

# Proposal to Cal Poly Wildland-Urban Interface (WUI) FIRE Institute

## IOU WUI Research Coordination Fuel Clearing & Modification Study

### Overview

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- 1<sup>st</sup> Prong - Research the rules and reasonings behind the current regulatory requirements
  - What was the IOU decision to expand pole brushing.
  - Consider PRC4292 from the original logic and see if the environment has changed that requires updated standards.
- Understand the fire risk (what causes sparks from utilities and types of ignition risks), and if there is an opportunity to share utility data from our own pole brushing work to see what works and what doesn't.
- Outcome:
  - Determine from the data and experience if fuel clearing programs should be modified.
    - Based on other factors, i.e. vegetation type, land area, type of equipment on pole, etc.
    - What is a reasonable distance, and should the distance vary for various scenarios?

### Problem Statement

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- 1) 10ft radial x 8ft Height firebreak per PRC 4292 and Guidance provided for SRA land in 14 CCR 1255  
The origin of these clearance recommendations is unclear warranting a contemporary documented evaluation of these clearance requirements to validate adequacy or propose alternatives for consideration of California Utility Regulatory (CPUC, OEIS and CalFire/Board of Forestry).

### Considerations

- Current code is targeted at specific equipment and normal operations that may expel hot or molten material to ground, ladder, or aerial fuels.
    - Are there new equipment types that require expanded clearances?
    - Are there reduced clearance requirements for assets that have less risky equipment?
    - Padmount (UG assets) clearances?
  - Transmission and Distribution poles and structures are variable in size and shape. Do these variations warrant different clearances based on operational and site considerations?
    - Are there different clearance considerations to mitigate Transmission or Distribution equipment failures
  - Are there management practices or situations that do not justify bare ground firebreak maintenance
    - Hardscape
    - Residential Landscaping
    - Private / Commercial land (i.e. farms / ranches / commercial properties)
    - Areas where surrounding conditions or improvements act as appropriate firebreaks
    - Environmental impacts of bare ground firebreaks
- 2) Additional Fuel Management Activities for utility asset protection and/or wildfire mitigation  
California utilities are beginning to explore the benefits of conducting additional fuel management activities to protect or minimize impacts of wildfires (all causes) to assets and reduce risk of utility ignitions contributing to the rapid spread or development of destructive wildfires.

### Considerations

- Are radial clearances around assets an appropriate approach or is maintenance/modification of fuels in the entire Right-of Way more beneficial.
  - What is the appropriate size(s) or area(s) of treatment
- Are there recommendations for different fuel types and fuel loading situations that can inform specific recommendations for breaks in continuity of horizontal and vertical fuels

## For Discussion Only

- What are appropriate maintenance intervals
  - What are the best ways to identify vegetative risks (Tree Inventory, In-Person inspection, remote sensing i.e. LiDAR, hyperspectral, multi-spectral, drone, soil moisture, aerial surveillance)
- Are there situations where fuel management practices may increase wildfire risks?
  - Removal of brush or overstory fuels creating space for more flashy annual fuel crops
  - Creating opportunity for noxious or invasive weed species spread
- Potential for conflicts with environmental regulation or California Forest Practice Rules

### **Background Questions on IOU Fuels Management Programs**

1. What is the scope of your Fuels Management (FM) program (e.g., do you clear around structures, create fuel breaks adjacent to roads, or within easements)?
  - a. **SCE:** SCE has approximately 3000 grids, 1100 in HFRA. Each grid is a polygon (1 km in radius) approximately 214 acres. Vegetation types on the SCE WMP page 42 Table 5-3
    - i. Drivers:
      1. Regulatory
        - a. NERC FAC-003-4
        - b. ANSI A300
        - c. GO 95 Rule 35 (Case 13 and Case 14)
        - d. GO 95 Rule 37
        - e. Cal. Pub. Res. Code (PRC) § 4291, 4292, 4293
        - f. Title 14 CCR Sections 1250-1258
      2. Clearance Requirements in UVM 02 and 03 Distribution and Transmission Vegetation Management Plan
      3. Relevant environmental regulation
    - ii. FM Program (Identification Process)
      1. Hazard Tree Management Program (VM-1)
        - a. Identifies hazard trees and develops specific prescription
        - b. HTMP inspectors use the Tree Risk Calculator (TRC) to document tree defects and likelihood of failure and target impact. The certified arborist assigns a risk score based on six criteria: (1) Voltage Impact; (2) Fire Impact; (3) Likelihood of Impact; (4) Tree Lean; (5) Tree Height Factor; and (6) Site Condition Attributes. The final scoring results can range from 1-100 (100 being the highest risk score).
      2. Structure Brushing (VM-2)
        - a. Inspect, then clear where needed, with the exception of customer access & environmental constraints  
Between 63,700 to 135,200 structures per year, and these are in addition to PRC 4292
      3. Expanded Clearances for Legacy Facilities (VM-3)
        - a. 50-70 sites/year
      4. Dead & Dying Tree Removal (VM-4)
        - a. 350-650 grids/year
      5. Distribution Line Clearances (VM-7)
        - a. 1900 grids/year
      6. Transmission Line Clearances (VM-8)
        - a. 1000 grids/year
      7. LiDAR Distribution Inspections (VM-9)
        - a. 1020 miles/year
      8. LiDAR Transmission Inspections (VM-10)
        - a. 1820 miles/year
    - iii. Remediation Process:

1. Please see SCE's 2023-2025 WMP in section 8.2.2.1 "Route Line Clearing" to understand SCE's inspection and remediation processes.

**b. SDG&E:**

The purpose of SDG&E's Fuels Modification Program is to reduce the risk of point source wildfire ignition in high fire risk areas, and to protect electrical infrastructure by reducing the intensity of wildfires originating outside the right-of-way. The Fuels Modification Program targets select distribution poles subject to Public Resources Code (PRC) 4292, high risk circuits, and low environmental/cultural impact. The scope of work includes thinning fifty (50) feet around select poles by reducing the vegetation cover to less than 30%, creating areas of separation between stands of woody vegetation, and removing fast-burning fuels like dry grasses and dead/down vegetation.

In addition to FM activities performed by the Vegetation Management Dept, SDG&E performs additional fuels management activities including: Fuels Grant Program (administered by Fire Science and Climate Adaptation Dept) - provides grant funding to local tribes and agencies for the creation of fuels breaks adjacent to roads and utility easements; and Transmission corridor fuels break (administered by Land Services Dept) – removal of vegetation within transmission corridors to reduce fuels through mechanical thinning and the use of goats. The responses below are specific to the Veg Mgmt Fuels Modification activities.

**c. PG&E:**

PG&E has two core programs that manage fuels in a manner that aligns with this question.

- i. Vegetation Control (VC): Year-round maintenance of poles supporting non-exempt equipment as defined by the California Power Line Fire Prevention Field Guide
  1. 10ftx8ft firebreaks are inspected and maintained with 1-3 visits per year based on surrounding site conditions.
  2. Risk is assessed at each location (low or elevated) based on a standardized risk assessment
  3. Bare ground target/objective
- ii. Utility Defensible Space (UDS):
  1. Fuel modification to 50ft around select poles and towers.
  2. Break up vertical and horizontal continuity of fuels, removal of dead downed fuels, limbing lower canopy of trees and reduction of ladder fuels.
  3. Shaded Fuel break model to avoid adverse environmental impacts or conflict with Forest Practice Rules. Generally, not resulting in tree removals
- iii. There are other programs that have similarities but regulatory drivers, process, procedures, and clearances are variable
  1. Transmission Roads access and maintenance
  2. IVM program for transmission ROWS
  3. Fee Strip Management Program (weed abatement on PG&E owned property)
  4. Wood Management for tree mortality and WMP mitigation programs
  5. Ad-hoc tags from T&D system inspections (GO 165)

2. Do you perform FM on distribution and/or transmission facilities?

**a. SCE:** Yes, VM-7, VM-8 along with VM-9/VM-0 for inspection risks.

**b. SDG&E:**

The Fuels Modification Program activities are performed almost exclusively on distribution poles.

**c. PG&E:**

- i. VC: Majority is targeted at Distribution but we have included Transmission Switches in SRA/FRA/HFTD/HFRA

- ii. UDS: Majority is targeted at Distribution but we have included Transmission Switches in SRA/FRA/HFTD/HFRA
- 3. Do you perform radial ground clearances around structures and/or linear easement clearing?
  - a. **SCE:** Yes, VM-2 (Poles Brushing program) which radial ground clearances of 10 ft around distribution poles), VM-3 (Structures Brushing program) which consist of legacy generation assets in T2/T3 which follow PRC4291 of 100 ft for occupied facilities and 30 ft for unoccupied structures.  
SCE prioritizes PRC 4292 in State Responsibility Areas through its Routine Line Clearing program that maintains clearances above 8 feet.
  - b. **SDG&E:**  
SDG&E performs radial ground clearances of 50ft around the distribution poles.
  - c. **PG&E:**  
Radial clearance for VC and UDS
- 4. Is the FM work limited to HFTD/HRFA?
  - a. **SCE:** SCE performs Routine Line Clearing throughout its service territory. While WMP drives FM, SCE does structure brushing in in our State Responsibility Areas (SRA) + HFRA.
  - b. **SDG&E:**  
SDG&E's FM work is limited to the HFTD.
  - c. **PG&E:**  
Program target SRA/FRA/HFTD/HFRA
- 5. Is the FM work determined by a risk-based analysis?
  - a. **SCE:** Yes, it is risk-informed prioritization using SCE's Tree Risk Index (TRI).
  - b. **SDG&E:**  
The FM work is determined by a risk-based analysis which prioritizes poles within high risk circuits and wildfire risk modeling.
  - c. **PG&E:**  
VC schedule not risk model informed but standard requires initial clearing on all poles by fire season declaration date. Maintenance and Reclear cycles follow initial clearing
- 6. Do you perform FM year-round?
  - a. **SCE:** Yes
  - b. **SDG&E:**  
Typically, FM work is performed outside bird nesting season (September through February); however, there are plans to expand the scheduling of this work throughout the calendar year following environmental review and protocols.
  - c. **PG&E:**  
VC's annual schedule begins in October and initial clearing carries into May/June. June-September targets maintenance and reclears for non-herbicide treatment locations (~40-60% of inventory, regionally varied)
- 7. Do you limit FM work performed around poles/towers to just those subject to Public Resources Code 4292?
  - a. **SCE:**  
No. In addition to structures subject to PRC 4292, SCE performs FM on other structures in High-Risk areas. The additional work is detailed in SCE's WMP. Refer to section 8.2.3 SCE WMP that reviews its Vegetation Fuels Management program.

- b. SDG&E:**  
FM work is performed around poles subject to PRC 4292 where there is a higher relative ignition potential.
    - c. PG&E:**
      - i. VC: Yes
      - ii. UDS: Scope has varied since program start in 2021. First two years targeted mainly distribution poles including carrier poles. 2023 populations targeted equipment supporting poles and incorporated Transmission Switches and piloted maintenance at previously completed UDS locations.
- 8. Do you have a targeted % of retained vegetation ground cover as part of your scope?
  - a. SCE:** No. SCE's goal is to clear PRC 4292 structures to bare soil understand there will be some regrowth before the next clearing cycle, but we do not have a % value.
  - b. SDG&E:**  
SDG&E's target is to reduce vegetation ground cover to 30% or less, and to create 6 feet of lateral and 3 foot vertical separation between adjacent vegetation.
  - c. PG&E:**
    - i. VC: No unless otherwise constrained or in alignment with exemptions in 14 CCR 1255
    - ii. UDS: no targeted percentages but the goal is to modify fuels avoid adverse environmental impacts or conflict with Forest Practice Rules. Generally, not resulting in tree removals.
- 9. Do you perform FM work on agency lands (e.g., USFS, BLM, State Park, Wildlife Refuge, Caltrans, tribal)?
  - a. SCE:** Yes, if we have PRC 4292 structures there.
  - b. SDG&E:**  
Currently, SDG&E performs FM primarily on privately-owned property, and select locations on BLM and tribal land.
  - c. PG&E:**
    - i. VC: Yes, the program is compliance driven and requires work in all jurisdictions and ownership unless documented as a constraint
    - ii. UDS: Workplans are generally unbiased to land ownership. Environmental review process or permissioning of work will identify potential constraints. The program is discretionary/optional
- 10. Do you experience environmental and/or permitting challenges with FM work?
  - a. SCE:** Yes
  - b. SDG&E:**  
SDG&E conducts an annual internal environmental and cultural review of selected FM sites to avoid impacting sensitive areas. Fuels modification activities on USFS, State Parks, Caltrans, and military bases are currently excluded due to agency restrictions or permitting/mitigation.
  - c. PG&E:**  
VC: Yes  
UDS: Yes  
Both program experience limited work delays, scope adjustment or documented work limitations or restrictions and small subsets of the targeted populations

## For Discussion Only

11. Do you have a targeted number of structures, acres to complete annually?
  - a. **SCE:** Yes. In 2024 SCE is targeting to inspect and clear where clearance is required approximately 125K structures for PRC 4292, and approximately 125K additional non PRC structures in high risk areas.
  - b. **SDG&E:**  
Under its Wildfire Mitigation Plan, SDG&E targets to complete Fuels Modification activities on 500 structures annually.
  - c. **PG&E:**  
VC: Yes based on non-exempt equipment inventory verified annually by inspection
    - i. 2023 initiated more robust integration of select exempt equipment~9-10k polesUDS: Variable based on available funding
    - ii. 2021 ~5,500 locations (generally model driven identification and prioritization of work , limited projects from local requests)
    - iii. 2022 ~ 7,500 locations (first full year, generally model driven identification and prioritization of work, limited projects from local requests)
    - iv. 2023 ~150 risk model informed/2022 carry-over, ~650 Transmission Switches, ~480 maintenance locations. (Budget reduced for 2023 based on OEIS feedback and GRC programmatic adjustments)
12. Has your company performed any internal or third-party study on the application and efficacy of FM as it relates to scope and ignition mitigation?
  - a. **SCE:** Yes. In 2020 SCE engaged EPRI to perform a fuel management study.
  - b. **SDG&E:**  
SDG&E performed a third-party study on the application and efficacy of its Fuels Modification activity, however, the results were mainly inconclusive due to the relative lack of ignition data.
  - c. **PG&E:**  
For 2023, both VC and UDS location review has been integrated into incident investigations

### PG&E Requested - Additional Questions/Discussion

1. How have you integrated maintenance into your FM program?
  - a. PG&E – Started initial maintenance of select work completed in 2021 to evaluate benefits, costs and need.
2. How does the program integrate management of annual grass and forb crops (flashy fuels)
  - a. Learnings pending from 2023 maintenance work, observations and experience.
  - b. Integrate customer agreements to improve longevity and benefits of initial work?

### Acronym Definitions:

IOU	Investor Owned Utility	GO	General Order
PRCC	Public Resource Code (California)	CPUC	California Public Utilities Commission
SRA	Severe Risk Area	OEIS	Office of Energy & Infrastructure Safety
SRA	State Responsibility Area	DTD	Transmission & Distribution
HCA	High Consequence Area	O	Overhead (lines)
HFRA	High Fire Risk Area	U	Underground (lines)
HFTD	High Fire Thread District	FM	Fuels Management
CCR	California Code of Regulations	UVM	Utility Vegetation Management