

## Power Generation Powerhouse and Switchyard Defensible Space

### SUMMARY

This procedure provides instructions for the following at all permanently installed Tier 2 and Tier 3, and adjacent Tier 1 High Fire-Threat District (HFTD) powerhouse yards, switchyards, and equipment:

- Performing inspections.
- Managing vegetation for fire hardening and defensible space.

The performance of inspections and mitigating actions in this procedure are to minimize the risk of an event within powerhouse yards and switchyards that propagates outside the parcel ensuring public safety and to adhere to the California Public Resource Code Section 4291 (under the CA Department of Forestry and Fire Protection).

This procedure considers regionally appropriate vegetation management suggestions that preserve and restore native species that are fire resistant or drought tolerant, or both, minimize erosion, minimize water consumption, and permit trees near facilities for shade, aesthetics, and habitat.

Temporary facilities are exempt from the requirements. Examples of temporary facilities are:

- Construction trailers
- Refuse dumpsters, etc.

Level of Use: Informational Use

### TARGET AUDIENCE

All Pacific Gas & Electric (PG&E) Utility personnel (employees and contractors) responsible for vegetation management in and around PG&E powerhouses and switchyards, including employees from:

- Power Generation
- System Inspections
- Natural Resources Management (NRM)

### SAFETY

This procedure involves two actions for maintaining defensible space around PG&E powerhouse yards, switchyards, and equipment.

Personal injury may result from inspecting PG&E assets in the field. The work area containing hazards is inherently dangerous with overhead hazards (falling limbs and/or trees), rough/uneven terrain, wildlife (snakes, bears, and/or mountain lions), Insects (ticks and or

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spiders), and poison oak. There is also risk of drowning while working near water sources such as lakes, reservoirs, and other water conveyance systems. Weather can be a factor in planning this work (hot, rainy, lightning, or snowy). Be aware of the forecasted weather conditions and stop work if conditions are not safe to work in. Care should be taken, and preparations made to ensure your safety while working in the field. This includes wearing the proper PPE (including, but not limited to hardhat, sturdy boots, & pants/long sleeve shirt).

All Contractors performing work as part of this procedure must follow and UNDERSTAND the following Standards and Procedures

- [SAFE-3001S, "Contractor Safety Standard"](#)
- [SAFE-3001P-17, "General Counsel Contractor Safety Procedure"](#)
- [ENV-10002S, "Environmental Release to Construction \(ERTC\) for Land and Environmental Evaluations"](#)
- [TD-1464S, "Preventing and Mitigating Wildfires during PG&E Work"](#)
- Wildfire Mitigation Matrix (TD-1464S, Attachment 1)
- Wildfire Risk Checklist (TD1464S, Attachment 2)

**Power Generation Powerhouse and Switchyard Defensible Space**

**BEFORE YOU START**

- 1.1 IDENTIFY the following:
- Powerhouse AND Switchyard parcel boundaries
  - Defensible space requirements
- 1.2 REVIEW site specific defensible space maps provided by PGEN (PG&E Power Generation) and stored in PGEN ERIM compliant sharepoint for the following:
- Tier 2 Powerhouses
  - Tier 3 Powerhouses
  - Adjacent Tier 1 Powerhouses

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## Power Generation Powerhouse and Switchyard Defensible Space

### PROCEDURE STEPS

#### 1 General Rules on Inspections

1.1 Once per calendar year, Natural Resources Management (NRM) PERFORM inspections in the following to ensure maintenance and compliance with this procedure:

- Tier 2 High Fire-Threat District (HFTD) powerhouses, switchyards, AND equipment.
- Tier 3 High Fire-Threat District (HFTD) powerhouses, switchyards, AND equipment
- Adjacent Tier 1 High Fire-Threat District (HFTD) powerhouses, switchyards, AND equipment.

#### NOTE

PG&E's planned inspection timeframe for all assets is November 15 of the prior year through November 15 of the current year (i.e. 11/15/20-11/15/21 for the 2021 plan year) however delays including inaccessible facilities, sensitive environments or other limitations may delay some inspections for the current plan year by a few weeks.

1.2 CONDUCT ground-based inspections by end of calendar year (i.e. 12/31/21).

1.3 INCLUDE the following in inspections:

1. IDENTIFY the following:
  - Need for vegetation work
  - Hazard trees
  - Weed AND grass abatement
  - Encroaching brush
  - Cut-stump regrowth
  - Logs

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### 2 Defensible Space Inspections for Tier 2, Tier 3, and adjacent Tier 1 HFTD Powerhouse Yards, Switchyards, and Equipment

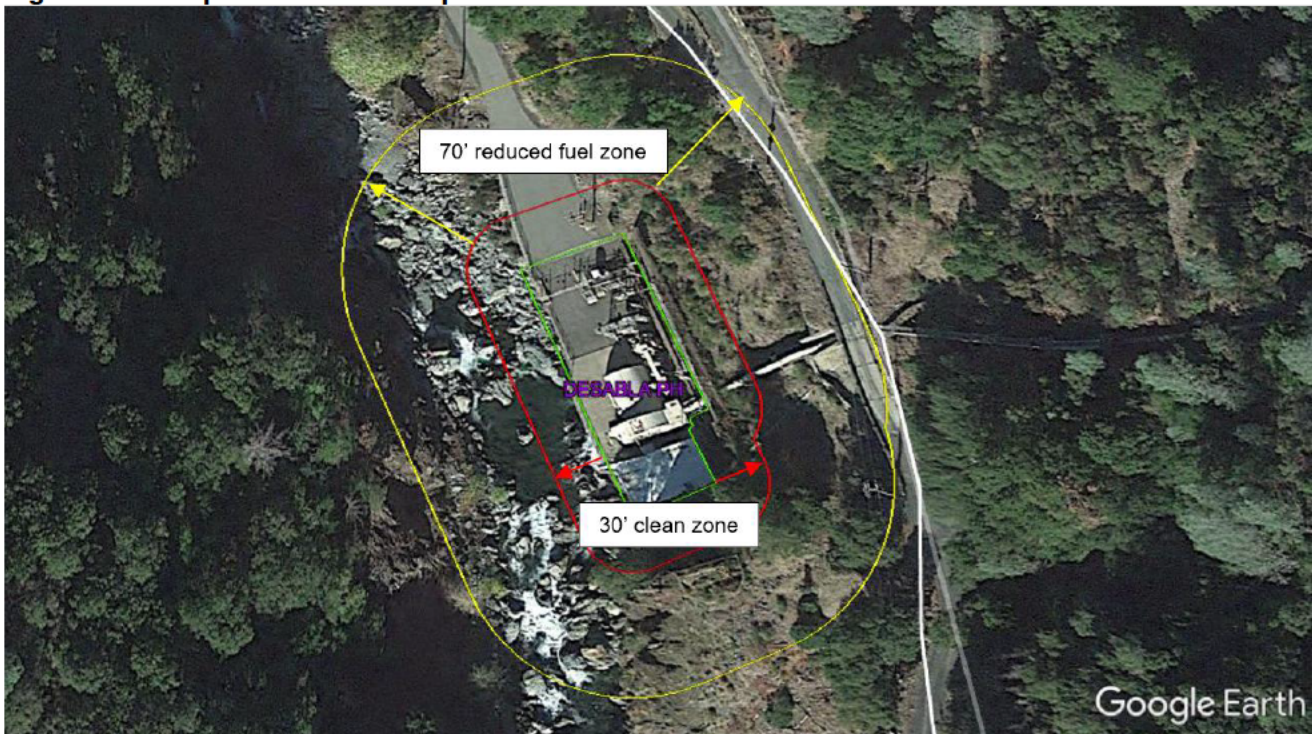
2.1 Power Generation ENSURE site-specific defensible space maps are created.

1. REFER TO Figure 1 - Example of Defensible Space Zones.
2. STORE in Enterprise Records and Information (ERIM) compliant sharepoint.

2.2 IDENTIFY work completed by taking actual measurements on the ground for:

- Zone 1 - Clean Zone (0 to 30 feet, SEE details below).
  - Zone 2 - Reduced Fuel Zone (30 to 100 feet, SEE details below).
1. REFER TO Figure 1 - Example of Defensible Space Zones,

**Figure 1 - Example of Defensible Space Zones**



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- 2.3 Natural Resources Management (NRM) PERFORM inspections of Defensible Space Zone 1 - Clean Zone, as follows:
1. ENSURE a firebreak exists in Zone 1 – Clean Zone.
    - a. MEASURE 30 feet from all outermost buildings OR energized equipment for the firebreak.
    - b. MAINTAIN a firebreak.
      - (1) REMOVE and CLEAR away all flammable vegetation AND other combustible growth within 30 feet of each building or structure, with certain exceptions pursuant to PRC §4291(a).

**NOTE**

Branches, leaves and pine needles will be removed from the ground when they are acting as surface fuels. The expectation is not to remove dead leaves or pine needles from standing trees.

2. REMOVE the following dead OR dying vegetation from Zone 1 – Clean Zone:
  - Grass
  - Plants
  - Shrubs
  - Trees
  - Branches
  - Leaves
  - Weeds
  - Pine needles
3. MAINTAIN all live vegetation by:
  - Spacing
  - Pruning
  - Trimming grasses to less than 4 inches

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### 2.3 (continued)

4. IF any of the following are necessary,

THEN RETAIN:

- a. Riparian vegetation OR habitat next to waterbodies for protection of sensitive fish AND wildlife species.
- b. Live AND healthy green grasses OR irrigated landscape plants OR areas with existing erosion issues.
- c. Single specimens of trees OR other vegetation that are well-pruned AND maintained.
- d. Shrubs AND grass on steep cliffs where NO fuel continuity exists AND worker safety is a concern in rappelling over cliff face.

### 2.4 NRM PERFORM inspections of Zone 2 - Reduced Fuel Zone, as follows:

1. MEASURE Zone 2 - Reduced Fuel Zone, extending out from 30-foot clean zone to 100 feet away from outermost building OR energized equipment for the firebreak.
  2. ENSURE the following:
    - a. Area has reduced fuel load to inhibit progression AND reduce risk of fire moving through zone.
    - b. NO loose surface litter exceeding depth of 3 inches, including:
      - Fallen leaves
      - Needles
      - Twigs
      - Bark
      - Cones
      - Small branches, etc.
- (1) IF surface litter can be removed reasonably OR safely from site,  
THEN REMOVE surface litter.

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### 2.4 (continued)

- (2) IF surface litter is located in an area that CANNOT be removed reasonably OR safely from site,  
  
THEN PERMIT surface litter to remain in excess of 3 inches.
  - Area examples: Steep cliffs AND rocky slopes.
- c. Annual dead OR dying grass does NOT exceed maximum height of 4 inches.
  - (1) IF a situation exists for either of the following:
    - Fuels are isolated from other fuels.
    - Necessary to stabilize soil.THEN PERMIT grasses AND forbs to reach a height of 18 inches.
- d. NO new tree sprouts.
  - (1) IF new tree sprouts exist,  
  
THEN REMOVE new tree sprouts.
  - (2) IF isolated tree sprouts are located in an area that CANNOT be removed reasonably OR safely from site,  
  
THEN PERMIT tree sprouts to remain.
    - Area examples: Steep cliffs AND rocky slopes.



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2.4 (continued)

3. ENSURE minimum vertical clearance between limbs. REFER TO Figure 2, Minimum Vertical Clearance.

**Figure 2, Minimum Vertical Clearance**



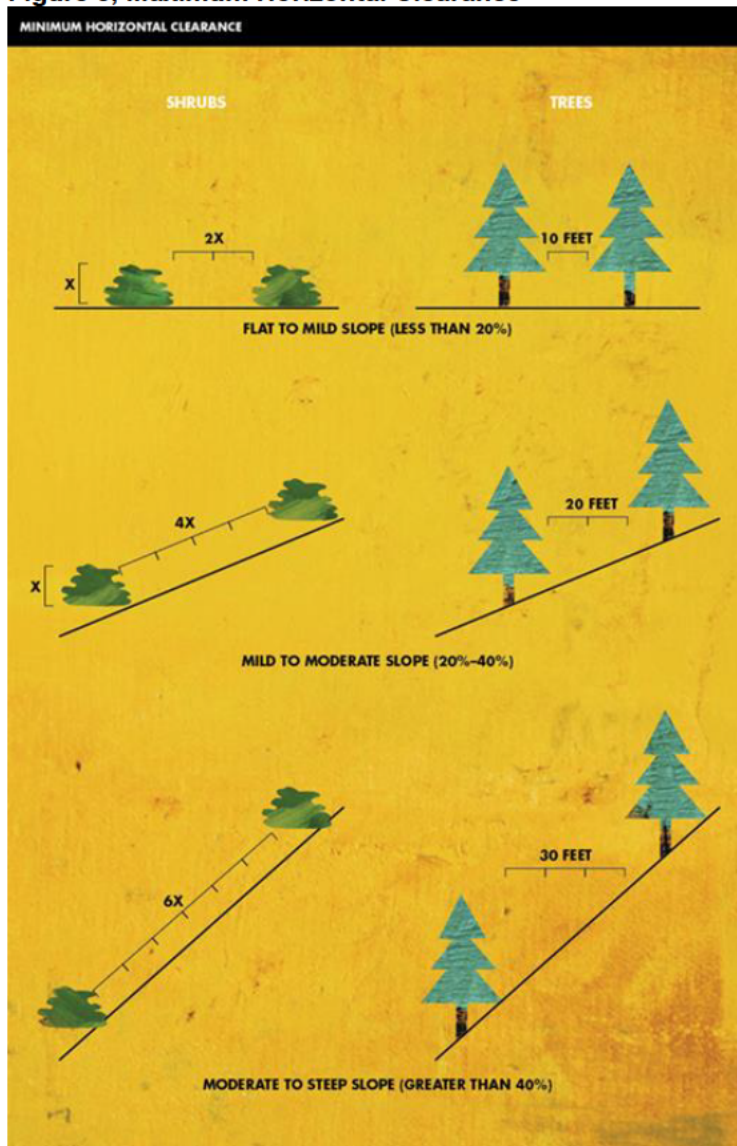
- a. ENSURE minimum vertical clearance of 6 feet between tree limbs AND ground.
  - (1) IF tree limbs are identified to be less than 6 feet to the ground, THEN REMOVE:
    - Identified tree branches
    - Resprouting branches
- b. DETERMINE proper vertical spacing between shrubs AND lowest branches of trees by using the following formula:
  - (1) Height of shrub multiplied by 3.
    - Example: If shrub is 5 feet high, then minimum vertical clearance is 15 feet. (5 feet x 3 = 15 feet).

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2.4 (continued)

4. ENSURE horizontal spacing distances of trees AND shrubs are determined by slope of the land.
  - a. For tree spacing, REFER TO the two acceptable methods.
    - Crown spacing based on slope. REFER to Figure 3, Maximum Horizontal Clearance.
    - Continuous tree canopy. REFER TO Figure 4, Continuous Tree Canopy for Defensible Space.

**Figure 3, Maximum Horizontal Clearance**



## Power Generation Powerhouse and Switchyard Defensible Space

### 2.4 (continued)

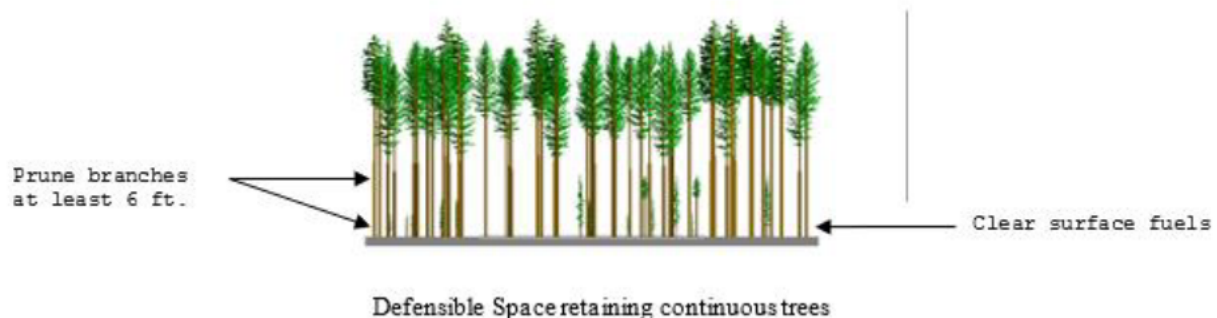
5. ENSURE the following horizontal spacing of trees AND shrubs when feasible.
  - a. SPACE tree crowns PER the following formula when possible:
    - (1) Flat to mild slope (less than 20 percent) - Minimum of 10 feet apart.
    - (2) Mild to moderate slope (20 to 40 percent) - Minimum of 20 feet apart.
    - (3) Moderate to steep slope (greater than 40 percent) - Minimum 30 feet apart.
  - b. SPACE shrubs per the following formula:
    - (1) Flat to mild slope (less than 20 percent) - Minimum 2 times height of shrub.
      - Example: If shrub is 2 feet high, space shrubs 4 feet apart.  
(2 ft. x 2 = 4 ft.)
    - (2) Mild to moderate slope (20 to 40 percent) - Minimum 4 times height of shrub.
      - Example: If shrub is 2 feet high, space shrubs 8 feet apart.  
(2 ft. x 4 = 8 ft.)
    - (3) Moderate to steep slope (greater than 40 percent) – Minimum 6 times height of shrub.
      - Example: If shrub is 2 feet high, space shrubs 12 feet apart.  
(2 ft. x 6 = 12 ft.)
    - (4) Groups of vegetation (numerous plants growing together less than 10 feet in total foliage width) may be treated as a single plant. For example, three individual manzanita plants growing together with a total foliage width of eight feet can be “grouped” and considered as one plant and spaced according to the Plant Spacing Guidelines in this document.

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### 2.4 (continued)

6. APPLY the following treatments in Reduced Fuel Zone (Zone 2): Defensible Space with Continuous Tree Canopy, to ensure defensible space while retaining a stand of larger trees with a continuous tree canopy:
  - a. Generally, REMOVE all surface fuels greater than 3 inches in height. REFER TO Figure 4, Continuous Tree Canopy for Defensible Space.
    - (1) May RETAIN single specimens of trees OR other vegetation provided they are well-spaced, well-pruned AND create a condition that avoids spread of fire to other vegetation or to a building or structure.
  - b. REMOVE lower limbs of trees (“prune”) to at least 6 feet up to 15 feet (or the lower 1/3 branches for small trees).
  - c. IF properties have greater fire hazards, such as steeper slopes OR more severe fire danger,  
  
THEN REMOVE lower limbs of trees (“prune”) in the upper end of the range.

**Figure 4, Continuous Tree Canopy for Defensible Space**



- 2.5 IF 100 feet of defensible space must be obtained beyond PG&E’s property line,  
  
THEN before conducting clearance NRM OBTAIN written consent from landowner.
  1. IF landowner declines to provide permission,  
  
THEN NRM only PERFORM defensible space clearing work to property line.

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### 3 Environmental Concerns

- 3.1 PROTECT water quality PER California Code of Regulations (14 CCR § 1299.03 (c)(2)) as follows:
1. AVOID clearing vegetation to bare mineral soil (except within energized switchyards).
  2. AVOID use heavy equipment in AND around watercourses AND reservoirs.
  3. Only minimally DISTURB soil on steep slopes.
    - Vegetation removal can cause soil erosion, especially on steep slopes.

### 4 Work Verification

- 4.1 PG&E employee or designated contractor PERFORM the following:
1. COLLECT and RECORD all vegetation treatment data as completed if verified.
  2. STORE Records of Work Verification data in PG&E managed Hydro Vegetation Management (HVM) database.
    - a. PROVIDE PGEN official document of record.

### 5 Exceptions

- 5.1 IF defensible space OR vegetation hardening requirements are NOT able to be obtained, THEN OBTAIN additional wildfire mitigations if necessary, including:
1. Fire walls
  2. Animal abatement
  3. Hardscaping OR Landscaping
  4. Construction of fire suppression system OR improvement of existing system
  5. Powerhouse Vegetation Management Plan (PHVMP) – A written long-term vegetation management plan including:
    - Details of reduced vegetation clearing in limited areas.
    - Larger defensible space buffers in less sensitive areas.
    - Map rendering the powerhouse AND management plan.

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### 5.1 (continued)

6. Written determination certifying vegetation is NOT a fire hazard by the following:
  - PG&E Fire Marshal
  - Safety Infrastructure Protection Team (SIPT) Manager or Supervisor, or similar position
7. Written determination certifying that vegetation is low risk of being a fire hazard by internal team of subject matter experts (SME's):
  - PGEN asset management representative
  - PGEN's Management representative
  - Safety Infrastructure Protection Team (SIPT) representative
  - Natural Resource Management (NRM)
  - Electric Operations representative
8. Reasons for NOT meeting requirements may include the following:
  - a. Worker Safety Concerns OR dangerous working conditions.
  - b. NOT able to obtain permits (including, but not limited to, CA Department of Fish & Wildlife 1600 permit or Army Core of Engineers 404).
  - c. Customer or Agency Refusals - Adjacent property owners or agency (i.e. USFS or BLM land) will NOT allow vegetation management.
  - d. Protection of rare, threatened, OR endangered species AND requirements to protect those species through the following:
    - United States Forest Service (USFS)
    - Bureau of Land Management (BLM)
    - Federal Energy Regulatory Commission (FERC)
    - United States Fish and Wildlife Service (USFWS)
    - California Department of Fish and Wildlife (CDFW)
  - e. Structures on adjacent properties within Defensible Space
  - f. Protection of cultural resources

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- 5.2 Power Generation Asset Management EVALUATE each location NOT able to obtain defensible space to determine appropriate mitigation measures, if any.
1. IF locations do NOT meet defensible space requirements,  
THEN PGEN IMPLEMENT additional measures or Evaluate the level of risk of wildfire.

### 6 Evaluation

- 6.1 ENSURE Evaluation team is comprised of subject matter experts (SME's) AND representatives from the following:
- Power Generation
  - Natural Resource Management
  - Substation Fire Marshall
  - Safety Infrastructure Protection Team
- 6.2 Evaluation team REVIEW the following where the defensible space was NOT able to be met:
- Photos
  - Aerial images
  - Details
- 6.3 WHEN a risk determination has been made from the Evaluation team/process,  
THEN as a collective group PERFORM one of the following:
- SIGN OFF for low-risk sites.
  - CONSIDER additional mitigation (i.e. animal abatement) for greater risk sites.

**END of Instructions**

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### DEFINITIONS

**Defensible Space** - The area within the perimeter of a facility where basic wildfire protection practices are implemented, providing the key point of defense from an approaching wildfire or escaping fire.

**Riparian** – means the banks and other adjacent terrestrial environs of lakes, watercourses, estuaries, and wet areas, where transported surface and subsurface freshwaters provide soil moisture to support mesic vegetation.

**Surface Fuels** - Loose surface litter on the soil surface, normally consisting of fallen leaves or needles, twigs, bark, cones, and small branches that have not yet decayed enough to lose their identity; also grasses, forbs, low and medium shrubs, tree seedlings, heavier branches and downed logs.

### IMPLEMENTATION RESPONSIBILITIES

NRM & Land Management is responsible for approving, issuing, and revising this procedure.

It is NRM's responsibility to implement this procedure and communicate to all users.

### GOVERNING DOCUMENT

Pacific Gas and Electric Wildfire Mitigation Plan

### COMPLIANCE REQUIREMENT / REGULATORY COMMITMENT

#### **Records and Information Management:**

Information or records generated by this procedure must be managed in accordance with the Enterprise Records and Information (ERIM) program Policy, Standards and Enterprise Records Retention Schedule (ERRS). REFER [GOV-7101S, "Enterprise Records and Information Management Standard"](#) and related standards. Management of records includes, but is not limited to:

- Integrity
- Storage
- Retention and Disposition
- Classification and Protection



## Power Generation Powerhouse and Switchyard Defensible Space

### REFERENCE DOCUMENTS

#### Developmental References:

[LAND-4001S "System-wide Facility Vegetation Control"](#)

TD-7102S "Distribution Vegetation Management Standard (DVMS)

[TD-7103S "Transmission Vegetation Management Standard"](#)

[SEC-2010S "Enterprise Perimeter Barrier/Fencing Standard"](#)

#### Supplemental References:

[California Public Resource Code Section 4291 \(under the CA Department of Forestry and Fire Protection\)](#)

[General Guidelines for Creating Defensible Space, State Board of Forestry and Fire Protection \(BOF\) California Department of Forestry and Fire Protection, 2006](#)

[California Code of Regulations 14 CCR § 1299.03](#)

[California Public Resource Code \(PRC\) 4292](#)

[California Public Resource Code \(PRC\) 4293](#)

[General Order 95, Rule 35](#)

[California Public Utilities Commission \(CPUC\) High Fire-Threat District Map](#)

[California Board of Forestry and Fire Protection – State Responsibility Area \(SRA\) Fire Safe Regulations, Section 1273.10](#)

### APPENDICES

N/A

### ATTACHMENTS

N/A

### DOCUMENT REVISION

Utility Bulletin TD-3322B-065, Wildfire Defensible Space for Substations

**Power Generation Powerhouse and Switchyard Defensible Space****DOCUMENT APPROVER**

[REDACTED] – Director, Land Management

**DOCUMENT OWNER**

[REDACTED] – Supervisor, Natural Resource Management (NRM)

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**REVISION NOTES**

Where?	What Changed?
NA	New Procedure