCUNOMIX 968-018 - MIRACOOOL COOLING PAD FOR HARD HAT NAVY BLUE	OCC968	
MAGID PF6200 - COOLING VEST THERMAL WEAR BLUE WITH INSERTS	TMTT1912212OR	
ALLEGRO 8405-54 - COOL OFF COOLING BAND 38" LONG FOR NECK OR HEAD WEAR AMERICAN FLAG PATTERN	ALG037840554	
COOLING VEST KIT PGE L/XL INCLUDES VEST AND COOLING INSERTS	TMTT1812201	
ALLEGRO 8406-02 - COOLING NECK SHADE FLAME/HEAT RETARDANT	ALG840602	
OCCUNOMIX PC-VV-FR-NB - COOLING VEST WITH INSERT	OCCPCVVFRNB	
OBERON CV-ARC-TALL - ARC FLASH COOLING VEST SIZE TALL	204001	

Procedures, Standards and Resource Links:

Heat Illness Prevention Standard SAFE-2001S

Heat 80-94 degrees Fahrenheit Tailboard

*

Heat Illness Emergency Response

High Heat 95 degrees Fahrenheit and above Tailboard

Attendance Sheet

Date: Click here to enter text.			Tailboard Lead: Click here to enter text.		
Time Began: Click here to enter text.			Lan Id: Click here to enter text.		
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Topics Discussed (attach or identify all documents, handouts or videos provided viewed or discussed) <u>Heat Illness Prevention</u>					
Other (include a brief summary of what was discussed) Click here to enter text.					
ATTENDEES					
Print Last Name	Signature	Lan Id	Print Last Name	Signature	Lan Id

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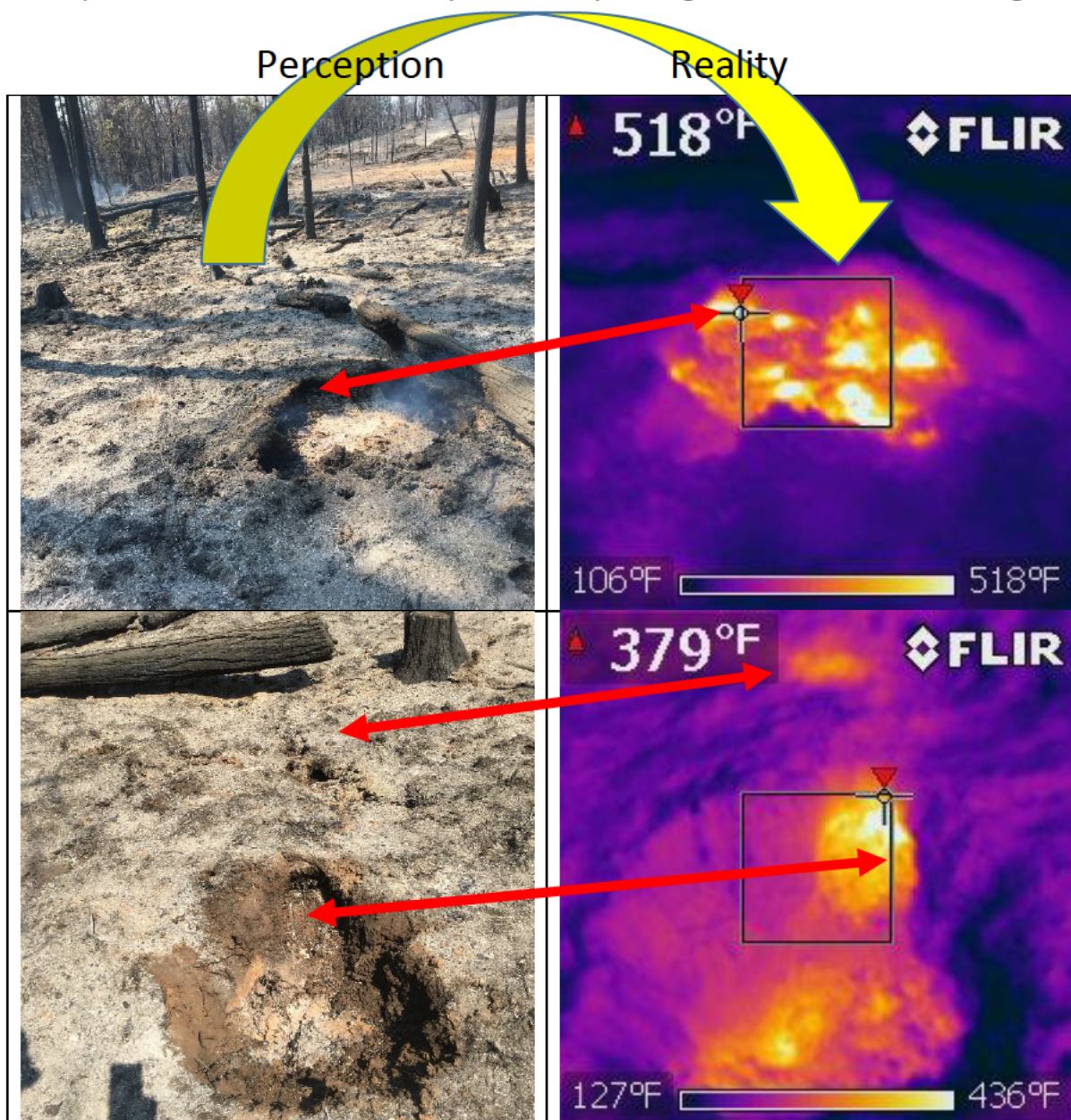
SAFETY Tailboard

Hidden Fire and Safety Dangers with Burned Out Stumps

Tree felling operations during past fire events are extremely susceptible to re-ignition due to tree's being felled on burned out stumps.

Pictures below compare what you might see with the plain eye with true heat images of these burned out stumps. These pose a threat not only to rekindle a fire but a hidden walking danger. When felling a tree make sure to walk the whole potential fall zone to identify this potential hazard.

Take all precautions to avoid felling trees or walking near these hazards. Several firefighters and other responders have been severely burned by falling into the hidden burning roots.





SAFETY TAILBOARD



Safety in the Field – How am I feeling?

This is a question we should be asking ourselves and others before we perform tasks where feeling less than par could put us and others in danger. Signs and symptoms of illness and fatigue can come on gradually throughout the day or can present themselves in an instant. Whether you are driving a motor vehicle, operating heavy machinery, working at heights, walking a flume, or working around electrical equipment, you must be feeling well enough to keep yourself and others out of harm's way. The following tailboard describes some situations in which you must stop work and get help to prevent potential hazards.

Impairment due to drugs and/or alcohol

- ***Never perform work or engage in company activities under the influence of alcohol or illegal drugs***

Illness

Illnesses can affect your ability to work safely if not properly manages. Some of these illnesses include, but are not limited to:

- Heat stress
- Diabetes
- Stroke
- Heart attack
- Mental disorders
- Allergies
- Vision problems
- Flu
- Epilepsy
- Anxiety
- Shock
- Sleepiness



Symptoms of these illnesses can affect your ability to work safely and put yourself and others in danger. Medications can also cause adverse health symptoms. If you are taking prescription medication that could affect your ability to work safely, carefully follow the directions and inform your supervisor immediately. You must stop work (or stop operating a motor vehicle) and get help immediately if you experience these symptoms or suspect a coworker is experiencing symptoms of illness, such as:

- | | |
|-----------------------------|--------------------------|
| • Dizziness | • Severe cramping |
| • Confusion | • Blurred vision |
| • Inability to concentrate | • Faintness |
| • Vomiting | • Severe headache |
| • Swelling of face and neck | • Loss of motor function |
| • Chest pain | • Profused sweating |

Fatigue

Working long hours and not getting adequate rest can cause fatigue. When you are fatigued, your mind and body are not alert and fatigue can slow down your reaction time and affect motor skills. In some cases, fatigue can cause you to fall asleep unexpectedly, putting you and others at extreme risk of injury. Always ensure you get adequate rest to avoid fatigue.

Evaluate the situation

Feeling well and alert is an important part of evaluating hazards and ensuring you are fit for duty. Symptoms of fatigue and illness are not always easy to spot, especially in others. That's why it's important for everyone to evaluate themselves to ensure they feel good enough to perform their tasks safely. Listen to your body; it may be trying to tell you something to help you avoid further injury. Just as important, listen to your coworkers. Be proactive when you hear such phrases as:

- I don't feel so good today.
- I feel weird.
- I'm a little off today.
- Are you okay? You don't look yourself.
- I'm on a new medication and it's making me feel different.
- I'm exhausted.
- I'm having a tough time concentrating.

The Bottom Line

If you don't feel well, stop what you are doing and evaluate the situation. Get yourself to a safe location and get some help. If you are driving a motor vehicle, pull over and call for help. Do not attempt to continue in hopes that you will arrive safely. Continuing to work, or drive a motor vehicle in these situations can quickly make a bad situation worse.

Training Details and Attendance Sheet

[illegible]

New Contractor Qualifications and Training Form

This form is intended for new contractors supporting PG&Es fire response, and it is intended to document that they meet minimum qualifications for their role. The form must be completed before new contractors can work in the field. This form is not needed for current contract employees.

Company: _____

Position: _____

Contract Employee Name: _____

Contract Employee Date of Birth: _____

Education and Experience – Attach a resume or list applicable education and experience.

Training – Attach new employee training or list applicable training below.

Contract employee supervisor/manager – I have verified that the employee's qualifications are appropriate for the work they will be performing.

Name: _____

Signature: _____

Date: _____

PG&E event lead (Vegetation Branch Director or VM Regional Manager) – I have verified that the employee's qualifications are appropriate for the work they will be performing.

Name: _____

Signature: _____

Date: _____

Customer Outreach Team Matrix

Position / Stakeholder	Category 3 Level Event
VM Customer Outreach Lead: Coordinate all communications activities	██████████, Marketing and Communications ██████████, Corporate Communications ██████████, LCE
External Communications (Media Reps)	██████████, based in EOC Local External Communications based on incident location ██████████: VM External Communications ██████████: Wildfire and Wood Removal Communications
Call Center Operations	██████████ or other CCO contact Check Incident Org chart
Local Customer Experience	██████████: LCE coordinates with DLT Leads to assign ██████████: Outreach Lead (Division Operations Specialist)
Public Affairs	██████████ VM Public Affairs Rep and local reps
VM Communications	██████████ and ██████████
Field Representatives	Contract Work Force
Agency Liaison	██████████, ██████████ and ██████████

Wildfire Q&A

(Should we split this up into audience and delivery method?)

What PG&E is doing? (Should the first two be combined?)

- Pruning or removing trees that present a threat to the power lines
- Public Safety

Why PG&E is doing it? (Combine with question 1?)

- Public Safety
- PRC-4292/GO-95, Rule 35

What can you expect

- PG&E Contractors will be evaluating the health of trees to determine if they present a threat to PG&E lines.
- If they present a threat to PG&E lines they will be marked with a “P” for removal.
- Tree professionals will follow up and remove the trees.
- Wood 4” or less will either be chipped on-site or will be looped and scattered (definition?)

When you can expect it to happen? (This would be nice to have a generic timeframe rather than dates)

- The vast majority of the trees will be evaluated by (date) or (normally takes 6-8 weeks)
- Tree crews will follow and remove the trees normally with/in (date) or (normally takes 6-8 weeks)

How can you get more information?

- Call 1-800-PGE-5000 and reference “Wild Fire”
- http://www.pge.com/Wild_Fire
- Personnel are available to meet you on-site

Options you have?

- Wood Hauling program if offered
- Chips may be available
- Personnel are available to meet you on-site

Who to contact if you have concerns with trees in the power lines?

- Call 1-800-PGE-5000 and reference “Wild Fire” (Need to confirm with Call Center)
- http://www.pge.com/Wild_Fire (Need to confirm with Lisa Randle)
- Personnel are available to meet you on-site

How PG&E evaluates trees? (I think we need a short and long answer for this)

- PG&E’s trained contractors
- Evaluate species to determine effect on Crown, roots and cambion layer

Who PG&E is working with?

- Primarily government agencies (i.e. county, CalFire, CalTrans, etc.)

PG&E's wood removal program?

- I think this is pretty well defined and will not change.

Where is PG&E working?

- Geographic locations how specific and how often do we update? Or Within the fire foot print.

How much work is PG&E doing? (I think this is best handled by a weekly report that VM posts for our Stakeholders)

- This could be a weekly report that is sent to stakeholders
- # of trees we estimate to be worked
- # of trees evaluated?
- # of trees worked?
- By geographic area?

If you have concerns with trees near Power Lines

- Communication lines are often mistaken for power lines
- PG&E does not clear communication lines
- We could direct them to the website
- Call 800-PGE 5000 to schedule someone to come out and evaluate

Where is the wood going?

List of trees by county

Who is paying for it?

What do the markings mean?

Delivery Method and Material

PG&E Web presence

- www.pge.com/trees Pre-established web-site that has generic information – Lisa Randle is page owner. Vanity url www.pge.com/treesdroughtandwildfire for generic VM wildfire response information
- Incident and GO level Wildfire Commitment and Wildfire Response pages
- http://www.pgecommitment.com/?WT_pgeac=Alerts_NapaFire-Oct17_Commitment
- https://www.pge.com/en_US/safety/emergency-preparedness/natural-disaster/wildfires/wildfires.page?WT.pgeac=Alerts_NapaFire-Oct17_MoreInfo

Various Brochures

- A-Frame distribution
- LOB use and distribution
- Contractors, CAL Fire Incident Base
- Any customer facing outlet of PG&E; Customer Service Offices, town hall meetings etc.

A-Frames

- To be strategically place in the community, and at CAL FIRE public information locations

Hazard Tree Work Placards/Fliers

- 8 to be placed in the fire footprint and community
- Provided to CAL Fire at incident

Contractor Talking Points

- Part of the PI and TC pocket guide to aid them in answering questions

Media/News Release/Talking Points/Currents/Daily Digest/YouTube/Social Media

- Developed by External Communications at GO level or local External Communications Rep within the emergency response structure
- Collaterals Utilized by Public Affairs, DLT and other internal LOG outreach partners

Gen Ref Call Center Operations

- GenRef Generic Articles for pre-printed materials
- GenRef Articles developed per new activities – coordinate with those being developed per the emergency response organization.

Community Meetings

- Generally organized by Public Affairs or Agency
 - VM would be one attendee
- Do's and Don'ts at community meetings

Customer Letter/Email Notification or Call Outs

- Created by Local Customer Experience to meet specific communication needs. (Wood Management, example)
- A letter we can mail to property owners affected by the fire



**Pacific Gas and
Electric Company®**

Pacific Gas and Electric Company
P.O. Box 770000
San Francisco, CA 94177-1490

Date

«CUSTOMER_NAME»
OR CURRENT OCCUPANT
«PREM_ADDRESS2»
«PREM_ADDRESS1»
«PREM_CITY», «PREM_STATE» «PREM_POSTAL»

**An update on our safety
and power restoration
efforts in your area related
to the Fire Name .**

Dear Valued Customer,

As you and numerous other customers are dealing with the effects of the devastating Fire Name, I wanted to let you know about the fire suppression support and power restoration efforts Pacific Gas and Electric Company (PG&E) is providing in your area.

PG&E's top priority is the safety of our customers, firefighters, the public and our employees. In addition, we are focused on minimizing power outages to customers and protecting our critical infrastructure which is necessary to deliver safe and reliable electric service.

To meet that goal, PG&E crews are working ahead of the fire, where safe, to pre-treat our utility poles with fire-retardant to minimize the fire's impact should it reach them. Additionally, we are performing other activities to protect our infrastructure, including clearing vegetation, and in many cases removing trees near or around utility poles, lines, and structures. PG&E is working closely with the U.S. Forest Service, CAL FIRE and other agencies to ensure we are coordinated in meeting these objectives.

Damage to PG&E infrastructure has occurred within the fire boundaries and our crews have begun assessment and reconstruction efforts where it is safe to do so. Due to safety concerns, PG&E has not yet been able to access all of our damaged equipment to conduct a full assessment. Once fire agencies allow us safe access, we will work quickly to restore power to all customers impacted by the fire.

PG&E's contracted Vegetation Management crews are also beginning tree inspections and tree mitigation work in the fire-damaged areas where safe. As expected, there are numerous trees along our power lines which have been damaged by the fire. As of xxxxxx (insert date), these crews have identified many dead or hazardous trees and are falling them to prevent limbs or portions of trees from failing into power lines. These fire damaged trees could cause additional fires or power outages and must be mitigated to protect safety public and ensure electric power remains reliable.

We recognize that our preventative maintenance work may impact the area or your property. It is critical that we remove any potential safety hazards to avoid any additional fires, and abide by all federal and state regulations that require us to remove hazard trees along high voltage lines. If you have any questions or concerns about this work, please contact your local PG&E representative, Name, at phone number or email address.

Sincerely,

Name
Title

Pacific Gas and Electric Company

Fire Name

Cutting Trees to Create Defensible Space?

Look up for high voltage power lines!



Recent fires in the area have proven the importance of creating and keeping defensible space around your home. However, clearing for defensible space can be dangerous if you have high voltage power lines on or near your property. Cutting trees near high voltage power lines can result in outages, fires, or personal injury and death, should trees or tree limbs fall into or contact power lines.

PG&E's certified line clearance contractors may be able to prune or cut down the trees on your property that are near high voltage power lines.* If you are planning on cutting trees near high voltage power lines and want to know if PG&E's certified line clearance contractors can help, please contact PG&E at

1-800-743-5000

*Cal/OSHA requires certified line clearance tree workers' to perform any tree work that is within 10 feet of power lines.



**Pacific Gas and
Electric Company®**



EMERGENCY WORK COMMUNICATIONS

Recent fires in Pacific Gas and Electric Company's service area have left numerous dead and dying trees standing along power lines and across the landscape.

California law requires that dead, dying or diseased trees that have the potential to contact power lines be removed. We now face the task of performing emergency tree felling along power lines in addition to the local devastation that has occurred.

During this time, customers returning to the area will be devastated by personal loss as well as the damage to the environment and tree loss. Many customers will voice their concern negatively; others will welcome the work being conducted. Throughout the emergency, it will be very important to treat customers with respect, patience and thoughtfulness as many will be expressing extreme frustration and venting at the first person encountered.

Talking Points:

What and why:

- PG&E is committed to the safe operation of a safe and reliable electric system: this includes removing dead and dying trees which threaten public safety and electric power lines.
- Hazardous trees, left standing, can threaten **public safety** by falling on reenergized lines and potentially injuring customers or starting a new fire.
- PG&E is **felling trees** along easements, right of ways and private property that pose a threat to power lines and public safety.
- Trees felled in **water ways, near structures or blocking roads and driveways** will be moved aside.

Notification:

- During an emergency or emergency work operation PG&E is not required to make **notifications or obtain permission**; however efforts are made to do so if residents are in the area.

How trees are selected for felling:

- Professional foresters or arborists, under contract to PG&E, patrol the damaged area, marking trees for felling.
- To determine if a tree should be felled, it is examined at the base for stability; for current insect attack, frozen needles, and degree of greenery remaining, if any. All are indicators of a dead, dying and hazardous tree. If one-third or more greenery remains, absent of other imminent mortality or structural hazard issues, the tree will be left

standing to be examined again during next years' routine vegetation management maintenance patrol.

- Trees may have greenery that will subsequently die due to fire damage to the cambium layer which provides water and nutrients to the tree. (Similar to a person having a severed artery). The cambium layer is the first layer underneath the bark. Extreme heat and burning kill this vital layer of the tree, resulting in either immediate tree death and browning of needles or tree death within a few days.

Removal and disposal (debris):

- Do not make clean-up commitments to customers that may occur during “routine” work practices.
- During an emergency or emergency work operation, it is not PG&E’s responsibility to remove or dispose of felled trees. Any **removal or disposal** of the felled trees is the responsibility of the land owner. PG&E cannot remove the trees which are the property of the land owner.
- **Other remaining dead, dying or damaged trees** on a customer’s property are the responsibility of the land owner. These trees, as well as those felled by PG&E, may have value to the customers as marketable timber or firewood.

Assistance:

- Customers can obtain a “**Utility Exemption Permit**” that enables customers to have a licensed timber operator remove the wood as salvage timber and cleanup the large wood. Sometimes the customer will receive payment for the value of the timber. This relieves customers of the responsibility of having a licensed forester complete an extensive Timber Harvest Plan for timber removal. Should a customer desire additional timber removal from their property an additional form Emergency Exemption would be required from CALFIRE. (*see attached list of contacts*)

Please visit the link below for additional information on the permit

http://www.fire.ca.gov/resource_mgt/downloads/ch_rtwy2a.pdf

The permit can be found by at

http://www.fire.ca.gov/resource_mgt/resource_mgt_EPRP_TimberlandConversions.php

Note: Trees can be salvage logged, usually up to one year after a fire before insect damage makes them unusable for lumber.

- When it’s time to replant, informational brochures can be requested from PG&E either through RightTreeRightPlace@pge.com or by calling 1-800-743-5000. Other tree selection information and fire safe landscaping resources are available at www.selecttree.calpoly.edu and www.ca.fire.gov

Emergency Work Notice

What's Happening and Why

Disastrous fires have raged through this area, destroying homes and leaving numerous dead and dying trees in their wake. Left standing, these dead and dying trees pose a serious safety risk to people, power lines and to continued electric service -- should they fail. California law (Public Resources Code 4293) requires that dead, dying or diseased trees that have the potential to contact power lines be removed. To address this hazardous situation, PG&E's Vegetation Management group is identifying dead and damaged trees, and performing emergency tree felling of the hazardous trees that threaten power lines.

How are dead and dying trees identified?

A professional forester or arborist, under contract to PG&E, patrols the damaged area and marks trees along power lines that are dead or diseased and that need to be felled. Each tree is examined for stability; current insect attack, frozen needles, and degree of greenery remaining, if any. All are indicators of a dead, dying or hazardous tree. If one-third or more greenery remains, and no other structural damage or defects are identified, the tree will be left standing and will be inspected during the next routine vegetation management maintenance patrol.

How are customers notified?

Is a signature or permission required?

PG&E normally tries to notify customers when removing dead or dying trees on routine patrols. But that is not always possible in an emergency, especially when homes have been damaged or destroyed or there has been an evacuation. If we see customers while performing this work, we will explain what is happening and why we are felling the trees. Additionally, we post notices in the damaged area, and use door hangers or handouts whenever possible.

Removal and Debris

Once tree inspections have been performed and hazardous trees have been marked, tree crews will then begin their work. Trees will be felled with the debris remaining on site as per our Vegetation Management emergency operation practices. Numerous trees are being felled leaving behind a considerable amount of debris that can be difficult for any homeowner to manage. PG&E recognizes this and offers this assistance to customers.

When Planning to Rebuild and Replant

PG&E's Vegetation Management Department has a variety of useful brochures for guidance in landscaping near power lines and vegetation consideration when rebuilding that can be requested through RightTreeRightPlace@pge.com or by calling 1-800-743-5000. Other tree selection and fire-safe landscaping resources are available at www.selecttree.calpoly.edu and www.ca.fire.gov.

This is a difficult time for our customers and we understand the additional burden our work creates. However, safety is our primary concern, and we want to minimize the risk that a dead or dying tree will fall into our power lines and start another devastating fire.

Should you wish to speak with a PG&E Vegetation Management Representative, please contact



**Pacific Gas and
Electric Company**

Contact # _____

Rev. 3-2014

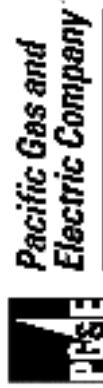
Emergency Work Notice

Caution: Falling Trees

Due to the recent fire in this area, numerous trees are dead and dying and pose serious concerns for public safety and electric power lines.

Pacific Gas and Electric Company, contract inspectors and tree crews are assessing trees and performing emergency tree felling to remove hazards. Tree crews will be working in the area until the immediate hazards have been removed.

If you have questions regarding our work or your trees, please contact our Vegetation Management Staff at:

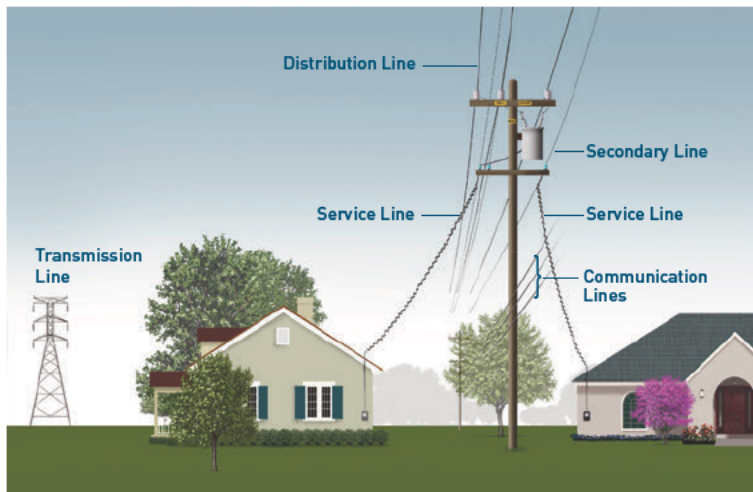


Contact # _____

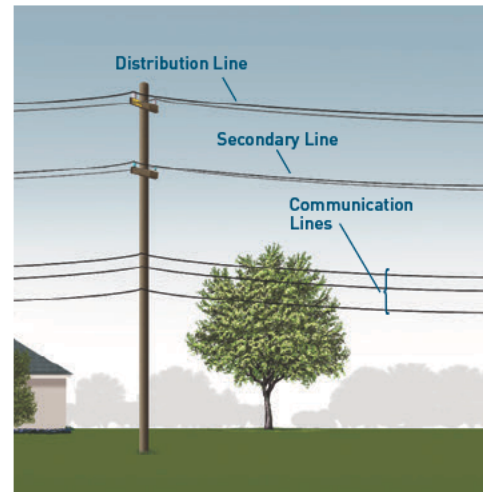
Rev. 3-2014



Know Your Overhead Lines



Electric and communication lines



PG&E is not responsible for communication lines.

Communication lines

Communication lines, such as telephone and cable TV, are the lowest lines on the pole. They are typically black and thicker than any other lines. In most areas, PG&E does not own or conduct maintenance on communication wires. Contact your phone service provider for concerns with communication lines.

Service drops

Service drops extend from the electric distribution transformer or secondary line to homes or businesses. California Public Utility Commission (CPUC) Electric Service Rules require customers to maintain a clear route, free of hazards for the electric service wire from the pole to the service delivery point.

Secondary lines

Secondary lines are positioned above communication lines and below the highest voltage distribution lines. Typically these secondary lines carry 240 volts of electricity to homes and businesses. PG&E performs vegetation clearance on these lines when strain and abrasion are evident, per CPUC General Order 95 (CPUC) requirements.

Distribution lines

Distribution lines deliver electricity to neighborhoods and are generally supported by wooden poles. The voltage of these lines generally ranges from four thousand volts to 21 thousand volts. Under CPUC GO 95, these lines require year-round clearance of a minimum of 18 inches, with lines in some rural areas requiring up to four feet of clearance. PG&E utilizes directional pruning techniques to maintain customer trees to these requirements. Removal can be a preferred option for tall or fast growing species.

Transmission lines

Transmission lines transport bulk electricity at high voltages ranging from 60 thousand volts to 500 thousand volts. These lines are generally supported on tall metal towers, but may also be located on wooden poles. Federal requirements require clearances around transmission lines to prevent outages caused by encroachment by trees and other vegetation. Our goal is to achieve a sustainable landscape that supports native plants and natural habitats. Trees near these lines are difficult to effectively manage by continued pruning, and often must be removed.

During the performance of Vegetation Management (VM) activities, the following Best Management Practices (BMPs) must be implemented where practicable. BMPs are considered practicable where physically possible and not conflicting with other regulatory obligations or safety considerations (GO 95, Rule 35 and Public Resource Codes 4292 and 4293) or emergency response situations. These BMPs are designed to ensure that PG&E VM activities are performed in an environmentally sensitive manner to minimize environmental impacts.

General BMPs for all VM activities

BMP #	Best Management Practice
BMP 1	VM employees and contractors must conduct ongoing training of environmental laws and procedures. VM employees and Contractors performing vegetation management activities must comply with these laws and procedures to minimize or avoid effects on natural resources during work activities.
BMP 2	On federal, state, local and tribal agency land the land managers should be notified of pending work as far in advance as possible.
BMP 3	Roads, erosion control measures, fences, and structures damaged as a result of vegetation management operations must be repaired and reported to the work group supervisor and the VM PG&E Representative. Gates must be left as they are found.
BMP 4	Vehicles and equipment must use pavement, existing roads, and previously disturbed areas to the extent practicable.
BMP 5	Motorized equipment must comply with Air Resources Board permitting requirements.
BMP 6	Vehicle idling, noise, and odor must be minimized to the extent practicable when working near residences, public buildings, or commercial buildings. Within 100 feet of school facilities work vehicle must not stand idling for more than five minutes, unless necessary for work purposes. Diesel-fueled work vehicles must not stand idling for more than five minutes at any location, unless necessary for work purposes.
BMP 7	Contractors must have the ability to communicate quickly with their supervisor and/or PG&E by having a working cell phone or radio on the job site at all times, or by identifying the closest area of cell phone reception or closest public phone and familiarizing all employees with that location.

Water Quality/Sediment Control BMPs

BMP #	Best Management Practice
BMP 8	Vehicles and heavy equipment must be refueled at least 100 feet away from riparian areas. Handheld tools must be refueled outside of riparian areas. The fueling operator must stay with the fueling operation at all times. Do not top off tanks.
BMP 9	Petroleum and herbicide spill containment and cleanup materials must be available at the job site. Spills must be immediately cleaned up and contaminated materials disposed of properly. Spills greater than 8 oz. on soil or spills that create sheen on the water must be reported immediately to the supervisor and the VM PG&E Representative for appropriate management.
BMP10	Immediately after vegetation management activities, if the amount of contiguous, bare soil exposed in one location exceeds 0.1 Acres, erosion control measures must be implemented. These measures may include lop & scatter, broadcasting chipped material or compliance with other PG&E Erosion control measures.
BMP 11	Vehicle use within riparian areas is limited to existing roads and dry crossings, and they must be checked and maintained daily to prevent leaks of materials that, if introduced to water, could be harmful to aquatic life.
BMP 12	Cleared or pruned vegetation and woody debris (including chips) must be disposed of in a manner to ensure that it does not enter surface water or a watercourse. All cleared vegetation and woody debris (including chips) must be removed from surface water or watercourses, and placed or secured where it cannot re-enter the watercourse.

Environmental/Biological BMPs

BMP #	Best Management Practice
BMP 13	Vehicles should not exceed 15 mph on un-surfaced roads such as agricultural field roads and transmission right-of-way (ROW) access roads.
BMP 14	Vehicles and heavy equipment must not be operated off roads within 25 feet of the edge of a vernal pool unless a biologist or natural resource professional evaluates and prescribes site specific AMMs.
BMP 15	VELB: VM activities in Valley Elderberry Longhorn Beetle (VELB) habitat must follow PG&E VELB Utility Standard ENV-7001S and VM VELB Procedures .
BMP 16	Migratory Birds: VM activities must follow the VM Migratory Bird Flowchart , to comply with the Migratory Bird Treaty Act.
BMP 17	Sudden Oak Death: VM activities in counties subject to the Sudden Oak Death quarantine must follow VM Sudden Oak Death Protocols .
BMP 18	Environmental screening for mowing locations, fee strip weed abatement, and for electric transmission ROW reclamation work must be conducted by the VM environmental group prior to work.
BMP 19	VM must verify that the environmental screening process for capital and other non-VM work was conducted by the work owner prior to VM starting vegetation management activities. VM personnel and contractors must implement the environmental protection measures prescribed for the work.
BMP 20	<p>Cultural Resources:</p> <p><i>Items identified through Patrols/Screenings:</i> When previously identified cultural resources are found (i.e., old bottles, cans, buildings), they must be left in place and undisturbed. If it is necessary to move or disturb them to complete the work, or if human remains are found, stop work and contact the VM PG&E Representative.</p> <p><i>Unanticipated Discovery:</i> If any new cultural resources (e.g., structure features, bone, shell, artifacts, or architectural remains) are encountered and site disturbance cannot be avoided during work activities, or if human remains are suspected:</p> <ul style="list-style-type: none"> ▪ Stop all work within 100 feet of the discovery ▪ Notify the VM PG&E representative who will contact the Cultural Resource Specialist ▪ Secure location, but do not touch or remove remains and associated artifacts; ▪ Do not remove associated spoils or pick through them; ▪ Note the location and document all calls and events; ▪ Keep the location confidential.
BMP 21	If a protected wildlife species is killed or injured as a result of current VM activities, the incident must be reported immediately to a supervisor and the VM PG&E Representative for appropriate management.
BMP 22	Disturbance or removal of non-target vegetation within a work area should not exceed the minimum necessary to complete operations, subject to other public, health and safety directives governing the safe operations and maintenance of electric and gas facilities.

Fire BMPs

BMP #	Best Management Practice
BMP 23	During designated Fire Season motorized equipment must have federal or state approved spark arrestors; all vehicles must be equipped with firefighting tools as appropriate and in accordance with all applicable laws, rules, regulations, orders, and ordinances. When the fire adjective rating is Very High or Extreme no vehicular travel is permitted off cleared roads except in case of emergency.
BMP 24	During designated Fire Season the contractor must check and follow the requirements of the daily Project Activity Level (PAL) when working on USFS or other required properties, or the Fire Adjective Index rating in hazardous fire areas and SRAs. These are measures of fire weather conditions and may restrict activities otherwise permitted.

BMP 25	<p>During designated Fire Season in grass and wildland areas:</p> <ul style="list-style-type: none"> • Smoking is not allowed while walking, working, or operating light or heavy equipment. • Smoking is allowed in a barren area, or within an area cleared to mineral soil at least three feet in diameter. <p>During Fire Adjective Index ratings of Very High or Extreme smoking is not allowed at any time in grass and wildland areas.</p>
BMP 26	Hunting, firearms, portable stoves, open fires (such as barbecues) not required by the VM activity, and pets (except for safety in remote locations) are prohibited in VM work activity sites. All trash, food items and human-generated debris must be properly contained and/or removed from the site.
BMP 27	Woody debris created by chipping, lop and scatter, or brush mowing operations must be left at an average depth of less than 18 inches from the ground surface unless otherwise specified in an easement or land owner agreement.

Herbicide BMPs

BMP #	Best Management Practice	
BMP 28	A Licensed Pest Control Advisor must write prescriptions for all herbicide and tree growth regulator applications. Contractors must use a Qualified Applicator when applying herbicides and tree growth regulators for VM.	
BMP 29	Nozzle tip, pressure and sprayer configuration should be such to produce a coarser droplet to minimize drift.	
BMP 30	Pesticides must not be transported in the same compartment with persons, food, or feed. Pesticide containers must be secured to the vehicle during transportation in a manner that will prevent spilling into or off the vehicle.	
BMP 31	Selective application techniques should be used for VM ROW maintenance operations wherever practicable so that desirable vegetation is not adversely affected.	
BMP 32	The contractor must have a written training program for employees who handle pesticides. The written program must describe the materials and the information that will be provided and used to train the employees.	
BMP 33	Training must be completed before an employee is allowed to handle any pesticide, and must be continually updated to cover any new pesticides that will be handled. Training must be repeated at least annually thereafter.	
BMP 34	<p>These special precautions must be observed during periods of inclement weather:</p> <ul style="list-style-type: none"> • Applications must not be made in, immediately prior to, or immediately following rain when runoff could be expected. • Applications must not be made when wind and/or fog conditions have the potential to cause drift. • Basal bark applications must not be made when stems are wet with rain, snow or ice. 	
BMP 35	Herbicide Buffer Width from Stream, Wetland, or Other Sensitive Habitat	Herbicide designation or usage
	No buffer requirement	Approved for aquatic use
	25 feet	Not approved for aquatic use
	200 feet	Mixing, Loading, Cleaning

Mechanical Clearing Operations BMPs

BMP #	Best Management Practice
BMP 36	Mechanical clearing equipment must not be used to clear vegetation within 10 feet of towers, poles or guy wires. Only handheld tools such as chainsaws and weed eaters may be used in these areas.
BMP 37	Contractor must flag guy wires 200 feet ahead of working an area, using bright colored flagging, and a minimum of three flags per wire.
BMP 38	During fire season contractor must have a water source containing a minimum of 300 gallons of water and 250 feet of 1-inch hose on site at all times during operation. The water source must either be self-propelled or always attached to a vehicle capable of moving it to where it is needed. Where access/terrain allows, contractor's water source must always be within 500 feet of the mowing/cutting operation. Excess water must be disposed of in accordance with all laws and regulations.
BMP 39	Mechanical clearing equipment must have at least one 5 lb. or more Class ABC fire extinguisher with current inspection tag mounted in the cab and accessible by the operator.
BMP 40	During fire season or High Fire Hazard levels contractor must stay on site for a minimum of ½ hour after mechanical clearing operations end for the day to ensure fire safety. During extreme fire levels an additional support person must be dedicated to follow the equipment with a water type back pump and fire line tool. During extreme fire levels mechanical clearing will be limited to the hours of 5:00 AM to 12:30 PM.
BMP 41	<p>Watercourse protection zones must be marked with brightly colored flagging prior to the start of any mechanical clearing or timber operation. Water classes are defined by the California Forest Practice Rules: 14 CCR 916.5. The following watercourse protection zone widths must be maintained at all times, except on existing roadways:</p> <ul style="list-style-type: none"> • Class I & II watercourses with a slope < 30%---No heavy equip. within 50' • Class I & II watercourses with a slope > 30%---No heavy equip. within 75' • Class III & IV watercourse ----- No heavy equip. within 25' <p>Protection zones may be increased in areas with steep slopes or highly erodible soils.</p>

Document Replaces: Vegetation Management *Best Management Practices to Reduce Environmental Impacts*, created 3/29/04 and revised 3/01/06, Version 2.

Document Contact: [REDACTED], Environmental Specialist, Vegetation Management

Manejo de la vegetación cercana a
líneas eléctricas
Fecha de entrada en vigencia:
04/01/2014 Ver: 3

TITLE IN SPANISH: Mejores Prácticas de Gestión

ENGLISH	SPANISH
During the performance of Vegetation Management (VM) activities the following Best Management Practices (BMPs) must be implemented where practicable. BMPs are considered practicable where physically possible and not conflicting with other regulatory obligations or safety considerations (GO 95 Rule 35 and Public Resource Codes 4292 and 4293) or emergency response situations. These BMPs are designed to ensure that PG&E VM activities are performed in an environmentally sensitive manner to minimize environmental impacts.	Durante la ejecución de actividades relativas al Manejo de Vegetación (Vegetation Management, VM, por sus siglas en inglés) las siguientes Mejores Prácticas de Gestión (Best Management Practices, BPM, por sus siglas en inglés) deberán ser implementadas donde sea factible. Las BMPs son consideradas factibles donde resulte físicamente posible realizarlas y donde no exista conflicto con otras regulaciones o consideraciones relativas a la seguridad (GO 95 Rule 35 and Public Resource Codes 4292 and 4293) o con situaciones de respuesta a emergencias. Estas BMPs están diseñadas para asegurar que las actividades de manejo de vegetación por parte de PG&E sean ejecutadas respetando el medio ambiente de manera de minimizar el impacto ambiental.

General BMPs for all VM activities

BMP's Generales para actividades de VM

BMP #	Mejores Prácticas de Gestión
BMP 1	<p>VM employees and contractors must conduct ongoing training of environmental laws and procedures. VM employees and Contractors performing vegetation management activities must comply with these laws and procedures to minimize or avoid effects on natural resources during work activities.</p> <p>Los empleados y contratistas dedicados al manejo de la vegetación deben recibir capacitación continua sobre las leyes y los procedimientos relativos al medio ambiente. Las actividades de estos empleados y contratistas deben ajustarse a estas leyes y procedimientos para que durante la ejecución de los trabajos se minimicen o se eviten efectos sobre los recursos naturales.</p>
BMP 2	<p>On federal, state, local and tribal agency land the land managers should be notified of pending work as far in advance as possible.</p> <p>Ya sea en tierras federales, estatales, locales o de agencias tribales, los responsables de la administración de las tierras deben ser notificados con la máxima anticipación posible.</p>
BMP 3	<p>Roads, erosion control measures, fences, and structures damaged as a result of vegetation management operations must be repaired and reported to the work group supervisor and the VM PG&E Representative. Gates must be left as they are found.</p> <p>Los daños en caminos, elementos para control de erosión, cercos y estructuras ocasionados durante operaciones de manejo de la vegetación, deben ser reparados y reportados al supervisor del grupo de trabajo y al Representante de PG&E a cargo de VM. Los portones deben quedar tal como se encontraron.</p>
BMP 4	<p>Vehicles and equipment must use pavement, existing roads, and previously disturbed areas to the extent practicable.</p> <p>En la medida de lo posible, los vehículos y equipos deben circular por el pavimento, caminos existentes y áreas que han sido utilizadas con anterioridad.</p>

BMP 5	<p>Motorized equipment must comply with Air Resources Board permitting requirements.</p> <p>Los equipos motorizados deben cumplir con los requerimientos del Air Resources Board.</p>
BMP 6	<p>Vehicle idling, noise, and odor must be minimized to the extent practicable when working near residences, public buildings, or commercial buildings. Within 100 feet of school facilities work vehicle must not stand idling for more than five minutes, unless necessary for work purposes. Diesel-fueled work vehicles must not stand idling for more than five minutes at any location, unless necessary for work purposes.</p> <p>En los vehículos operando con el motor al ralentí, los ruidos y los olores deben minimizarse al punto de lo prácticamente posible cuando estén trabajando cerca de áreas residenciales, de edificios públicos y de edificios comerciales. Dentro de un radio de cien pies de cercanía a escuelas, los vehículos no deben permanecer con el motor al ralentí por más de cinco minutos, salvo que sea necesario por cuestiones relativas al trabajo realizado. Los vehículos con motores diesel no deben permanecer al ralentí por más de cinco minutos en ningún lugar, salvo que sea necesario por cuestiones operativas.</p>
BMP 7	<p>Contractors must have the ability to communicate quickly with their supervisor and/or PG&E by having a working cell phone or radio on the job site at all times, or by identifying the closest area of cell phone reception or closest public phone and familiarizing all employees with that location.</p> <p>Los contratistas deben tener la posibilidad de poder comunicarse rápidamente con sus supervisores y/o con PG&E teniendo en el área de trabajo y en todo momento, un teléfono celular operativo o una radio; también deben identificar el área más cercana con buena recepción para teléfonos celulares o el teléfono público más próximo, y deben familiarizar a los empleados con dichas ubicaciones.</p>

Water Quality/Sediment Control BMPs

BMPs relativas a la Calidad del Agua y al Control de Sedimentos

BMP #	Mejores Prácticas de Gestión
BMP 8	<p>Vehicles and heavy equipment must be refueled at least 100 feet away from riparian areas. Handheld tools must be refueled outside of riparian areas. The fueling operator must stay with the fueling operation at all times. Do not top off tanks.</p> <p>Los vehículos y equipos pesados deben ser reabastecidos de combustible a una distancia mayor de 100 pies de áreas ribereñas. Las herramientas de mano deben ser reabastecidas de combustible fuera de áreas ribereñas. El operador de reabastecimiento de combustible debe permanecer en el área de reabastecimiento en forma permanente. No llene a tope los tanques de combustible.</p>
BMP 9	<p>Petroleum and herbicide spill containment and cleanup materials must be available at the job site. Spills must be immediately cleaned up and contaminated materials disposed of properly. Spills greater than 8 oz. on soil or spills that create sheen on the water must be reported immediately to the supervisor and the VM PG&E Representative for appropriate management.</p> <p>Materiales de limpieza específicos para derrames de petróleo y de herbicidas deben estar disponibles en el área de trabajo. Los derrames deben limpiarse en forma inmediata y los materiales contaminados deben ser desechados de la forma apropiada. Los derrames de más de 8 onzas sobre suelos o los derrames sobre agua que formen una superficie brillante, deben ser reportados inmediatamente al supervisor y al representante de PG&E encargado de VM, para que los mismos sean tratados apropiadamente.</p>
BMP10	Immediately after vegetation management activities, if the amount of contiguous, bare soil exposed in

	<p>one location exceeds 0.1 Acres, erosion control measures must be implemented. These measures may include lop & scatter, broadcasting chipped material or compliance with other PG&E Erosion control measures.</p> <p>Si inmediatamente después de un trabajo de control de vegetación, la cantidad contigua de suelo expuesto superase los 0.1 acres, se deben implementar medidas de control de erosión. Estas medidas podrían incluir "lop & scatter" (poda selectiva y esparsión de residuos), dispersión de material astillado o alguna otra medida de control de erosión aprobada por PG&E.</p>
BMP 11	<p>Vehicle use within riparian areas is limited to existing roads and dry crossings, and they must be checked and maintained daily to prevent leaks of materials that, if introduced to water, could be harmful to aquatic life.</p> <p>El uso de vehículos dentro de áreas ribereñas está limitado a caminos existentes y cruces secos; éstos deben ser controlados y mantenidos diariamente para prevenir eventuales pérdidas de materiales en el agua, que podrían causar riesgo a la vida acuática.</p>
BMP 12	<p>Cleared or pruned vegetation and woody debris (including chips) must be disposed of in a manner to ensure that it does not enter surface water or a watercourse. All cleared vegetation and woody debris (including chips) must be removed from surface water or watercourses, and placed or secured where it cannot re-enter the watercourse.</p> <p>Los restos de vegetación podada y los restos de madera (incluyendo trozos pequeños) deben ser eliminados de manera que no lleguen a la superficie del agua o que no entren en un curso de agua. Todo resto de vegetación podada y de madera (incluyendo trozos pequeños) debe ser removida de la superficie del agua o de cursos de agua y se los debe ubicar o confinar en lugares seguros donde no tengan la oportunidad de volver a entrar al curso de agua.</p>

Environmental/Biological BMPs

BMP's relativas al Medio Ambiente y a la Biología

BMP #	Mejores Prácticas de Gestión
BMP 13	<p>Vehicles should not exceed 15 mph on un-surfaced roads such as agricultural field roads and transmission right-of-way (ROW) access roads.</p> <p>Los vehículos no deben exceder las 15 millas por hora en caminos no asfaltados tales como caminos en campos de agricultura y caminos con derecho a paso de acceso a líneas de transmisión (right-of-way, ROW por sus siglas en inglés).</p>
BMP 14	<p>Vehicles and heavy equipment must not be operated off roads within 25 feet of the edge of a vernal pool unless a biologist or natural resource professional evaluates and prescribes site specific AMMs.</p> <p>Los vehículos y equipos pesados no deben ser operados fuera de rutas dentro de un radio de 25 pies del borde de un charco vernal, a menos que un biólogo o un profesional en recursos naturales evalúe y prescriba AMMs específicas para el lugar.</p>
BMP 15	<p>VELB: VM activities in Valley Elderberry Longhorn Beetle (VELB) habitat must follow PG&E VELB Utility Standard ENV-7001S and <u>VM VELB Procedures</u>.</p> <p>VELB: las actividades relativas al manejo de la vegetación en el hábitat del escarabajo de cuerno largo del Valley Elderberry (Valley Elderberry Longhorn Beetle ,VELB, por sus siglas en inglés) deben seguir los estándares de PG&E VELB Utility Standard ENV-7001S y los <u>procedimientos VM VELB</u>.</p>

BMP 16	<p>Migratory Birds: VM activities must follow the <u>VM Migratory Bird Flowchart</u>, to comply with the Migratory Bird Treaty Act.</p> <p>Pájaros Migratorios: las actividades relativas al manejo de la vegetación deben seguir el <u>Diagrama de Flujo VM para Aves Migratorias (VM Migratory Bird Flowchart)</u>, para cumplir con el Acta de Tratamiento de Aves Migratorias.</p>
BMP 17	<p>Sudden Oak Death: VM activities in counties subject to the Sudden Oak Death quarantine must follow <u>VM Sudden Oak Death Protocols</u>.</p> <p>Muerte Súbita del Roble: las actividades relativas al manejo de la vegetación en condados sujetos a cuarentena por Muerte Súbita del Roble deben seguir los <u>Protocolos VM para Muerte Súbita del Roble (VM Sudden Oak Death Protocols)</u></p>
BMP 18	<p>Environmental screening for mowing locations, fee strip weed abatement, and for electric transmission ROW reclamation work must be conducted by the VM environmental group prior to work.</p> <p>Los controles ambientales para zonas de segado, de control de maleza y para trabajos de restauración en zonas con derecho a paso en líneas de transmisión eléctricas (ROW), deben ser realizados por el grupo ambiental VM antes de iniciar el trabajo.</p>
BMP 19	<p>VM must verify that the environmental screening process for capital and other non-VM work was conducted by the work owner prior to VM starting vegetation management activities. VM personnel and contractors must implement the environmental protection measures prescribed for the work.</p> <p>Antes de comenzar tareas de manejo de vegetación, VM debe verificar que el proceso de control ambiental para trabajos primordiales y otros no relacionados al control de vegetación, fue realizado por el dueño de la obra. El personal de VM y los contratistas deben implementar las medidas de protección ambiental recomendadas para la obra.</p>
BMP 20	<p>Cultural Resources:</p> <p><i>Items identified through Patrols/Screenings:</i> When previously identified cultural resources are found (i.e., old bottles, cans, buildings), they must be left in place and undisturbed. If it is necessary to move or disturb them to complete the work, or if human remains are found, stop work and contact the VM PG&E Representative.</p> <p><i>Unanticipated Discovery:</i> If any new cultural resources (e.g., structure features, bone, shell, artifacts, or architectural remains) are encountered and site disturbance cannot be avoided during work activities, or if human remains are suspected:</p> <ul style="list-style-type: none"> ▪ Stop all work within 100 feet of the discovery ▪ Notify the VM PG&E representative who will contact the Cultural Resource Specialist ▪ Secure location, but do not touch or remove remains and associated artifacts; ▪ Do not remove associated spoils or pick through them; ▪ Note the location and document all calls and events; ▪ Keep the location confidential. <p>Recursos Culturales:</p> <p><i>Elementos identificados a través de Patrullajes/Controles:</i> cuando se encuentren recursos culturales previamente identificados (por ejemplo botellas viejas, latas, edificaciones), se deben dejar en el lugar tal como se los encontraron. Si es necesario moverlos o alterarlos para completar el trabajo, o si restos humanos son encontrados, detenga el trabajo y contacte un Representante VM de PG&E.</p> <p><i>Descubrimiento No Anticipado:</i> Si cualquier recurso cultural nuevo (por ejemplo restos de estructuras, huesos, conchas, artefactos o ruinas arquitectónicas) son descubiertos y la alteración del lugar no puede ser evitada durante el trabajo o ante la sospecha de presencia de restos humanos:</p> <ul style="list-style-type: none"> • Detenga todo trabajo dentro de un radio de 100 pies del descubrimiento

	<ul style="list-style-type: none"> • Notifique al representante VM de PG&E quien contactará al especialista en recursos culturales • Proteja el área, pero no toque o remueva los restos o artefactos asociados; • No remueva el hallazgo ni lo revise; • Anote la ubicación y documente todas las llamadas y eventos; • Mantenga la ubicación confidencial
BMP 21	<p>If a protected wildlife species is killed or injured as a result of current VM activities, the incident must be reported immediately to a supervisor and the VM PG&E Representative for appropriate management.</p> <p>Si alguna especie protegida de vida salvaje es muerta o herida como resultado de alguna actividad VM, el incidente debe ser reportado en forma inmediata a un supervisor y al Representante VM de PG&E para que sea manejado apropiadamente.</p>
BMP 22	<p>Disturbance or removal of non-target vegetation within a work area should not exceed the minimum necessary to complete operations, subject to other public, health and safety directives governing the safe operations and maintenance of electric and gas facilities.</p> <p>La perturbación o remoción de vegetación que no sea el objetivo de trabajo debe ser la mínima necesaria que permita completar las operaciones. Debe estar sujeta a directivas públicas, de salud y de seguridad que rijan operaciones y mantenimiento de plantas eléctricas y de gas.</p>

Fire BMPs

BMP's relativas a Incendios

BMP #	Mejores Prácticas de Gestión
BMP 23	<p>During designated Fire Season motorized equipment must have federal or state approved spark arrestors; all vehicles must be equipped with firefighting tools as appropriate and in accordance with all applicable laws, rules, regulations, orders, and ordinances. When the fire adjective rating is Very High or Extreme no vehicular travel is permitted off cleared roads except in case of emergency.</p> <p>Durante la Temporada de Incendios los equipos motorizados deben contar con sistemas de contención de chispas aprobados por el estado o por el gobierno federal; todos los vehículos deben contar con equipos extinguidores de fuego para la situación apropiada, debiendo cumplir los mismos con todas las leyes, regulaciones, reglas, órdenes y ordenanzas que les corresponda aplicar. Cuando el riesgo de incendio está en el nivel Muy Alto o Extremo, no se permite ninguna circulación vehicular fuera de los caminos habilitados excepto en casos de emergencia.</p>
BMP 24	<p>During designated Fire Season the contractor must check and follow the requirements of the daily Project Activity Level (PAL) when working on USFS or other required properties, or the Fire Adjective Index rating in hazardous fire areas and SRAs. These are measures of fire weather conditions and may restrict activities otherwise permitted.</p> <p>Durante la Temporada de Incendios el contratista debe verificar y seguir los requerimientos del Nivel diario de Actividad del Proyecto (Project Activity Level, PAL, por sus siglas en inglés) cuando esté trabajando en USFS u otras propiedades o debe seguir el Índice de Calificación de Riesgo de Incendio en áreas de alto riesgo y áreas de responsabilidad del estado (SRA, por sus siglas en inglés). Estas son medidas de condiciones de clima relativas a riesgo de incendios que podrían restringir actividades que normalmente serían permitidas.</p>

BMP 25	<p>During designated Fire Season in grass and wildland areas:</p> <ul style="list-style-type: none"> • Smoking is not allowed while walking, working, or operating light or heavy equipment. • Smoking is allowed in a barren area, or within an area cleared to mineral soil at least three feet in diameter. <p>During Fire Adjective Index ratings of Very High or Extreme smoking is not allowed at any time in grass and wildland areas.</p> <p>Durante la Temporada de Incendios en áreas con pasto y terrenos vírgenes:</p> <ul style="list-style-type: none"> • No está permitido fumar mientras se camina, trabaja u opera equipo liviano o pesado. • Fumar está permitido en áreas yermas o dentro de un área de por lo menos 3 pies de diámetro donde se ha removido vegetación hasta dejar solo suelo mineral. <p>Cuando el Índice de Calificación de Riesgo de Incendios es Muy Alto o Extremo no está permitido fumar en ningún momento en áreas con pasto o en terrenos vírgenes.</p>
BMP 26	<p>Hunting, firearms, portable stoves, open fires (such as barbecues) not required by the VM activity, and pets (except for safety in remote locations) are prohibited in VM work activity sites. All trash, food items and human-generated debris must be properly contained and/or removed from the site.</p> <p>En áreas de trabajo de manejo de la vegetación, está prohibido cazar, usar armas de fuego, utilizar cocinas portátiles, realizar fuegos abiertos si no lo requiriese la actividad VM (barbacoas por ejemplo). También están prohibidos los animales domésticos, excepto que sean requeridos por razones de seguridad en ubicaciones remotas.</p>
BMP 27	<p>Woody debris created by chipping, lop and scatter, or brush mowing operations must be left at an average depth of less than 18 inches from the ground surface unless otherwise specified in an easement or land owner agreement.</p> <p>Los restos de madera originados por triturado, por "lop & scatter" (poda selectiva y dispersión de residuos), o por operaciones de segado de arbustos deben ser dejados a una profundidad promedio de menos de 18 pulgadas de la superficie del suelo, excepto que se especifique de otra forma a través de una servidumbre o de un acuerdo con el dueño de la propiedad.</p>

Herbicide BMPs

BMP's relativas a Herbicidas

BMP #	Mejores Prácticas de Gestión
BMP 28	<p>A Licensed Pest Control Advisor must write prescriptions for all herbicide and tree growth regulator applications. Contractors must use a Qualified Applicator when applying herbicides and tree growth regulators for VM.</p> <p>Todas las aplicaciones de herbicidas y reguladores del crecimiento de árboles deben ser prescriptas por un asesor Licenciado en Control de Pestes. Los contratistas deben usar un Aplicador Calificado cuando se apliquen herbicidas y reguladores de crecimientos de árboles, como parte de actividades VM.</p>
BMP 29	<p>Nozzle tip, pressure and sprayer configuration should be such to produce a coarser droplet to minimize drift.</p> <p>La punta de la boquilla, la configuración del rociador y su presión deben ser tal que produzcan gotas de un tamaño suficientemente grande que minimicen el rocío a la deriva.</p>
BMP 30	<p>Pesticides must not be transported in the same compartment with persons, food, or feed. Pesticide</p>

	<p>containers must be secured to the vehicle during transportation in a manner that will prevent spilling into or off the vehicle.</p> <p>Los pesticidas no deben ser transportados en el mismo compartimento que personas, comida o alimento para ganado. Durante su transporte, los contenedores de pesticidas deben estar firmemente sujetos al vehículo para prevenir derrames dentro o fuera del vehículo.</p>	
BMP 31	<p>Selective application techniques should be used for VM ROW maintenance operations wherever practicable so that desirable vegetation is not adversely affected.</p> <p>Cuando sea posible, técnicas de aplicación selectivas deberían ser utilizadas en operaciones de mantenimiento VM en caminos con derecho a paso (ROW) de forma tal que la vegetación deseada no sea adversamente afectada.</p>	
BMP 32	<p>The contractor must have a written training program for employees who handle pesticides. The written program must describe the materials and the information that will be provided and used to train the employees.</p> <p>EL contratista debe tener un programa de entrenamiento escrito para empleados acerca de cómo manipular pesticidas. El programa escrito debe describir los materiales y la información que será provista y utilizada para entrenar a los empleados.</p>	
BMP 33	<p>Training must be completed before an employee is allowed to handle any pesticide, and must be continually updated to cover any new pesticides that will be handled. Training must be repeated at least annually thereafter.</p> <p>El entrenamiento debe ser finalizado antes de que un empleado sea autorizado a la manipulación de pesticidas y se debe actualizar en forma continua para cubrir cualquier pesticida nuevo a ser utilizado. Se debe repetir el entrenamiento al menos una vez al año.</p>	
BMP 34	<p>These special precautions must be observed during periods of inclement weather:</p> <ul style="list-style-type: none"> • Applications must not be made in, immediately prior to, or immediately following rain when runoff could be expected. • Applications must not be made when wind and/or fog conditions have the potential to cause drift. • Basal bark applications must not be made when stems are wet with rain, snow or ice. <p>Las siguientes precauciones especiales deben ser tenidas en cuenta durante los periodos de clima riguroso:</p> <ul style="list-style-type: none"> • Las aplicaciones no deben realizarse durante lluvias, o inmediatamente antes o inmediatamente después de las mismas, cuando escorrentías pueden esperarse. • Las aplicaciones no deben realizarse si las condiciones de viento o de niebla pudieran causar que el rocío quede a la deriva. • Las aplicaciones de corteza basal no deben realizarse cuando los tallos están húmedos por lluvia, nieve o hielo. 	
BMP 35	Herbicide Buffer Width from Stream, Wetland, or Other Sensitive Habitat Ancho de la zona de protección desde arroyos, pantanos u otros hábitats sensibles	Herbicide designation or usage Uso o designación del herbicida
	No buffer requirement No se requiere zona de protección	Approved for aquatic use Aprobado para uso acuático
	25 feet 25 pies	Not approved for aquatic use No aprobado para uso acuático
	200 feet	Mixing, Loading, Cleaning

	200 pies	Mezclado, Carga, Limpieza
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Mechanical Clearing Operations BMPs

BMP's relativas a Operaciones de Remoción Mecánica

BMP #	Mejores Prácticas de Gestión
BMP 36	<p>Mechanical clearing equipment must not be used to clear vegetation within 10 feet of towers, poles or guy wires. Only handheld tools such as chainsaws and weed eaters may be used in these areas.</p> <p>No se debe usar equipos mecánicos de remoción de vegetación dentro de un radio de 10 pies de torres, de postes o de cables de amarre. Solo herramientas de mano como sierras a cadena y cortador de malezas, pueden ser utilizadas en estas áreas.</p>
BMP 37	<p>Contractor must flag guy wires 200 feet ahead of working an area, using bright colored flagging, and a minimum of three flags per wire.</p> <p>El contratista debe señalizar los cables de amarre a 200 pies por delante del área de trabajo, usando señales de colores vivos, con un mínimo de tres señales por cable.</p>
BMP 38	<p>During fire season contractor must have a water source containing a minimum of 300 gallons of water and 250 feet of 1-inch hose on site at all times during operation. The water source must either be self-propelled or always attached to a vehicle capable of moving it to where it is needed. Where access/terrain allows, contractor's water source must always be within 500 feet of the mowing/cutting operation. Excess water must be disposed of in accordance with all laws and regulations.</p> <p>Durante la temporada de incendio el contratista debe tener en el lugar de trabajo y en todo momento, una reserva de agua de por lo menos 300 galones y una manguera de 250 pies de longitud por 1 pulgada de diámetro. La fuente de agua debe poseer motorización propia o estar siempre acoplada a un vehículo capaz de trasladarse a donde sea necesario. Donde el acceso/terreno lo permita, la fuente de agua del contratista debe estar siempre dentro de un radio de 500 pies de la operación de siega/tala. El exceso de agua debe ser desechado de acuerdo a todas las leyes y regulaciones vigentes.</p>
BMP 39	<p>Mechanical clearing equipment must have at least one 5 lb. or more Class ABC fire extinguisher with current inspection tag mounted in the cab and accessible by the operator.</p> <p>Los equipos de remoción mecánicos deben tener al menos un extintor de fuego Clase ABC de 5 libras o más con su correspondiente tarjeta de inspección vigente, y debe estar montado en la cabina de forma accesible al operador.</p>
BMP 40	<p>During fire season or High Fire Hazard levels contractor must stay on site for a minimum of ½ hour after mechanical clearing operations end for the day to ensure fire safety. During extreme fire levels an additional support person must be dedicated to follow the equipment with a water type back pump and fire line tool. During extreme fire levels mechanical clearing will be limited to the hours of 5:00 AM to 12:30 PM.</p> <p>Durante la temporada de incendios o de niveles de Peligro Alto de Incendio, el contratista debe permanecer en el lugar de trabajo por lo menos durante media hora después de haber efectuado la</p>

	<p>última operación de remoción mecánica del día para asegurarse que no existan riesgos de incendio. Cuando se alcancen niveles extremos de riesgo de incendio una persona de soporte adicional debe ser asignada para que siga a los equipos con una de bomba de agua tipo mochila y con herramientas para contención de fuego. Durante niveles de riesgo de incendio extremos, las operaciones de remoción deben limitarse al horario de 5:00 AM a 12:30 PM</p>
BMP 41	<p>Watercourse protection zones must be marked with brightly colored flagging prior to the start of any mechanical clearing or timber operation. Water classes are defined by the California Forest Practice Rules: 14 CCR 916.5. The following watercourse protection zone widths must be maintained at all times, except on existing roadways:</p> <ul style="list-style-type: none"> • Class I & II watercourses with a slope < 30%---No heavy equip. within 50' • Class I & II watercourses with a slope > 30%---No heavy equip. within 75' • Class III & IV watercourse ----- No heavy equip. within 25' <p>Protection zones may be increased in areas with steep slopes or highly erodible soils.</p> <p>Las zonas de protección de cursos de agua deben ser marcadas con señales de colores vivos previo al comienzo de cualquier operación de remoción mecánica y de talado. Los cursos de agua están definidos por el reglamento 14 CCR 916.5 de las Prácticas Forestales de California. Se deberán mantener en todo momento las siguientes dimensiones de zona de protección a cursos de agua:</p> <ul style="list-style-type: none"> • Cursos de agua clase I y II con una pendiente <30% ---Sin equipo pesado, dentro de 50 pies • Cursos de agua clase I y II con una pendiente >30% ---Sin equipo pesado, dentro de 75 pies • Cursos de agua clase III y IV-----Sin equipo pesado, dentro de 25 pies <p>Las zonas de protección deben ser incrementadas en áreas con pendientes mayores o con suelos altamente erosionables.</p>

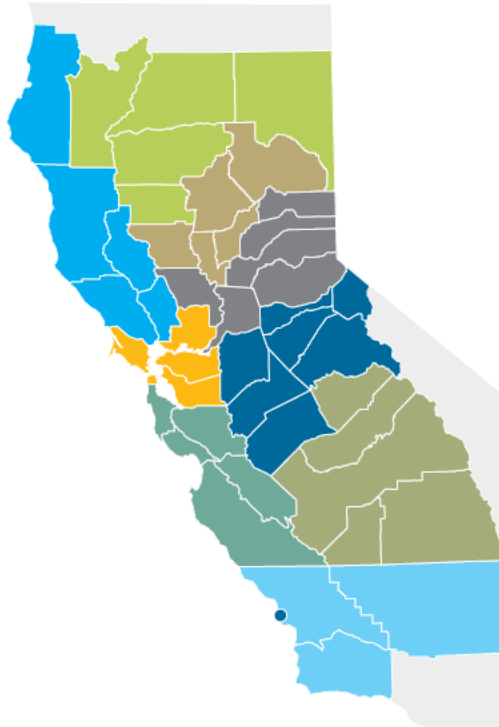
Document Replaces: Vegetation Management *Best Management Practices to Reduce Environmental Impacts*, created 3/29/04 and revised 3/01/06, Version 2.

Este Documento Reemplaza: *Mejores Prácticas de Gestión para Reducir Impactos Ambientales*, creado el 3/29/04 y revisado el 3/01/06, Versión 2.

Document Contact: [REDACTED], Environmental Specialist, Vegetation Management

Contacto relativo a este documento: [REDACTED], Environmental Specialist, Vegetation Management

Cultural resource contacts



NORTH VALLEY/CASCADES

CENTRAL SIERRA/VALLEY

Best management practices

- Observe all work exclusion zones as indicated by flagging, "environmentally sensitive area" signage or depicted on project maps.
- Limit ground disturbance to the greatest extent feasible.
- Be respectful of Native American and archaeological monitors who may be observing work within culturally sensitive areas.
- Comply with requests from archaeological monitors to temporarily stop work.
- Contact a PG&E Cultural Resource Specialist if work stoppages last more than one hour.

Relevant laws

Public Resources Code

5097.99: Removal or possession of any Native American artifacts or human remains from a grave or cairn is a felony unless otherwise permitted by law.

5097.993-5097.994: Unlawful and malicious excavation, removal or destruction of Native American archaeological or historic sites is a misdemeanor punishable by up to a \$10,000 fine, imprisonment or both. Violators may be subject to a civil penalty up to \$50,000 for each violation.

CA Health and Safety Code

7050.5: Following discovery of human remains there shall be no further excavation or disturbance of the site or areas reasonably suspected to overlie adjacent remains until approved by the responsible authorities.

Penal Code

622: Willful injury, disfiguration, defacement, or destruction of any archaeological or historical site, by a person other than the landowner, is a misdemeanor.

Federal

16 U.S.C. 470aa-470mm, Archaeological Resources Protection Act: willful or intentional damage to archaeological sites or objects on federal land is a felony punishable by fine (up to \$100,000), imprisonment or both.

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Cultural Resources: awareness and response



Together, Building
a Better California



Early 20th century artifacts.



Juvenile deer bone.

Discovery of a cultural resource

If a discovery is made:

- **Stop all ground disturbing work** within 100 feet of the discovery location to avoid impacts.
- **Immediately notify** a PG&E Cultural Resource Specialist who will assess the discovery.
- Leave the site or the artifact **untouched**.
- **Record** the location of the resource, the circumstances that led to discovery, and the condition of the resource.
- **Do not publicly reveal** the location of the resource and ensure the location is secured.

If unsure about the significance or antiquity of a discovery, photograph the artifact or feature with a scale (e.g., coin, tape measure, etc.) and send to a PG&E Cultural Resource Specialist for review.

Comprehensive guidance on the protocol related to an inadvertent discovery of potentially significant cultural resources on a job-site can be found in Utility Standard ENV-8005S or by consulting a PG&E Cultural Resource Specialist.



Artifacts reflecting the span of human occupation of California.



Discovery of human remains

Encountering confirmed or suspected human remains requires **immediate action**.

- **Stop all ground disturbing work** within 100 feet of the discovery location to avoid additional impacts.
- **Immediately notify** a PG&E Cultural Resource Specialist who will initiate the legally-mandated notification and response protocol.
- Treat the discovery location as a **potential crime scene** and secure with plates, fencing, etc. to ensure no subsequent damage occurs.
- **Treat the remains with respect** and do not handle, alter or remove bones from the discovery location.
- **Keep excavated spoils** on-site.
- **Do not publicly reveal** the location of the remains.
- **Keep a log** of all calls and events related to discovery.

It can be difficult to distinguish human remains; if unsure, photograph bone(s) with a scale and send to a PG&E Cultural Resource Specialist. Treat the photograph(s) as confidential and do not distribute beyond those with an absolute "need to know."



Mission-period glass bead.

Defining cultural resources

Cultural resources are found in a variety of forms and locations. The significance of such resources is dependent upon their age (typically at least 50 years old), content and association. Cultural resources with the potential to occur within a PG&E worksite include:

Prehistoric archaeological materials: flaked stone tools (arrowheads, stone knives, etc.) and stone waste flakes made of chert, obsidian, etc., bedrock milling features, groundstone tools, animal bones, culturally-modified soil (midden), and human burials.

Historic-era archaeological resources: burial plots, cut (square) nails, glass bottles or containers, glass fragments, cans with soldered seams or tops, ceramic or stoneware objects, miscellaneous hardware, milled or split lumber, earthworks, feature or structure remains (e.g., foundations) and refuse scatters.

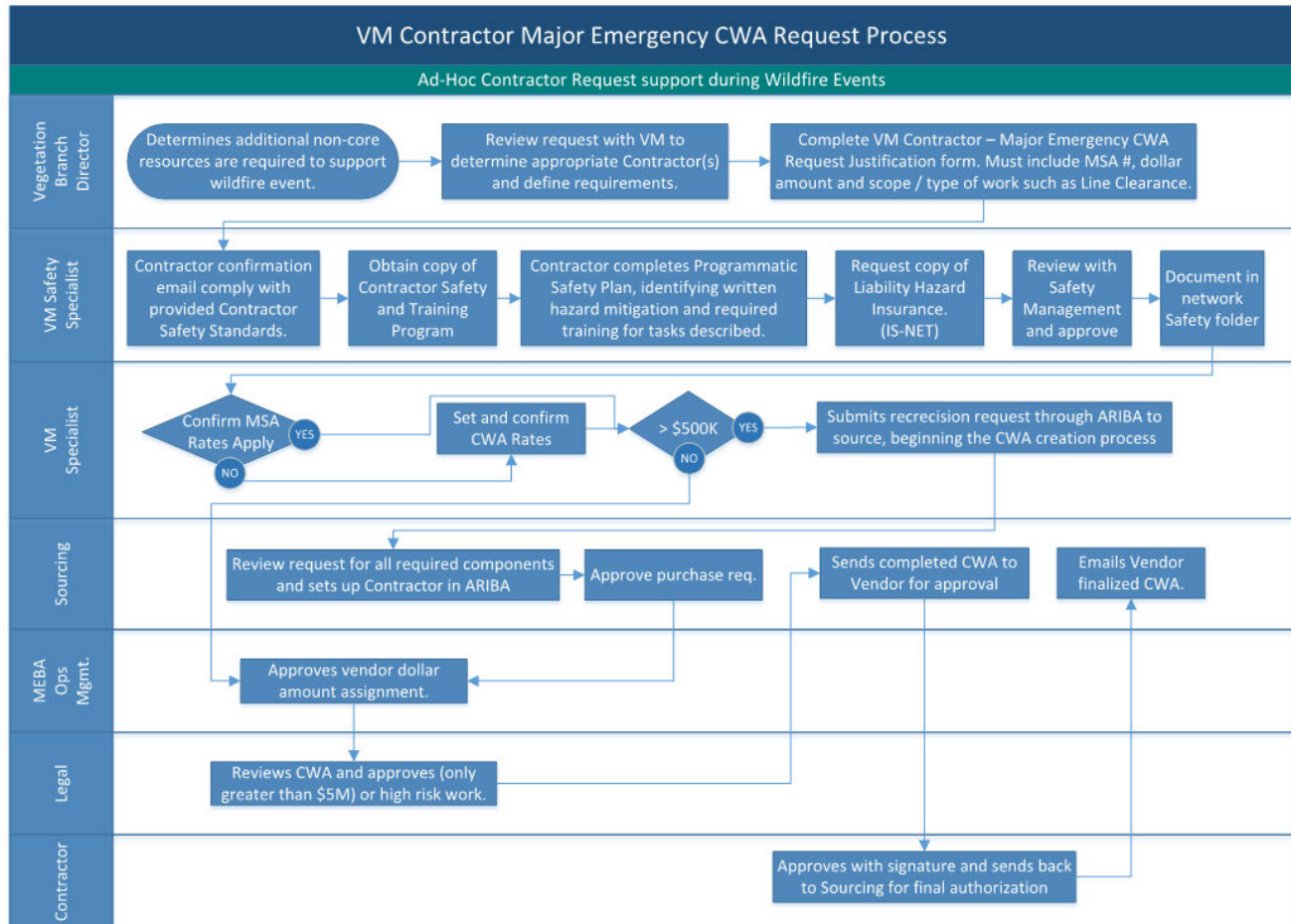
Historic built-environment resources: standing structures, railroad grades, rock walls and stonework, dams, powerhouses, bridges, canals, flumes and some electric transmission lines.

Tribal Cultural Resources and Traditional Cultural Properties: special places associated with the activities or beliefs of a living community.

Keep in mind that not everything that is old is important or significant; however, be sure to defer to an expert.

VM Tree Crew Charging Guidelines

Grouping	Program	MWC	Activity	Additional Information
Standard Operations	Vegetation Program	HN	Priority Vegetation Tag, Tree Crew call-out for: 1. Secondary strain and abrasion 2. Tree in contact with primary 3. Imminent threat of tree/branch failure 4. Arcing 5. Public safety issue	Strain: Tension causing an abnormal deflection of the span Abrasion: Damage to the conductor. Doesn't include polishing / scuffing of insulation.
NO Outages	Vegetation Program	HN	M&C crew call-out for safety reasons to facilitate Vegetation Compliance work: 1. Clearance, Line Drop or Grounding	Local VPMs provide order numbers for M&C Labor charges
No OEC Activation	M&C Maintenance	KA/KB 2A/2B	Incidental tree work, Tree Crew call-out for: 1. Service drops 2. Non-compliance secondary 3. Brush disposal 4. Climbing/access space 5. UG substructure clearing	Majority of tree work is Expense OH related. Assure appropriate Expense / Capital and OH / UG orders. M&C Clerk creates PO for Tree Crew Contractor
ED Routine Emergency Restoration < 24 Hrs. No OEC Activations	Vegetation Program	HN	Level 1 Outage Event, Tree Crew call-out for: 1. Facilitate restoration activities	Tree Crews charge assigned local Veg Routine Emergency order
	Routine Emergency	BH/17	Level 1 Outage Event, Tree Crew call-out for: 1. Facilitate restoration activities 2. ONLY when required to clear access to site	M&C PO generated as requested by Tree Crews once this criteria is met. Tree Crews Called Out through ARCOS
In the event Tree Crew work can be charged to both HN and BH on the same work site, than 100% of the work should be charged to the larger of the two.				
Major Emergency	ED Major Emergency Expense	IF	Pre Event staging for Level 2 or above Outage Event, Tree Crews callout by OEC IC: 1. OECs may request stand-by Tree Crews to support high impact SOPP Model forecast and overall reliability	Orders created when OEC activates
Restoration > 24 Hrs.	a. ED Major Emergency	IF/95	Level 2 and above Outage Event, Tree Crew call-out for: 1. Facilitate restoration activities	Purchase Orders are set up annually by Sourcing with support by VM Operations
	b. ET-Lines and Substation	IB/AM GC/92	a. OEC activated (Distribution Outage) b. OEC activated (Transmission Outage)	VM Transmission Contractors charge MWC CQ unless provided T-line or Substation orders
At least one OEC Activated	1 -3. Major Emergency	IF/95	Post Outage Event, Tree Crew call-out for: 1. Post Patrol for equipment Inspection. 2. Hazardous tree identification and mitigation work not to exceed a period of 60 days after OEC is de-activated. 3. ONLY significant Vegetation Outage Investigation T&M (Time & Materials) as a result of increased outage activity (e.g. MEDs).	In the event tree crews requires more than 60 days to complete hazard tree removal, an agreement to continued charging must be reached by VM Operations and Emergency Program Manager. T&M charges approved by the local SVMP with their Manager CC'ed on submission email.
	4. Vegetation	HN	4. Investigation work charged to VM program	Cost fall under Lump Sum agreement



VM Vendor - Major Emergency CWA Request form

Email request to Sourcing [REDACTED]) and CC [REDACTED]

Vendor Name: _____

Existing MSA Number: _____

(Pricing is set under the core MSA unless billing rates are listed on the CWA)

Vendor Billing Contact Name: _____

Vendor Billing Contact Phone: _____

Vendor Email: _____

“2018-2019 Vegetation” Order Number: **8184542**

(This order number is for work beginning on June 1, 2018 to May 31, 2019)

Note the vendor invoice must reference the actual Event orders (Expense and Capital).

Cost Estimate: \$_____

List cost forecast assumptions, such as:

Combined Rate (ST/OT/DT) X hours per day X number of days X number of crews X people per crew

Additional cost such as special equipment

Requested Start Date: _____

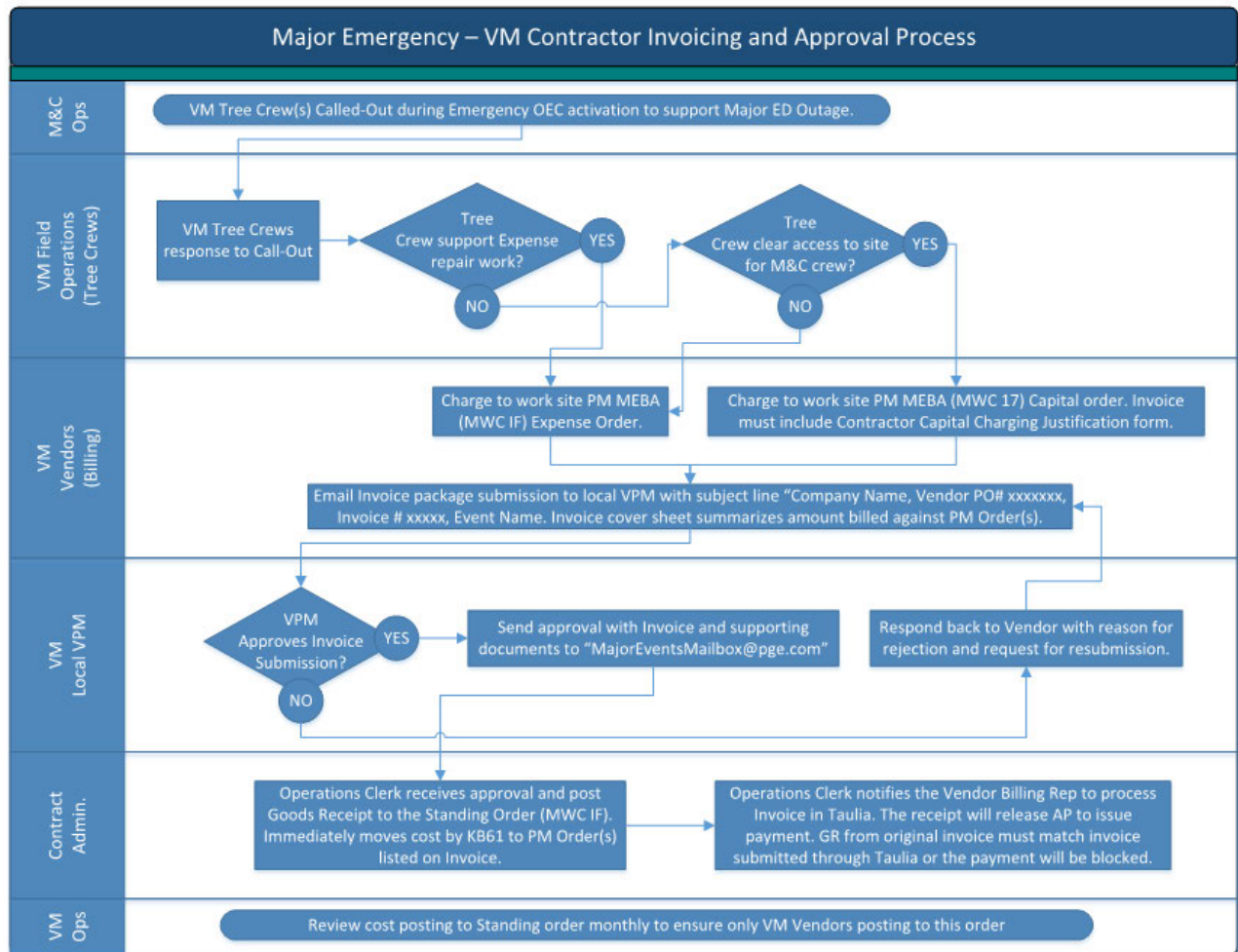
Work Description: Outline the type of work requested such as hazard tree removal, debris management or specialized skills (Forestry consultant, Logger / Faller).

Include an explanation of why existing vendor resources can't support the work needs for this event.

Requested by: Local SVPM NAME

Receive Invoice: Local VPM NAME

Goods Recipient: [REDACTED]



PG&E VEGETATION MANAGEMENT

Major Emergency 2018-2019 Contract Work Agreement and Invoicing Guide

OBJECTIVE:

The goal of this job aid is to provide clarification to the Major Event Annual Contract Work Authorization (CWA) and contractor invoicing process. When followed during major emergency events, as OECs are activated, this process will improve the time period for contractors to receive financial compensation for work performed and will provide necessary oversight by PG&E to ensure costs are recorded accurately.

CONTRACT WORK AUTHORIZATION: PG&E has created Major Event Annual CWAs for emergency Vegetation Management contractors that routinely respond to emergency situations. The annual cycle for these CWA begins on June 1st and ends the following year on May 31st.

The CWA is limited to Work requested by PG&E under major Emergency conditions. Contractor shall not perform or bill routine compliance Work under this CWA. The total of all Work performed under this CWA shall not exceed the CWA value, and PG&E shall not be obligated to compensate Contractor for any Work performed after the CWA value has been reached.

INVOICE SUMMARY SHEET: Contractor's Emergency Work invoices must include a summary sheet with the following information;

- Invoice Number
- Contractor CWA Number
- Event Name
- Event Order Number(s)
- Summary of charges per Billing Code / Description

INVOICE SUBMISSION: Contractor will bill on a weekly basis. The PG&E workweek is defined as Sunday to Saturday (Example: Week Ending Saturday April 14 = WE 4/14). Contractor will bill within **two weeks** of the week ending date. Contractor will email an invoice and all supporting documents as one package to the VM Representative. Contractor will ensure timely processing of invoice submissions with focus on end of quarter (**EOQ**) and end of year (**EOY**) cycles. Invoices submitted **30 days after the work end-date** are subject to rejection.

The email subject line shall be uniform in the following format:

Contractor Name, Vendor Contract #CXXXX, PG&E PO#27XXXXXXX, Invoice # XXXXX, Event Name

Example: Trees USE, Contract C7877, PO2700105151, Invoice 001-USA, Marina Fire

EXPENSE AND CAPITAL INVOICES: Expense and Capital invoices shall be submitted separately in accordance with this section. Capital invoices require the completion and inclusion of the **Contractor Capital Charging Justification form** in the form with the following information:

- Work location (including county)
- Event Name
- Resource Hours
- Position Billing Rate(s) with Billing Codes
- Dates worked
- Capital Order Number
- Description of work completed that supports the requirements of Capitalization

PG&E VEGETATION MANAGEMENT

EXPENSE WORK: Work is primarily considered cost category Expense because the Work does not directly involve installing or replacing PG&E assets.

CAPITAL WORK: Work can be classified as Capital ONLY if BOTH of the following criteria are met:

- a) Vegetation work **MUST** directly support Capital work (equipment replacement work such as broken poles or cross arms, etc.); **AND**
- b) Vegetation work is required for PG&E construction crews to access a job site. This may include vegetation work required to remove hazardous trees or debris that are preventing PG&E construction crews from completing or accessing Capital work.

Expense cost category examples:

- Vegetation Resource Coordinator (VRC) role
- Event Standby Time
- Event Patrol Time
- Assessment time for outage identification with no broken equipment in need of replacement.
- Tree pruning for an outage that did not result in broken assets and is not blocking access (tree cross-phased a line, a line dislodged from an insulator, etc.)

INVOICE APPROVALS: VM Representative is responsible for timely reviews of all submitted invoices. If there are any questions or need for clarification the VM Representative will respond back to the Contractor with the reason for rejection.

GOODS RECEIPT: Contract Administration receives the approval from the VM Representative to post a Goods Receipt. At that time they will notify the Contractor Billing contact that they may process that invoice in Taulia, <https://portal.taulia.com/login>.

Do NOT post invoices to Taulia until approved to do so by PG&E Contract Administration.

Email billing related questions to Contract Administration at MajorEventsMailbox@pge.com

Work completed and not billed **beyond 60 days** will automatically be rejected by Contract Administration and Contractors will not be compensated for erroneously delinquent invoices.

TAULIA ENROLLMENT: To Enroll in Taulia (online Major Event billing database), send request to “PGE–Taulia-Msg@pge.com” with the following information:

Contractor ID, PO# or Federal Tax ID
Contractor Name
Contact Name (Person who enrolled)

Telephone Number

Email Address

Taulia Contact Information 1-866-913-8409 or email Support@Taulia.com

PAYMENT TERMS: Payment terms are based on the Contractor’s MSA. Term date begins with the Contractor authorized invoice submission date in Taulia. Thus it is critical to move through the submission, approval and GR posting as quickly as possible so Contractors can post timely into Taulia.

VM Contractor Capital Charging Justification Form

Contractor Name: ABC Tree Service
 Event Name Jan 7th - Rain

Resource Type	County	M&C requester	Date Worked	Crew Hours	Billing Rate	Invoice Amount	OIS #	Capital Order #	Work Done and Remarks to Support Capitalization
Tree Crews	Mariposa		12/7/2017	8		\$0.00	12-56763	31280734	Supporting Capital work that required tree removal before M&C crews could access the work site.
Tree Crews	Mariposa		12/8/2017	3		\$0.00	12-56376	31280734	Removed branch on line to allow safe site access for M&C crew to complete pole replacement
Tree Crews	Mariposa		12/8/2017	3		\$0.00	12-56378	31280734	Provided access to work site for PG&E crew by removing tree in cotact with the line
						\$0.00			
						\$0.00			
						\$0.00			
				14		\$0.00			

Wildfire Wood Removal Program (WWRP) – CWA Addendum

Scope of Work

In addition to the Major Emergency Program Work described in the CWA and in compliance with the MSA, Contractor shall also perform Wildfire Wood Removal Program (WWRP) Work as described herein.

1. Wood Removal Management

1.1. PG&E will provide Contractor with Work location reports and “Request for Wood Management” customer authorization form for each Work location requested. Wood identified for removal at each location will be tagged.

1.2. For each Work request, Contractor is responsible for the complete removal and proper disposal of each tagged, downed tree, using appropriate methods and procedures. Contractor shall be responsible for removing identified wood and disposing of it safely and legally at their discretion (i.e. salvage timber sale, bio mass, fire wood, chips, etc.). This includes procuring all necessary licenses and permits. Contractor is solely responsible for disposal of all wood. If laydown/sorting yards are utilized, the Contractor is responsible to find, set up, permit, fund and close down these yards in adherence to all state and county regulations.

1.3. Work may include, but may not be limited to cutting, chipping, hauling, and other processing of wood and logs generated from vegetation fire mitigation and restoration operations. Work may also include mechanical removal of wood from work sites, transportation to sorting locations, set-up, management, and restoration of sorting locations. Contractor may be requested by PG&E to provide skidding, wood hauling, salvage logging, mastication and other specialized equipment to chip and/or relocate wood. Contractor shall provide all equipment, labor and associated laydown yards necessary to perform and complete the Work.

2. Commencement and Completion Dates

Work will commence when requested by PG&E and completed within 90 days of the CWA execution date.

3. Location of Work

WWRP Work may be performed in each of the assigned divisions of PG&E’s electric service territory. Work sites and requirements within each division of work will be determined by the PG&E vegetation department.

4. Contractor’s Responsibilities

4.1. Contractor must be a California Licensed Timber Operator.

4.2. Contractor shall prepare and maintain records of the volume of material (Units) removed and how disposed of (i.e. Cal Fire exemption number, to non-co-generation facilities, export markets, lumber mills & particle board facilities). Contractor shall provide copies of all documentation to PG&E on request.

4.3. Contractor is responsible for providing Timber Yield Tax information to State Board of Equalization and for Timber Yield Tax payment on a quarterly basis.

4.4. Contractor is required to manage landowner’s expectation as defined in Specification 5404, Section 2 in the Master Service Agreement.

4.5. Contractor shall provide PG&E weekly reports on progress which will include, but not limited, locations worked, number of Units removed and disposal method. This is in addition to Scope of Work, under Section 3, Contractor Record Keeping within the Contract Work Authorization (CWA) for payment purposes.

5. Pricing

Contractor agrees to complete wood removal on a unit price basis of \$ per Unit. A Unit is defined as a “Tree”. A Tree may have been felled whole or have been pieced into chunks, but is still considered one Unit. Unit price includes all labor, equipment, transportation, management and other associated costs for the complete removal and proper disposal of each Tree. No other billing will be submitted other than unit price unless agreed to by PG&E. Contractor shall provide documentation of completed Work as required by PG&E.

PUBLIC AGENCY, PUBLIC AND PRIVATE UTILITY
RIGHT OF WAY
EXEMPTION

FOR ADMIN. USE ONLY

Ex. # _____

Date Rec'd _____

Date Expires _____

STATE OF CALIFORNIA
DEPARTMENT OF FORESTRY AND FIRE PROTECTION
NOTICE OF TIMBER OPERATIONS THAT ARE EXEMPT FROM
CONVERSION AND TIMBER HARVESTING PLAN REQUIREMENTS
RM-73 (1104.1bc) (12/08)

VALID FOR ONE YEAR FROM DATE OF RECEIPT BY CAL FIRE

The Director of the Department of Forestry and Fire Protection (CAL FIRE) is hereby notified of timber operations under the requirements of 14 CCR § 1104.1(b) or (c): Harvesting of trees in order to construct or maintain a right of way by a public agency, public or private utility that is exempt from the requirements to obtain a Timberland Conversion Permit or file a Timber Harvesting Plan. **This notice is not required nor should it be submitted if timber is not sold, bartered or traded for commercial purposes by the timber owner.** The timber owner shall complete Items 1 through 5 of this notice and sign below.

1. TIMBER OWNER(S) OF RECORD: Name _____ t _____

Address _____

City _____ State _____ Zip _____ Phone _____

TIMBER TAX EXEMPTION: Timber owners owe timber yield tax when they harvest trees unless the harvest is exempt (Revenue and Taxation Code sec. 38116). Some small or low value harvests may be exempt from timber yield tax: timber removed from an operation whose value does not exceed \$3,000 within a quarter, according to BOE Harvest Value schedules, Rule 1024. If you believe your harvest may qualify for this exemption, please complete Items A, B, C, and D. **For timber yield tax information or for further assistance with these questions call 1-800-400-7115**, or write: Timber Tax Section, MIC: 60, State Board of Equalization, P.O. Box 942879, Sacramento, California 94279-0060; or contact the BOE Web Page on the Internet at <http://www.boe.ca.gov>.

A. Circle the option that most closely estimates the total volume for this harvest, in thousands of board feet (mbf - Net Scribner short log):

Under 8 mbf 8-15 mbf 16-25 mbf Over 25 mbf

B. Estimate what percentage of timber will be removed during this harvest:

Redwood ____%; Ponderosa/Sugar pine ____%; Douglas-fir ____%; Fir ____%;

Port-Orford Cedar ____%; Cedar (IC, WRC) ____%; Other conifer ____%; Other hardwood ____%.

C. Fuelwood over 150 cords? Yes ____ No ____ D. Christmas trees over 3,000 lineal feet? Yes ____ No ____

2. TIMBERLAND OWNER(S) OF RECORD: Name _____

Address _____

City _____ State _____ Zip _____ Phone _____

3. LICENSED TIMBER OPERATOR(S): Name _____ Lic. No. _____

Address _____

City _____ State _____ Zip _____ Phone _____

3. PUBLIC AGENCY, PUBLIC OR PRIVATE UTILITY REMOVING TREES:

Name Pacific Gas and Electric Contact Person _____

Address _____

City _____ State _____ Zip _____ Phone _____

PUBLIC AGENCY, PUBLIC AND PRIVATE UTILITY RIGHT OF WAY EXEMPTION, Page Two

5. Designate the legal land description of the location of the timberland conversion and the timber operation. Attach a map showing the location of the timberland conversion and the timber operation. Map shall be a 7 1/2 minute quadrangle or equivalent. In addition, smaller scale maps designating the length of rights of way are acceptable. It is helpful to describe the access route to the timber operation so that it can be easily located, and/or include an assessor's parcel map for small areas.

Section(s)	Township	Range	Base & Meridian	County	Logging Area Acreage (Estimated)	Assessors Parcel # (Optional)
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Will send data at a later date _____

Public Resources Code (PRC) Section 4628 and California Code of Regulations (CCR) Title 14 Section 1104.1(b) exempt public agencies from the requirement to file an application for timberland conversion (TLC) or a timber harvesting plan (THP) when they construct or maintain rights of way on their own property or that of another public agency. This exemption extends to easements over lands owned in fee by private parties. This exemption is not available for rights of way granted from one private landowner to another.

If the harvested trees are sold, bartered or traded for commercial purposes a timber operation has occurred per PRC Section 4527, and a notice of exemption is required to be filed by the timber owner. This is true if the timber is owned by the public agency, sold or given by the agency to another party, or the timber is owned by a private landowner subject to a public agency easement. A licensed timber operator is required in order to remove the harvested trees from the property. If the harvested trees are not sold, bartered or traded for commercial purposes, a notice of exemption is not required. The timber owner is responsible to pay all yield taxes for timber harvested. Timber yield tax information can be obtained from the State Board of Equalization, P.O. Box 94979, Sacramento, California 94279-0001.

14 CCR § 1104.1(c) exempts public and private utilities from the TLC and the THP requirements for construction and maintenance of gas, water, sewer, oil, electric and communications rights of way. 14 CCR § 1104.1(d), (e), (f), and (g) contain specifications of allowable right of way widths and supplemental clearances. If the harvest is a timber operation per PRC § 4527, a notice of exemption is required to be filed by the timber owner. A licensed timber operator is required in order to remove the harvested trees from the property. If the harvested trees are not sold, bartered or traded for commercial purposes, a notice of exemption is not required. The timber owner is responsible to pay all yield taxes for timber harvested.

14 CCR § 1104.1 requires that all timber operations conducted according to exemptions granted under this section abide by all operating regulations pertaining to a timber harvesting plan. There are special requirements for timber operations conducted in Coastal Commission Special Treatment Areas, the Tahoe Regional Planning Agency area, and in counties with special rules adopted by the Board of Forestry and Fire Protection. These rules should be reviewed prior to submitting this notice to CAL FIRE.

The following suggestions may help ensure your compliance with the Forest Practice Rules.

1. Timber owners, timberland owners and timber operators should obtain and review copies of the Forest Practice Rules pertaining to the Notice of Exemption. Copies may be obtained from BARCLAYS LAW PUBLISHERS, P.O. BOX 3066, SO. SAN FRANCISCO, CA. 94080. or from CAL FIRE, Forest Practice Section, P.O. BOX 944246, Sacramento, CA 94244-2460; or from CAL FIRE's Web Page on the Internet at <http://www.fire.ca.gov>.
2. Contact the CAL FIRE office listed below for questions regarding the use of this notice.

FILE THIS NOTICE WITH THE NEAREST CAL FIRE OFFICE BELOW FOR THE COUNTY IN WHICH THE OPERATION WILL OCCUR:

Alameda, Colusa, Contra Costa, Del Norte Humboldt, Lake, Marin, Mendocino, Napa, San Mateo, Santa Clara, Santa Cruz, Solano, Sonoma, western Trinity and Yolo Counties.	=>	Forest Practice Program Manager CAL FIRE 135 Ridgway Avenue Santa Rosa, CA 95401
Butte, Glenn, Lassen, Modoc, Nevada, Placer, Plumas, Shasta, Sierra, Siskiyou, Sutter, Tehama, eastern Trinity and Yuba Counties.	=> =>	Forest Practice Program Manager CAL FIRE 6105 Airport Road Redding, CA 96002
Alpine, Amador, Calaveras, El Dorado, Fresno, Imperial, Inyo, Kern, Los Angeles, Madera, Mariposa, Merced, Mono, Monterey, Orange, Riverside, San Benito, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, Stanislaus, Tuolumne, Tulare, and Ventura Counties.	=> => =>	Forest Practice Program Manager CAL FIRE 1234 East Shaw Avenue Fresno, CA 93710

SIGNATURE OF THE TIMBER OWNER OR AGENT THEREOF: _____

Printed Name: _____ Title: _____ Date: _____

Address _____ City _____ State _____ Zip _____ Phone _____

VEGETATION MANAGEMENT DEPARTMENT

F00001



Request for Wood Management

Tree Work Notice Form

A Pacific Gas and Electric Company (PG&E) inspection of vegetation growing along power lines following recent wildfires has determined that tree work (specified on separate Notice of Tree Work) is necessary to ensure the safety and reliability of PG&E's electrical facilities. You have requested that PG&E remove wood resulting from tree work on your property in accordance with this Request for Wood Management.

We greatly appreciate your partnership in the interest of public safety and electric service reliability.

INITIAL CHECK

TREE QUANTITY: _____

- _____ ☐ PG&E has sole discretion to determine if the property qualifies for Wood Management under this Request.
- _____ ☐ Wood Management under this Request constitutes the removal or disposal of wood that is greater than 4 inches in diameter (measured at the small end), created by PG&E in response to tree work resulting from wildfires as follows:
- Wood will be removed from the property:
Quantity of logs: _____; Approximate diameter and length: _____
 - Wood will be cut into smaller sections:
Quantity of logs: _____; Approximate lengths wood to be left in: _____
 - Wood will be relocated to a different section on the property:
Quantity of logs: _____; Location logs are to be placed: _____
 - Wood chips will be broadcasted on the property; PG&E will not be responsible to move or remove chips once left on the property.
 - Truckloads of chips left on property: Quantity of truck loads: _____
- _____ ☐ PG&E will provide no financial reimbursement under this program, including without limitation for removed wood.
- _____ ☐ Tracked or rubber tire equipment and machinery shall have access to the property when needed to perform the work.
- _____ ☐ PG&E will not rehabilitate the work zone back to pre-work conditions (though excessive rutting of roads or damage to the property will be mitigated by PG&E's work contractor).
- _____ ☐ Work that PG&E deems not to be reasonable will not qualify for removal under this program.
- _____ ☐ PG&E may complete the work in an extended timeframe.
- _____ ☐ This wood removal is an exception to routine PG&E vegetation management work and it is in response to recent wildfires. PG&E has no obligation to perform large wood removal for future line clearance work performed on this property.

Please sign/date to confirm agreement:

Legal Owner's Signature _____

Date _____

Print Name _____

Phone Number _____

Agency Name (if applicable) _____

Assessor Parcel Number (if known) _____

Property Address _____

City _____

Township _____

Range _____

Section _____

Prepared by _____

Phone Number _____

Tag Number _____

Circuit _____

SSD _____

SSD Rte Number _____

Loc Rte Number _____

Need additional information? Please visit our website at pge.com/trees to learn more about PG&E's vegetation program. Thank you.



January 25, 2019

«CUSTOMER_NAME»
OR CURRENT RESIDENT
«PREM_ADDRESS2»
«PREM_ADDRESS1»
«PREM_CITY» «PREM_STATE» «PREM_POSTAL»

Wildfire wood management is available for qualified customers in wildfire-affected areas. Read below to learn if you qualify for the expanded debris and wood management program.

Dear Valued Customer:

Pacific Gas and Electric Company (PG&E) is hard at work to inspect and remove dead and dying trees affected in the recent wildfires that could fall into electrical lines. As part of our commitment in helping wildfire affected residents and communities, we would like to clarify what you can expect and two programs available for those residences that would like to participate.

What you can expect

You will continue to see PG&E's contract tree crews, with trucks and other equipment as we perform the tree work. In some cases we have cut down trees that posed a threat to our lines and left the debris. In the following weeks we will return to clean up debris less than 4 inches in diameter. Larger wood will be left on-site. Debris will either be chipped and spread on-site or cut into smaller pieces and scattered where chippers are not accessible.

Chips are Available at No Cost

As we remove the brush the chippers will be generating chips. Chips will consist of the following;

- These chips can consist of all types and species of plant material from the surrounding area.
- Chip sizes varies and could be up to +/- 6 inches in length.
- Only full truckloads of chips are available. Approximately 6 to 10 yards.
- Locations on your property to dump chips must be away from structures, access to structures and driveways/roads

A limited supply of chips will come available. If interested in applying for chips delivered at no cost to you call 1-800-743-5000.

Participation in the Wildfire Wood Management Program

Additionally, PG&E is offering to remove larger wood as part of our Wood Management Program at no cost to the customer. To qualify for this program trees must meet the following criteria:

- The tree was felled by PG&E
- Wood is located on properties within the wildfire affected areas
- Wood is greater than 4 inches in diameter and 6 feet in length
- Wood must be easily accessible by equipment or machinery
- Debris is within 50 feet of permanent a structures or have the ability to impede traffic, roll into roads or watercourse.

To inquire if your tree(s) qualify for this program call 1-800-743-5000



Work safely above and below.

Mind the lines up above pge.com/mindthelines
Know the lines below pge.com/811



CCC-0816-6679

**Trust only qualified tree contractors around electric lines**

The Division of Occupational Safety and Health (OSHA) does not allow non-qualified tree workers within 10 feet of high voltage power lines. Tree removal is dangerous and we strongly recommend that homeowners leave the work to our qualified tree contractors and do not attempt to do it themselves.

We appreciate your partnership in managing the dead trees in fire-damaged areas. Removing dead or dying trees near power lines is part of our commitment to help customers recover from the recent wildfires.

Sincerely,

A handwritten signature in black ink, which appears to read "Signature".

Program Manager
Vegetation Management
Pacific Gas and Electric Company



Work safely above and below.

Mind the lines up above pge.com/mindthelines
Know the lines below pge.com/811



Steps to apply:

1. Call **1-800-743-5000** to opt in
2. Schedule an inspection appointment
3. Meet with the tree inspector
4. Review and approve the
Request for Wood Management form

Call us today!

Wildfire Wood Management Program

**A no-cost program for
qualifying customers in
wildfire-affected areas**



Wildfire Wood Management Program

PG&E is committed to helping residents and communities recover from the recent devastating wildfires by offering a one-time, no-cost wood removal program.

In response to the recent fires, our tree crews felled a number of hazardous trees that threatened electrical facilities and public safety. If you have trees on your property that were taken down by PG&E, you may qualify for this wood management program.

Does your wood qualify for free removal?

Wood located on properties within the fire-affected areas qualify when:

- Wood is reasonably accessible by equipment/ machinery.
- Wood is greater than 4 inches in diameter and 6 feet in length.

AND

Wood is within 50 feet of a permanent structure. This does not include moveable or temporary sheds and outbuildings or carports.

OR

Wood has the ability to impede traffic or role into roads or road drainage structures or watercourses.

Your options for removal, if your tree(s) qualify

- Move, cut up or pile wood and leave on your property
- Chip and spread wood on site where accessible
- Haul donated wood away offsite

How to apply

To opt in and receive a free wood removal evaluation for your property **please call: 1-800-743-5000.**

What you can expect once we receive your request to opt in to the program

- An inspector will call you to set up a site review appointment on your property.
- A **Request for Wood Management** form will be provided for your authorization of the work.

We offer this wood removal program as our commitment to helping the communities impacted by the wildfires recover as quickly as possible.

For more information about PG&E's Vegetation Management Program, visit pge.com/trees.