

Operations and Maintenance Plan Electric Facilities on National Forest System Lands within the Pacific Southwest Region



OPERATIONS AND MAINTENANCE PLAN FOR ELECTRIC FACILITIES ON NATIONAL FOREST SYSTEM LANDS WITHIN THE PACIFIC SOUTHWEST REGION

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Acronyms and Abbreviations

APE	area of potential effects
BISON	Biodiversity Information Serving our Nation
BMP	best management practice
CAISO	California Independent System Operator
CHRIS	California Historical Resources Information System
CNDDB	California Natural Diversity Database
CPUC	California Public Utilities Commission
ESA	Endangered Species Act
Forest Service	U.S. Department of Agriculture Forest Service
Forest	local National Forest or management unit
FSS	Forest Service sensitive
G.O.	General Order
GIS	geographic information system
HRSP	heritage resource screening process
kV	kilovolt
Level 2	Level 2 maintenance standard
MOU	memorandum of understanding
MPEs	master permits and easements
NEPA	National Environmental Policy Act
NFS	National Forest System
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NRIS	Natural Resource Information System
OHV	off-highway vehicle
O&M	operations and maintenance
R5 PA	Programmatic Agreement among the U.S.D.A. Forest Service, Pacific Southwest Region (Region 5), California State Historic Preservation Officer, Nevada State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Process for Compliance with Section 106 of the National Historic Preservation Act for Management of Historic Properties by the National Forests of the Pacific Southwest Region (Amendment #1)
Region 5	Pacific Southwest Region
RPM	resource protection measure
SHPO	State Historic Preservation Officer
SME	subject matter expert

the Plan
USFWS

Operations and Maintenance Plan
U.S. Fish and Wildlife Service

1.1 Introduction, Goals, and Background

This Operations and Maintenance (O&M) Plan (referred to in this document as the *Plan*) outlines the activities conducted by Pacific Gas and Electric Company and Southern California Edison (collectively referred to in this document as the *Utility*) to fulfill the requirements of maintaining electrical transmission and distribution infrastructure and ancillary facilities across National Forest System (NFS) lands throughout the Pacific Southwest Region (Region 5). The Utility operates and maintains these facilities via special use permits, easements, master transmission and distribution easements, and other authorizations that are issued by the U.S. Department of Agriculture Forest Service (Forest Service). Collectively, these are referred to as *master permits and easements* (MPEs).

Region 5 has led a regional effort to issue new MPEs that will replace expired or expiring authorizations for the Utility's existing electrical systems. This effort included conducting an environmental review of the Utility's O&M activities, establishing the process by which O&M activities are approved as part of the MPEs, and identifying which situations or activities will require additional approvals by the Forest Service over the life of the authorization (30 years).

This Plan describes the Utility's required activities to operate and maintain safe and reliable electric and ancillary facilities throughout the 11 local National Forests (Forests) with Pacific Gas and Electric Company and the 7 Forests with Southern California Edison within Region 5.

The Forest Service has established the following objectives associated with the Plan.

1. Reduce the administrative burden on both the Forest Service and the Utility of case-by-case authorizations for O&M activities with low environmental risk while allowing Forest Service personnel more time for high-priority work and enabling more opportunities to observe activities in the field (as needed).
2. Identify the Utility's routine O&M activities that will be covered under the MPEs and establish a consistent process for how these activities will be evaluated and conducted.
3. Identify major O&M activities that will require additional environmental analysis prior to being authorized.
4. Identify coordination procedures to facilitate ongoing communication between the Utility and the Forest Service.
5. Ensure that the Utility's field personnel and contractors conduct O&M activities in a manner that is consistent with the standards and guidelines of each Forest's land management plan.
6. Empower the Utility to prepare environmental documentation for Forest Service review and verification.
7. Encourage information sharing between all parties to streamline analysis, including geographic information system (GIS) spatial data and resource maps.¹

¹ Heritage resource information will be shared through non-disclosure agreements with the Forest and by utilizing Organic Act, Antiquities Act, and Archeological Resource Protection Act permits for research, survey, and reporting.

8. Standardize Forest response and review periods, which will allow the Utility to have predictable resolution of the reviews and will expedite work schedules to prevent wildfires and power outages.
9. Identify reasonable and feasible standard best management practices (BMPs) and resource protection measures (RPMs) that will be implemented to avoid environmental impacts when conducting O&M activities.

This Plan describes the activities conducted by the Utility to operate and maintain electric transmission and distribution lines. The Plan categorizes O&M activities and new projects by classes (Class I, Class II, Class III, and Class IV) to describe the coordination between the Forest Service and the Utility in conducting those specific activities. The Plan establishes an environmental screening process that the Utility must perform for specified O&M activities and the requirements for notifying the Forest of the results. The environmental screening process includes a comprehensive list of GIS Forest Service sensitive (FSS) species data, among others, that are updated on an annual basis. The Plan also incorporates BMPs and RPMs that were developed collaboratively between the Utility, Forest Service, and resource agencies.

BMPs are standard practices the Utility implements while carrying out O&M activities. These are practices or combinations of practices that have been determined to be effective and practicable means of preventing or reducing the negative impacts of an activity. RPMs are specific measures to avoid and minimize impacts on special-status species, sensitive habitats, and heritage resources.

This Plan does not consider, review, or analyze “greenfield” projects. Greenfield projects consist of new transmission and distribution lines and associated access.

The Forest Service has the obligation to ensure that the Utility operates and maintains its equipment in compliance with federal laws and regulations, including those protecting natural and heritage resources. To this end, the Forest Service ensured that this Plan complies with Section 7 of the Endangered Species Act (ESA) and Section 106 of the National Historic Preservation Act (NHPA). The Forest Service conducted informal consultation with the U.S. Fish and Wildlife Service (USFWS) to arrive at a not likely to adversely affect conclusion and determined that a National Marine Fisheries Service (NMFS) consultation was not needed because there would be no effect on anadromous fish. The Forest Service clarified with the State Historic Preservation Officer (SHPO) that its current Region 5 Programmatic Agreement (R5 PA)² will be implemented to comply with the NHPA.

The Utility has the obligation to comply with the laws and regulations governing the safe and reliable delivery of electricity (see Appendix A). Compliance with those laws and regulations is critically important to ensure the safety of the public and the protection of property and resources from risks such as wildfire. In addition, the Utility must implement the BMPs (see Appendix C), RPMs (see Appendix D), and heritage resource measures (see Appendix E) to avoid and minimize impacts.

The Forest Service will monitor O&M activities associated with the MPEs and will conduct compliance inspection reviews of the Utility’s ongoing activities. The results of the monitoring and compliance reviews will be used to provide feedback to the Utility at annual and quarterly meetings, as needed, as quality assurance of environmental screening and implementation of RPMs.

² U.S. Department of Agriculture Forest Service. 2018. Amendment #1 to *Programmatic Agreement among the U.S.D.A. Forest Service, Pacific Southwest Region (Region 5), California State Historic Preservation Officer, Nevada State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Process for Compliance with Section 106 of the National Historic Preservation Act for Management of Historic Properties by the National Forests of the Pacific Southwest Region*. Vallejo, CA.

Chapter 2

Description of Facilities

The Utility facilities addressed in this Plan are electric transmission and distribution infrastructure, internal communications equipment located within the right-of-way, helicopter pads, Utility roads, and underground facilities. All facilities located on NFS lands will be administered with this Plan, although some facilities have been authorized in perpetuity through statute, permanent easement, or other permanent authorization. These facilities are not authorized through the MPEs and will continue being authorized by their parent authorization, but they will be administered and maintained in accordance with this Plan. Descriptions of these facilities are included below.

This Plan does not apply to any facility located outside the right-of-way or approved under a separate authorization. Communications equipment installed by third parties (i.e., fiber optic lines owned by a commercial communications company) on Utility poles may be permitted separately by the Forest Service to the third party. The Utility may have entered into a Joint Pole Agreement with the third party, but the Utility has no authority over these third-party installations.

2.1 Transmission Infrastructure

Transmission infrastructure consists of poles and towers supporting powerlines used to transport electricity with voltages ranging from 33³ to 500 kilovolts (kV). Transmission lines allow high voltages of electricity to be carried over long distances. Transmission lines are eligible for an easement from the Forest Service and are under operational control of the California Independent System Operator (CAISO).

Transmission lines include conductors (powerlines) supported by wood, lightweight or engineered steel, composite or concrete poles, or by steel lattice towers. Typically, concrete, composite, wood, and light-duty steel poles are installed using direct burial with no concrete foundations. Steel poles are installed using direct burial or using concrete footings. Engineered steel poles and lattice structures require concrete foundations. Where necessary, anchors, guy wires, and stub poles are used to resist pole deflection. Stub poles may be wood or steel and sometimes require concrete foundations. All structure types are used to support cross-arms; insulators and conductors; guying; and a variety of other electrical equipment, such as switches, lightning arresters, vibration dampers, and marking and lighting accessories as appropriate. Insulators are attached directly to the poles or to cross-arms mounted on the structures. Poles and towers also may support non-Utility communication cables and equipment.

2.2 Distribution Infrastructure

Distribution infrastructure consists of poles supporting powerlines used to transport electricity with voltages ranging from 4 to 33 kV. Distribution lines typically are designed to deliver electricity to customers and end users. Distribution lines are eligible for a Forest Service special use permit and generally are regulated by the California Public Utilities Commission (CPUC).

³ Pacific Gas and Electric Company's and Southern California Edison's transmission infrastructure on NFS land ranges from 50 to 500 kV and from 55 to 500 kV, respectively.

Overhead distribution facilities include powerlines and other electrical equipment on wood poles that may be supported by anchors, guy wires, and stub poles. Overhead facilities also may be supported by trees, or by composite or lightweight engineered steel poles. Poles also may support Utility and non-Utility communication cables and equipment.

To deliver electricity to its individual customers, the Utility must use equipment to “step down” the voltage one or more times. The Utility accomplishes this through the use of substations and local equipment such as transformers on or adjacent to distribution poles.

2.3 Internal Communications Equipment

Internal communications equipment, including fiber optics equipment, is necessary for the Utility to monitor and operate its facilities in a safe and reliable manner. Examples include communications lines between substations and remote switching equipment (i.e., supervisory control and data acquisition [SCADA]). Communications equipment also consists of overhead optical ground wire or fiber optic cables that can provide the functions of grounding, communications, or both. Internal communications equipment does not include infrastructure operated and maintained by third parties within the Utility’s right-of-way or infrastructure operated by the Utility for commercial purposes.

2.4 Helicopter Pads

Helicopter landing areas are necessary when helicopters are prescribed for activities or where traditional access is infeasible. Standard helicopter landing specifications include a touchdown pad, with dimensions of approximately 12 by 12 feet and a hardened touchdown pad using asphalt, concrete, large-size gravel (>3 inches), or natural bedrock. Additional space may be needed to ensure a safe landing zone. Federal Aviation Administration regulations will apply.

Elevated helicopter landing pad structures also are used. They are maintained up to and including replacement of the structures on an as-needed basis. Helicopter pads will be identified in the Forest Service transmission easement or distribution special use permit. Limited operating periods may be in effect to protect avian species of concern when flights are requested. Access to helicopter landing areas occurs on an as-needed basis.

2.5 Access Routes

Safe and reliable access to facilities is required for operation and maintenance of the electric system and is a vital component of implementing this Plan. Access routes are required for detailed ground-based inspection of electric distribution and transmission poles, towers, and other equipment as required by federal and state regulations. Access routes also are critical for emergency response and wildland fire response near electric distribution and transmission lines.

To access its electric facilities, the Utility manages a Utility Access Road Network. This network includes a system of existing roads, off-highway vehicle (OHV) routes, and foot trails.

The Utility Access Road Network is maintained in a GIS database. Management of the network involves inventory and mapping, field-based condition assessment, and applied maintenance work.

The Forest and Utility will use the annual meeting and other scheduled meetings, as needed, to discuss issues and opportunities associated with the Utility Access Road Network—including trouble spots, areas containing biological and heritage resources, seasonal use restrictions, and previous work.

2.5.1 Roads

The Utility utilizes two main classes of roads on NFS lands to access and maintain its infrastructure. These include Forest Service System roads (System roads) and roads permitted to the Utility by the Forest Service for exclusive motorized use by the Utility in order to access its infrastructure (Utility roads).

System roads are under the jurisdiction of the Forest Service and are maintained and managed by the Forests. For System roads, the Utility will identify these facilities as needed in the Utility Access Road Network; any repair or maintenance activities to be conducted by the Utility will be coordinated with the Forest via project-specific permit (i.e., FS-7700-0040, Application for Permit for Use of Roads, Trails, or Areas Restricted by Regulation or Order). The permit will outline the authorized uses and standards for these System roads and specify the Utility’s responsibility, if any, for making repairs to System roads due to localized O&M activities.

Utility roads typically are rocky or native surface low-volume roads. Standard widths for Utility roads are typically 12 to 18 feet. If berms are present, they typically extend 1 to 2 feet on either side of the road. The components of an access road are illustrated in Figure 1. Where safety requires it, turning radii may exceed typical road widths. All Utility roads will be maintained at a Level 2 Maintenance Standard (Level 2) consistent with Forest Service December 2005 *Guidelines for Road Maintenance Levels* (or current guidelines when updated) unless otherwise agreed upon. Level 2 roads are used by high-clearance vehicles and are not suitable for passenger car traffic. They have low traffic volume, accommodate low speed, and are maintained only as necessary for planned traffic. Utility roads will be inspected and maintained consistent with the standards and practices described in this Plan.

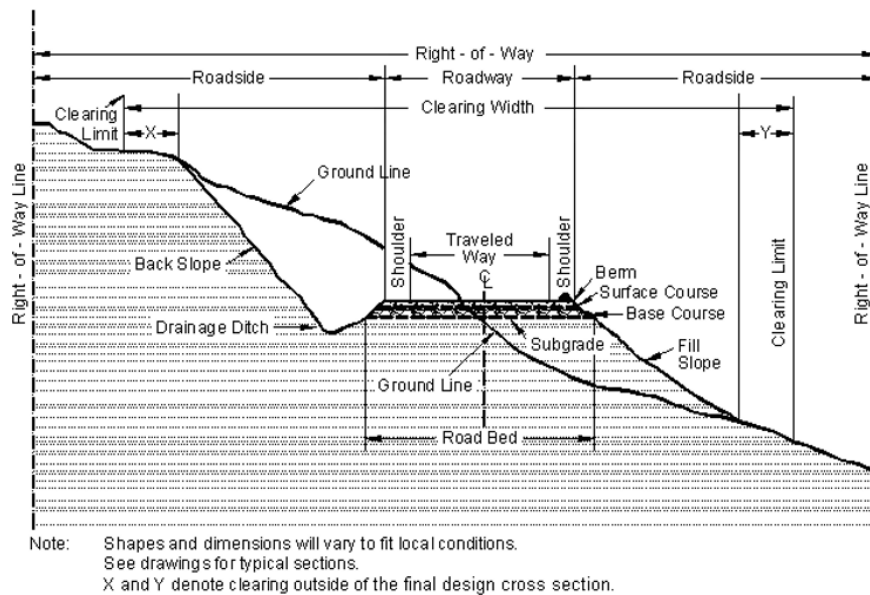


Figure 1. Typical Cross Section of Components of Access Road

The Utility will work with the Forest to identify roads and locations where additional physical controls are needed to restrict public motorized access to Utility roads and the associated rights-of-way. As new controls (e.g., gates, earthen berms, boulders, and other controls) are constructed, the Utility will record and track this information in its Utility Access Road Network. All gates will be kept locked at all times with Utility and Forest Service-issued locks.

2.5.2 Off-Highway Vehicle Routes

The Utility may use established OHV routes to access and maintain its infrastructure. Similar to roads, many OHV routes are under the jurisdiction of the Forest Service (System OHV routes) and are maintained and managed by the Forests. In some locations, System OHV routes are permitted to the Utility by the Forest for exclusive motorized use by the Utility in order to access its infrastructure. Standard widths for OHV routes are 6 to 10 feet, although some locations may require turning radii that exceed these standard widths for safety. A typical cross section of an OHV route is illustrated in Figure 2. The Utility will adhere to vehicle size and use restrictions along these routes consistent with standard Forest Service policies and practices.

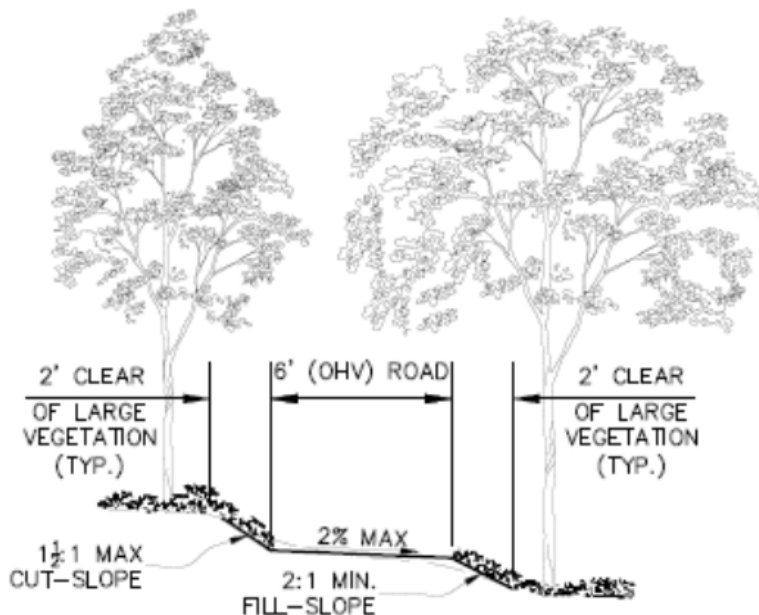


Figure 2. Typical Cross Section of Off-Highway Vehicle Route

The use of, and potential for impacts from using, OHV routes will be considered by the Utility as part of the environmental screening process, as described in this Plan. Utility OHV routes will be included in the Utility Access Road Network and identified as such. These routes will be used, inspected, and maintained consistent with the standards and practices identified in this Plan to avoid resource impacts and additional unauthorized access. The Utility will identify System OHV routes as needed in the Utility Access Road Network. Any repairs or maintenance activities to be conducted by the Utility will be delineated and described as needed in a project-specific permit with the Forest. The permit will outline the authorized uses and standards for these System OHV routes and specify the Utility's responsibility, if any, for making repairs to System OHV routes due to localized O&M activities. The Forest and Utility will use the annual meeting and other scheduled meetings, as

needed, to discuss issues associated with the use of OHV routes—including trouble spots, areas containing biological and heritage resources, and any seasonal use restrictions.

Where utilized, the Utility will work with the Forest to regularly review and identify OHV routes and locations across the Utility Access Road Network where access controls may be needed to restrict public motorized access along these routes. The Utility will work with the Forest to install and maintain gates, earthen berms, boulders, or other physical controls at these locations. Any installed gates will be kept locked at all times with Utility and Forest Service-issued locks.

2.5.3 Foot Trails

When road or OHV access is not available, the Utility may use foot trails to access its facilities. Although not regularly maintained, the trails may require vegetation management prior to their use; standard widths for foot trails are typically 4 to 6 feet, depending on local conditions. A typical cross section of a foot trail is illustrated in Figure 3. Where needed, the vegetation management activities required along a trail will be considered as part of a work activity's environmental screening process.

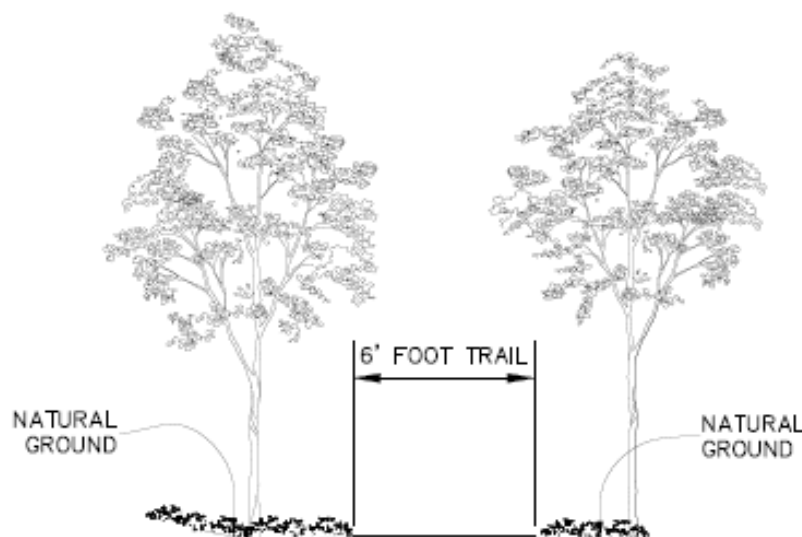


Figure 3. Typical Cross Section of Foot Trail

2.5.4 Overland Vehicular Travel

In some locations, overland vehicular travel and temporary vehicular access may be required when other safe access has not been previously established or does not exist. In these cases, the anticipated overland travel route will be described by the Utility in its notification package, and potential impacts will be evaluated according to the environmental screening process described in this Plan. In areas where overland vehicle travel is regularly required, but establishing or maintaining permanent access is infeasible or otherwise not possible, the Utility will evaluate and map these areas to identify any BMPs or RPMs needed to enable such access.

2.6 Underground Facilities

Underground facilities include distribution infrastructure consisting of conduit with electrical cables used to transport electricity, with voltages ranging from 4 to 33 kV. Pull boxes, junction boxes, vaults, transformers, automation and detection devices, and other equipment may be installed below ground in a right-of-way or roadway. Often, they may be connected to aboveground facilities with cables attached to a pole with a protective cover. Underground facilities will be identified in the MPEs.

Overview of Activity Classes and Review Process

O&M activities comprise the decisions and actions regarding the control and upkeep of property and equipment. These include, but are not limited to (1) actions focused on scheduling, procedures, and work/systems control and optimization; and (2) performance of routine, preventive, predictive, scheduled, and unscheduled actions aimed at preventing equipment failure or decline with the goal of maintaining or increasing efficiency, reliability, and safety. Inadequate maintenance of energy infrastructure can lead to threats of wildfire and risks to public safety.

O&M activities for transmission facilities are dictated by the inspection and maintenance requirements in the Transmission Owner Maintenance Practices Agreements between the Utility and the CAISO. These agreements establish a priority ranking that further defines the type and frequency of inspections of poles and towers, equipment, roads, trails, and vegetation. The Utility considers the general age of the infrastructure, the number and types of customers on the circuit, the surrounding geography and environmental constraints, accessibility, and the impact of failures on the transmission network. Additional factors determining the frequency of inspection and maintenance activities include environmental conditions present in a particular geographic area (e.g., the level of dirt, dust, and bird droppings), the level of vandalism of facilities (e.g., gunshot insulators), the severity of storms (e.g., snow, winds), other natural disasters (fires, floods, and earthquakes) and accidents, and the normal aging of the facilities.

O&M activities for distribution facilities are specified by Public Resources Codes 4292 and 4293; CPUC General Order 95, Rule 35; and CPUC General Order 165, among others. The timing of inspection and maintenance of distribution infrastructure generally considers the variables that are described above for transmission infrastructure, although there is no formal priority ranking as required in the CAISO agreement for transmission facilities.

3.1 Class I Activities – Routine Patrols, Inspections, and *de Minimis* Activities

3.1.1 Description

Class I activities are routine activities with minimal to no ground disturbance and environmental impact. These activities are considered *de minimis* – lacking significance – and are minor; they do not warrant in-depth analysis. Table 1 provides a summary of Class I O&M activities.

Table 1. Class I Activities

Activity
<i>Routine Patrols</i>
<ul style="list-style-type: none"> • Aerial patrols^a • Ground patrols^b
<i>Inspections</i>
<ul style="list-style-type: none"> • Internal communications equipment • Towers, poles, and equipment • Wood poles • Sections of overhead and underground conductors, cables, and wires • Substations • Helicopter pads
<i>de Minimis Activities</i>
<ul style="list-style-type: none"> • Land surveys • Outage repairs • Pole/tower clearing^c and limbing/pruning^d • Minor road maintenance • Anchor/guy wire replacements

^a Patrols where the Utility plans to fly below 200 feet in elevation in the vicinity of federally listed bird species or as otherwise specified in the RPMs (e.g., see California condor, northern spotted owl, Peninsular bighorn sheep, and Sierra Nevada bighorn sheep for additional RPMs) must be submitted as a Class IIa or Class IIb action; and a flight plan must be submitted to the Forest's local Dispatch Office or Air Tanker Base. If a resource protection process can be established where threatened and endangered birds are mapped, and flight decks and limited operating periods are established consistent with the RPMs, the Utility can submit as a Class I activity.

^b Ground patrols must take place on System roads in the Utility Access Road Network or other access routes agreed to by the Forest. Activities involving overland or off-road vehicular travel must be submitted to the local Forest for review as a Class II activity. Overland travel does not include foot travel.

^c Class I pole and tower clearing applies only to subject (non-exempt) poles that are currently cleared and require light weeding, or were cleared the previous year. Poles that have not been previously cleared, or that require heavy clearing or brushing, must be screened for resources and submitted as a Class II action.

^d Whole tree removal (excluding hand tool removal of small tree ingrowth and resprouting vegetation previously removed by the Utility) is not authorized as a Class I action; large volumes of limbing and pruning will require a fuel load assessment and determination of proper disposal by the Forest. The Utility will submit maps and schedules of pruning work 3 weeks prior to the annual meeting to allow sufficient time for Forest review. Utility pruning work can proceed after the annual meeting. If the work activity does not align with the annual meeting, the Utility will notify the Forest of such activity during a quarterly call.

3.1.2 Review Process

Class I activities will be jointly reviewed by the Utility and the Forest at each annual meeting, or more frequently as needed. The annual meeting will provide the Forest with an opportunity to discuss any areas of concern, including newly identified areas where resource protection is required. During the annual meeting, both parties will share (1) any new and relevant information to ensure that the Utility is operating with the best available data; and (2) any new RPMs or methods to better protect resources.

Class I activities are performed by implementing applicable BMPs and RPMs, and no further action is needed from the Forest. The Forest may monitor activities, and the Utility will provide an overview of the proposed work to be completed in the coming year. Quarterly conference calls may be initiated at the discretion of the Forest and/or Utility to discuss upcoming work.

The Forest and Utility are committed to participating in annual meetings and will make appropriate staff available to attend in person or call in via conference call. As part of the annual meetings, the Forest and the Utility will discuss the effectiveness of these meetings to ensure that they are informative and useful. The Region 5 Leadership Team will be available, upon request, to participate in meetings or conference calls to give feedback and suggestions on effective communication. Annual meetings will be scheduled by the first quarter of each year.

3.2 Class II Activities – Routine Operations and Maintenance

3.2.1 Description

Class II work consists of routine O&M activities. In this Plan, Class II activities are categorized into three subclasses depending on the presence or absence of resources requiring protection and the measures to be implemented for the protection of such resources. All Class II activities undergo an environmental screening through GIS and multiple databases to ensure compliance with state and federal legal requirements and the protection and avoidance of impacts on biological, heritage, and water quality/wetland resources. The Utility also uses the environmental screening process to ensure that O&M activities are being implemented in ways that avoid impacts on special-status species, sensitive habitats, and artifacts—in addition to minimizing the footprint of the activity. As used in this Plan, *special-status species* include federally listed species, candidates, or species proposed for listing; State-listed and State fully protected species; plants with a California rare plant rank from the California Native Plant Society; and FSS species. For the Class II activities defined in this Plan, the environmental screening process may involve pre-activity, activity, and post-activity support, depending on the timing of mobilization to conduct inspections, maintenance, replacements, and repairs. The BMPs and resource-specific RPMs were collaboratively developed by the Utility, Forest Service subject matter experts (SMEs), and resource agencies to ensure that measures are appropriate for protecting resources when performing maintenance activities.

The environmental screening will result in the proposed activity being classified in one of three subclasses.

- **Class IIa** includes routine activities in locations with no resources.
- **Class IIb** includes routine activities proposed in proximity to resources that can be avoided through implementation of standard BMPs and/or the established resource-specific RPMs.
- **Class IIc** represents routine activities proposed near or within an area supporting resources for which modified or additional resource-specific RPMs may be needed in order to avoid impacts. In these instances, the Utility will propose modified or additional measures and must request authorization from the Forest Service prior to performing the work. Class IIc activities represent a very small percentage of the total volume of work completed by the Utility.

Table 2 provides a summary of Class II activities.

Table 2. Class II Activities

Activity^a
<ul style="list-style-type: none"> • Pole and conductor replacements^b • Tower replacements • Reconductoring/underground work • Vegetation maintenance • Internal communications maintenance • Shoo-fly installations/interset installations • Routine road maintenance
<p>^a O&M activities involving overland or off-road vehicular travel will be submitted to the Forest as a Class II activity.</p> <p>^b To the extent possible, routine pole replacements (non-emergency) will be bundled and submitted to the Forest quarterly, understanding that the Utility must comply with state and federal regulations that may prevent bundling (refer to Appendix A). Tree attachments also are considered in this work.</p>

3.2.2 Review Process

- **Class IIa:** The Utility will notify the Forest and proceed with this work after 5 business days using standard BMPs given that no resources are present.
- **Class IIb:** The Utility will notify the Forest with a complete work package that includes a description of the activity, the location, and the BMPs and resource-specific RPMs to be implemented to avoid impacts on resources. The Utility may proceed after a 10-business-day review by the Forest. During the 10-business-day review, the Forest will have the opportunity to provide feedback and edit or comment on the work packet. The Utility will work with Forest to address the Forest's feedback prior to commencing work, and the Forest will work on addressing the responses in a timely manner. A copy of the clearance will be reviewed and implemented by the work crew, and a copy will be maintained onsite at all times and available to the Forest representatives as requested.
- **Class IIc:** The Utility will notify the Forest with a complete work package that includes a description of the activity, the location, the resource-specific BMPs and RPMs to avoid impacts on resources, and the proposed additional measures to ensure proper protection of the resources. The Forest will review and respond within 15 business days as to whether it concurs that the proposed site-specific BMPs and RPMs will avoid potential impacts. If the Forest does not concur, it will provide the Utility with (1) direction on what additional documentation and measures are needed to conduct the work, including consultation with regulatory agencies if applicable; and (2) a timeline on when a work authorization will be issued. If consultation is required, the Utility may proceed once consultation is complete. If the Forest deems the work package adequate, the Utility may proceed.

See Section 5.1.3, *Dispute Resolution*, for a more detailed discussion of methods for resolving disputes. Dispute resolution for heritage resources follows a similar but slightly different process, as outlined in Appendix E.

3.2.3 Notification Package

Attachment B-1 provides an example of a Utility notification. Class II notifications will include the following:

- Project description and list of activities.
- Location, area (if applicable) with GIS coordinates and/or maps.
- Type of work, denoting all areas of ground disturbance to include, but not limited to workspace, temporary staging/assembly areas, landing zones, and/or turnaround locations.
- Anticipated schedule and/or work start/end date.
- Accessibility (to include access roads, navigation roads, and footpaths to be traveled).
- Contact information for the lead Utility person conducting the work (if available).
- Equipment to be used.
- Anticipated square footage of ground disturbance, if greater than 1,000 square feet per site.
- Number, location, size, and species of trees to be cut or area polygon describing the brush unit count and key species, as applicable.
- Applicable resource information provided in the form of maps and associated GIS data from desktop review or surveys, or on-the-ground inspections when existing information is unavailable.
- BMPs and RPMs to be followed (to include biological and heritage measures).
- Forest and Utility contacts.

3.3 Class III Activities – Project Proposals

3.3.1 Description

Activities that do not fit the scope and scale of Class I and Class II are considered Class III. In many cases, these activities are considered “projects” because they are broader in scope, encompass areas outside of the permitted boundary, and may be proposed in areas supporting resources. These activities typically require more extensive environmental analysis and review prior to initiating work.

All Class III activities require the Utility to submit a work package and receive approval from the Forest in the form of an authorization prior to initiating work. The Utility will provide the Forest with a complete project description; a list of proposed activities; the location, including maps and GIS layers; a description of the equipment to be used; desired access, including the use of System roads; timelines; result of the initial screening for resources; and site-specific BMPs and RPMs proposed for the project.

Table 3 provides a summary of Class III O&M activities.

Table 3. Class III Activities

Activity
<ul style="list-style-type: none"> • Reconductoring projects • New pole construction or alignment changes • Major road construction/reconstruction • New underground projects • Specialized right-of-way vegetation management • Wood product removal

Note: Class III could include other activities; it is not limited to the descriptors in the table above. Any project proposal that is deemed within the scope and scale of O&M activities may be considered by the local Forest.

3.3.2 Review Process

The Utility must screen and analyze all Class III project proposals for potential impacts on resources. The Forest will determine whether a new authorization is required and the possible need for consultation with other agencies; the Forest also may provide additional RPMs for the proposed activity. Within 30 business days of receiving the Utility's proposal, the Forest will (1) approve the proposal as submitted; (2) approve the proposal with additional RPMs; or (3) provide guidance as to the process to be followed and a schedule for when the activity can be reviewed, analyzed, and approved.

NOTE: New activities that require Forest Service authorization (e.g. new permits, permit amendments) are not included in this Plan; these project proposals will be submitted separately and require National Environmental Policy Act (NEPA) analysis.

Section 5.1.3, *Dispute Resolution*, provides a detailed discussion of circumstances under which the Utility and the Forest cannot agree on measures and a timeline.

3.3.3 Notification Package

All Class III activities require the Utility to submit a work authorization package and receive approval from the Forest prior to initiating work. Information provided in the authorization request will include the following (see Attachment B-1):

- Project description and list of activities.
- Location area (if applicable) with GIS coordinates and/or maps.
- Type of work denoting all areas of ground-disturbance to include, but not limited to, workspace, temporary staging/assembly areas, landing zones, and turnaround locations.
- Anticipated schedule and/or work start/end date.
- Accessibility (to include access roads, navigation roads, and footpaths to be traveled).
- Contact information for the lead Utility person conducting the work (if available).
- Equipment to be used.
- Anticipated square footage of ground disturbance, if greater than 1,000 square feet, per site.

- Number, location, size, and species of trees to be cut or area polygon describing the brush unit count and key species, as applicable.
- Applicable resource information provided in the form of maps and associated GIS data from desktop review or surveys, or on-the-ground inspections when existing information is unavailable.
- BMPs and RPMs to be followed (to include biological and heritage measures).
- Forest and Utility contacts.

As applicable, the Utility will submit other information as part of the initial Class III work package. Examples of additional information include the following:

- Description of all System roads to be used and their current condition.
- Full description of any needed temporary access roads or trails, including a complete map and assessment of any overland travel to be completed.
- A draft restoration plan for the general project area, where the area of disturbance is greater than 1 acre, including restoration of roadbeds and temporary access points, re-establishment of native plants, post-project erosion control methods, and weed risk assessment.
- A draft monitoring plan, where the area of disturbance is greater than 1 acre, for the effectiveness of erosion control, noxious and invasive weed control, and success rates of native vegetation (if needed).

3.4 Class IV Activities – Emergency Response

3.4.1 Description

Emergency work is required to resolve a situation that, if not corrected, could compromise the transmission or distribution facilities, electric system reliability, or Forest resources. These conditions represent immediate threats to public safety, electric reliability, or property. Emergency response can involve activities that require crews to respond immediately to address an imminent threat as well as activities to address emergency situations that result in damage to Utility infrastructure and equipment. An emergency also is considered in instances where a system failure breakdown has occurred as a result of multiple towers, poles, and conductors are not functioning correctly.

Examples of emergency repairs include replacing downed poles or towers, reconductoring segments of line, pulling new line, removing vegetation, or felling trees that pose an imminent threat to facilities. Emergency response may include helicopter flights below 200 feet of the tree line, overland travel on non-permitted lands, and access for emergency equipment used to address the hazards and restore power.

3.4.2 Review Process

Class IV activities are those actions that the Utility must conduct immediately in response to an imminent threat or emergency. The Utility will notify the Forest of its activity as soon as possible (typically within 48 hours). The Utility will provide post-reporting and other information to the Forest as required within 15 business days of completing work associated with a situation posing an

imminent threat (i.e., pole posing immediate threat of failing) and within 30 business days of completing work associated with activities resulting from an emergency (i.e., wildfire response).

3.4.3 Notification Process

Class IV emergency work will start immediately to correct unsafe conditions and return the transmission or distribution facilities to service or deenergize them when necessary. The Utility will notify the Forest as soon as reasonable (typically within 48 hours) of an identified need for or commencement of any emergency repairs. The notice will include, if known, a brief description of the work, location of the facilities, scope of work, equipment used, access used, cause of the emergency, and BMPs and/or RPMs applied. In addition, the Utility will conduct the necessary assessments of impacts and provide post-activity reporting and other information to the Forest as required within 30 business days from completing the emergency activities. For immediate repair work, the Utility will provide a report to the Forest within 15 business days. The Forest and the Utility will mutually inspect and agree on any restoration work required to repair emergency work areas on a case-by-case basis. While most activities can be scheduled in advance, emergency repairs may be needed at any time.

Chapter 4

Environmental Protection Process

The following sections outline and describe the decision process and requirements for different classes of work. Each class and subclass reflects distinct activities and requirements.

O&M activities will be carried out according to the environmental protection process described below. In accordance with the requirements of this Plan, the Utility will implement BMPs for all work activities and RPMs as prescribed by a Utility SME or the Forest, following the environmental protection process outlined in Figure 4.

4.1 Best Management Practices

BMPs are standard practices the Utility implements while carrying out O&M activities. These are practices or combinations of practices that have been determined to be effective and practicable means of preventing or reducing the negative impacts of an activity. These measures include employee environmental awareness training and invasive species prevention but are predominately taken from the *National Best Management Practices for Water Quality Management on National Forest System Lands*⁴ and reflect the components of the measures related to Utility work (Appendix C). BMPs specific to preventing the spread of invasive plants are provided in Attachment C-1.

4.2 Resource Protection Measures

RPMs are specific measures used to avoid and minimize impacts on special-status species, sensitive habitats, and heritage resources. Some examples of RPMs are listed below.

- Scheduling work outside limited operating periods (e.g., avoiding breeding or flowering periods for special-status species).
- Conducting pre-activity surveys for special-status species.
- Having a biological monitor onsite during work activities.
- Imposing resource-specific buffer zones (e.g., to avoid an active natal den of a special-status species).

The Utility may specify RPMs for Class I activities to be consistent with USFWS/NMFS/SHPO requirements. The Forest may concur or recommend additional BMPs/RPMs during the annual meeting. The Forest Service coordinated with the Utility, USFWS, and NMFS to review and approve the species-specific RPMs outlined in Appendix D. The evaluation and protection process for heritage resources is described in Appendix E. The Utility's Fire Plan is included in Appendix F.

⁴ U.S. Department of Agriculture Forest Service. 2012. *National Best Management Practices for Water Quality Management on National Forest System Lands*. (FS-990a.) April. Volume 1: National Core BMP Technical Guide.

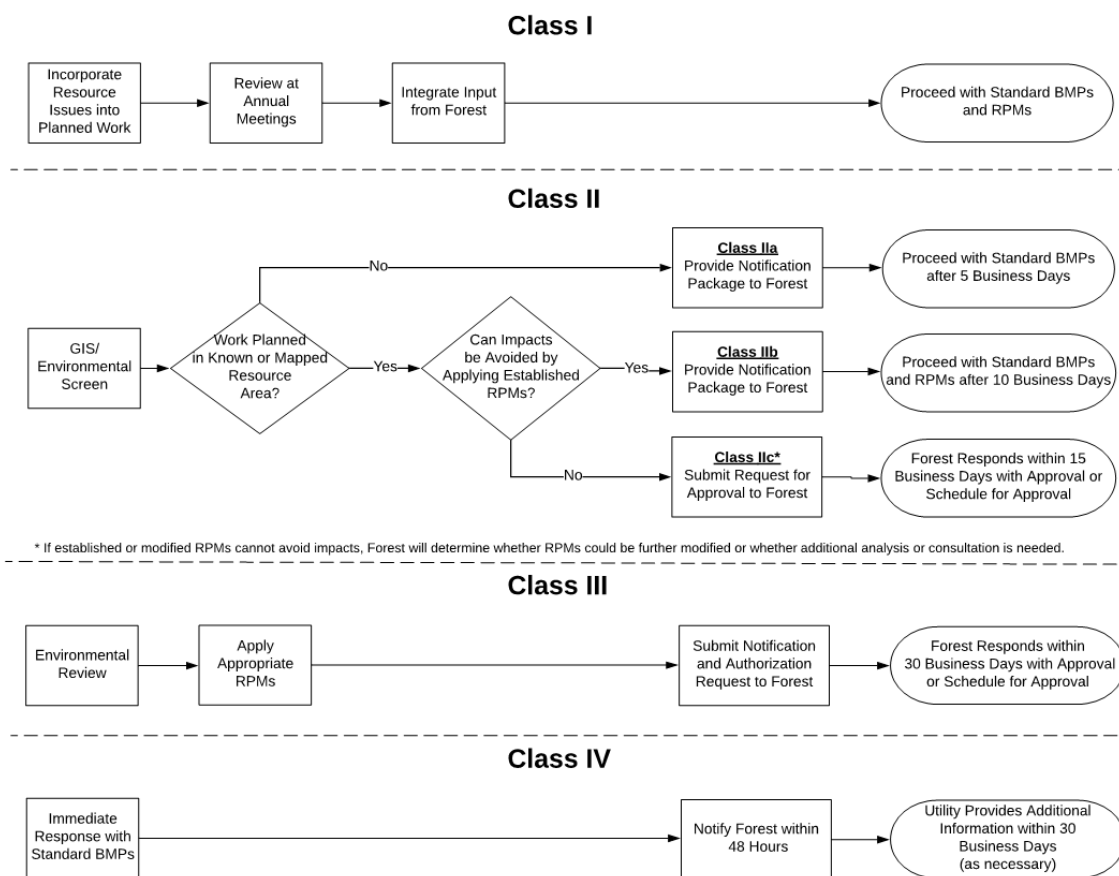


Figure 4. Overview of Utility Environmental Protection Process

4.2.1 Biological Resources and Wetlands/Waterways

An overall evaluation of potential habitat and species effects was conducted on a Forest-level basis as part of the Plan. This evaluation occurred in the biological assessments and biological evaluations (including Migratory Bird Treaty Act evaluation) prepared for the Plan. These documents summarize how BMPs and RPMs will avoid impacts consistent with Forest Service requirements during Class I, Class IIa, and Class IIb O&M activities.

Prior to initiating Class I, Class II, and Class III activities, the Utility conducts a multi-step process to determine whether the activities would occur in an area(s) known to have special-status species, designated critical habitat, non-native invasive weeds, or jurisdictional waters.

The first step of the environmental screening process is to compare work locations against GIS data for biological resources, proximity to waterways and wetlands, land ownership, and proximity to roads and existing survey records of known mapped resources. The second step of the environmental screening process is for the Utility to review aerial imagery, and if necessary, field verify the work locations and GIS data sets. Information collected during the field verification process (if needed) will be used to update GIS data sets where necessary. These two steps will determine whether work can be released with implementation of standard BMPs or if RPMs are

process (if needed) will be used to update GIS data sets where necessary. These two steps will determine whether work can be released with implementation of standard BMPs or if RPMs are required, along with notification to the Forest. Field verification and survey coverage will depend on field conditions such as habitat suitability and work location.

The following are examples of datasets that may be included in the biological and wetlands/waterways screening:

- Forest Service Classification and Assessment with Landsat of Visible Ecological Groupings (CALVEG) land cover data
- Forest Service Natural Resource Information System (NRIS) data
- U.S. Geological Survey National Hydrographic Dataset (e.g., waterways, water features)
- U.S. Geological Survey Biodiversity Information Serving Our Nation (BISON)
- California Department of Fish and Wildlife California Natural Diversity Database (CNDDDB)
- California Protected Areas Database
- California Invasive Plant Council Weed Mapper
- USFWS and NMFS critical habitat
- Serpentine soil data
- GIS datasets of surveys and occurrences of threatened, endangered, candidate, and proposed species collected by the Utility

The Utility will use the best available data to prescreen its work activities, which will include at a minimum NRIS and CNDDDB data, and the Utility will share data updates with the Forest. Similarly, the Forest will share data updates with the Utility. The data sources will be updated annually, as necessary, and modified to ensure that the necessary constraints are properly considered.

If the initial screening process of the work location does not identify a potential resource area from the first steps of screening and current survey coverage is available for the O&M activity area (i.e., Class IIa work), the work packet/environmental clearance with standard BMPs will be submitted to the Forest for a 5-business-day notification and an edit/comment opportunity.

If the initial screening process of the work location identifies a potential resource area (i.e., Class IIb work), RPMs are attached to the work packet and the packet is reviewed by one or more of the Utility's SMEs. Utility SMEs include land analysts, biologists, environmental field specialists, and environmental land planners. The SME reviews the work packet, including the scope of work and RPMs stipulated by the initial screening; the GIS data outputs; the timing, size, and duration of the activity; and photos collected by staff and contractors. If the SME deems the RPMs to be appropriate, the SME will release the work packet with standard BMPs and RPMs for submittal to the Forest for a 10-business-day notification and edit/comment opportunity.

If a resource is present that cannot be avoided by implementing the established RPMs (i.e., Class IIc work), the SME will prescribe additional RPMs or modifications to the established RPMs to avoid and minimize the effects of the activity and will submit an authorization request to the Forest for a 15-business-day review and approval or schedule for approval.

4.2.2 Heritage Resources

Prior to initiating Class I activities, the Utility will review BMPs with the Forest at Heritage quarterly meetings and Forest annual meetings, and discuss the application of approved standard protection

measures in accordance with the R5 PA (Appendix E). Prior to initiating Class II and Class III activities, the Utility also conducts a Heritage Resource Screening Process (HRSP) to determine whether the activities have the potential to affect known heritage resources. The first step of the HRSP is to determine whether adequate survey coverage exists for the O&M activity's area of potential effects (APE). Utilities will utilize an Adequate Survey Catalog prepared by utility archaeologists and approved by the Heritage Program Managers (HPMs) for this purpose. Additional heritage resources data are used for this screening and may include the following:

- Heritage resource files and GIS data
- Utility heritage resource GIS data and past project files (including Utility facility GIS data)
- California Historical Resources Information System (CHRIS) files

A qualified archaeologist (Utility or consultant staff) who meets, or is directly overseen by one who meets, the Secretary of Interior Standards (36 CFR Part 61) will perform the CRSP, which has four potential results.

1. Adequate survey with no known heritage resources in the APE. *Result:* No further work is required. Report citation is included in the notification package.
2. Adequate survey with avoidable impacts to heritage resources in the APE. *Result:* Report citation and approved standard protection measures are submitted in the notification package for Heritage Program Manager or designee validation/comment.
3. Adequate survey with unavoidable impacts to heritage resources in the APE. *Result:* Consult with Heritage Program Manager or designee.
4. New heritage resources survey is required. *Result:* No heritage resources (follow #1); avoidable impacts to heritage resources (follow #2); unavoidable impacts to heritage resources (consult with Heritage Program Manager or designee).

Heritage Program Managers or their designees will validate/comment on HRSP results that include heritage resources within to the APE. All heritage resource management actions will be compliant with the R5 PA⁵ and submitted in an annual report, which will include new heritage resources and surveys, associated GIS, and any impact minimization and mitigation efforts.

Appendix E is the Heritage Resources Management Plan, which includes additional information on the HRSP and references to the R5 PA. The R5 PA provides guidance for Utility compliance with Section 106 of the NHPA (as amended) for O&M activities/undertakings. Should the R5 PA be amended, the amended version will apply to this Plan.

4.3 Class III Activities

Activities that cannot be characterized as routine and ongoing, and do not fit the scope and scale of Class I and Class II activities, are considered Class III. These activities typically will require more extensive environmental analysis, review, and reporting prior to initiating work activities. In many cases, these activities are considered "projects" because they are larger, of longer duration, use more

⁵ U.S. Department of Agriculture Forest Service. 2018. Amendment #1 to *Programmatic Agreement among the U.S.D.A. Forest Service, Pacific Southwest Region (Region 5), California State Historic Preservation Officer, Nevada State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Process for Compliance with Section 106 of the National Historic Preservation Act for Management of Historic Properties by the National Forests of the Pacific Southwest Region*. Vallejo, CA.

equipment, and may require access to other NFS lands beyond currently authorized areas. The Utility will provide the Forest with a complete project description, which will include the need for the action; proposed activities; mapping and shape files; a description of the equipment to be used, access, timelines, and initial screening for resources; and the proposed BMPs and RPMs. Within 30 business days, the Forest will authorize the activity or provide the Utility with a list of additional information needed to process and approve the request, as well as a timeline in which the Forest will review and approve the proposed work activity. As previously mentioned, Section 5.1.3, *Dispute Resolution*, provides a detailed discussion of circumstances under which the Utility and the Forest Service cannot agree on measures and a timeline.

4.4 Class IV Activities

Class IV activities are those actions that the Utility must conduct immediately in response to outages, such as storm response and imminent threats of wildfire or risks to public safety. The Utility will notify the Forest of its activity as soon as possible (typically within 48 hours) and will provide post-reporting and other information to the Forest as required within 15 business days of completing work associated with a situation posing an imminent threat (i.e., pole posing immediate threat of failing) and within 30 business days of completing work associated with activities resulting from an emergency (i.e., wildfire response).

Chapter 5

Communication and Monitoring

This chapter summarizes the communication practices and monitoring commitment to ensure the effective long-term implementation of this Plan.

5.1 Communication Practices

Primary communications will occur between each Forest and the Utility via designated points of contact. If necessary, a back-up point of contact can be identified, in the event that the primary point of contact is not available. Each designated point of contact will be responsible for distributing communications, notifications, and other related information regarding the activities defined in this Plan to their respective teams for review and comment. All feedback from the Forest and Utility should be relayed to their respective points of contact, who will be responsible for sharing the information with the point of contact at the other organization.

5.1.1 Annual Meetings

The Forest and the Utility will participate in annual meetings to discuss feedback on the process, solidify what worked well, review lessons from the prior year, discuss work that is projected for the coming year, and share concerns regarding the protection of resources. The annual meeting will also be an opportunity to discuss the communications protocol between the Forest and the Utility to keep the Forest informed of ongoing Class I activities such as limbing and pruning and road maintenance. Annual meetings will be scheduled by the first quarter of each calendar year and generally will occur during the second quarter of each calendar year. Both parties will work to ensure that appropriate resource staff are present at these meetings. The Utility will provide a draft agenda and information on Class I activities 3 weeks in advance of the meeting and will provide presentation materials/handouts 1 week in advance of the meeting.

The Utility also will provide a summary of its proposed annual work plan to be discussed at the meeting. The summary will include the following information:

- Information on the Utility's priorities and priority work in the upcoming year.
- Information on the location, extent, and timing of road maintenance activities (e.g., road closures, work to maintain roads to a Level 2 standard, and culvert repairs) proposed for the coming year.
- Information on the location, extent, and timing of vegetation management activities (including hazard tree removals) proposed for the coming year.
- Point of contact information for key work activities and other primary communication.
- Summary of new subject poles, if available, that may be needed in the Forest.
- Information on other Class I work that is expected to be conducted over the coming year and the BMPs, RPMs, and other measures that will be implemented to avoid impacts.
- Level 2 Utility road inventory, maintenance schedule, goals, and current status.

The Forest will provide a list of questions or issues, if necessary, at least 1 week in advance of the meeting. Additionally, the Forest will provide the Utility with the following information at the annual meeting:

- Information on the Forest goals and priorities for the coming year.
- Staff and potential administrative resources.
- GIS and/or maps demonstrating resource areas of concern.
- Geographic areas of concern where impacts have occurred (e.g., off road vehicle use associated with Utility facilities).
- Status and estimate of funds remaining of cost recovery agreements with the Utility.

During the annual meeting, the Utility and Forest also may discuss the following:

- Monitoring efforts that have been conducted the prior year.
- Issues of concern related to work practices and Forest resources.
- Information pertaining to the road use agreements.
- Biological and invasive weed data to be shared and updated.
- Department of Parks and Recreation (DPR) forms (both hardcopy and electronic) for all new, updated, and monitored heritage resources; descriptions of historic properties recommended eligible for listing in the National Register of Historic Places.
- Summaries of inadvertent effects or unanticipated discoveries with appropriate considerations for confidentiality/sensitivity related to heritage resources.

Following the annual meeting, the Utility and Forest will share GIS data updates with each other.

5.1.2 Regional Conference Calls

Region 5, the Forest, and the Utility will participate in regional conference calls to discuss issues and trends across the region. The calls will be scheduled by the Utility and will occur on a quarterly or semi-annual basis, on an interval and date acceptable to all parties. The Utility will provide a draft agenda 2 weeks in advance of the meeting. All parties will work to ensure that appropriate resource staff participate at these meetings.

5.1.3 Correction and Addition or Deletion of Land Rights

Corrections and updates to Utility land rights on NFS lands should be addressed annually. If facilities are expanded or new rights are acquired, these rights will be amended to the MPE and also be subject to the terms of this Plan and the MPEs it supports to ensure timely and consistent application of the procedures and practices set forth in this document.

Additional facilities identified for inclusion under the MPE and Plan will be provided to the Forest for review and verification at the annual meeting. To include an additional facility under the MPE, the Utility will provide the Forest with supporting documentation of prior land rights or other regulatory approvals as well as a map and GIS or other electronic data sufficient to identify the facility's location using currently available spatial technology. The Utility will continue to evaluate its overall facility footprint, including the Utility Access Road Network, to determine the location and condition of additional facilities that should be incorporated under the MPE.

If the Utility disposes of its land rights, the Utility will notify the Forest and provide updates in GIS regarding which area has been transferred. If the Utility needs to decommission a line, the Utility will notify the Forest and work with the Forest to ensure that the line is decommissioned appropriately.

Region 5 also will assist, as needed, in the MPE amendment process.

5.1.4 Modifications, Clarifications, and Revisions

This Plan periodically may need modification, clarification, or revision based on its implementation. Changes and improvements are likely to be identified because of the multiple processes involved (e.g., notification, screening, review, consultation, and meetings) and over time, certain changes may be needed (e.g., additional RPMs are needed, additional information needs to be submitted). Such clarifications can take two forms: minor modifications and amendments. Any minor modifications or amendments will be in accordance with applicable legal requirements. Minor modifications or amendments can be made independently for each Utility.

5.1.4.1 Minor Modifications

Minor modifications are clerical and administrative actions or clarifications that do not substantially affect the Plan. These changes do not require an amendment to the Plan, but they do require approval by the Forest Service before being implemented. The Utility requesting or receiving the minor modification request is only required to obtain approval from the Forest Service, not the other Utility. Examples of minor modifications are listed below:

- Correction of typographical, grammatical, and similar editing errors in the Plan that do not change the intended meaning.
- Changes to any map or exhibit to correct errors in mapping.
- Minor changes to the activity descriptions or tables.
- Minor changes to the BMPs or RPMs.
- Minor changes to monitoring or reporting protocols.
- Minor changes to the meeting protocols.
- Correction of any tables or appendices in the Plan to reflect previously approved amendments.

The Utility or Forest Service may propose minor modification to the Plan by providing written notice to all other parties. Such notice will include a statement of the reason for the proposed change and an analysis of its environmental effects and any other information required by law. The parties will respond in writing to the proposed minor modification within 30 business days of receipt of such notice.

The Utility requesting or receiving the minor modification request or Forest Service may object to a proposed minor modification for any reasonable basis. The Forest Service may object to a proposed minor modification if it believes the change is substantive. Where possible, before rejecting a proposed minor modification, the Forest Service first will contact the Utility and suggest reasonable conditions or alterations to the proposal. If the Utility requesting or receiving the minor modification request agrees, the Utility can approve the proposed minor modification. If the Forest Service reasonably objects to a minor modification, and the objection is not resolved by any conditions or alterations, the proposed modification will be processed as an amendment.

5.1.4.2 Amendments

All changes to the Plan that do not qualify as minor modifications may be processed as amendments in accordance with all applicable laws and regulations, including the ESA and NEPA. The party proposing the amendment will provide a statement of the reasons and an analysis of the amendment's effects. The Utility requesting or receiving the amendment request is only required to obtain approval from the Forest Service, not the other Utility. Examples of changes that would require an amendment are listed below.

- Substantial changes to the text of the Plan.
- Substantial revisions to RPMs.
- Substantial changes to the monitoring or reporting protocols.
- Actions or activities that are substantially different or larger than activities previously analyzed.
- Extending the permit term.

5.1.5 Relationship to Other Permits

To the extent that the Utility has multiple Forest Service permits for a specific facility and activity, the Utility will operate and maintain facilities consistent with the authorization or permit most specific to the facility and activity. For example, facilities subject to Federal Energy Regulatory Commission license conditions will continue to implement the conditions of that license.

5.1.6 Dispute Resolution

The Forest and the Utility will work together to try to resolve, in a timely manner, any dispute that occurs as part of this Plan and Forest Service authorizations. The local leadership of the National Forests and the Utility will work together to try to resolve any disagreements or misinterpretations of the Plan or its appendices. Any issues that are not readily resolved will promptly be referred to the next-level supervisor for resolution within both the Forest Service and Utility. If the next level of supervision is unable to resolve the conflict, the issue will be referred to the Public Services Director or equivalent within Region 5 and the Utility's Director or equivalent. Issue resolution may be initiated by request of either party. Both the Forest Service and the Utility are responsible for ensuring timely elevation and resolution of issues.

5.2 Monitoring and Consistency Reviews

One of the goals of this Plan is to reduce the administrative burden of case-by-case authorizations for O&M activities with a low environmental risk by establishing a consistent process by which O&M activities described in the Plan are conducted, pursuant to the NEPA review. Region 5 will help maintain consistency across NFS lands. To ensure that the environmental screening process and field activities are being carried out in a consistent manner that meets the standards of the Forest Service and the Utility—and meets the goals of the Plan—Region 5, Forests, and the Utility will have an opportunity to share findings that result from monitoring and conducting consistency reviews. Periodic and random monitoring will be conducted to evaluate how work is classified, screened, and conducted. Findings will be shared between Region 5 and the Utility on a biannual basis, or when needed, to identify processes that are working successfully and opportunities for improvement. The results of the monitoring and consistency reviews also will be used by the Forest and Utility to provide feedback during the annual meeting.


5.2.1 Forest Service Monitoring


The Forests will conduct periodic and random monitoring of activities on an ongoing basis to determine whether the terms and conditions of the permits are being followed and the site specific BMPs and RPMs are being implemented correctly, and to document the effectiveness of the BMPs and RPMs. Monitoring also will evaluate whether activities are occurring as characterized and are described accurately in packages submitted by the Utility. Monitoring will occur at the discretion of the Forest.

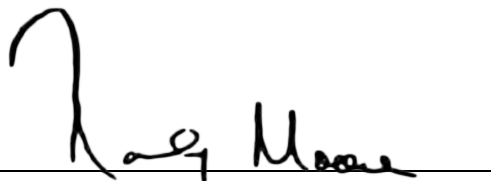
The results of this monitoring will be shared with the Utility at the annual meeting, or sooner if necessary. The Forest and the Utility will discuss the findings and, if necessary, Region 5 will be involved to provide guidance and recommendations for amending the environmental screening process, BMPs, RPMs, or work practices.

Chapter 6 Signatories

This Plan is in effect from the date of signature through the expiration of the permit. Revisions and modifications to this Plan shall be made by mutual consent of the Utility and Region 5 by the issuance of a written modification, signed and dated by all parties, prior to any changes being performed.

Plan Approved by  Date 12/20/18
Vice President
Pacific Gas and Electric Company

Plan Approved by  Date 12/20/18
Director
Southern California Edison

Plan Approved by  Date 2/15/19
Regional Forester
U.S. Forest Service

Appendix A

Legal Obligations and Regulatory Requirements

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Attachment A-1. Vegetation Management Memorandum of Understanding

Legal Obligations and Regulatory Requirements

The Utility has a number of regulatory and legal obligations to ensure that the integrity of its electric powerlines and facilities is maintained. These obligations may change or new regulations may arise during the term of the master permits and easements (MPEs). These requirements include the following.

A.1 California Public Resources Code Section 4292

California Public Resources Code Section 4292 (PRC 4292) specifies brush clearance for persons who own, operate, control, and maintain electric transmission or distribution lines on any mountainous, forest-covered, brush-covered, or grass-covered lands. This section requires clearing flammable vegetation to reduce fire hazards around specific structures that support certain connectors or types of electrical apparatuses (e.g., switch, fuse, transformer, lightning arrester, and line junction) or a dead end or corner pole. The firebreak consists of clearing not less than 10 feet in each direction from the outer circumference of the structure or tower. Each year before the onset of fire season, the vegetation around subject poles or towers is removed and maintained to bare ground through the entire fire season. This law also covers all State Responsibility Areas in California. State responsibility lands generally are outside city limits where the California Department of Forestry and Fire Protection (CAL FIRE) is the direct protection agency.

The Forest Service also adopted California PRC 4292.

A.2 Section 895.1 of California Code of Regulations, Title 14

The California Code of Regulations, Title 14, Section 895.1 defines danger trees in relation to utilities. *Danger tree* means any tree located on or adjacent to a utility right-of-way or facility that could damage utility facilities should it fall where: (1) the tree leans toward the right-of-way; or (2) the tree is defective because of any cause, such as heart or root rot, shallow roots, excavation, bad crotch, dead or with dead top, deformity, cracks or splits, or any other reason that could result in the tree or a main lateral of the tree falling.

A.3 Section 1254 of California Code of Regulations, Title 14

The California Code of Regulations, Title 14, Section 1254 further defines the requirements stipulated in PRC 4292. This code states that the firebreak clearance requirements in PRC 4292 are applicable within an imaginary cylindrical space (10- by 8-foot tall) surrounding each subject pole. Flammable vegetation and materials located wholly or partially within the firebreak space shall be treated as follows:

- At ground level, remove flammable materials, including but not limited to, ground litter, duff, and dead or desiccated vegetation that will propagate fire.

- From 0 to 2.4 meters (0 to 8 feet) above ground level, remove flammable trash, debris or other materials, grass, and herbaceous and brush vegetation. All limbs and foliage of living trees shall be removed up to a height of 2.4 meters (8 feet).
- From 2.4 meters (8 feet) to horizontal plane of highest point of conductor attachment, remove dead, diseased, or dying limbs and foliage from living sound trees and any dead, diseased, or dying trees in their entirety.

A.4 California Public Resources Code Section 4293

PRC 4293 requires specific clearance between conductors and vegetation. The clearance increases as the line voltage increases (with minimum clearances ranging from 4 to 10 feet based on voltages). Clearances must be maintained at all times in all conditions (e.g., sway, sag, and snow loading). This code also requires felling or pruning of hazard trees adjacent to the line that may fall into the line. PRC 4293 defines hazard trees as “dead trees, old decadent or rotten trees, trees weakened by decay or disease, and trees or portions thereof that are leaning toward the line which may contact the line from the side or may fall on the line” and further requires that the hazard trees “shall be felled, cut, or trimmed so as to remove such hazard.” The trim zone and the hazard tree zone are variable in width depending primarily on the height of trees adjacent to the distribution line, the topography, and the sway of the conductors at mid span as determined by the tension and length of the span.

A.5 California Public Utilities Commission General Order 95

California Public Utilities Commission (CPUC) General Order (G.O.) 95 is the key standard governing the design, construction, and operations and maintenance (O&M) activities for overhead electric lines in California. It was adopted in 1941 and updated most recently in 2006. G.O. 95 includes safety standards for overhead electric lines, including minimum distances for conductor spacing, minimum conductor ground clearance, standards for calculating maximum sag, electric line inspection requirements, and vegetation clearance requirements. Sections of particular relevance within G.O. 95 include the following.

- **CPUC General Order 95, Rule 18**

Rule 18A requires establishment of an auditable maintenance program for electric facilities and lines that includes a timeline for corrective action following identification of a nonconformance. Rule 18A describes what a safety hazard is (“a condition that poses a significant threat to human life or property”) and the priority levels given to safety hazards. The rule also requires companies to take appropriate corrective actions to remedy safety hazards and maintain records of the corrective action.

- **CPUC General Order 95, Rule 35**

- Rule 35 requires that minimum clearances be maintained between all overhead electric supply and communication facilities and that vegetation be maintained by California state and local agencies. Clearances are required between vegetation and energized conductors (wires) that range from 18 to 120 inches based on the voltage. This law covers all of California regardless of location and defines the minimum clearance required at all times. Utility vegetation management programs often must achieve greater clearance than 18 inches to address regrowth of affected vegetation and all potential weather and climatic conditions that can affect

the vegetation and the conductors. The length of time between maintenance cycles also can increase the amount of clearance required.

- **CPUC General Order 95, Rule 44**
- Rule 44 defines safety factors for poles and line elements.
- **CPUC General Order 95, Rule 165**
- Rule 165 specifies inspection cycles, record keeping, and reporting requirements for electric facilities (excluding those facilities contained in a substation) in order to ensure safe and high-quality electric service.
- **CPUC General Order 95, Rule 166**
- Rule 166 specifies emergency and disaster preparedness standards that will facilitate the CPUC's investigations into the reasonableness of the Utility's response to emergencies and major outages.

A.6 California Public Utilities Commission Fire Regulations and High Fire-Threat Map

The CPUC's development of fire safety regulations and a high fire-threat district (HFTD) map, adopted in December 2017 and January 2018, respectively, added new rules to G.O. 95, G.O. 165, and G.O. 166 that require electric utilities to:

- Prioritize correction of safety hazards based, in part, on whether the safety hazard is located in the HFTD (G.O. 95, Rule 18A).
- Correct non-immediate fire risks in Tier 2 of the HFTD within 12 months, and in Tier 3 within 6 months (G.O. 95, Rules 31.2, 80.1A, and 90.1B).
- Maintain increased clearances between vegetation and power lines throughout the HFTD (G.O. 95, Rule 35, Table 1, Case 14).
- Maintain more stringent wire-to-wire clearances for new and reconstructed facilities in Tier 3 (G.O. 95, Appendix E).
- Conduct annual patrol inspections of their overhead distribution facilities in rural areas of Tier 2 and Tier 3 (G.O. 165, Appendix A, Table 1).
- Prepare a fire-prevention plan annually if they have overhead facilities in the HFTD (G.O. 166, Standard 1.E).

The Utility's Electric Tariff Rule 11 was amended to allow electric utilities to disconnect service to customers who refuse to provide access to their property for the removal of trees that pose an immediate threat for contacting a power line.

The HFTD map depicted in Figure A-1 identifies areas across California with the highest likelihood of wildfire affecting people and property, and areas where additional action may be necessary to reduce wildfire risk. The HFTD covers 44% of California's total land area and consists of three areas:

- Tier 1 High Hazard Zones on the Forest Service-CAL FIRE joint map of Tree Mortality High Hazard Zones.
- Tier 2 of the CPUC Fire-Threat Map where there is an elevated risk for utility-associated wildfires.

- Tier 3 of the CPUC Fire-Threat Map where there is an extreme risk for utility-associated wildfires.

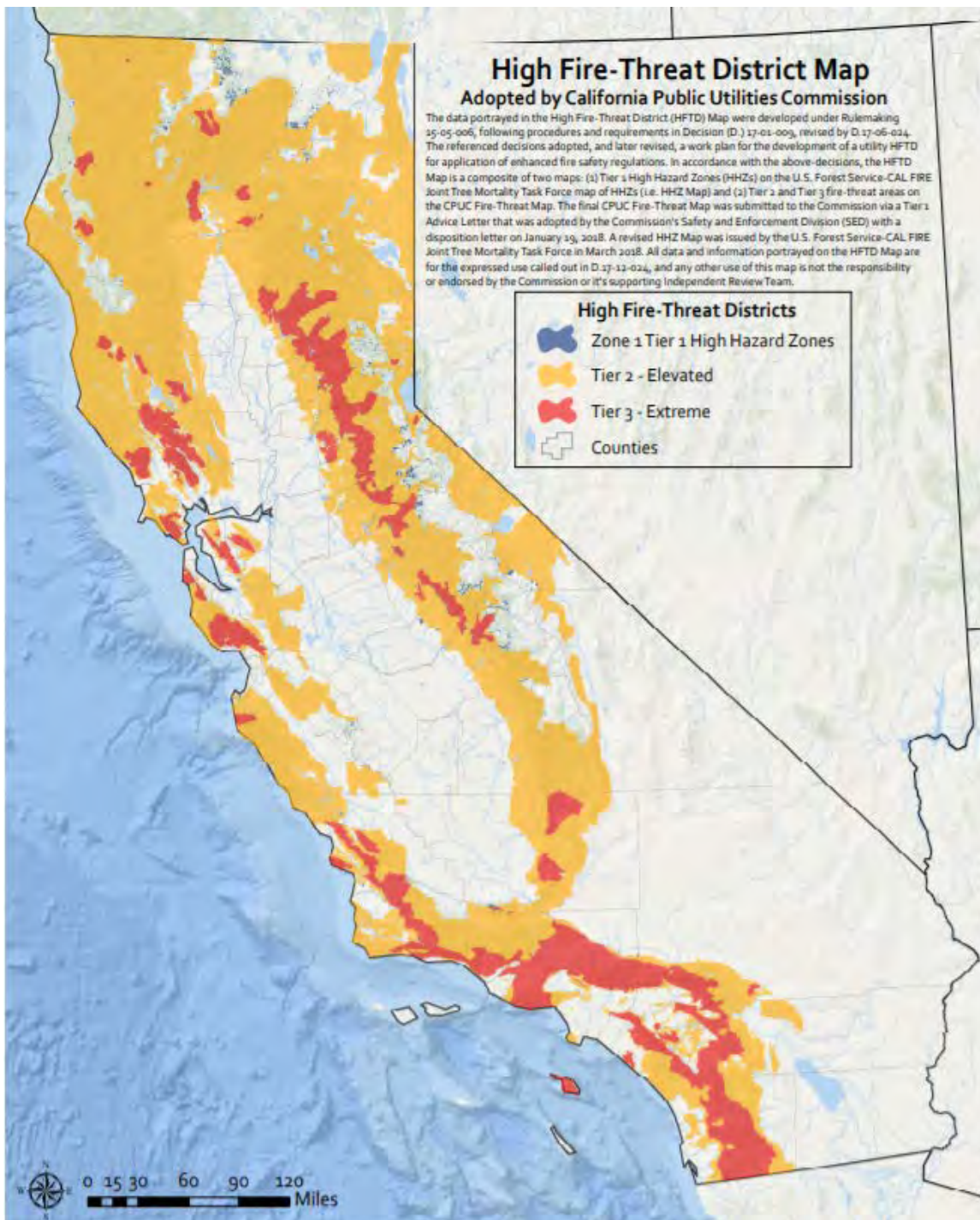


Figure A-1. CPUC High Fire-Threat District Map

A.7 California Public Utilities Commission Resolution ESRB-4

The CPUC Electric Safety and Reliability Branch (ESRB) issued Resolution ESRB-4 on June 12, 2014. Resolution ESRB-4 directs investor-owned utilities, like the Utility, to “take practicable measures necessary to reduce the likelihood of fires associated with their facilities.” These measures include increasing vegetation inspections, removing hazard trees near electric power lines and poles, and clearing access roads under powerlines for fire truck access. The resolution builds on emergency declarations issued by California’s Governor.

A.8 North American Electric Reliability Council FAC-003-04 Standards

The North American Electric Reliability Council (NERC) is a not-for-profit international regulatory authority whose mission is to ensure the reliability of the bulk power system (i.e., the Utility’s transmission systems) in North America. NERC develops and enforces reliability standards for investor-owned electric utilities that are under Federal Energy Regulatory Commission jurisdiction. NERC’s function is to maintain and improve the reliability of the North American integrated electric transmission system, including preventing outages from vegetation located in transmission rights-of-way, minimizing outages from vegetation located adjacent to rights-of-way, and maintaining clearances between transmission lines and vegetation on and along transmission rights-of-way. As a result of the recommendations following the August 14, 2003 blackouts on the East Coast, NERC was charged with developing a vegetation management standard that would be applicable to all utilities and that would provide greater specificity than the National Electric Safety Code (NESC) and the American National Standards Institute (ANSI) described below.

Standard FAC-003-1, *Transmission Vegetation Management Program*, became effective on April 7, 2006, and is mandatory for all utilities, pursuant to Section 1211 of the Energy Policy Act of 2005. This standard applies to all transmission lines operated at 200 kV and above and to any lower-voltage lines considered critical to the reliability of the electric system in the region. The transmission owner must prepare, and keep current, a formal Transmission Vegetation Management Program (TVMP). The TVMP must identify and document clearances between vegetation and overhead ungrounded supply conductors, taking into consideration transmission line voltage, the effects of ambient temperatures on conductor sag under maximum design loading, and the effects of wind velocities on conductor sway. Minimum clearance distances shall be no less than those set forth in the Institute of Electrical and Electronics Engineers (IEEE) Standard 516-2003.

NERC adopted new standards (FAC-003-4) for clearance between conductors and vegetation for 230 kV lines and higher, and for certain other lines identified as NERC critical. The clearance requirement increases as the line voltage increases. The standard requires that these clearances be maintained at all times in all conditions (e.g., sway, sag, and snow loading). This standard is essentially the same as that in PRC 4293. The penalty for not complying with these standards could result in up to \$1 million in fines per day per occurrence.

A.9 California Independent System Operator Transmission Owner Maintenance Practice

The California Independent System Operator (CAISO) adopted the Transmission Owner Maintenance Practice, Overhead Electrical Transmission Lines, which specifies the maintenance practices to prioritize, inspect, and maintain overhead electrical transmission lines placed under the control of CAISO. Transmission lines are considered to be high priority under the CAISO guidelines and require more frequent inspection.

A.10 National Electric Safety Code Rules 1977, 2006

NESC is the national code covering a variety of basic provisions regarding electric supply stations and overhead and underground electric supply and communication lines. The code contains work rules for construction, maintenance, and operation of electric supply and communication lines and equipment.

NESC Rule 218 generally requires that “trees that interfere with ungrounded supply conductors should be trimmed or removed.” The rule is generally interpreted to require utilities to perform a “reasonable” amount of utility vegetation management (UVM) work. The rule does not specify cycles, clearances, program requirements, performance objectives, or any other type of requirement that would result in meeting specific UVM objectives.

Rule 218 was revised in 2006 to note that utility experience is a key issue in developing clearance standards. Both the frequency of pruning and the distance by which vegetation is pruned back from the lines are affected by the line voltage class, the relative growth rates and failure characteristics of relevant plant species, right-of-way limitations, location of the vegetation relative to the conductors, potential movement of conductors and vegetation during routine winds, and sag of conductors due to elevated temperatures or ice loadings.

NESC Rules 232, 233, and 234 prescribe clearances of wires from ground, structures, and other installations but provide no specific information with respect to clearances from vegetation. Rule 217A4 requires supporting structures to be kept free from climbing hazards, such as vines; however, no further specificity is provided.

A.11 American National Standards Institute Standards

ANSI is the primary organization for fostering development of technology standards in the United States. ANSI developed the A300 Standards to unify and take authoritative precedence over all previously existing tree care industry standards. ANSI requires that approved standards be developed according to accepted principles, and that they be reviewed and, if necessary, revised every 5 years.

ANSI A300 standards apply to professionals who provide for or supervise the management of trees, shrubs, and other woody landscape plants. Intended users include businesses, government agencies, property owners, property managers, and utilities.

ANSI A300 Part 7 conveys integrated vegetation management (IVM) as a best management practice. IVM is consistent with the requirements in FAC-003-04 and it provides practitioners with what industry experts consider to be appropriate techniques to apply to electric right-of-way projects in order to meet or exceed the standard. IVM is a system of managing plant communities whereby

managers set objectives; identify compatible and incompatible vegetation; consider action thresholds; and evaluate, select, and implement the most appropriate control method or methods to achieve set objectives. IVM identifies the correct preferred vegetation management approach within the Utility's distribution and transmission rights-of-way based on the sensitivity of resources, reliability and safety issues, and environmental laws and regulation. IVM is the practice of promoting desirable, stable, low-growing plant communities within the Utility's rights-of-way that will resist invasion by tall-growing tree species, through the use of appropriate, environmentally sound, and cost-effective control methods. The IVM approach establishes the wire and border zone, with a goal of having a low shrub-forb-grass cover type in the wire zone and a taller shrub-forb-grass cover type in the border zone. Benefits of this approach include a reduction in the frequency of disturbance due to less frequent vegetation management activities. IVM methods may include a combination of chemical, biological, cultural, mechanical, and manual treatments. To maintain the desired conditions over time, periodic inspections and maintenance will be conducted within the areas where IVM is implemented.

ANSI also developed Standard Z133-2012, *Safety Requirements for Arboricultural Operations*, the industry safety standard for working on vegetation in proximity to energized electrical apparatuses. The standard addresses arboriculture safety requirements for pruning, repairing, maintaining, and removing trees and for using equipment in such operations.

ANSI specified the minimum approach distances from energized conductors for qualified line-clearance arborists as follows:

- Between 230 and 242 kV (phase-to-phase), the minimum distance is 7 feet, 11 inches between sea level and 5,000 feet in elevation and 9 feet between 5,001 and 10,000 feet in elevation
- For 500 kV (phase-to-phase), the minimum distance is 19 feet between sea level and 5,000 feet in elevation and 21 feet, 9 inches between 5,001 and 10,000 feet in elevation

Additionally, ANSI specified the minimum approach distances from energized conductors for persons other than a qualified line-clearance arborist as follows:

- Between 230 and 242 kV (phase-to-phase), the minimum distance is 16 feet
- For 500 kV (phase-to-phase), the minimum distance is 26 feet

A.12 Institute of Electrical and Electronics Engineers Standard 516-2003

IEEE is a leading authority in setting standards for the electric power industry. Standard 516-2003, *Guide for Maintenance Methods on Energized Power Lines*, provides minimum vegetation-to-conductor clearances to maintain electrical integrity, which includes the following:

- For 500 kV, the minimum distance is 19 feet (5.7 meters)
- For 230 kV, the minimum distance is 13 feet (3.9 meters)

A.13 Other Guidance

A.13.1 Vegetation Management Memorandum of Understanding

In September 2016, an updated memorandum of understanding (MOU) went into effect between Edison Electric Institute, the Utility Arborist Association, the National Park Service, the U.S. Fish and Wildlife Service, the Bureau of Land Management, and the Forest Service on vegetation management for powerline rights-of-way. The MOU was created to enable federal agencies and utilities to streamline and expedite management of vegetation near utility facilities, including facilities on federal lands. The purpose of the MOU is to establish a framework for developing cooperative rights-of-way IVM practices among the parties to the MOU. The MOU does not impose any binding obligation on any person. A copy of the Vegetation Management MOU is provided in Attachment A-1.

A.13.2 Consolidated Appropriations Act (2018)

The 2018 Omnibus Appropriations bill added Section 512 to the Federal Land Policy and Management Act of 1976, directing the Secretary of Interior and the Secretary of Agriculture to develop provisions for vegetation management, facility inspection, and O&M of existing infrastructure. The provisions provide utilities with the ability to perform routine maintenance activities (e.g., hazard tree removal for transmission and distribution lines rights-of-way) in a prompt manner through a consolidated, transparent, and coordinated review and approval process (i.e., not to exceed 120 days). The bill allows the utilities to prune or remove vegetation within or adjacent to an electric transmission or distribution right-of-way if it has contacted, or presents a danger of contacting, an electric transmission or distribution line on U.S. Bureau of Land Management and National Forest System (NFS) lands. The bill limits the utility's liability for damages or injury in the event that it is not allowed to manage vegetation on U.S. Bureau of Land Management and NFS lands as a result of an agency unreasonably withholding or delaying approval of a plan or failing to adhere to a plan schedule. The liability caps currently provided under U.S. Bureau of Land Management and Forest Service regulations (up to \$2 million and \$1 million per incident, respectively) remain in effect. It requires the U.S. Departments of the Interior and Agriculture to prepare and submit a report to Congress within 4 years on liability limitation established under the bill. The provisions require a training program for the Interior Department and the Forest Service personnel involved in vegetation management decisions on rights-of-way that aims to ensure such individuals understand electric system reliability and fire safety requirements, and how to assist owners and operators to comply with those standards.

**Attachment A-1. Vegetation Management
Memorandum of Understanding**

**MEMORANDUM OF UNDERSTANDING
ON VEGETATION MANAGEMENT FOR POWERLINE RIGHTS-OF-WAY**

Among the

**EDISON ELECTRIC INSTITUTE
UTILITY ARBORIST ASSOCIATION**

UNITED STATES DEPARTMENT OF THE INTERIOR
National Park Service
Fish and Wildlife Service
Bureau of Land Management

UNITED STATES DEPARTMENT OF AGRICULTURE
Forest Service

and the

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

This memorandum of understanding (MOU) is entered into by:

- The Edison Electric Institute (EEI) and Utility Arborist Association (UAA), “the non-governmental parties,” hereinafter referred to collectively as “the member companies,” and
- The United States Department of the Interior, National Park Service (NPS), Fish and Wildlife Service (FWS), and Bureau of Land Management (BLM), the United States Department of Agriculture, Forest Service (FS), and the United States Environmental Protection Agency (EPA), hereinafter referred to collectively as “the Federal agencies.”

This MOU addresses vegetation management for electric transmission and distribution line rights-of-way (referred to throughout this MOU as powerline ROWs) on Federal lands.

I. Authorities

The non-governmental parties are authorized to enter into this MOU by consent of their member companies.

The NPS is directed to manage all national park lands to protect and preserve natural and cultural resources, pursuant to the National Park Service Organic Act, 54 U.S.C. § 100101.

The FWS is authorized to enter into this MOU under the National Wildlife Refuge System Administration Act of 1966, as amended, 16 U.S.C. § 668dd-ee, and 50 C.F.R. §§ 29.21-4 and 29.21-8.

The BLM is authorized to enter into this MOU under Section 302(a) of the Federal Land Policy and Management Act, as amended, 43 U.S.C. § 1737(b),

The FS is authorized to enter into this MOU under the Organic Administration Act of 1897, 16 U.S.C. § 551, and the Multiple Use–Sustained Yield Act, 16 U.S.C. § 528 *et seq.*

The EPA is authorized to enter into this MOU under Section 6604(b) of the Pollution Prevention Act, 42 U.S.C. § 13103(b).

II. The Parties

EEI. This association represents all U.S. investor-owned electric utility companies. The EEI member companies provide electricity for 220 million Americans, operate in all 50 states and the District of Columbia (DC), and directly employ more than 500,000 people. With more than \$90 billion in annual capital expenditures, the electric power industry is responsible for millions of additional jobs. Reliable, affordable, and sustainable electricity powers the U.S. economy and enhances the lives of all Americans. EEI has 70 international electric utility companies as affiliate members and 250 industry suppliers and related organizations as associate members. The mission of EEI is to ensure members' success by advocating public policy, expanding market opportunities, and providing strategic business information relating to the electric power industry.

UAA. The nearly 3,000 members of this organization have an interest in and a commitment to the maintenance of trees and other vegetation in connection with powerline ROWs. The primary goal of the UAA is to ensure the safe and reliable distribution of energy, including electricity, oil, and gas, to businesses and residences through quality utility arboriculture. The mission of the UAA is to be the leading North American organization for the enhancement of utility arboriculture and vegetation management for powerline ROWs.

NPS. The NPS is responsible for managing nearly 84 million acres with over 400 units in the National Park System. The mission of the NPS is to preserve unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education, and inspiration of current and future generations. The NPS also has management responsibilities over other areas, including parts of the National Wild and Scenic Rivers System, National Trails System, National Heritage Areas, and NPS Affiliated Areas, which are closely linked in importance and purpose to those areas directly managed by the NPS. The NPS may issue ROW permits for lands it manages only if the use or activity is specifically authorized by Congress. One of these statutory authorities, The Act of March 4, 1911, gives the NPS the general authority to issue ROW permits for national park lands for electric poles and lines for the transmission and distribution of electrical power.

FWS. The FWS manages nearly 155 million acres in more than 560 National Wildlife Refuges and Wetland Management Districts and manages National Fish Hatcheries on federally owned lands. The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans. The FWS issues ROW permits under its Rights-of-Way policy (340 FW 3), (e.g., vegetation management required for a powerline corridor). The Appropriate Refuge Uses (603 FW 1) and Compatible Uses (603 FW 2) policies further guide the issuance of ROW permits on National Wildlife Refuge System lands and waters. The FWS Biological Integrity, Diversity, and Environmental Health policy (601 FW 3) establishes a process for managers to follow for maintaining and/or restoring the biological integrity, diversity, and environmental health of our lands and waters when authorizing and considering uses and activities on the National Wildlife Refuge lands and waters.

BLM. The BLM manages public lands under the principles of multiple-use and sustained yield as described in the Federal Land Policy and Management Act of 1976 (FLPMA). The BLM administers more than 245 million surface acres of Federal lands, the most of any Federal agency. This land, known as the National System of Public Lands, is primarily located in the 12 western states and Alaska. The BLM also manages 700 million acres of subsurface mineral estate throughout the United States. The mission of the BLM is to manage public lands for the use and enjoyment of present and future generations. Title V of FLPMA authorizes the BLM to grant ROWs for systems for generation, transmission, and distribution of electric energy.

FS. The mission of the FS is to sustain the health, diversity, and productivity of the national forests and grasslands to meet the needs of present and future generations. The FS achieves its mission by applying the principles of sustainable, multiple-use management to meet the diverse needs of the American people. The FS manages over 192 million acres of Federal lands and waters within the National Forest System. The FS supports America's energy needs through effective oversight and management of thousands of miles of electric utility transmission and distribution corridors and related facilities on the National Forest System lands.

EPA: The mission of the EPA is to protect human health and the environment. In support of this mission, the Office of Pesticide Programs licenses pesticides for use in the United States under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). In addition, Section 136r-1 of FIFRA provides direction to the EPA and USDA related to implementation of Integrated Pest Management, which is comparable to Integrated Vegetation Management (IVM). The Agency supports, through partnerships and regulatory processes, IVM as a means of reducing pesticide risk, protecting endangered species, and promoting pollinator protection along electric utility transmission and distribution ROW corridors. The June 20, 2014, Presidential Memorandum "Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators" established a Pollinator Health Task Force to be co-chaired by the USDA and EPA, that presents opportunities for all Federal agencies to include specific efforts to enhance pollinator habitat, including on Federal ROWs.

III. Purpose

The purpose of this MOU is to facilitate cooperation and coordination among the parties regarding vegetation management within and immediately adjacent to existing and future powerline ROWs and associated facilities. This MOU will facilitate implementation of cost-effective and environmentally sound vegetation management plans, procedures, and practices for powerline ROWs that will reduce adverse environmental and cultural impacts while enhancing the ability of utilities to provide uninterrupted electrical service to customers and address public safety. Federal agencies have established policies and procedures relating to vegetation, watershed, fire and fuels, wildlife habitat, enhancing pollinator habitat, and invasive species management that may help facilitate the MOU objectives. The Federal agencies' procedures may enhance the reliability and safety of electrical energy transmission while protecting the environment, and natural and cultural resources within and immediately adjacent to powerline ROWs on Federal lands. This MOU addresses the use of incorporating vegetation management practices into the existing and future ROW grants/authorizations across Federal lands.

IV. Mutual Interests and Benefits

Executive Order 13212, dated May 18, 2001, provides for expedited review of applications for energy-related projects on Federal lands; Section 216(h) of the Energy Policy Act of 2005, 16 U.S.C. § 824p, provides for coordinating, streamlining, and expediting Federal agency review of applications for powerline ROWs on Federal lands. Presidential Memorandum dated August 31, 2011, Speeding Infrastructure Development Through More Efficient and Effective Permitting and Environmental Review and Executive Order 13604, dated March 22, 2012, provide for Federal agencies to take all steps within their authority, consistent with available resources, to execute Federal permitting and review processes with maximum efficiency and effectiveness, ensuring the health, safety, and security of communities and the environment while supporting vital economic growth including infrastructure projects on Federal lands. Executive Order 13112, Section 2 (a)(3), dated February 8, 1999, requires each Federal agency whose actions may affect the status of invasive species, to the extent practicable and permitted by law, to not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species. These authorities provide an understanding of the roles and responsibilities of the parties to this MOU with regard to vegetation management within powerline ROWs on Federal lands and facilitate expediting Federal agency review of applications for those ROWs, which typically include a vegetation management component.

Electric utilities provide a vital service that is integral to America's security, safety, economy, and welfare. Powerline ROWs are necessary components of America's energy infrastructure and include thousands of miles of electric utility powerlines and other electric utility facilities across Federal and private lands. These powerline ROWs span across millions of acres of forestlands, grasslands, wetlands, fish and wildlife habitats, rare plant communities, and other natural and constructed features across the landscape. Efficient and environmentally safe control of undesirable vegetation along the entire span of these powerline ROWs, including around utility poles and towers, is critical for providing reliable delivery of electricity, addressing utility worker and public safety, and meeting requirements in applicable law and policy. Proper vegetation management for those ROWs can protect environmental and cultural features of these

areas, (e.g., by decreasing fuel loads, minimizing the spread of invasive plants, preserving and creating wildlife habitat, creating fuel breaks, maintaining the condition of the watershed, protecting habitat for pollinators, and preserving ecosystem connectivity).

Utility companies must manage vegetation in powerline ROWs on Federal lands to prevent power outages, wildfires, and the spread of invasive species and to protect human health, property, and natural and cultural resources. Power outages can occur when overhead lines stretch or sag onto vegetation due to increased load or changes in ambient conditions, (e.g., high air temperature or wind speed). Outages may occur when undesirable vegetation grows, falls, or otherwise makes contact with overhead electric powerlines. Since 1996, the presence of undesirable vegetation within powerline ROWs on Federal and private lands has been implicated in the initiation of three large-scale electrical grid failures in the United States and Canada, including the massive August 14, 2003, blackout that affected 50,000,000 people.

Vegetation that encounters powerlines and other electric transmission facilities can also start fires. Arcing can occur when any part of a bare, high-voltage line gets too close to a tree, limb, or shrub. There have been catastrophic wildfires across multiple states caused by interaction of vegetation with powerlines and other facilities within powerline ROWs on Federal lands. The spread of invasive plants, as well as other flammable native vegetation, can increase fuel loads, creating dangerous fire conditions that can threaten powerlines and other facilities within powerline ROWs on Federal lands. Properly maintained vegetation in powerline ROWs can prevent the spread of invasive species, provide habitat for pollinators, and act as an effective firebreak for the control and suppression of wildfire.

V. Coordination and Cooperation

Coordination between Federal agencies and the utility companies before and during ROW establishment and maintenance activities along the entire corridor on Federal lands may help to avoid interruptions in electric service while maintaining the environmental and cultural integrity of the lands they occupy. This coordination is important for ROW vegetation management activities across all Federal lands. Implementing a coordinated and cooperative approach to ROW vegetation management programs for utility corridors across the landscape will increase maintenance efficiencies, and decrease management costs at all levels while considering potential environmental and cultural impacts.

Coordination and cooperation among the relevant Federal agencies and member companies, before and during establishment and maintenance of powerline ROWs on Federal lands, is important to enhance electric transmission reliability, increase maintenance efficiencies, reduce management costs, prevent the spread of invasive plants, reduce fuel loads, and minimize other potential environmental and cultural resource impacts and human safety risks. This coordination and cooperation may entail development of annual vegetation management plans that identify vegetation control prescriptions within a given year for each powerline ROW on Federal lands. Such vegetation management plans must comply with applicable Federal laws and policies, be consistent with operations and maintenance plans for each powerline, and consider requirements for member company compliance with Federal reliability standards.

VI. Roles and Responsibilities

A. The parties to this MOU will:

1. Comply with all applicable Federal, tribal, state, and local laws, regulations, policies, executive orders, and presidential memoranda regarding electric transmission safety and reliability and environmental and cultural resource protection.
2. Consistent with their respective missions, roles and responsibilities, coordinate and cooperate to promote cost-efficient, proactive, environmentally appropriate, and safe management of undesirable vegetation in and adjacent to powerline ROWs on Federal lands to minimize the risk of vegetation-caused outages and adverse impacts on powerline facilities, human health and safety, and to minimize harm to native plants and animals in particular pollinators, soil, water, and other natural and cultural resources on Federal lands. Specifically, the parties to this MOU acknowledge that:
 - a. To the extent practicable, management and maintenance of powerline, ROWs on Federal lands should be coordinated with all affected landowners to enhance operational efficiency, public safety, environmental protection, and cost-effectiveness.
 - b. The spread of invasive species along powerline ROWs on Federal lands is widespread but can be prevented or controlled through a proactive and integrated management approach. Where consistent with the Federal agencies' other obligations, appropriate prevention, mitigation, and control measures related to the non-governmental parties' activities that may cause invasive plant species to increase will be incorporated into vegetation management plans, land use authorizations, and maintenance agreements for powerline ROWs on Federal lands.
 - c. Integrated vegetation management, incorporating established principles of "integrated pest management," is widely accepted in the public and private sectors. The proactive pest management approach includes a broad spectrum of integrated techniques for managing undesirable plant species. Standards for IVM plans outlined in the American National Standards Institute A300 Part 7 and best management practices for IVM compiled by the International Society of Arboriculture provide reliable, widely accepted guidance for protection and conservation of natural resources that balance benefits of control, cost, public health, environmental quality, and regulatory compliance.
 - d. Programmatic environmental analysis for vegetation management for powerline ROWs on Federal lands where appropriate, will be conducted in accordance with the National Environmental Policy Act (NEPA). The NEPA decision document will provide a foundation for site-specific environmental analysis for vegetation management for powerline ROWs on Federal lands.
 - e. Consistent with applicable law and agency responsibilities, each Federal agency will evaluate land use authorizations and vegetation management practices for powerline

ROWs on Federal lands. The Federal agencies will propose appropriate changes to those authorizations and vegetation management practices that would enhance pollinator habitat on Federal lands using pollinator-friendly best management practices. When related to vegetation management activities, provide supplemental existing vegetation management plans, agreements, and MOUs with holders of powerline ROWs on Federal lands to establish or enhance pollinator habitat.

3. Facilitate coordination and cooperation with each other at the local level to accelerate development of vegetation management plans and land use authorizations for powerline ROWs on Federal lands. To the extent possible, promote joint preparation of NEPA documents among the Federal agencies for vegetation management activities to maximize efficiency and coordination and to ensure consistency with applicable land management plans and policies and applicable law.
 4. Promote safety during vegetation management activities associated with powerline ROWs on Federal lands. The parties to this MOU acknowledge that:
 - a. In general, the safety of electric utility workers and the public at transmission and distribution facilities is the responsibility of the electric utility identified in the Federal land use authorization or permit. Electric utility companies and their affiliates will conduct their operations in accordance with the National Electrical Safety Code and Occupational Safety and Health Administration standards, and the terms and conditions in the ROWs/authorizations, and other worker protection standards where applicable.
 - b. The Federal agencies will coordinate with the member companies to develop appropriate measures to ensure personal and public safety and protection of the public lands and resources during vegetation management activities on Federal lands.
 5. Facilitate prompt identification of potential risks, unforeseen impacts, and deviations in implementing vegetation management plans within and immediately adjacent to land use authorizations associated with powerline ROWs on Federal lands and, to the extent appropriate and practicable, mitigate those risks, impacts, and deviations.
 6. Encourage opportunities, where appropriate, to provide training and technical assistance to government agency staff, powerline ROW maintenance personnel, electric utility companies, and private landowners seeking to improve vegetation management and overall maintenance of powerline ROWs across public and private lands.
 7. Work with the Association of Fish and Wildlife Agencies on separate MOUs to facilitate cooperation and coordination among the parties regarding vegetation management within and immediately adjacent to existing and future powerline ROWs and associated facilities on Federal, state and private properties.
- B. The member companies will:

1. Promote coordination and cooperation between the Federal agencies and the private utilities that own, operate, or maintain powerline ROW on Federal lands.
2. Ensure that their members and affiliates that are proposing or that have a powerline ROW on Federal lands provide the necessary information for vegetation management activities; including treatment procedures, pesticide use, maps, and mitigation measures, to the administering Federal agency for review and approval of the proposed or revised vegetation management plan for ROWs/permit.
3. Ensure that their members and affiliates that have an powerline ROW on Federal lands comply with the terms and conditions of the applicable ROW/permit, including the approved vegetation management plan, and closely coordinate vegetation management activities associated with the powerline ROW with the authorizing Federal land management agency. In particular, ensure that:
 - a. Vegetation management plans for powerline ROWs on Federal lands provide for the holder to give prior notice to the administering Federal agency of all proposed vegetation management activities.
 - b. Vegetation management plans for powerline ROWs on Federal lands should include procedures for conducting emergency vegetation management activities to ensure the safe and reliable operation of the powerlines. Emergency vegetation management involves vegetation trimming or removal actions near powerlines that if not taken immediately would result in damage to powerline structures that interrupts service to customers. Federal agency approval is not required prior to emergency vegetation control actions; however, actions will be reported on or before the next business day or as soon as possible to the administering Federal agency.
4. Within 18 months of the effective date of this MOU:
 - a. Disseminate this MOU to their members, affiliates, and other interested parties and emphasize laws, regulations, and policies associated with vegetation management for powerline ROWs on Federal lands.
 - b. Work with the Federal agencies to develop a process for coordinating vegetation management for all ROWs on Federal lands; assess the effectiveness of this MOU; and document any challenges, concerns, or opportunities for improvements in connection with implementation of this MOU.
 - c. Provide the Federal agencies updates on the progress of a formal agreement with Association of Fish and Wildlife Agencies that specifically addresses coordinating vegetation management of powerline ROWs on Federal land, where such operations could potentially affect state land.

C. The Federal agencies shall:

1. Promote coordination and cooperation between the Federal agencies and the private utilities that own, operate, or maintain electrical transmission line ROWs on Federal lands.
2. If necessary, take steps to modify policies and procedures to facilitate electric utility compliance with the North American Electric Reliability Corporation (NERC) standards and other regulatory and legal vegetation management requirements for those areas that require prior review.
3. Ensure that vegetation management plans for powerline ROWs on Federal lands are consistent with Federal laws, regulations, and policies.
4. Prior to issuance of powerline ROW authorizations on Federal lands and to the extent practicable and consistent with other Federal agency obligations and priorities, analyze, review, and approve the proposed annual vegetation management plan, treatment procedures, pesticide use, maps, and mitigation measures.
5. To the extent practicable and consistent with other Federal agency obligations and priorities, review requests for any required, non-emergency vegetation management for powerline ROWs on Federal lands within member companies' desired timeframes.
6. Provide to the ROW grant/permit holders a list of suitable, native ecoregion specific plants that attract pollinators for ROW areas that may require re-vegetation to mitigate vegetation management's adverse impacts.
7. When deemed appropriate, develop separate MOUs to facilitate cooperation and coordination regarding vegetation management within and immediately adjacent to existing and future powerline ROWs on Federal lands.
8. Within 18 months of the effective date of this MOU:
 - a. Disseminate this MOU to Federal agency field offices, emphasize laws, regulations, and policies associated with vegetation management for powerline ROWs on Federal lands.
 - b. Work with the non-governmental parties to develop a process for coordinating vegetation management of powerline ROWs on Federal lands; assess the effectiveness of this MOU; and document challenges, concerns, or opportunities for improvement in connection with implementation of this MOU.

VII. Principal Contacts

Amendments must be in writing, signed, and dated by all Parties prior to being in effect. The principal contacts for this MOU are:

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United States Environmental Protection Agency
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703-308-8712, mcnelly.robert@epa.gov

VIII. Implementation, Amendments, and Termination

This MOU will become effective on the date it is fully executed and will remain in effect for 5 years, unless it is terminated in writing by all parties prior to its expiration. This MOU may be amended with the written consent of all parties. Other public or private organizations may become a party to this MOU if mutually agreed to in writing by all parties. Any party may terminate its participation in this MOU in whole or in part after 30 days written notice to the other parties. Termination of one party's participation in this MOU does not void this MOU among the remaining parties.

IX. Non-Fund-Obligating Document

Each party will fund its own participation under this MOU and will carry out its separate activities in a coordinated and mutually beneficial manner. In implementing this MOU, the Federal agencies will be operating under their own laws, regulations, and policies, subject to the availability of appropriated funds. The non-governmental parties' actions in implementing this MOU will be subject to available funds. This MOU does not obligate any party to any current or future expenditure of resources. This MOU does not authorize the parties to spend funds or enter into any contract, assistance agreement, interagency agreement, or other financial obligation, regardless of whether funds are available for that purpose. Specific projects or activities that involve the transfer of funds, services, or property among the parties require execution of separate agreements and are contingent upon the availability of appropriated funds. These activities must be independently authorized by statute. This MOU does not provide that authority. Negotiation, execution, and administration of these agreements must comply with all applicable law.

X. Endorsement

Federal agencies do not endorse the purchase or sale of any products or services provided by private organizations or their affiliates. The MOU signatories should not make any statements, based on this MOU that implies that a Federal agency endorses the purchase or use of their products or services.

XI. Limitations

This MOU is intended to improve the working relationship between the private and public sectors in connection with vegetation management for powerline ROWs on Federal lands. This MOU is not intended to and does not create any right, benefit, or trust responsibility, substantive or procedural, enforceable at law or equity, by a party against the United States, its agencies, its officers, or any person.

This MOU is not intended to alter, limit, or expand the Federal agencies' statutory and regulatory authority, including the Federal agencies' cost recovery authority for powerline ROWs on Federal lands. Cost recovery for powerline ROWs on Federal lands will be conducted, as appropriate, under applicable laws, regulations, and policies.

This MOU has no legal effect on existing or future land use authorizations for powerline ROWs on Federal lands.

This MOU does not impose any binding obligations on any party. Nothing in this MOU obligates any of the parties to engage in any activities inconsistent with their respective missions, roles, and responsibilities.

The parties will implement this MOU consistent with all applicable Federal laws and regulations, including the Federal Advisory Committee Act. Any information furnished to the Federal agencies under this MOU is subject to the Freedom of Information Act, 5 U.S.C. § 552.

This MOU in no way restricts the Federal agencies from participating in similar activities with other public or private agencies, organizations, and individuals.

No member of or delegate to Congress may benefit from this MOU either directly or indirectly.

XII. Authorized Representatives

The parties to this MOU acknowledge that each of the signatories and the principal contacts listed in Section VII is authorized to act on behalf of their respective organization regarding matters related to this MOU.



Thomas R. Kuhn
President
Edison Electric Institute

9/29/16

Date



Philip Charlton
Executive Director
Utility Arborists Association

9/21/2016

Date



Jonathan B. Jarvis
Director
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7/13/2016

Date



Daniel Ashe
Director
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7.11.2016

Date



Steven A. Ellis
Deputy Director
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Date



Thomas L. Tidwell
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United States Forest Service

7/29/16
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Jim Jones
Assistant Administrator for the Office of Chemical Safety and Pollution Prevention
United States Environmental Protection Agency

8/29/16
Date

Appendix B

Descriptions of Operations and Maintenance Activities

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Appendix B

Descriptions of Operations and Maintenance Activities

This appendix contains detailed descriptions of the Utility's operations & maintenance (O&M) activities. Table B-2 (at the end of the appendix) provides an overview of O&M activity classes, and Table B-3 (at the end of the appendix) contains summary descriptions of O&M activities by class. A notification checklist is provided in Attachment B-1, and road maintenance specifications are included in Attachment B-2.

B.1 Class I – Routine Patrols, Inspections, and *de Minimis* Activities

Class I activities typically are carried out by vegetation management, transmission, and distribution line maintenance personnel. These activities include *de minimis* disturbance of the ground surface and vegetation within the Utility's rights-of-way in previously disturbed areas. Class I activities are performed by implementing applicable best management practices (BMPs) and resource protection measures (RPMs). Class I maintenance activities and scheduling will be presented to the local National Forest (Forest) during annual meetings.

Class I activities include routine patrols and inspections, with some minor repairs and maintenance (e.g., replacing insulators, transformers, switches, and fuses) on the Utility's infrastructure. Patrols and inspections are performed for either compliance and/or operations. Other regular maintenance activities include minor repairs to the facilities (e.g., poles, fiber optic line) and road maintenance activities not requiring new ground disturbance.

Class I activities also include limbing and pruning within the Utility's corridor, hazard tree zone, and powerlines, and clearing out flammable vegetation around subject poles and towers. Subject poles and towers contain hardware, including fuses, switches, lightning arrestors, hot tap (hot line) clamps and split bolts, that are used to protect electrical equipment and isolate outages. The base of "subject" poles and towers must be cleared annually in the event that sparks fall from this equipment.

These activities occur at scheduled intervals or as needed (both proactively and reactively) and are conducted from roads¹ or off-highway vehicle (OHV) routes² by vehicle, on foot, or by aircraft. More detailed descriptions of Class I activities are in the sections below.

¹ There are two main classes of roads: Utility roads and National Forest System (System) roads. Utility roads are covered under these master permits and easements. System roads are not covered; they will be managed with road use agreements on a project-level basis.

² If the Utility uses motorized vehicles to access its facilities via OHV routes, it must comply with requirements discussed in Section 2.5.2.

B.1.1 Routine Patrols

B.1.1.1 Aerial Patrols

The Utility's maintenance staff conducts periodic patrols by air. Aerial inspections are conducted from helicopters, fixed-wing aircraft, and unmanned aircraft. Transmission, telecommunication, and distribution line reconnaissance is performed to assess the condition of facilities. These patrols typically are conducted annually or on an as-needed basis to ensure continued worker and public safety and system reliability. Typically, aerial patrols are flown 200 feet above the tree line, depending on land use, topography, and infrastructure requirements. In general, the aerial inspections pass over each segment of the overhead facilities within a 1-minute period. Poles are typically between 100 and 200 feet apart, with poles more closely spaced in high wind areas; and towers generally are spaced between 600 and 1,000 feet apart. Patrols where the Utility plans to fly below 200 feet, and where known threatened and endangered birds (e.g., California condor northern spotted owl) are present, must be submitted as a Class II action; and a flight plan must be submitted to the Forest's local Dispatch Office or Air Tanker Base. If a resource protection process can be established where threatened and endangered birds are mapped, and flight ceilings and limited operating periods are established, the Utility can submit as a Class I activity.

Aerial inspection also may involve the use of drones and unmanned aircraft to inspect individual pole locations or the conditions within a right-of-way. These types of devices may be used to observe environmentally sensitive areas without the use of trucks, helicopters, or other Utility equipment, thus minimizing the environmental impact.

B.1.1.2 Ground Patrols

The Utility's maintenance staff conducts periodic ground patrols. Routine ground patrols generally are conducted from a patrol vehicle traveling on a road or OHV route, or by foot access via trail. The Utility has authorized motorized access on roads defined as System roads, county roads, state highways, and roads and trails within the Utility Access Roads Network. Ground patrols of all equipment are required based on system reliability and local conditions, including the level of dirt, dust, bird activity, and other environmental factors present in a particular geographic area; the level of vandalism of facilities (e.g., gunshot insulators); the severity of storms (e.g., Santa Ana winds), other natural disasters (e.g., fires, floods, and earthquakes), or accidents; and normal aging of the facilities.

These activities typically involve patrol personnel using all-terrain vehicles or light-duty vehicles on roads to visually inspect structures, lines, hardware, and foundations. No surface disturbance or off-road activity occurs during routine patrols. Patrol personnel visually inspect for such things as broken or gunshot insulators, loose or damaged guy wires, eroding hardware, and broken cross-arms. Conditions found and required maintenance items are identified and recorded during routine patrols. Minor repairs sometimes are completed immediately, but more often they are compiled and completed separately from the patrols for efficiency.

In addition to inspecting the towers and poles, the surrounding area is checked for vegetation and tree clearances, brush and other potential fire hazards, erosion, and slides or soil covering tower and pole footings. Authorized roads also are checked for water quality impacts, erosion, rocks, or slides that may block access; overhanging brush; trees that intrude into the roadway; and other combustible materials that may cause a fire hazard. During winter and spring months, patrol

vehicles may drive through small stream crossings that contain flowing, frozen, or ponded water. These crossings are at established locations, and periodic use will not increase erosion or result in increased soil exposure. Routine patrols will not disturb meadows or riparian vegetation associated with streambanks.

Patrols also consist of qualified vegetation management personnel examining transmission and distribution corridors annually or as needed to identify hazard trees and other vegetation that must be treated in compliance with all applicable regulations. Pre-inspectors mark the location and record the condition of the hazard tree(s). Felling hazard trees is considered a Class II activity, except for small ingrowth tree removal by hand. To reduce any conflicts of interest, the Utility uses different companies for hazard tree identification and for hazard tree removal.

B.1.2 Inspections

In addition to ground patrols, hands-on inspections are conducted on the Utility's distribution and transmission facilities and associated equipment to complete a close visual assessment of structures (including foundations), insulators, conductors, Utility roads and drainage systems, and vegetation for safety and reliability purposes. Access to these facilities is similar to patrols although inspections also may involve qualified personnel physically climbing poles and towers. Repairs and minor maintenance activities typically are performed by personnel climbing the pole or tower to make the repair or from vehicles parked off of the established road near the pole, tower, structure, or conductors.

B.1.2.1 Internal Communications Equipment

Inspections of communication equipment within the corridor occur on a regular basis. Fiber optic and copper cables are inspected and tested periodically (typically up to four times per year). Minimal overhead sections may need to be replaced to facilitate repairs. Vehicles, light-duty trucks, and telecom line trucks (Telstas) are used to perform these activities.

B.1.2.2 Towers, Poles, and Equipment

The Utility routinely inspects tower footings and poles to verify stability, structural integrity, and equipment condition (e.g., fuses, breakers, relays, cutouts, switches, transformers, and paint). Footings and poles are accessed from roads or OHV routes, or may require overland travel on foot. Examples of minor maintenance and repairs on towers, poles, and equipment include the following activities.

Insulator Washing. In areas with relatively high levels of atmospheric moisture, condensation combined with dust on porcelain insulators can create an electrical discharge known as *arcing* that can result in outages. Insulator washing on transmission and distribution lines is necessary in dusty areas (e.g., agricultural fields, near processing buildings). Insulators may require periodic washing with water to remove a buildup of dust and reduce the possibility of arcing. Washing activities generally take place from a vehicle on an established road or from a helicopter. For washing insulators on poles or transmission towers, a boom truck or pumper tanker pumps water through a hose or pipe to the conductor level of the structure.



Photo B-1. Example of Utility Washing Insulators on a Transmission Tower

A qualified electrical worker climbs the tower, attaches a wash gun to the hose or pipe, and washes the insulators. Boom trucks, or “pea-shooters,” also are used. These trucks have a hose attached to the boom, and an articulating wash gun controlled from the operator platform. The wash gun is controlled remotely to apply water to and clean the insulators. For any tower or pole to be washed, water is discharged for approximately 1 to 5 minutes, with the over-spray mostly confined to the area immediately around the structure. The rate of over-spray discharge is equivalent to a heavy mist and often evaporates before it reaches the ground. There are no chemical additives in the water used for spraying. The frequency of insulator washing is region specific and is based on the build-up of contaminants. It generally occurs every 6 to 8 weeks but can be significantly less or more frequent, depending on field conditions.

Pole and Tower Equipment Repairs and Replacements. Normal wear and tear on powerlines and associated equipment requires the Utility to routinely make minor repairs such as repairing or replacing equipment (e.g., cross-arms, insulators, pins, transformers, wires, cables, guys, anchors, switches, fuses, and paint) when it fails, becomes unsafe, outlasts its usefulness, or is identified for replacement. Other minor maintenance activities that may occur on the Utility’s poles and towers include repairs made to aircraft warnings, bird guards, structure mile markers, antennas, steel members, and brace repairs. Pole and tower equipment repair and replacement activities typically take place using a line truck on an existing road and in previously approved work areas. Tools used to perform these activities, including various hand tools, ladders, ropes, and slings, are transported to and from the work location by line truck, Utility truck, or helicopter, or are carried to the location by personnel on foot.



Photo B-2. Example of Utility Conducting Pole Top Repairs from a Utility Bucket Truck

Strengthening Tower Superstructures. Superstructures may require strengthening via replacement, modification, or addition of pieces of steel lattice, as determined by engineering analysis specific to each tower. Other minor tower repairs may include replacing fuses, breakers, relays, cutouts, switches, transformers, and paint. Tower strengthening and repair/replacement activities are made by personnel physically climbing the tower to make the repair, from vehicles parked off the access road near the tower structure or transmission line, or via helicopter transport.



Photo B-3. Example of Utility Working on a Transmission Line

Steel Truss Installations. Installation of a steel truss may be necessary when the structural integrity of a pole is compromised but generally not to the point where a pole replacement is warranted. Some steel trusses are installed to support a wood pole when a replacement is warranted but cannot occur within sufficient time to protect public health and safety and electric system reliability. Steel trussing allows a pole to be remediated with less disturbance to the environment. The Utility has specifications that allow certain poles to be repaired with a steel truss.

Trussing of wood poles is conducted from an existing road and in designated work areas whenever it is feasible and safe. Some pole locations and laydown areas may be in previously undisturbed areas and may result in minor ground or vegetation disturbance; however, attempts will be made to use previously disturbed areas to the greatest extent possible. If ground-disturbing activities are required to complete trussing, the activity must be submitted and reviewed as a Class II activity. Pole trussing is accomplished using a light line truck, depending on the location and local conditions. Existing roads, OHV routes, and trails are used for access to the pole locations; and minimal ground disturbance occurs during installation of the steel, which is attached to the existing pole.



Photo B-4. Steel Trussing on a Wood Pole

B.1.2.3 Wood Poles

Wood pole inspection is a necessary maintenance activity to evaluate the condition of wood structures both above and below ground level across the Utility's grid, and to verify that the poles are structurally sound and appropriately loaded.

The Utility identifies the line segments for inspection and testing based on their age and condition. Transmission and distribution wood poles are evaluated to determine whether they are suitable candidates for replacement, trussing, stubbing, or fiber-wrapping. Crews excavate soil and bore holes at the axis of the pole. Wood poles are intrusively inspected at least every 10 years after 15 to 20 years of service. Intrusive inspections require the temporary removal of soil around the base of the pole, usually to a maximum depth of 20 inches, to check for signs of deterioration. Small holes also may be bored into the pole to assess its structural integrity and strength. Existing roads, OHV routes, and trails are used for access to poles. In some cases, crews will hike to poles that cannot be easily accessed by Utility roads, OHV routes, and trails. As part of the inspection, a sample of the pole is removed and analyzed for its remaining strength capacity. A visual inspection also is conducted to determine whether there is a split or decay in the pole and, in some cases, to catalog the equipment and loading on the pole. Once the inspection is complete, the removed soil is replaced and compacted. Return trips are required if the results of the analysis indicate that the poles need modifications or replacement.

In some cases, poles also are evaluated for potential exceedance of allowable pole loading requirements, as specified in California Public Utilities Commission (CPUC) General Order (G.O.) 95. Wood poles are evaluated for their structural integrity based on the load imposed on the pole by its cross-arms, pole-mounted equipment (i.e., transformers, conductors), and environmental conditions (i.e., potential winds, icing during winter, and soil moisture). Wood poles deemed insufficient to withstand the current pole loading requirements may need to be replaced. The

process involves completing a visual inspection on each pole where the physical characteristics (e.g., significant holes), inventory of all equipment on the pole, and measurements are recorded.



Photo B-5. Examples of Pole Decay at Base of a Pole



Photo B-6. Pole Split inside a Pole

B.1.2.4 Sections of Overhead and Underground Conductors, Cables, and Wires

Regular inspection of both aboveground and underground facilities, instrumentation and controls, and support systems is critical for safe, efficient, and economical operation. The Utility inspects aboveground components periodically for corrosion, equipment misalignment, loose fittings, and other common mechanical problems. Additionally, the underground portion of the line is inspected at vault locations. Inspections are performed on an as-needed basis from roads or OHV routes, or may require overland travel on foot. Repairs of overhead and underground conductor, cable, and wire typically are categorized as Class II activities and are described in further detail in Section B.2.3.

B.1.2.5 Substations

The Utility inspects transmission and distribution substations periodically to verify equipment operation and conduct safety inspections. Substations typically are accessed from roads in vehicles.

B.1.2.6 Helicopter Pads

Helicopter landing structures are inspected as part of the normal patrol process. A 35-foot clearance of small trees and shrubs around the touch-down pad is maintained, as well as a 70-foot-wide “approach/takeoff” slot to the touch-down pad at a 12-degree angle. Hand and power tools are used for maintenance activities. Due to various environmental conditions (e.g., snow pack), periodic replenishment of site hardening material may be required. Access to helicopter landing areas occurs on an as-needed basis. Flight plans for air operations under 200 feet will be provided to the local Forest’s Dispatch Office or Air Tanker Base as Class II work.

A.1.3 *de Minimis* Activities

B.1.1.3 Land Surveys

When new construction is proposed by a property owner or land developer, the Utility conducts land surveys of facilities and facility rights-of-way for construction layouts and other purposes. Data collected include precision measurements regarding length and slope and other geology-related information. Access is by vehicles on roads or OHV routes but may include overland travel or surveys on foot.

B.1.1.4 Outage Repairs

After outages occur because of weather, accidents, equipment failure, or other reasons, the Utility inspects lines to determine the location and probable cause of the outage. Lines are accessed from roads or OHV routes, or may require overland travel on foot.

B.1.1.5 Pole/Tower Clearing and Limbing/Pruning

The Utility must perform ongoing vegetation management to be in compliance with existing state and federal laws and regulations; this is crucial for maintaining reliable service, especially during severe weather or disasters. Tree limb and branch contact with energized conductors is a potential cause of power outages and a possible ignition source for fires. For purposes of this Plan, these vegetation management activities are categorized as pole and tower clearing activities and limbing and pruning activities.

Pole/Tower Clearing. The Utility is required to maintain minimum clearances of vegetation around certain poles and transmission tower pads for fire protection. Utilities often refer to this practice as *brushing*, and it is the practice used to maintain clearance around subject (non-exempt) poles and towers of flammable vegetation for compliance with Public Resources Code (PRC) 4292. The Utility also maintains clearances in some Local Responsibility Areas per CPUC G.O. 95, Rule 35, which includes locations where the local fire department (not the State) has primary fire suppression responsibility—as well as what is required in the California Independent System Operator's (CAISO's) maintenance practice agreements, which require the Utility to access and inspect poles and towers. Photo B-7 is an example subject pole.

Typically, a 10-foot radial clearance around subject (non-exempt) poles is maintained in compliance with existing state and federal laws, rules, and regulations. Greater clearance is obtained for transmission towers, as needed. Figure B-1 provides an example of pole clearing (brushing) requirements (refer to PRC 4292). Vegetation typically is hand-cleared with power brush cutters (weed whackers or string trimmers) or chainsaws. Brush and tree pruning will be lopped and scattered at site locations or, in rare instances, removed to a permitted disposal location offsite. Placement of debris on resources, such as known special-status plant populations or streams, would be avoided to avoid any impacts. Pole and tower clearing activities typically occur annually or on as needed based on local conditions.

Poles that are not currently deemed as subject poles or require new clearance due to changes in classification must be submitted for review as a Class II activity for initial clearing activities. Once initially cleared of vegetation, all non-exempt poles may be maintained thereafter under Class I activities for the life of the permit.



Photo B-7. Example Subject Pole

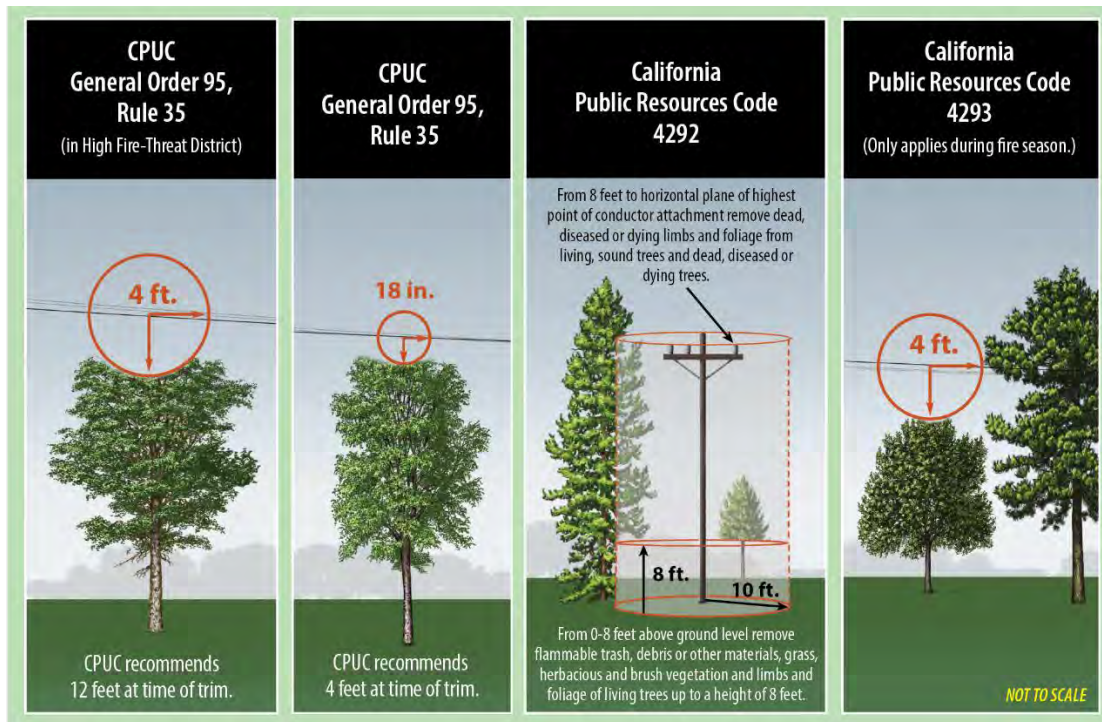


Figure B-1. Example of Pole Clearing (Brushing) and Limbing/Pruning (Line Clearing) Requirements

Woody vegetation within and outside of the transmission tower cages and around the footings of a single-leg tower are cleared to allow a 100% visual inspection of the structure footing(s) and to maintain the integrity of the tower structure. Work is performed as follows:

- All woody or vine material capable of growing to a mature height greater than 3 feet is removed from the interior of the tower/pole structure and to a distance of 5 feet around the structure
- All woody or vine material capable of growing to a mature height of greater than 10 feet is removed to a distance of 10 feet around the structure
- Any limbs or branches growing into contact with a structure are removed to a minimum distance of no less than 10 feet from any portion of the structure

Limbing/Pruning. The Utility regularly maintains vegetation near primary electrical powerlines to prevent electrocution during a storm or accident, reduce the risk of fire due to arcing or sparking, and prevent power outages. Regular tree pruning also must be performed to comply with existing state and federal laws, rules, and regulations, including PRC 4923 (as shown in Figure B-1) and CPUC G.O. 95; and clearance between conductors and vegetation must be maintained at all times in all conditions (e.g., sway, sag, and line loading) throughout the year. Pruning must be done before limbs and branches grow to within the minimum clearance distances and will result in greater than the minimum distances to allow for new growth. In addition, the clearances between lines and vegetation must be visible from the ground, and sufficient for personnel working around lines to keep themselves and their tools away from danger. The CPUC, the North American Electric Reliability Council, the CAISO, and the California Department of Forestry and Fire Protection (CAL FIRE) monitor compliance with the clearance standards and take prompt enforcement action when clearances are not maintained. Utilities often refer to these limbing and pruning activities as *line clearing*. Included in this level of work are hand tool removal of small tree ingrowth and resprouting vegetation previously removed by the Utility.

The line clearances can vary depending on the voltage of the line, type of construction, and field conditions. At a minimum, the clearances shown in Table B-1 must be maintained for transmission and distribution powerlines. These clearances are based on current regulations and subject to change as the regulations are modified or updated.

Table B-1. Required Clearances for Transmission and Distribution Circuits

Voltage	Clearance
500 kV	25 feet
220 kV	25 feet
115 kV	15 feet
33 to 66 kV	12 feet
<33 kV	4 feet

State regulations require that minimum distances are kept at the time the vegetation is pruned; that is, pruning must be done before limbs and branches grow to within these distances and must result in greater than the minimum distances to allow for new growth. The Utility's standard approach to line clearing is to obtain the maximum amount of clearance possible and for the

longest period of time possible, while taking into consideration the overall health of the tree. Limbing and pruning work typically takes place annually but sometimes is needed more frequently.

Class I line clearing activities for transmission and distribution facilities occur in two distinct zones, as depicted in Figures B-2 and B-3. The first is within the designated right-of-way (wire zone) where lines, poles, towers, and related facilities are located. The actual right-of-way width, and subsequently the vegetation management zone, may vary, depending on the line voltage and particularly at mid-span to accommodate the maximum sway of the conductors. This zone will be kept clear of trees that can grow into or come within the flashover zone of the conductors.

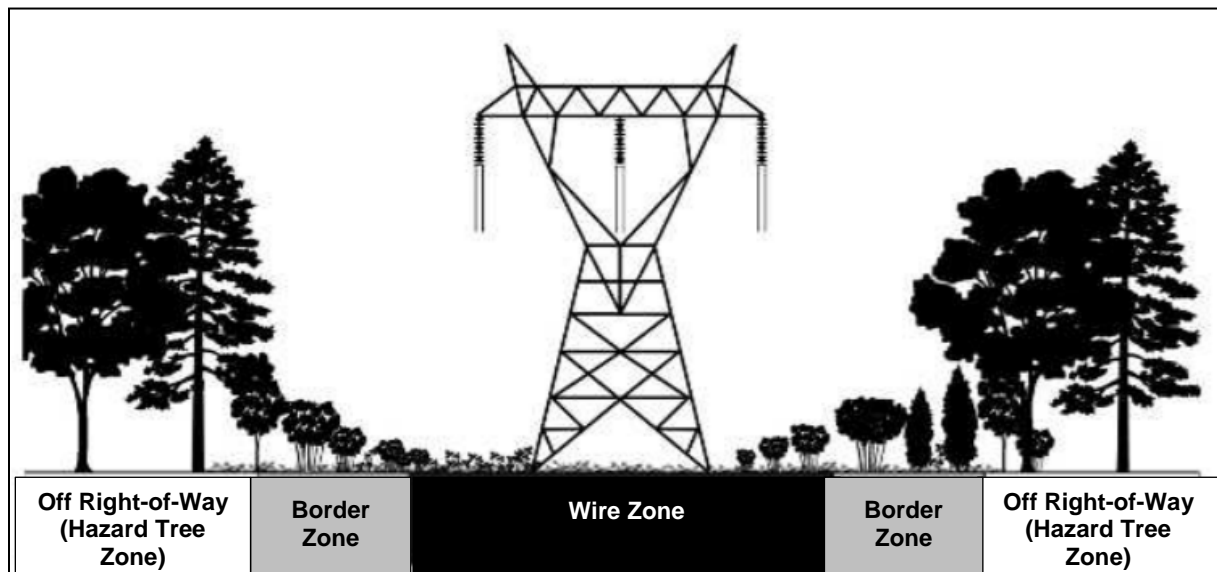


Figure B-2. Wire Zone and Border Zone

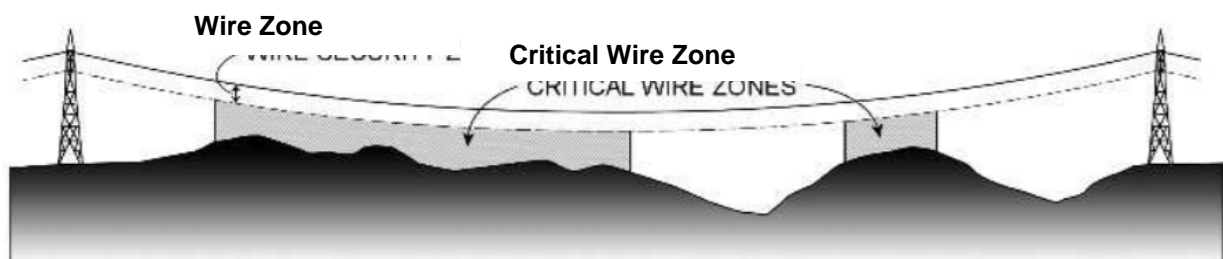


Figure B-3. Profile View of Wire Zone

The second vegetation management zone is variable in width and extends out from the edge of the right-of-way. This zone is depicted in Figure B-2 as the border zone. The width of the border zone is determined by terrain, tree height, and sway of the conductors. Limbing and pruning will be completed within the border zone to reduce the risk of trees or branches falling onto lines, or lines sagging or swaying into trees. Some small, low-growing shrubs and plants may be permitted. Additionally, trees within the border zones should not have any portion of their canopies growing adjacent to the lines. Figure B-4 illustrates incompatible vegetation in the border zone, and Figure B-5 provides examples of swaying and sagging powerlines.

A third vegetation management zone, known as the hazard tree zone, is beyond the right-of-way and border zone. The Utility typically will not operate in this area unless a hazard tree is identified that is at risk of falling onto the Utility’s powerlines and related equipment. Hazard tree removal work is categorized as a Class II activity and is described in further detail in Section B.2.4. The Utility will also submit a Class II work package if a line segment must be cleared that has not been recently maintained and requires extensive vegetation management.

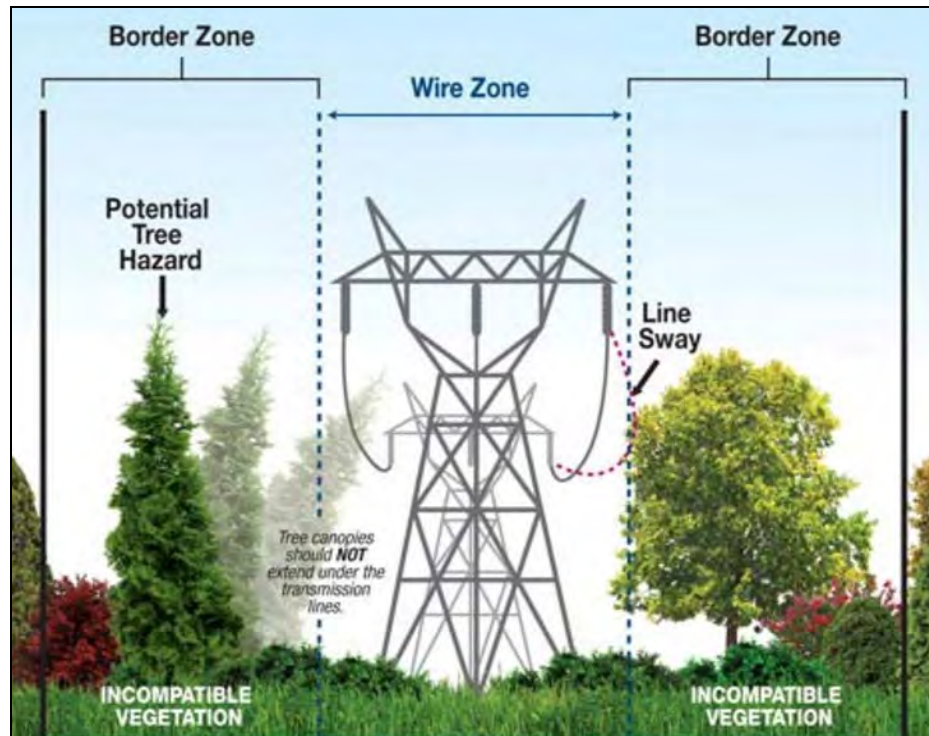


Figure B-4. Incompatible Vegetation in Wire Zone and Border Zone

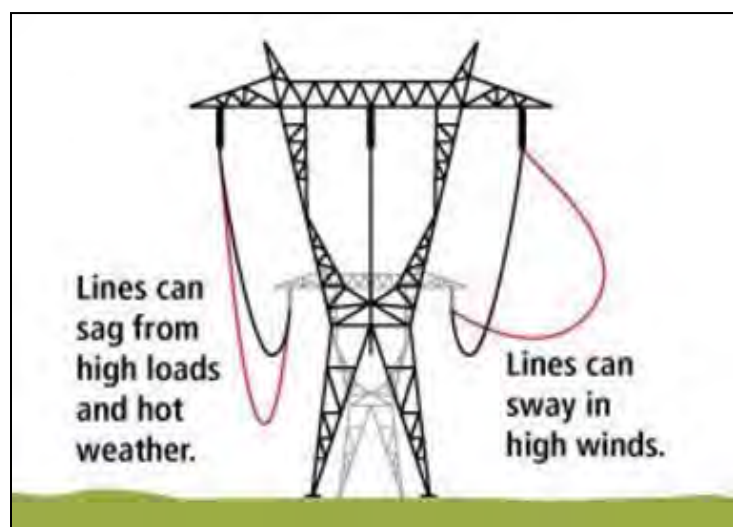


Figure B-5. Examples of Sagging and Swaying Powerlines



Photo B-8. Example of Utility Clearing Powerlines of Vegetation

The clearances between lines and vegetation must be visible from the ground and sufficient for personnel working around lines to keep themselves and their tools away from danger. The CPUC, CAL FIRE, and other agencies or groups monitor compliance with the clearance standards and take prompt enforcement action when clearances are not maintained.

Tree pruning is done with power and hand tools, including chainsaws, pole pruners, and hand saws. Debris may be lopped and scattered, or chipped onsite, or removed to a permitted disposal location offsite. Placement of debris on resources, such as known special-status plant populations or streams, would be avoided to avoid impacts. Appropriate methods for debris disposal will be determined based on the field conditions and in coordination with the Forest. All use of internal combustion engines will be operated in compliance with federal and state requirements.

B.1.2.10 Minor Road Maintenance

Class I minor road maintenance is required to keep roads clear and functioning at a Level 2 standard. These activities typically occur in spring or early summer to clean up debris and maintain drainage structures and facilities. Maintaining the roadbed and drainage features prevents significant erosion in the future due to poor roadbed conditions. These maintenance activities occur within the existing roadbed prism and do not require new ground disturbance. Additionally, Class I road maintenance activities do not produce significant spoils, sedimentary runoff, or erosion. They typically are performed as a single pass through. More comprehensive road maintenance activities within the roadbed prism will be submitted as a Class II activity, as described in Section B.2.7.

Class I minor road maintenance activities include the following.

Clearing Obstructions. Clearing obstructions involves removing downed trees, rocks, and other debris present on the roadbed prism.

Drainage and Culvert Clearing. Drainage and culvert clearing involves removing wood or sediment from the inlet using hand tools such as shovels to ensure proper hydrologic function.

Vegetation Clearing. Vegetation clearing involves cutting and disposing of vegetation growth from the road surface and right-of-way using hand tools such as weed whackers or string trimmers to clear obstructions on the road prism.

Miscellaneous Structure Maintenance. Miscellaneous structures include retaining walls, guard rails, cattle guards, fences, gates, and other similar existing structures that have been installed to provide safe and efficient operation of the road. Maintenance of these structures includes cleaning and other repair work necessary to ensure that all structures remain fully functional and in conformance with the standards in the *Manual on Uniform Traffic Control Devices (MUTCD)* and *EM7100-15 Sign and Poster Guidelines for the Forest Service*. All materials used to maintain miscellaneous structures will conform by type and specification to the material in the structure being maintained.

Signage and Traffic Services Maintenance and Installation. Maintenance of signage and traffic services includes maintaining and installing signage and traffic-related regulatory, warning, and directional signs, as well as roadside delineators, markers, and other such devices.

Snow Removal. Snow removal includes blading, shoveling, or otherwise removing snow, ice, and associated debris from Utility roads. Snow removal will be conducted in a manner that protects roads; ensures safe and efficient transportation of materials; and prevents erosion damage to roads, streams, and adjacent lands.

B.1.2.11 Anchor/Guy Wire Replacements

Routine anchor/guy wire replacements or additions are necessary when a structure or hardware modification requires additional support to accommodate increased loading or higher voltages, to repair damages, and to maintain worker and public safety. Existing roads or OHV routes and trails typically are used for access to existing locations inside the designated right-of-way, with minimal ground disturbance for installation of the anchor. Anchor/guy wire replacements are completed on an as needed basis and may involve the use of light-duty vehicles and trucks, and occasionally heavy-duty line trucks. Photo B-9 illustrates guy wires on a pole.



Photo B-9. Example of Guy Wires on a Pole

B.2 Class II – Routine Operations and Maintenance

Class II work consists of routine O&M activities. Class II activities include repairs to existing facilities, such as replacing existing poles and towers; pruning limbs or portions of trees to maintain clearance distances; felling hazard trees, including roadside trees; removing small trees and brush; replacing conductors; and completing minor underground repairs. In this Plan, Class II activities are categorized into three subclasses depending on the presence or absence of resources requiring protection and the measures to be implemented for the protection of such resources. All Class II activities undergo an environmental screening through geographic information system and multiple databases to ensure compliance with state and federal legal requirements and the protection and avoidance of impacts on biological, heritage, and water quality/wetland resources. The Utility also uses the environmental screening process to ensure that O&M activities are being implemented in ways that avoid impacts on special-status species, sensitive habitats, and artifacts—in addition to minimizing the footprint of the activity.

These activities occur at scheduled intervals or as needed (both proactively and reactively) and are conducted from roads or OHV trails, on foot via overland travel, or by aircraft. More detailed descriptions of Class II activities are in the sections below.

B.2.1 Pole and Conductor Replacements

Pole and/or conductor replacements occur within the existing right-of-way. Replacement in-kind of wooden, composite, concrete, or tubular steel poles or other material is conducted from existing

Utility roads and in designated work areas whenever it is feasible and safe to do so. Conductor can be replaced in-kind or with insulated or coated conductor. Pole replacements also involve removing the powerline conductor and equipment from an existing green or hazard tree (known as a *tree attachment* or *tree connect*) and installing it on a new pole located adjacent to the tree. The tree attachment is then removed or trimmed to maintain the required clearance needed from the new pole.

Some pole locations, such as interset poles, and laydown areas may be in previously undisturbed areas and may result in ground and vegetation disturbance, although attempts will be made to use previously disturbed areas to the greatest extent possible. Pole and/or conductor replacement is accomplished using a backhoe, track machine, crane, bucket truck, heavy line truck and/or helicopter, depending on the location and local conditions. (Helicopter use under 200 feet requires flight notification.) If access is limited or environmental sensitivities exist, other construction methods will be used to minimize ground and vegetation disturbance to the greatest extent possible (e.g., performing work from roadside, entering the project area on foot and pole dollies, helicopter set, same hole set, and use of rubber tire vehicles). When feasible, these methods are used to avoid impacts on resources close to the project area.

The typical construction work area for a pole and conductor replacement is within a 10- to 20-foot radius around the pole. Pole replacement activities typically involve installing the new pole within the right-of-way and within 10 feet of the existing pole or tree. Once the new pole is placed, the conductor and equipment are transferred to the new pole. The old pole is removed after all equipment (including telecommunications equipment of other utilities) is transferred to the new pole. New conductor installed on the new pole is done before the removal of the old pole and conductor. On rare occasions, the new pole is placed within the boring of the existing pole (same hole set), but this is not the preferred method due to stability and structural integrity of the original hole. Photos B-10 through B-15 depict various activities associated with pole replacements.



Photo B-10. Drilling New Pole Location



Photo B-11. Hole Excavation – Spoon, Spade, and Bar



Photo B-12. Use of Line and Boom Truck to Pull Existing Pole from Ground and Place New Pole in Existing Hole



Photo B-13. Use of Line and Boom Truck to Pull Existing Pole from Ground and Place New Pole in Adjacent Hole



Photo B-14. Pole Set by Crane



Photo B-15. Pole Set by Helicopter

B.2.2 Tower Replacements

Tower replacement involves replacing the tower and may require replacing the concrete footings, as well as assembling and erecting the tower onsite. Towers result in increased ground disturbance and require a larger laydown area than poles. Tower replacement is completed on an as-needed basis and is accomplished using a bucket loader, bulldozer, backhoe, crane, bucket truck, or heavy-duty line truck as needed and appropriate. Replacement towers are brought in via truck using roads and designated areas or helicopter. (Helicopter use under 200 feet requires flight notification.) In some cases, new roads may be created or re-opened to remove and replace an existing tower (see Class III activities).

B.2.3 Reconductoring/Underground Work

Existing conductors may require re-stringing (replacement) to accommodate increased loading or higher voltages, improve system resiliency and safety, or to repair damages. Replacement of existing conductors, and any necessary structure reinforcements, replacements, or additions is known as *reconductoring*. Existing insulator, transformer, and hardware assemblies also may be replaced or upgraded as part of these activities. Poles and towers may be replaced as part of this work, and their heights and/or diameter may be increased slightly. Poles and towers may be increased by 5 to 20 feet from their original height to accommodate new conductors or regulatory conductor clearance requirements in NFS areas that are not categorized by the Forest Service as a high or very high scenic integrity objective. These increases in height/diameter are achieved through replacement of poles or installation of cage extensions mounted to the existing tower structure. Class II reconductoring is defined and classified as a low environmental risk if (1) the wire stringing/replacement activities are generally limited to and contained within authorized roads; pole and tower locations, including interset locations; and designated work areas; and (2) the conductor does not come in contact with any vegetation as it is pulled/lifted to its destination. In some cases, a helicopter is necessary to install poles, conductor, and equipment. Helicopter use under 200 feet requires a flight plan notification. Reconductoring projects are completed on an as-needed basis.

Work crews install bare conductors by temporarily splicing them to the ends of the existing conductors and pulling them through travelers attached to the arms of the towers or pole cross-arms. Travelers are installed at each tower or pole using a boom truck. Where a boom truck cannot be used, a winch is used to install the travelers. Tensioning equipment is used to pull the conductors through the stringing blocks and to achieve the desired sag and tension condition. During the stringing operation, temporary guard structures or boom trucks will be placed at road and highway crossings and at crossings of existing Utility lines to ensure public safety and continued operation of other Utility equipment. Coated, insulated, or other conductor is installed by laying the cable on the ground and lifting it to the cross-arm or bracket rather than pulling the conductor through travelers.

Underground work includes activities in areas previously disturbed to install a piece of equipment (e.g., a subsurface vault) or to repair or replace the equipment as needed. These activities also may include replacement or repair of cables within an existing underground conduit where no to minimal ground impacts may occur in already disturbed areas. Underground work is completed on an as-needed basis and may include use of light-duty vehicles, trucks, and heavy-duty line trucks. Backhoes and compactors also may be used for underground repairs.

B.2.4 Vegetation Maintenance

Recurring vegetation maintenance work includes pruning limbs or portions of trees to maintain clearance distances; felling hazard trees, including roadside hazard trees; removing scattered, incompatible green trees that have grown into the wire or border zone; and mechanically mowing brush and small ingrowth trees to maintain previously cleared corridors. These are components of the Utility's overall vegetation management program and are required to maintain compliance with overlapping state and federal laws, rules, and regulations. Hazard tree removals are crucial for maintaining and restoring reliable service, especially following fires, severe weather, insect epidemics, or disasters.

B.2.4.1 Hazard Tree Work

A hazard or danger tree is a tree located on or adjacent to a Utility right-of-way or facility that could damage Utility facilities should it fall where (1) the tree leans toward the right-of-way; or (2) the tree is defective because of any cause, such as heart or root rot, shallow roots, excavation, bad crotch, dead or with dead top, deformity, cracks or splits, or any other condition that could result in the tree or a main lateral of the tree falling. This may include dead, diseased, dying, or green trees. Class II activities include felling hazard trees located in or beyond the Utility's rights-of-way (in the wire zone, border zone, or hazard tree zone, as depicted in Figure B-2).

Hazard tree work may include individual trees or larger groups of trees that meet the definition of a hazard or danger tree as a result of landslides, storms, wildfire, drought, insects, opening the stand from adjacent timber harvesting, or erosion. It also may include green trees that have characteristics prone to causing outages, such as long limbs near lines that tend to blow or break out in storms, low trunk diameter-to-height ratios that tend to bend over under snow loads, shallow root systems that uproot under saturated soils, and exposed roots along road or stream banks.

Trees usually are removed with chainsaws, pole pruners, and hand saws; work may be conducted from ground level, by tree climbing, or from lift trucks.

Within the 10-business-day notification window, the Utility will coordinate with the Forest on fuel management requirements or other specific measures to fell and treat hazardous trees, including measures to protect resources known to occur in the vicinity of the hazard tree. All use of internal combustion engines will be operated in compliance with federal and state requirements, including Project Activity Levels.

NOTE: Vegetation management is not considered a commercial activity and is not subject to stumpage or settlement sale as a Forest product, unless the Utility is attempting to recuperate costs by selling felled trees as a by-product of its operation.

B.2.4.2 Corridor Maintenance

Vegetation and trees can create access problems, fire hazards, and clearance hazards when they encroach on the minimum clearance distances. Vegetation adjacent to previously cleared corridors and areas tends to resprout quickly and intrude into the wire and border zone areas. Many transmission corridors require maintenance clearing at 2- to 5-year intervals to manage low-growing vegetation communities before they approach conductor distance clearance requirements.

Vegetation may be cleared with chainsaws and hand saws as well as by mechanical mowing to control brush and small trees in wire zones and border zone areas.



Photo B-16. Hazard Trees Identified Adjacent to a Powerline in a Region 5 Forest



Photo B-17. Utility Crew Topping Hazard Tree

B.2.5 Internal Communications Maintenance

Maintenance of internal communications equipment may involve replacing and repairing optical ground wires, fiber optics, communications cables, and related internal communications equipment (e.g., remote fault indicators, packet routers). These activities occur on a regular basis to ensure that the infrastructure can provide the automation and information needed to operate the Utility's power system in a safe and reliable manner.

Helicopter, cranes, rigging, and boom trucks may be used to complete microwave maintenance work. Vehicles used for communication lines and site maintenance may include bucket/reel trucks (without outriggers); various-sized pick-up trucks, Telstas, or boom trucks; cable dollies; a single drum puller; a two-axle trailer; and a splice lab truck. Vehicles used to receive and load out materials include a 5-ton forklift and various-sized pick-up trucks. If the maintenance activities require sky wrap cable, special equipment—including a helicopter, a tugger, and a spinner—may be used. (Helicopter use under 200 feet requires flight plan notification.)

B.2.6 Shoo-Fly Installations/Intersect Installations

The Utility needs to replace or repair poles, towers, and equipment (e.g., anchors, cross-arms, insulators, wires, cables, guys, and switches) when they fail or become unsafe. New additions to existing transmission line facilities or tap lines from the old facilities may require installation of a shoo-fly.

Shoo-fly installations involve adding temporary poles or structures around existing permanent facilities to limit service interruptions until work crews can make permanent repairs. Shoo-flies consist of a number of poles and anchors supporting conductors to bypass facilities needing repairs or upgrades. In some cases, existing conductors are removed from the old poles or structures and reattached to the shoo-fly structures. In most cases, this is accomplished with one or two poles for every circuit attached to the structure being shoo-flied. For example, one double-circuit 115 kV tower (six wires attached) requires a minimum installation of four poles. Shoo-fly supports are removed when the repair or construction work is complete. A work area of approximately 25 by 100 feet typically is required.

The Utility also may need to install a new intersect pole between existing poles to support new infrastructure and equipment. Intersect poles are installed in existing rights-of-way.

Shoo-fly/intersect installations are completed on an as-needed basis and may include use of a backhoe, crane, bucket truck, heavy-duty line truck, and helicopter. Poles typically are delivered via truck or helicopter. Varying construction methods may be used to minimize ground and vegetation disturbance to the greatest extent possible (e.g., entering the project area on foot and using pole dollies, using a helicopter set, using a same hole set, and using rubber tire vehicles). (Helicopter use under 200 feet requires flight plan notification.)

B.2.7 Routine Road Maintenance

Class II routine road maintenance includes activities undertaken to (1) ensure that roads provide safe and reliable access to power lines and facilities for maintenance and inspection crews; and (2) minimize impacts on NFS lands. Most O&M activities occur from authorized roads, including System roads, Utility roads, and other public or municipality roads. The Utility is responsible for

properly maintaining and using Utility roads according to Forest Service road maintenance standards. Road maintenance activities requiring ground disturbance can include roadbed restoration, vegetation management, erosion control, cleaning culverts and drainage structures, snow removal, and any other requirements to keep the road at a Level 2 standard.

Road conditions vary based on impacts from weather and usage. Maintenance is conducted on an annual or as-needed basis to maintain the road's original line and grade; provide a safe, drivable surface; maintain a vegetation-free travel corridor; and minimize impacts on NFS lands. The Utility has the ability to install, maintain, and use gates and fences in the easement area with the prior written approval of the Forest. Gates and fences already in use for existing facilities do not require prior written approval.

Typical road maintenance activities are described below. Standard provisions for their implementation are described in the road maintenance specifications included as Attachment B-2.

Class II routine road maintenance activities include the following.

Road Surface Blading. Road surface blading involves keeping the native material or aggregate surface of the road in a condition to facilitate traffic, minimize additional future maintenance, reduce erosion, and provide proper drainage. Road surface blading also includes maintaining the crown, inslope, or outslope of the traveled way and shoulders, drainage dips, leadoff ditches, berms, and turnouts; and removing minor slides and slumps and other irregularities that prevent normal runoff from the road surface.

Rolling Dip and Waterbar Repair and Maintenance. This activity includes all work necessary to restore the rolling dip to its original shape and form. Upon completion of the work, the roadway will be shaped to provide for removal of surface water and passage by high-clearance vehicles. Berms existing prior to maintenance operations will be repaired or reinstalled. Maintenance includes excavation and placing and compacting replacement surface material.

Slide Removal and Slump Repair. Slide removal and slump repair includes all work necessary to restore the road to its original cross section, as may be necessary following a slide or slump event, to facilitate use and provide drainage. This work typically cannot be accomplished by a grader during surface blading and ditch cleaning operations due to the size of the slide or slump. Slide removal and slump repair may include excavation; loading, hauling, placing, and compacting replacement material; and removing and disposing of waste material at approved locations.

Road Surface Repair. Road surface repair consists of using surface aggregate or other materials to patch potholes and depressions. It includes all surface preparation activities, furnishing and placing all surfacing materials, and other work necessary to patch the road surface. It also includes slump repair and slide removal incidental to other repairs being made to roads.

Surface Rock Replacement or Spot Surfacing. Surface rock replacement or spot surfacing consists of adding rocks, gravel, or other surfacing materials to the road to re-establish existing conditions and allow for a drivable surface and appropriate drainage control.

Cleaning Drainage Structures. Drainage structures are constructed passages with single or multiple waterways designed to promote efficient water flow without damaging surrounding resources. Examples include drains, bridges, and other structures that permit water flow under the roadway. Maintenance of these structures includes cleaning inlets, outlets, related channels, existing riprap, trash racks, delineators, object markers, rails, and timber; bridge inspections; and

other work necessary to maintain the structures. All materials used to maintain drainage structures shall conform by type and specification to the material in the structure being maintained.

- **Ditch Cleaning.** Ditch cleaning involves removing and disposing of all slide or slump material from roadside ditches to provide an unobstructed waterway conforming reasonably to the previous line, grade, and cross section. These activities may require heavy equipment as well as recontouring the ditch.
- **Culvert Cleaning.** Culvert cleaning involves cleaning and reconditioning of culverts, catch basins, and other small drainage structures. These activities may require heavy equipment as well as recontouring drainage to restore flow patterns.

Culvert and Rock Ford Crossing Repair and Maintenance. Repair and maintenance of culvert and rock ford crossing includes adding rock or aggregate at a road crossing to improve drainage control.

Bridge Maintenance. Bridge maintenance may involve clearing debris lodged on the bridge structure, repair of scour or erosion, or stabilization of bridge footings, repair of bridge decking, or other bridge related maintenance tasks required for safe bridge use. Bridge replacement, or new bridge installation is a Class III activity.

Clearing Roadside Vegetation. Clearing roadside vegetation consists of cutting and disposing of all vegetative growth from the road surface and right-of-way, including trees that reduce the operational capability and sight distances of the road. Vegetation removal is required if growth during the authorization period causes an unacceptable reduction of sight distance or operational capability, impedes the flow of water, or diverts water from drainage structures. In some cases, this involves using mechanical equipment, such as a mower, to remove weeds or vegetation growing in the road or from the side of the road. Pole brushing also may occur when subject poles are adjacent to roads.

Vegetation Establishment. Vegetation establishment consists of applying seed, fertilizer, mulch, and/or plantings—singularly or in specified combinations—to cut or fill slopes, slides, slumps, disposal areas, or other areas disturbed during Utility road maintenance activities. The work area may be limited to designated portions of the roadway and roadside or may include treatment of the entire area bounded by the outer limits of the right-of-way. This activity requires review by a local botanist to ensure that materials used comply with all weed-free and native plant initiatives for the local area.

B.3 Class III – Project Proposals

Activities that cannot be characterized as routine and ongoing, and do not fit the scope and scale of Class I and Class II, are considered Class III. In many cases, these activities are considered “projects” because they are broader in scope, encompass areas outside of the permitted boundary, and may be proposed in areas supporting resources. These activities typically require more extensive environmental analysis, review, and reporting prior to initiating work. Projects require Forest review to determine the extent to which additional permits, documentation, or surveys may be required in order to comply with the National Environmental Policy Act.

Class III work generally includes large conductor replacement projects and multiple planned pole or tower replacements; line extension or line relocation projects; major tree removal projects and

timber settlement sales that extend beyond the authorized right-of-way; and fuel-loading reduction projects, not including follow-up maintenance to support reduction of re-grown fuels and to maintain wire zone-border zone conditions that do not require ground disturbance. Other examples of Class III work include new road construction or reconstruction or construction of a new route. This category of work also has a higher likelihood of ground disturbance in undisturbed areas. Construction and major reconstruction project plans will be submitted to the Forest for review.

More detailed descriptions of Class III activities are in the sections below.

B.3.1 Reconductoring Projects

Reconductoring projects that exceed the parameters of the reconductoring work described in Class II are typically much larger and may take place outside the right-of-way. Reconductoring projects may occur over multiple sections that vary in length. Pull and tension sites (pull sites) are used, and work areas or laydown areas on NFS lands outside of the authorized right-of-way are required. Pull sites are temporary construction areas used during removal of existing conductors and placement of new conductors along the transmission line. Pull sites may be used to stage materials and provide work areas for tower or pole work. Pull sites typically are located within relatively flat areas that are in line with the conductor. Several pieces of equipment are used at the pull sites, including tensioners (rope trucks) to feed out the new conductor and adjust tension, conductor reels to receive the existing conductor as it is removed, and reels of new conductors. Trailers pulled by semi-trucks, which also are parked onsite, typically deliver and remove the reels. Onsite cranes move the conductor reels on and off of the semi-trucks.

Pull sites generally are rectangular and vary in size, from approximately 50 to 350 feet wide for small pull sites and from approximately 100 to 1,250 feet long for large pull sites. Distances between pull sites vary, but on average, approximately 3 miles of conductor separates the pull sites. Vegetation mowing and minor grading may be required to prepare pull sites for use. Other equipment that may be needed includes four-wheel-drive trucks, boom trucks, line trucks, helicopters, and large tractors. (Helicopter use under 200 feet requires flight notification.) These projects are completed on an as-needed basis.

Before pulling the conductor, the Utility's crews install clearance structures at road crossings and other locations (where necessary) to prevent conductors from contacting existing electric or communication facilities or passing vehicles. These temporary structures consist of wood poles.

After the conductors are pulled into place, they are tensioned by pulling them to a predetermined sag and tension. The conductors are then permanently attached to the insulators and existing conductors.

One-third of all reconductoring work requires a pull site; the remaining reconductoring work requires installation and removal of travelers on a two-circuit line, resulting in new ground disturbance. Electric transmission reconductoring also requires a 25- by 25-foot work area. Larger reconductoring projects also may require replacement and upgrade of one or more utility poles or towers and construction activities that would result in ground disturbance beyond the designated right-of-way.



Photo B-18. Example of Large Reconductoring Project

B.3.2 New Pole Construction or Alignment Changes

Constructing new or extending existing overhead distribution and transmission lines may be needed to provide additional service to customers. These new lines would be supported by wood poles or towers or by steel-lattice towers, light-duty steel poles, or tubular steel poles with concrete foundations. This work typically requires new rights-of-way or an amendment of existing land use authorizations. Staging may occur in previously undisturbed areas. These projects may be constructed in natural vegetation and on agricultural lands that contain suitable habitat for covered species. Equipment that may be needed includes four-wheel drive trucks, excavators, boom trucks, line trucks, helicopters, rough-terrain cranes, and large tractors. (Helicopter use under 200 feet requires flight notification.) These projects are completed on an as-needed basis.

B.3.3 Major Road Construction/Reconstruction

Class III road construction activities may include, but are not limited to, work outside of the road right-of-way, road realignment projects, construction of new roads, installation of new road facilities (e.g., culverts, water diversions), and road decommissioning projects.

Class III access road maintenance also may include repair, replacement, and installation of storm water diversion devices on an as-needed basis. Storm water diversion devices are used to protect structures or roads in areas that are susceptible to erosion caused by water run-off. Examples of these types of storm water diversion devices include McCarthy road over side drains (Mac drains), culverts, water bars, "V" ditches, "V" ditches with splash wall, berms, sacked concrete, and visqueen

with sand bags and rebar. Equipment that may be needed for these activities includes four-wheel drive trucks, graders, excavators, water trucks, and large tractor vehicles.

Major road construction/reconstruction work occurs on an as-needed basis and may be completed within existing or new rights-of-way. Work extending beyond the existing road prism may require a change in grade or slope, or a change in condition. Staging may occur in previously undisturbed areas.

Dust abatement is conducted as a component of conducting other road maintenance work and typically is conducted for large work (i.e. Class III). Dust abatement consists of preparing the road surface; furnishing all necessary materials; and applying products, chemicals, or materials such as water, bituminous products, lignin sulfates, and chloride products to reduce dust generated from traffic on the road surface.

NOTE: Coordination with the Forest Engineer is required to determine whether a road use agreement is needed for work on System roads.

B.3.4 New Underground Projects

Extensions or new construction of underground facilities may be necessary. For both transmission and distribution lines, underground cable installation is accomplished using a cut-and-cover construction method (open trenching) for the underground power line, duct banks, and splice vaults. The length of the construction area for the covered activity varies based on the length of the line. During construction, trench excavation spoil is removed and stored. If hazardous material is present, construction crews haul the material offsite and dispose of it appropriately. This work is completed on an as-needed basis and may involve the use of trenching equipment, trucks, and excavators.

B.3.5 Specialized Right-of-Way Vegetation Management

Specialized transmission and distribution line right-of-way projects focus on infrequent long-term vegetation management to increase safety, system reliability. These activities help to protect the facilities in the event of a fire and allow for more timely restoration of service during emergency conditions. Specialized right-of-way vegetation management projects use the wire zone/border zone approach, in which the wire zone (including the right-of-way area lying under the transmission wire plus 10-20 feet on both sides depending on voltage) is managed for low-growing vegetation, while the border zone (the portion of the right-of-way that extends from 10 to 20 feet outside of the wire to the edge of the right-of-way) is managed for taller vegetation. Figure B-2 depicts this concept.

Specialized right-of-way vegetation management may include the following:

- Removal of structurally unsound, incompatible, or selective vegetation and trees within and outside of the authorized right-of-way.
- Right-of-way widening, reclamation of overgrown corridors that have had only pruning for many years, forest fuel reduction, or access improvement projects.
- Use of helicopters with a vertical, multi-blade apparatus suspended from the helicopter to trim back branches growing in the right-of-way .

The use of helicopters includes Heli-Saw, Heli-Feller, and other similar equipment. Heli-Saw is a vertical, multi blade apparatus that is suspended approximately 100 feet below the helicopter. Typically, it is used to trim back branches growing into the right-of-way. This prevents branches from growing into the conductor and reduces snow loading in winter that can cause trees to fall into the conductor. Heli-Feller is an apparatus that is suspended approximately 75 feet below the helicopter. The pilot maneuvers it up against the trunk of the tree and a set of hydraulic arms grabs the trunk. A saw, positioned between the upper and lower arms, extends out and cuts through the trunk of the tree and then retracts back. The pilot then releases the cut portion and directs it to an appropriate place on the ground. The typical cut piece will be between 5 and 15 feet, depending on the size of the tree. This process is repeated until the tree is short enough that it will not strike the line if it falls. Authorization for these activities will be coordinated with the Forest Service Line Officer and occur on an as-needed basis. (Helicopter use under 200 feet requires flight plan notification.) Other equipment that may be used during these activities include logging equipment, hydro-axes, masticator equipment, and large tractors.

B.3.6 Wood Product Removal

When large groups of trees are removed for rights-of-way widening, safety reasons, large-scale tree die-off, wildfire damage, or other reasons, the large wood may be removed from the project area as a fuel reduction measure or to use the wood resource as firewood, wood chips, or lumber. If the Utility removes forest products from NFS lands to be traded, bartered, or sold, a timber settlement sale may be executed. Service contracts with no stumpage fees may be agreed to where wood products are not commercially valuable but are removed to reduce fuel loading.

Downed logs generally are left on the ground to meet large woody material requirements for wildlife habitat. Should access allow salvage of the marketable material, the Forest may request that the Utility provides a summary of timber volume; and the material may be sold to the Utility under a timber settlement sale. Activities may include felling trees whole, skidding logs or wood chunks to a landing, loading them on trucks, and removing them from the site. Hazard tree felling and pruning operations generally require vehicle access to the vicinity of the work area. Additional equipment that may be necessary include logging equipment, hydro-axes, masticators, and large tractors. Timber contractors are used to fell or trim hazard trees. This work would be completed as needed.

B.4 Class IV – Emergency Response

Emergency work is required to resolve a situation that has compromised the transmission or distribution facilities, electric system reliability, or Forest resources. These situations represent immediate threats to public safety, electric reliability, or property. Emergency response can involve activities that require crews to respond immediately to address an imminent threat (i.e., hazards that could cause serious accidents under present conditions). Emergency response also can involve addressing emergency situations that result from conditions such as high winds, storms, wildfires, other natural disasters (e.g., slumps, slides, surface fault ruptures, erosion, major subsidence, earthquakes, and floods), and other accidents that damage Utility infrastructure and equipment.

Emergency repairs may include replacing downed poles or towers, reconductoring segments of line, pulling new line, removing vegetation, and felling trees that pose an imminent threat to

facilities. While most activities can be scheduled in advance, emergency repairs may be needed at any time.

Access for emergency repairs is primarily on authorized roads, although overland access with small trucks or SUVs is expected. Emergency response may include helicopter flights below 200 feet of the tree line, overland travel on non-permitted lands, and access for emergency equipment used to address the hazards and restore power. Required equipment varies but typically involves four-wheel drive trucks, boom trucks, line trucks, and helicopters. Repair may entail activities ranging from reclosing a switch to replacing a transformer or pole. New conductors may be installed using string blocks and tensioning equipment.

Emergency work will start immediately to correct unsafe conditions and return the transmission or distribution facilities to service. The Utility will notify the Forest as soon as reasonable (typically within 48 hours) of an identified need for or commencement of any emergency repairs. The notice will include, if known, a brief description of the work, location of the facilities, scope of work, equipment used, access used, cause of the emergency, and BMPs and/or RPMs applied. In addition, if the emergency repair activity is located within a jurisdictional wetland or waterway, the Utility will notify the appropriate federal or state regulatory agencies in accordance with current regulatory requirements. Roads damaged by the Utility during emergency use will be repaired to pre-use levels. The Forest and the Utility will mutually inspect and agree on any restoration work required to repair emergency work areas.

The Utility will provide post-reporting and other information to the Forest as required within 15 business days of completing work associated with a situation posing an imminent threat (e.g., a pole posing an immediate threat of failing) and within 30 business days of completing work associated with activities resulting from an emergency (i.e., wildfire response).



Photo B-19. Emergency Work Following a Wildfire

While most activities can be scheduled reasonably well in advance, emergency repairs may be needed at any time.

Table B-2. Overview of Operations and Maintenance Activity Classes

Class I <i>Routine Patrols, Inspections, and de Minimis Activities</i>	Class II <i>Routine Operations and Maintenance</i>	Class III <i>Project Proposals</i>	Class IV <i>Emergency Response</i>
Overview			
<p>Class I operations and maintenance (O&M) activities include routine patrols and inspections, with some minor repairs and maintenance (e.g., replacing insulators, transformers, switches, and fuses) on the Utility’s infrastructure. Class I activities also include vegetation management in the Utility’s corridor, hazard tree zone, and on subject poles and powerlines. Patrols and inspections are performed for compliance and/or operations. These activities occur at scheduled intervals or as needed and are conducted from authorized roads or off-highway vehicle (OHV) routes by vehicle, on foot, or by aircraft. The Utility may inspect lines as often as deemed necessary. Other regular maintenance activities include minor repairs to the facilities (e.g., poles, fiber optic line), vegetation management (e.g., pole brushing, line clearing) in the Utility corridor, and road maintenance. Class I activities typically are carried out by transmission and distribution line maintenance and vegetation management personnel. Class I activities may involve <i>de minimis</i> disturbance of the ground surface and vegetation within the Utility’s rights-of-way and in previously disturbed areas.</p>	<p>Class II routine O&M activities for existing facilities include replacing existing poles and towers, felling hazard trees, replacing or pulling new conductors, completing minor underground repairs, routine vegetation clearance and corridor maintenance to maintain wire zone and border zone conditions, internal shoo-fly/interset installations, and routine road maintenance. The need for these activities primarily is identified as a result of Class I inspections or patrols and may occur on a frequent (more than once a year) basis. Class II activities may involve disturbance of the ground surface and vegetation within the Utility’s rights-of-way.</p>	<p>Class III projects include conductor replacement projects and multiple planned pole or tower replacements; line extension or line relocation projects; major right-of-way reclamation; and wood product removal. Other examples of Class III work include reconstruction of roads, new road construction, and construction of a new interconnection. This activity class is more likely to result in ground disturbance. This class also includes those Class II activities that cannot be performed within established parameters of the O&M Plan and require approval prior to commencing activities.</p>	<p>Class IV emergency work addresses immediate threats to public safety, electric system reliability, or property. Emergency situations generally result from high winds, storms, wildfires, other natural disasters (e.g., slumps, slides, surface fault ruptures, erosion, major subsidence, earthquakes, and floods), and other accidents that damage the transmission or distribution lines. Emergency repairs may include replacement of downed poles or towers, reconductoring segments of line, or pulling new line. An emergency also is considered in instances where a system failure “breakdown” has occurred, as a result of multiple towers, poles, and conductors being down. Repairing the damage requires immediate attention.</p>
Notification			
<p>To the extent possible, Class I maintenance activities are reviewed with the Forest during annual meetings. The Utility will notify the Forest and will proceed with this work using standard best management practices (BMPs) and resource protection measures (RPMs) when no resources are present. Patrols and inspections require no notification.</p> <p>If the Utility uses motorized vehicles to access its facilities via OHV routes, it must comply with requirements discussed in Section 2.5.2 in the main document.</p>	<p>Based on the established screening process, Class IIa activities can proceed after a 5-business-day notification of the Forest. Class IIb activities require a notification package at least 10 business days prior to commencing work activities that includes standard BMPs and RPMs; the Forest has 10 business days to review the notification and provide additional feedback on the work activities. Class IIc activities require a work authorization request from the Forest with standard BMPs and additional or modified RPMs. The Forest will have 15 business days to review and approve the request or provide a schedule for approval. (Refer to Chapter 3 in the main document for definitions of Class IIa, Class IIb, and Class IIc activities.)</p>	<p>For Class III projects, the Utility submits a detailed work packet to the Forest prior to initiating work that includes the proposed work activities and BMPs and RPMs to be implemented. The Forest has 30 business days to approve, approve with additional protection measures, or provide a schedule for approval.</p>	<p>Class IV emergency work activities start as soon as possible to correct unsafe conditions and return the Utility facilities to service. BMPs and RPMs are implemented as feasible. The Utility notifies the Forest as soon as reasonable (typically within 48 hours) once emergency work is identified as needed or has been initiated. The Utility will provide post-reporting and other information to the Forest as required within 15 days of completing work associated with an imminent threat and within 30 days of completing work associated with an emergency.</p>

Table B-3. Summary of Descriptions of Operations and Maintenance Classes

Operations and Maintenance Activity	Frequency	Typical Equipment	Access and Typical Work Locations	Applicable Regulations ^a
Class I – Routine Patrols				
<p>Aerial Patrols. The Utility’s maintenance staff conducts periodic patrols by air. Aerial inspections are conducted from helicopters, fixed-wing aircraft, and unmanned aircraft. Patrol frequency varies depending on the accessibility of the structure, age of the circuit or poles/structures, and environmental conditions. Transmission, distribution, and telecommunication line reconnaissance is performed to assess the condition of facilities. Typically, aerial patrols are flown 200 feet above the tree line, depending on land use, topography, and infrastructure requirements. In general, aerial inspections pass over each segment of the overhead facilities within a 1-minute period. Poles typically are between 100 and 200 feet apart, with poles more closely spaced in high wind areas; and towers generally are spaced between 600 and 1,000 feet apart.</p> <p>Unmanned aircraft also may be used to observe environmentally sensitive areas without the use of trucks, helicopters, or other utility equipment, thus minimizing the environmental impact.</p> <p>Patrols where the Utility plans to fly below 200 feet in elevation in the vicinity of federally listed bird species or as otherwise specified in the RPMs (e.g., see California condor, northern spotted owl, Peninsular bighorn sheep, and Sierra Nevada bighorn sheep for additional RPMs) must be submitted as a Class II action and a flight plan must be submitted to the Forest’s local Dispatch Office or Air Tanker Base. If a resource protection process can be established where threatened and endangered birds are mapped, and flight decks and limited operating periods are established consistent with the RPMs, the Utility can submit as a Class I activity.</p>	<p>Annually but may occur more frequently to ensure continued worker and public safety and system reliability</p>	<p>Helicopters, fixed-wing aircraft, and unmanned aircraft</p>	<p>Over rights-of-way.</p>	<p>CPUC G.O. 95, Rule 18A CPUC G.O. 95, Rule 35 CPUC G.O. 165 CPUC Resolution ESRB-4 NERC FAC-003-04 CAISO Transmission Owner Maintenance Practice</p>
<p>Ground Patrols. The Utility’s maintenance staff conducts periodic patrols by ground. Ground patrols generally are conducted from a patrol vehicle traveling on authorized roads and off-highway vehicle (OHV) routes but may include staff walking into a location. Variables that affect patrol frequency include the level of dirt, dust, bird activity, and other environmental factors present in a particular geographic area; the level of vandalism of facilities (e.g., gunshot insulators); the severity of wind (e.g., Santa Ana winds) and other environmental conditions (e.g., fires, floods, and earthquakes) and accidents; and normal aging of the facilities.</p> <p>These activities typically involve patrol personnel visually inspecting structures, lines, hardware, and foundations. Patrol personnel visually inspect for such things as broken or gunshot insulators, loose or damaged guy wires, eroding hardware, and broken cross-arms. Patrol crews identify and record conditions found and maintenance needed. Minor repairs sometimes are completed immediately but are more typically noted for future maintenance.</p> <p>In addition to inspecting structures and appurtenant facilities, the surrounding area is checked for vegetation and tree clearances, brush and other potential fire hazards, erosion, and slides or soil covering tower and pole footings. Utility roads are checked for water erosion, rocks, or slides that may block access; overhanging brush; trees that intrude into the roadway; and other combustible materials that may cause a fire hazard.</p> <p>Patrols include vegetation management personnel examining transmission and distribution corridors annually or as needed to identify hazard trees and other vegetation that must be treated in compliance with all applicable regulations. Pre-inspectors mark the location of the hazard tree(s) on a map and record the condition of the hazard tree(s).</p>	<p>Patrols are conducted annually but may occur more frequently based on system and local conditions.</p>	<p>All-terrain vehicles and light-duty vehicles</p>	<p>Authorized roads, OHV routes, and trails are used to access pole locations.</p>	<p>CPUC G.O. 95, Rule 18A CPUC G.O. 95, Rule 35 CPUC G.O. 165 CPUC Resolution ESRB-4 NERC FAC-003-04 CAISO Transmission Owner Maintenance Practice</p>

Operations and Maintenance Activity	Frequency	Typical Equipment	Access and Typical Work Locations	Applicable Regulations ^a
Class I – Inspections				
<p>Internal Communications Equipment. Routine inspections of optical ground wires, fiber optics, communications cables, and related internal communications equipment (e.g., remote fault indicators, packet routers) occur at communication sites on a regular basis to ensure that the infrastructure can provide the automation and information needed to operate the Utility’s power system in a safe and reliable manner. Internal communications typically are located aboveground on poles and towers but may be located below ground.</p> <p>In some instances, repairs of internal communication sites could involve Class II work.</p>	<p>Routine inspections occur annually but may occur more frequently based on system and local conditions.</p>	<p>Existing authorized roads and OHV routes, with periodic non-motorized overland access to reach facilities.</p>	<p>Telecommunication sites and authorized roads to telecommunication sites.</p>	<p>CPUC G.O. 95, Rule 18A CPUC G.O. 165 NESC Rules 1977, 2006</p>
<p>Towers, Poles, and Equipment. The Utility routinely inspects tower footings and poles to verify stability, structural integrity, and equipment condition (e.g., fuses, breakers, relays, cutouts, switches, transformers, and paint). Examples of minor maintenance and repairs on towers, poles, and equipment include the following.</p> <p>Insulator Washing. Insulator washing is necessary in dusty areas (e.g., agricultural fields, near processing buildings). Insulators may require periodic washing with water to remove a buildup of dust and reduce the possibility of an electrical discharge known as arcing. For any tower or pole to be washed, water is discharged for approximately 1 to 5 minutes, with the over-spray mostly confined to the area immediately around the structure. The rate of over-spray discharge is equivalent to a heavy mist and often evaporates before it reaches the ground.</p> <p>Pole and Tower Equipment Repairs and Replacements. Normal wear and tear on powerlines and associated equipment results in the need for minor repairs such as repairing or replacing pole equipment (e.g., cross-arms, insulators, pins, transformers, wires, cables, guys, anchors, switches, fuses, and paint) when it fails, becomes unsafe, outlasts its usefulness, or is identified for replacement. Other minor maintenance activities that may occur on the Utility’s poles and towers include repairs made to aircraft warnings, bird guards, structure mile markers, antennas, steel members, and brace repairs.</p> <p>Strengthening Tower Superstructures. Superstructures may require strengthening via replacement, modification, or addition of pieces of steel lattice, as determined by engineering analysis specific to each tower. Other minor tower repairs may include replacing fuses, breakers, relays, cutouts, switches, transformers, and paint.</p> <p>Steel Truss Installations. Installation of a steel truss may be necessary to support pole structural integrity. If ground-disturbing activities are required to complete trussing, the activity must be submitted and reviewed as a Class II activity.</p>	<p>The frequency of insulator washing is region specific and is based on the build-up of contaminants but generally occurs every 6 to 8 weeks. Other minor repairs and replacements occur on an as-needed basis.</p>	<p>Helicopters, light-duty vehicles, utility trucks, and line trucks are used for pole, tower, and equipment repairs. “Live line” tools, chain hoists, various hand tools, ropes, slings, and ladders are used to replace cross-arms on towers and poles and to conduct other repairs.</p> <p>Patrols where the Utility plans to fly below 200 feet in elevation in the vicinity of federally listed bird species or as otherwise specified in the RPMs (e.g., see California condor, northern spotted owl, Peninsular bighorn sheep, and Sierra Nevada bighorn sheep for additional RPMs) must be submitted as a Class II action and a flight plan must be submitted to the Forest’s local Dispatch Office or Air Tanker Base.</p>	<p>Insulator washing activities generally take place from a vehicle on an established road or from a helicopter.</p> <p>Pole and tower equipment repair and replacement activities typically take place using a line truck on existing roads and in previously disturbed work areas. Authorized roads and trails are used to access pole locations.</p> <p>Tower strengthening and repair/replacement activities are made by personnel physically climbing the tower to make the repair or from vehicles parked off the access road near the pole, tower, structure, or conductors.</p> <p>Trussing is conducted from an existing road and designated work area within the right-of-way. Minimal ground disturbance occurs during installation of the steel, which is attached to the existing pole.</p>	<p>CPUC G.O. 95, Rule 18A CPUC G.O. 95, Rule 44 CPUC G.O. 165</p>

Operations and Maintenance Activity	Frequency	Typical Equipment	Access and Typical Work Locations	Applicable Regulations ^a
<p>Wood Poles. Inspections are completed to evaluate the condition of wood structures both above ground and below ground level, and to verify that poles are structurally sound and appropriately loaded. The Utility identifies the line segments for inspection and testing based on their age and condition. Transmission and distribution wood poles are evaluated to determine whether they are suitable candidates for replacement, trussing, stubbing, or fiber wrapping. As part of the inspection, a sample of the pole is removed and analyzed for its remaining strength capacity. A visual inspection also is conducted to determine whether there is split or decay in the pole and, in some cases, to catalog the equipment and loading on the pole. Once the inspection is complete, the removed soil is replaced and compacted. Return trips are required if the results of the analysis indicate that the poles need modifications or replacement.</p> <p>In some cases, poles also are evaluated for potential exceedance of allowable pole loading requirements as specified in CPUC G.O. 95. Wood poles are evaluated for their structural integrity based on the load imposed upon the pole by its cross-arms, pole-mounted equipment (e.g., transformers, conductors), and environmental conditions (e.g., potential winds, icing during winter, and soil moisture). Wood poles deemed insufficient to withstand the current pole loading requirements may need to be replaced.</p>	<p>Wood poles are inspected at least every 10 years after 15 to 20 years of service. Additional inspections may occur on an as-needed basis.</p>	<p>All-terrain vehicles, light-duty vehicles, and utility trucks are used. Tools used in the inspection process include shovels; picks; and hand tools such as augers, hammers, hand picks, probes, and tape measures.</p>	<p>Authorized roads, OHV routes, and trails are used for access to poles. In some cases, crews hike to poles that cannot be easily accessed by existing roads and trails.</p> <p>Work activities occur on and at the base of the pole location. Inspections require temporary removal of the soil around the base of the pole, usually to a maximum depth of 20 inches, to check for signs of deterioration. Small holes also may be bored into the pole to assess its structural integrity and strength.</p>	<p>CPUC G.O. 95, Rule 18A CPUC G.O. 95, Rule 44 CPUC G.O. 165</p>
<p>Sections of Overhead and Underground Conductors, Cables, and Wires. Regular inspection of both aboveground and underground facilities, instrumentation and controls, and support systems is critical for safe, efficient, and economical operation. The Utility inspects aboveground components periodically for corrosion, equipment misalignment, loose fittings, and other common mechanical problems. Additionally, the underground portion of the line is inspected at vault locations.</p>	<p>As needed</p>	<p>All-terrain vehicles, light-duty vehicles, and utility trucks.</p>	<p>Inspections are performed from existing roads or OHV routes, or may require overland travel or on foot.</p>	<p>CPUC G.O. 95, Rule 18A CPUC G.O. 95, Rule 44 CPUC G.O. 165</p>
<p>Substations. Inspections of transmission and distribution substations are conducted to verify equipment operation and conduct safety inspections.</p>	<p>As needed</p>	<p>Light-duty vehicles and utility trucks.</p>	<p>Substations typically are accessed from existing roads in vehicles.</p>	<p>CPUC G.O. 95, Rule 18A</p>
<p>Helicopter Pads. Helicopter landing areas occur where access by road is infeasible. Helicopter landing areas consist of hardened touch-down pads made of asphalt, concrete, large size gravel (> 3 inches), or natural bedrock. Periodic inspections and maintenance of these existing landing areas are necessary to ensure that the touch-down pads are adequate and that appropriate clearances around the landing areas are maintained. Elevated helicopter landing pad structures also are maintained, up to and including replacement of the structures on an as-needed basis. These aboveground structures are inspected as part of the normal patrol process.</p> <p>Helicopter maintenance work where the Utility plans to fly below 200 feet in elevation in the vicinity of federally listed bird species or as otherwise specified in the RPMs (e.g., see California condor, northern spotted owl, Peninsular bighorn sheep, and Sierra Nevada bighorn sheep for additional RPMs) must be submitted as a Class II action and a flight plan must be submitted to the Forest’s local Dispatch Office or Air Tanker Base. If a resource protection process can be established where threatened and endangered birds are mapped, and flight decks and limited operating periods are established consistent with the RPMs, the Utility can submit this work as a Class I activity.</p>	<p>As needed</p>	<p>Hand and power tools are used for maintenance activities. Site hardening material may be required due to environmental conditions.</p>	<p>O&M activities for standard helicopter landing pads involve maintaining the existing touch-down pad, approximately 12 by 12 feet. For elevated landing pads, O&M work involves maintaining a 35-foot clearance of small trees/shrubs around the touch-down pad as well as a 70-foot-wide “approach/takeoff” slot to the touch-down pad at a 12-degree angle.</p>	<p>CPUC G.O. 95, Rule 18A CPUC G.O. 165</p>

Operations and Maintenance Activity	Frequency	Typical Equipment	Access and Typical Work Locations	Applicable Regulations ^a
Class I – de Minimis Activities				
Land Surveys. When new construction is proposed by a property or land developer, land surveys are conducted of facilities and facility rights-of-way for construction layouts and other purposes. Data collected include precision measurements regarding length and slope and other geology-related information.	As needed	Light-duty vehicles and utility trucks.	Access is by vehicles on existing roads or OHV routes but may include overland travel or surveys on foot.	
Outage Repairs. After outages occur because of weather, accidents, equipment failure, or other reasons, lines are inspected to determine the location and cause of the outage.	As needed	Light-duty vehicles and utility trucks.	Lines are accessed from existing roads or OHV routes, or may require overland travel on foot.	
Pole/Tower Clearing. Minimum clearances of brush and weeds around certain poles and transmission tower pads are required for fire protection. The Utility refers to this as <i>brushing</i> , which is the process of maintaining clearance around subject (non-exempt) poles and towers of flammable vegetation.	Annually or as needed	Light-duty vehicles and utility trucks are used. Brush and weeds typically are hand-cleared with power brush cutters (weed whackers or string trimmers). Other equipment includes chippers and various power and hand tools, such as chain saws, brush cutters, and pruners.	Typically, a 10-foot radial clearance around non-exempt poles is maintained in compliance with existing state and federal laws, rules, and regulations. Greater clearances are obtained for transmission towers, as needed. Brush and tree trimmings may be lopped and scattered or chipped onsite, or removed to a permitted disposal location offsite.	PRC 4292 14 CCR 1254 CPUC G.O. 95, Rule 18A CPUC G.O. 95, Rule 35 CPUC Resolution ESRB-4 NERC FAC-003-04 CAISO Transmission Owner Maintenance Practice NESC Rules 1977, 2006 ANSI Standards IEEE Standard 516-2003
Limbing/Pruning. <i>Line-clearance tree limbing/pruning</i> refers to trimming or clearing of trees or brush that is near energized power lines. Brush and debris need to be cleared from primary electric powerlines to prevent electrocution during a storm or accident, reduce the risk of fire due to arcing or sparking, and prevent unnecessary power outages. Hand tool removal of small tree ingrowth and resprouting vegetation previously removed by the Utility is authorized.	Annually or more frequently as needed	Tree pruning is done with power and hand tools, including chainsaws, pole pruners, and hand saws. Chippers may be used from existing roads.	Minimum clearance requirements can range from 4 to 25 feet, depending on the voltages of the powerline. Additional clearance is added for growth or sag and sway of lines. Debris may be lopped and scattered or chipped onsite, or removed to a permitted disposal location offsite.	PRC 4293 CPUC G.O. 95, Rule 18A CPUC G.O. 95, Rule 35 CPUC Resolution ESRB-4 NERC FAC-003-04 CAISO Transmission Owner Maintenance Practice NESC Rules 1977, 2006 ANSI Standards IEEE Standard 516-2003
Minor Road Maintenance. Minor road maintenance includes activities to ensure that authorized Utility roads are in appropriate conditions for unimpeded access to powerlines and facilities by maintenance and inspection crews. These activities include clearing obstructions, drainage and culvert clearing, vegetation clearing, miscellaneous structure maintenance, signage and traffic services maintenance and installation, and snow removal. Road maintenance also includes maintaining a vegetation-free corridor to facilitate access and prevent fire.	Annually or as needed	Line truck and backhoe, various hand and power tools.	Class I road maintenance occurs within the existing road prism and approximately 2 to 5 feet beyond the berm or road edge when necessary to keep vegetation from intruding into the roadway.	CPUC G.O. 95, Rule 18A CPUC Resolution ESRB-4
Anchor/Guy Wire Replacements. Routine anchor/guy wire replacements or additions are necessary when a structure or hardware modification requires additional support to accommodate increased loading or higher voltages, to repair damages, and to maintain worker and public safety.	As needed	Light-duty vehicles and trucks, occasionally heavy-duty line trucks.	Existing roads or OHV routes and trails typically are used for access to anchor existing locations inside of the designated right-of-way.	CPUC G.O. 95, Rule 18A CPUC G.O. 95, Rule 44 CPUC Resolution ESRB-4

Operations and Maintenance Activity	Frequency	Typical Equipment	Access and Typical Work Locations	Applicable Regulations ^a
Class II – Pole and Conductor Replacements				
<p>Pole and/or conductor replacements occur within the existing right-of-way. Replacement in-kind of wooden, composite, concrete, or tubular steel poles or other material is conducted from existing Utility roads and in designated work areas whenever it is feasible and safe to do so. Conductor can be replaced in-kind or with insulated or coated conductor.</p> <p>Pole replacements also involve removing the powerline conductor and equipment from an existing green or hazard tree (known as a <i>tree attachment</i> or <i>tree connect</i>) and installing it on a new pole located adjacent to the tree. The tree attachment is then removed or trimmed to maintain the required clearance needed from the new pole.</p> <p>Some pole locations, such as intersets poles, and laydown areas may be in previously undisturbed areas and may result in ground and vegetation disturbance, although attempts will be made to use previously disturbed areas to the greatest extent possible. If access is limited or environmental sensitivities exist, other construction methods will be used to minimize ground and vegetation disturbance to the greatest extent possible (e.g., performing work from roadside, entering the project area on foot and pole dollies, helicopter set, same hole set, and use of rubber tire vehicles). When feasible, these methods are used to avoid impacts on resources close to the project area.</p>	As needed	<p>Backhoe, crane, bucket truck, heavy-duty line truck, and helicopter may be used to replace poles.</p> <p>*Helicopter use under 200 feet requires flight plan notification.</p>	<p>Pole replacements occur within the existing right-of-way from existing roads and designated work areas.</p> <p>Replacement of wooden, composite, concrete, light-duty steel poles or tubular steel poles is conducted from existing public, System, and Utility roads and designated work areas whenever feasible and safe.</p> <p>The typical construction work area for a pole replacement is 10 to 20 feet around the pole.</p> <p>Pole replacement activities typically involve installing the new pole within 5 feet of the existing pole. Once the new pole is placed, the conductor and equipment are transferred to the new pole, and the old pole is removed. On rare occasions, the new pole may be placed within the boring of the existing pole.</p>	<p>CPUC G.O. 95, Rule 18A CPUC G.O. 95, Rule 44 CPUC Resolution ESRB-4</p>
Class II – Tower Replacements				
<p>Tower replacement involves replacing the tower and may require replacing the concrete footings, as well as assembling and erecting the tower onsite.</p>	As needed	<p>Bucket loader, bulldozer, backhoe, crane, bucket truck, and heavy-duty line truck are used for tower replacements as needed. Replacement towers are delivered via truck or helicopter.</p>	<p>Tower replacements occur within the existing right-of-way from existing roads and designated work areas. Tower work may result in increased ground disturbance and require laydown areas within the right-of-way.</p>	<p>CPUC G.O. 95, Rule 18A CPUC G.O. 95, Rule 44 CPUC Resolution ESRB-4</p>
Class II –Reconductoring/Underground Work				
<p>Existing conductors may require re-stringing (replacement) to accommodate increased loading or higher voltages, improve system resiliency and safety, or to repair damages. Replacement of existing conductors with new conductors and any necessary structure reinforcements, replacements, or additions is known as <i>reconductoring</i>. Existing insulator, transformer, and hardware assemblies also may be replaced or upgraded as part of these activities. Poles and towers may be replaced as part of this work, and their heights and/or diameter may be increased slightly. Poles and towers may be increased by 5 to 20 feet from their original height to accommodate new conductors or regulatory conductor clearance requirements. Class II reconductoring is defined and classified as a low environmental risk if (1) the wire stringing/replacement activities are generally limited to and contained within authorized roads, pole and tower locations, including intersets locations, and designated work areas; and (2) the conductor does not come in contact with any vegetation as it is pulled/lifted to its destination.</p> <p>Work crews install bare conductors by temporarily splicing them to the ends of the existing conductors and pulling them through travelers attached to the arms of the towers or pole cross-arms. Travelers are installed at each tower or pole using a boom truck. Where a boom truck cannot be used, a winch is used to install the travelers. Tensioning equipment is used to pull the conductors through the stringing blocks and to achieve the desired sag and tension condition. During the stringing operation, temporary guard structures or boom trucks will be placed at road and highway crossings and at</p>	As needed	<p>Small underground work may include use of light-duty vehicles, trucks, boom trucks, and heavy-duty line trucks. Tensioning equipment is used during string operations. Backhoes and compactors may be used for underground repairs. In some cases, a helicopter is necessary to install the travelers and conductors.</p> <p>*Helicopter use under 200 feet requires flight plan notification.</p>	<p>Small reconductoring activities are contained within the existing rights-of-way and roads and designated work areas.</p> <p>Small underground work involves replacing or repairing cables within an existing underground conduit where no to minimal ground disturbance may occur in already disturbed areas.</p>	<p>CPUC G.O. 95, Rule 18A CPUC G.O. 95, Rule 44</p>

Operations and Maintenance Activity	Frequency	Typical Equipment	Access and Typical Work Locations	Applicable Regulations ^a
<p>crossings of existing Utility lines to ensure public safety and continued operation of other Utility equipment. Coated, insulated, or other conductor is installed by laying the cable on the ground and lifting it to the cross-arm or bracket rather than pulling the conductor through travelers.</p> <p>Underground work includes activities in areas previously disturbed to install a piece of equipment (e.g., a subsurface vault) or to repair or replace the equipment as needed. These activities also may include replacement or repair of cables within an existing underground conduit where no to minimal ground impacts may occur in already disturbed areas.</p>				
Class II – Vegetation Maintenance				
<p>Recurring vegetation maintenance work includes pruning limbs or portions of trees along corridor edges to maintain clearance distances; felling hazard trees, including roadside hazard trees; removing scattered, incompatible green trees that have grown into the wire or border zone; and mechanically mowing brush and small ingrowth trees to maintain previously cleared corridors.</p> <p>Hazard Tree Work. A hazard or danger tree is a tree located on or adjacent to a Utility right-of-way or facility that could damage Utility facilities should it fall where (1) the tree leans toward the right-of-way; or (2) the tree is defective because of any cause, such as heart or root rot, shallow roots, excavation, bad crotch, dead or with dead top, deformity, cracks or splits, or any other condition that could result in the tree or a main lateral of the tree falling. This may include dead, diseased, dying, or green trees.</p> <p>Corridor Maintenance. Vegetation and trees can create access problems, fire hazards, and clearance hazards when they encroach on the minimum clearance distances. Vegetation adjacent to previously cleared corridors and areas tends to resprout quickly and intrude into the wire and border zone areas. Many transmission corridors require maintenance clearing at 2- to-5-year intervals to manage low-growing vegetation communities before they approach conductor distance clearance requirements.</p>	<p>Inspections occur at least annually. Trees are felled as needed.</p>	<p>Removals are usually done with chainsaws, pole pruners, and hand saws; work may be conducted from ground level, by tree climbing, or from lift trucks.</p> <p>Vegetation clearing may be done with chainsaws and hand saws as well as by mechanical mowing.</p>	<p>Hazard tree work occurs within the right-of-way and adjacent to the right-of way-within the hazard tree zone.</p> <p>Vegetation clearing for corridor maintenance occurs in the right-of-way and in wire zones and border zone areas adjacent to the right-of-way.</p>	<p>PRC 4293 CPUC G.O. 95, Rule 18A CPUC Resolution ESRB-4 NERC FAC-003-04 CAISO Transmission Owner Maintenance Practice NESC Rules 1977, 2006 ANSI Standards IEEE Standard 516-2003 14 CCR 895.1</p>
Class II – Internal Communications Maintenance				
<p>Maintenance of internal communications equipment may involve replacing and repairing optical ground wires, fiber optics, communications cables, and related internal communications equipment (e.g., remote fault indicators, packet routers). Maintenance activities occur on a regular basis to ensure that the infrastructure can provide the automation and information needed to operate the Utility’s power system in a safe and reliable manner.</p>	<p>As needed</p>	<p>Helicopters, cranes, rigging, and boom trucks may be used to complete microwave maintenance work.</p> <p>Vehicles used for communication lines and site maintenance may include bucket/reel trucks (without outriggers); various sizes of pick-up trucks, Telstas, or boom trucks; cable dollies; a single drum puller; a two-axle trailer; and a splice lab truck.</p> <p>Vehicles used to receive and load out materials include a 5-ton forklift and various sizes of pick-up trucks.</p> <p>If the maintenance activities require sky wrap cable, special equipment—including a helicopter, a tugger, and a spinner—may be used.</p> <p>*Helicopter use under 200 feet requires flight plan notification.</p>	<p>Existing roads are used, with periodic non-motorized overland access to reach facilities.</p>	<p>CPUC G.O. 95, Rule 18A CPUC G.O. 165 NESC Rules 1977, 2006</p>

Operations and Maintenance Activity	Frequency	Typical Equipment	Access and Typical Work Locations	Applicable Regulations ^a
Class II – Shoo-Fly/Intersect Installation				
<p>Shoo-fly installations involve adding temporary poles or structures around existing permanent facilities to limit service interruptions until work crews can make permanent repairs. Shoo-flies consist of a number of poles and anchors supporting conductors to bypass facilities needing repairs or upgrades. In some cases, existing conductors are removed from the old poles or structures and are reattached to the shoo-fly structures.</p> <p>Intersect poles involve adding a pole between existing poles to support new infrastructure and equipment.</p>	As needed	<p>Backhoes, cranes, bucket trucks, heavy-duty line trucks, and helicopters may be used to replace poles. Poles are delivered via truck or helicopter. Varying construction methods may be used to minimize ground and vegetation disturbance to the greatest extent possible (e.g., entering the project area on foot and using pole dollies, using a helicopter set, using a same hole set, and using rubber tire vehicles).</p> <p>*Helicopter use under 200 feet requires flight plan notification.</p>	<p>Temporary placement of wooden, composite, concrete, or tubular steel poles is conducted from existing public, System, and Utility roads and designated work areas whenever feasible and safe.</p> <p>Installation of a shoo-fly typically requires a work area of approximately 25 by 100 feet.</p> <p>Temporary pole placement activities typically involve installing new poles adjacent to the right-of-way. Once the temporary poles are placed, the conductor and equipment are transferred to the new poles and the old pole is removed.</p>	<p>CPUC G.O. 95, Rule 18A CPUC G.O. 95, Rule 44 CPUC Resolution ESRB-4</p>
Class II – Routine Road Maintenance				
<p>Road maintenance includes activities to ensure that authorized Utility roads are in appropriate conditions for unimpeded access to powerlines and facilities by maintenance and inspection crews. These activities include clearing obstructions, vegetation cutting and mowing, grading, surface blading, and installing erosion control measures to maintain the road's original line and grade. Road maintenance also includes maintaining a vegetation-free corridor (to facilitate access and prevent fire). Other activities include blading to smooth over washouts, eroded areas, and washboard surfaces.</p> <p>Access road maintenance includes repair, replacement, and installation of storm water diversion devices on an as-needed basis.</p>	Annually or as needed	<p>Road graders, bulldozers, loaders, motor graders, dump trucks, and backhoes are used for road grading. Companion vehicles (including light-duty trucks) also are used to assist the equipment operator in brushing and clearing on an as-needed basis. Various hand and power tools are used.</p>	<p>Class II road maintenance occurs within the existing road prism and approximately 2 to 5 feet beyond the berm or road edge when necessary to keep vegetation from intruding into the roadway.</p>	<p>CPUC G.O. 95, Rule 18A CPUC Resolution ESRB-4</p>
Class III –Reconductoring Projects				
<p>Reconductoring projects that exceed the parameters of the reconductoring work described in Class II are typically much larger and may take place outside the right-of-way. Reconductoring projects may occur over multiple sections that vary in length. Pull and tension sites (pull sites) are used, and work areas or laydown areas on NFS lands outside of the authorized right-of-way are required. Pull sites are temporary construction areas used during removal of existing conductors and placement of new conductors along the transmission line. Pull sites typically are located within relatively flat areas that are in line with the conductor.</p> <p>Before pulling the conductor, the Utility's crews install clearance structures at road crossings and other locations (where necessary) to prevent conductors from contacting existing electric or communication facilities or passing vehicles. These temporary structures consist of wood poles.</p> <p>After the conductors are pulled into place, they are tensioned by pulling them to a predetermined sag and tension. The conductors are then permanently attached to the insulators and existing conductors.</p> <p>One-third of all reconductoring work requires a pull site; the remaining reconductoring work requires installation and removal of travelers (pulleys) on a two-circuit line, resulting in disturbance.</p>	As needed	<p>Several pieces of equipment are used at the pull sites, including tensioners (rope trucks) to feed out the new conductor and adjust tension, conductor reels to receive the existing conductor as it is removed, and reels of new conductors. Trailers pulled by semi-trucks, which also are parked onsite, typically deliver and remove the reels. Onsite cranes move the conductor reels on and off of the semi-trucks. Other equipment that may be needed includes four-wheel drive trucks, boom trucks, line trucks, helicopters, and large tractors.</p> <p>*Helicopter use under 200 feet requires flight plan notification.</p>	<p>Large reconductoring projects require temporary work and laydown areas outside of the established right-of-way.</p> <p>Pull sites are generally rectangular and vary in size, from approximately 50 to 350 feet wide for small pull sites and from approximately 100 to 1,250 feet wide for large pull sites. Distances between pull sites vary, but on average, approximately >3 miles of conductor separates pull sites. Vegetation mowing and minor grading may be required beyond the existing right of way to prepare pull sites for use.</p>	<p>CPUC G.O. 95, Rule 44</p>

Operations and Maintenance Activity	Frequency	Typical Equipment	Access and Typical Work Locations	Applicable Regulations ^a
Class III – New Pole Construction or Alignment Changes				
<p>Constructing new or extending existing overhead distribution and transmission lines may be needed to provide additional service to customers. These projects may be constructed in natural vegetation and on agricultural lands that contain suitable habitat for covered species. These new lines are supported by wood poles or towers or by steel-lattice towers, light-duty steel poles, or tubular steel poles with concrete foundations. This work typically requires new rights-of-way or an amendment of existing land use authorizations.</p>	As needed	<p>Four-wheel drive trucks, excavators, boom trucks, line trucks, helicopters, and large tractors may be necessary.</p> <p>*Helicopter use under 200 feet requires flight plan notification.</p>	<p>This work may be completed within the existing right-of-way but typically requires new rights-of-way or an amendment of existing land use authorizations. Staging may occur in previously undisturbed areas.</p>	
Class III – Major Road Construction/Reconstruction				
<p>Class III road construction activities may include, but are not limited to, work outside of the road’s right-of-way, road realignment projects, construction of new roads, installation of new road facilities (e.g., culverts, water diversions), and road decommissioning projects.</p>	As needed	<p>Trucks, graders, excavators, water trucks, and large tractor vehicles may be needed for road construction and reconstruction work.</p>	<p>Major work activities may extend beyond the existing road prism and may require a change in grade or slope, change in condition, and new rights-of-way. Staging may occur in previously undisturbed areas.</p>	
Class III – New Underground Projects				
<p>Extensions or new construction of underground facilities may be necessary. For both transmission and distribution lines, underground cable installation is accomplished using a cut-and-cover construction method (open trenching) for the underground power line, duct banks, and splice vaults. The length of the construction area for the covered activity varies based on the length of the line.</p>	As needed	<p>Trenching equipment, trucks, and excavators may be needed for large underground projects.</p>	<p>This work typically requires new rights-of-way or an amendment of existing land use authorizations. This work may also require trenching and other ground disturbing activities.</p>	
Class III – Specialized Right-of-Way Vegetation Management				
<p>Specialized transmission line right-of-way vegetation management projects focus on long-term management strategies to increase safety, system reliability, and compliance while minimizing impacts on the environment. In addition, these right-of-way projects reduce fuel loading and increase ease of access to the electric facilities. This helps to protect the facilities in the event of a fire and allows for more timely restoration of service during emergency conditions. Activities may include the following:</p> <ul style="list-style-type: none"> • Structurally unsound, incompatible, or selective vegetation and trees is removed from outside of the authorized right-of-way where possible, to maintain sustainable low-growing diverse plant communities that are compatible with electrical facilities. • Helicopters with a vertical, multi-blade apparatus that is suspended from the helicopter may be used to trim back branches growing in the right-of-way. • Where possible, pesticides approved by the U.S. Environmental Protection Agency are used to maintain sustainable low-growing diverse plant communities that are compatible with electrical facilities. 	As needed	<p>Logging equipment, hydro-ax, Heli-Saw, Heli-Feller, helicopters, masticator equipment, and large tractors, log skidders, loaders may be needed for these activities.</p> <p>*Helicopter use under 200 feet requires flight plan notification.</p>	<p>This work may occur within the border zone and wire zone and adjacent to the Utility right-of-way. After the trees are fallen, the slash is treated to meet fuel-loading standards required by the Forest Service. Downed logs may be left on the ground to meet large woody material requirements for wildlife habitat or be removed, depending on approval by the Forest Service Line Officer.</p>	
Class III – Wood Product Removal				
<p>When large groups of trees are removed for right-of-way widening, safety reasons, large-scale tree die-off, fuel reduction, or other reasons, the large wood may be removed from the property as a fuel reduction measure or to use the wood resource as firewood or lumber. Downed logs generally are left on the ground to meet large woody material requirements for wildlife habitat. Activities may include skidding logs or wood chunks to a landing, loading them on trucks, and removing them from the site.</p>	As needed	<p>Logging equipment, hydro-ax, masticator equipment, and large tractors may be needed for these activities.</p>	<p>Access is primarily on existing roads to the extent practical, although some overland access may be required. Work is confined to the hazard tree zone in and adjacent to a Utility right-of-way.</p>	

Operations and Maintenance Activity	Frequency	Typical Equipment	Access and Typical Work Locations	Applicable Regulations ^a
Class IV – Emergency Response				
<p>Emergency work is required to resolve a situation that has compromised the transmission or distribution facilities, electric system reliability, or Forest resources. These situations represent immediate threats to public safety, electric reliability, or property. Emergency response can involve activities that require crews to respond immediately to address an imminent threat (i.e., hazards that could cause serious accidents under present conditions). Emergency response also can involve addressing emergency situations that result from conditions such as high winds, storms, wildfires, other natural disasters (e.g., slumps, slides, surface fault ruptures, erosion, major subsidence, earthquakes, and floods), and other accidents that damage Utility infrastructure and equipment.</p> <p>Emergency repairs may include replacing downed poles or towers, reconductoring segments of line, pulling new line, removing vegetation, and felling trees that pose an imminent threat to facilities. While most activities can be scheduled in advance, emergency repairs may be needed at any time.</p>	As needed	<p>Requirements for equipment varies but typically involves four-wheel drive trucks, boom trucks, line trucks, and helicopters. Repair may entail activities from reclosing a switch to replacing a transformer or pole. New conductors may be installed using string blocks and tensioning equipment.</p>	<p>Access is primarily on existing roads, although some overland access with small trucks or SUVs is expected. Emergency response may include helicopter flights below 200 feet of the tree line, overland travel on non-permitted lands, and access for emergency equipment used to address the hazards and restore power.</p>	CPUC Resolution ESRB-4
<p>^a See Appendix A for detailed information on the applicable regulations.</p>				

Attachment B-1

Notification Checklist

Notes

1. This is a sample notification form. This information may be provided in a spreadsheet or other format.
1. Where applicable, an Archeological Resources Protection Act (ARPA) permit (or appropriate permits) for heritage field work and other required survey work (e.g., for paleontological, hydrological, and biological resources) may be submitted in advance of a complete notification to begin survey work that will support an understanding of the resources that may be present.
2. Notifications may be submitted well in advance of planned work activities.

Work Classification

- | | |
|---|--|
| <input type="checkbox"/> Class IIa (5-business-day notification) | <input type="checkbox"/> Class IIc (15-business-day Forest response) |
| <input type="checkbox"/> Class IIb (10-business-day notification) | <input type="checkbox"/> Class III (30-business-day Forest response) |

Work Overview

- Submittal date:
- Location:
 - Name of road/nearest intersection:
 - Latitude/longitude and/or map:
- Type of work denoting all areas of ground-disturbance:
 - (Use activity titles from O&M Plan)
- Equipment:
 - List of equipment to be used
- Anticipated schedule:
 - Estimated start date:
 - Estimated end date:
- Utility contact information:
 - Name:
 - Phone:
 - Email:
- Helicopter use:

- Will helicopters be used and dispatch notified?
 - Yes No
- Accessibility (to include access roads, navigation roads, and footpaths to be traveled)
- Anticipated square footage of ground disturbance if greater than 1,000 square feet
- Number, location, size, and species of trees to be cut or area polygon describing the brush unit count and key species, as applicable
- Applicable resource information from desktop review, surveys, or on-the-ground inspections:
 - Biological resources:
 - Surveys adequate:
 - Yes No
 - Resources present:
 - Yes (refer to resource protection measures)
 - No
 - Heritage resources:
 - Surveys adequate:
 - Yes No
 - Resources present:
 - Yes (refer to resource protection measures)
 - No

Attachment B-2

Road Maintenance Specifications

These specifications apply to the Utility roads; they also apply to System roads where the Utility has an agreement with the Forest or is requested by the Forest to maintain the System road.

Road Surface Blading Standard Provisions

1. Perform all aspects of surface blading as often as discussed in the annual meeting and to the standards required by the local National Forest (Forest) to facilitate traffic and proper drainage while causing no impacts on resources in the immediate vicinity (this may include limitations owed to the historic attributes of the roadway itself).
3. Perform surface blading in such a manner as to preserve the existing road profile and cross section, and to conserve surface materials.
 - a. On gravel-surfaced roads, the base must not be disturbed and no surface material may be bladed into the ditch or onto the road shoulders, except when needed to achieve other road maintenance objectives.
 - b. On native material-surfaced roads, perform blading so that no base material under 4 inches in the greatest dimension is lost.
4. Remove all ruts, holes, or other surface flaws by scarifying or cutting to the bottom of any surface irregularities. Remove any oversize material brought to the surface during the scarification process. Replace surface material that has been displaced to the shoulders, turnouts, and outside of curves so as to leave a uniform depth on the traveled way at the completion of blading. Apply water during blading if moisture is insufficient to prevent segregation.
5. Prevent undercutting of existing roadside cut slopes and berms.
6. Grade the roadbeds of intersecting side roads for a reasonable distance to ensure proper blending of the two travel surfaces.
7. Clean and continually maintain drainage dips and leadoff ditches to conform reasonably to their original constructed lines, grade, and cross section.
8. Promptly repair damage to existing road berms by placing selected material as needed to restore the berm to its original condition.
9. Do not push material over the side of the road or into creeks.
10. Materials resulting from blading shall not remain on or in structures such as culverts, cattleguards, or drainage dips.

Dust Abatement Standard Provisions

1. Prepare the road surface in accordance with road surface blading standard provisions.
11. Obtain advance approval (annual meeting) from the Forest for the type and rate of application of the product(s), chemical(s), or other material(s) to be used for dust abatement.

12. Application of chemical products shall not be applied when rain is anticipated within 24 hours of treatment application.
13. Obtain and apply approved dust abatement product(s), chemical(s), or other material(s) as necessary to control surface loss and provide for intervisibility between vehicles within their stopping distances.
14. Ensure that dust abatement product(s), chemical(s), or other material(s), including water, are not applied excessively such that they run off the road surface resulting in pollution or unnecessary waste.
15. Maintain dust abatement procedures as required throughout operation and use of the road.

Slide Removal and Slump Repair Standard Provisions

1. Deposit slide/slump material at a location approved by the Forest. The Utility (collectively refers to Pacific Gas and Electric Company and Southern California Edison) will not dispose of slide/slump material on road fills, nor establish any borrow, sand or gravel pits, stone quarry, or permanent material storage areas, unless specifically authorized by the Forest.
16. Repair/reshape the slope that contributed the slide/slump material as much as practicable to reduce future sliding/slumping.
17. Fill slumps and depressions using selected material, placed in layers, and compacted to conform with or exceed the density of the existing subgrade.
18. Salvage and replace existing aggregate surfacing after slumps have been filled.
19. Reshape the roadway following slide/slump removal so that it reasonably conforms to its original subgrade template.
20. Seed slump, waste, and borrow areas as required.

Road Surface Repair Standard Provisions

1. Prepare the road surface in accordance with road surface blading standard provisions.
21. Perform surface repair in a timely manner to prevent further road surface deterioration.
22. Ensure that native material or aggregate is weed free, if available, is distributed uniformly, and is properly compacted; feather the edges to conform to the original road profile and provide a seamless running surface.
23. Dispose of excess patching materials in an approved manner off National Forest System (NFS) land or as otherwise specified by the Forest at annual meetings

Ditch Cleaning Standard Provisions

1. Native material-surfaced roads: Remove slough material from ditches along native material-surfaced roads and, where suitable, replace and blend such material into the existing road surface or shoulders—or place it in a designed berm during surface blading.
24. Aggregate or gravel-surfaced roads: Prevent mixing of slough material and other ditch-cleaning debris with aggregate or gravel surfacing. Do not place such waste material on aggregate or gravel-surfaced roads.
25. Dispose of slough material in an approved manner off NFS land or as otherwise specified by the Forest Service at annual meetings.

Culvert Cleaning Standard Provisions

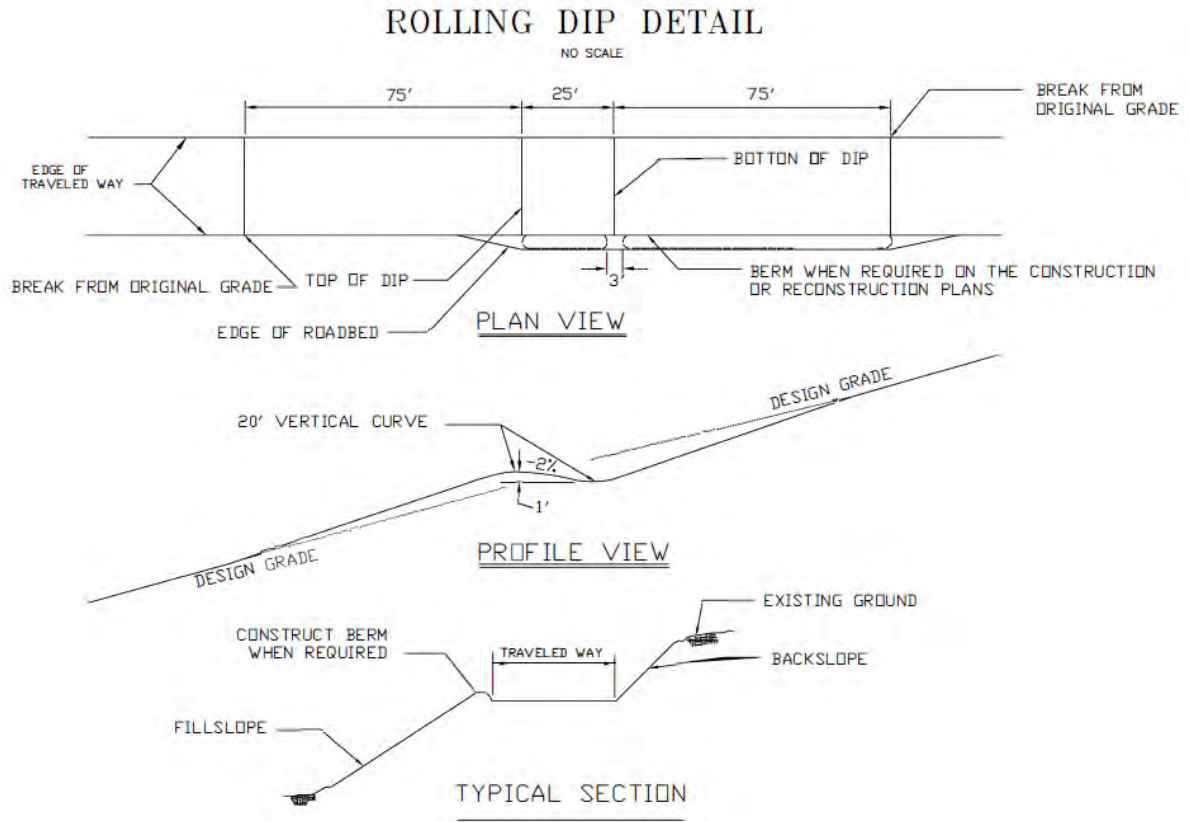
1. Clear the inlet and outlet of loose material that could cause plugging or prevent the free flow of water.
26. The transition from the ditch line to the catch basin shall be cleaned a distance of 10 feet. Outlet channels and lead-off ditches shall be cleaned a distance of 6 feet. Debris and vegetation shall be removed and placed so as to not enter the channel or ditch, or to obstruct traffic. Debris and vegetation shall be disposed of by scattering or chipping onsite, hauling to designated disposal areas, or disposed of as otherwise determined by the Forest at annual meetings.
27. Hydraulic flushing of drainage structures must be approved by the Forest as a Class II activity.
28. Reconditioning of culvert inlet or outlet shall be by field methods such as jacking out or cutting away damaged metal that obstructs flow. All cut edges and damage to galvanized coating shall be cleaned and treated with a zinc-rich coating. Exercise safety precautions and best management practices associated with this work as described in the Fire Plan (Appendix F).

Cleaning Drainage Structures Standard Provisions

1. Maintain all drainage structures in accordance with the following specifications during spring breakup and runoff, following any other significant runoff event, and prior to the beginning of fall/winter storms.
29. Clear inlet and outlet channels, inlet trash racks, bridge deck drains, and settling ponds of loose material that could cause plugging or prevent the free flow of water.
30. Remove logs, limbs, or other drift from inlets, trash racks, piers, abutments, and bridge decks without causing damage to the structures.
31. Dispose of all debris removed from structures off NFS land, or only at those locations on NFS land specifically authorized by the Forest at annual meetings.
32. Make necessary minor repairs to ensure the proper functioning of headwalls, aprons, inlets, overside drains, riprap, trash racks, settling ponds, and other related drainage structures.
33. Tighten loose bolts and other anchoring devices on all authorized structures.

Re-Establishing Rolling Dips Standard Provisions

1. Remove any sediment that may have deposited in the toe of the dip.
34. Repair roadway as shown in the Rolling Dip Detail. Maintain a 2% cross slope on the drain portion of the dip to drain water from road.
35. Salvage and replace existing aggregate or gravel surfacing after the dip has been re-established.
36. Ensure that native material or aggregate is properly compacted. Feather the break from the dip to conform to the original road profile and provide a seamless running surface.
37. Maintain existing berms or repair/reinstall as needed.



Miscellaneous Structure Maintenance Standard Provisions

1. Retaining walls: Ensure that retaining walls are structurally sound and performing their intended function. Report cracks or other readily evident appearance of potential failure to the Forest.
38. Guardrails: Tighten anchors and ensure that guardrail posts and rails are stable and secure.
39. Cattle guards: Ensure that cattle guards are signed in accordance with the *Manual on Uniform Traffic Control Devices (MUTCD)* and *EM7100-15 Sign and Poster Guidelines for the Forest Service*. Ensure that tie-in fences are sound and secured to the cattle guard wings. Weld or bolt loose rails back in place. Remove and properly dispose of debris deposited into the cattle guard during road use and maintenance operations. Maintain proper drainage into and away from cattle guards.
40. Fences: Tighten loose or sagging wires and re-splice broken wire fences, as necessary. Replace broken metal or wooden posts, wood railings, or other supports.
41. Gates: Re-install specified gates (or other barriers) according to existing type, form, and function. Ensure that Utility-installed and/or existing gates and barriers are signed in accordance with MUTCD and EM7100-15. Ensure that gate and barrier posts are stable; that the locking mechanism is in proper working order; and that the gate swings easily. Repair or replace broken or malfunctioning hinges, latches, and locking mechanisms.

NOTE: Installing new gates or other barriers requiring plans, drawings, or other specifications to be provided or approved by the Forest is a Class II activity.

Clearing Roadside Vegetation Standard Provisions

1. Remove and properly dispose of all vegetative matter from the road surface or within the road right-of-way that reduces sight distance, impedes vehicular travel, or interferes with road maintenance operations such as surface blading and ditch and culvert cleaning.
42. Merchantable timber: Cut timber meeting utilization standards into specified lengths and deck it along the roadside at locations specified by the Forest.

NOTE: Cutting and disposition of merchantable timber requiring additional Forest notification or approval is a Class II activity.

43. Cut low shrubs and brush only when they restrict sight distance or impede road maintenance, and are not necessary to help reduce erosion. In general, do not cut low shrubs and brush if the road surface can be adequately maintained without doing so. Dispose of shrubs, brush, nonmerchantable timber, and other vegetation by scattering or chipping onsite, hauling to designated disposal areas, or disposing of as otherwise determined by the Forest at annual meetings.

Vegetation Establishment Standard Provisions

1. Provide and apply plant and erosion control materials, including seed, plantings, mulch, wattles, fiber mats, and fertilizer, as specified by the Forest or approved in annual meetings.
44. Ensure that the surfaces of areas to be treated are in a loose and roughened condition favorable to retention and germination of seed.
45. Ensure that all planting and erosion control materials, including seed, plantings, mulch, wattles, fiber mats, and fertilizer, are certified to be free of noxious weed/exotic plant materials and seeds.
46. Perform vegetation establishment treatments when the ground is not frozen or excessively dry. The Utility will suspend application operations when wind, precipitation, or other factors are likely to cause inconsistent treatment rates or ineffective vegetation establishment.

Traffic Services Standard Provisions

1. Ensure that all signs, delineators, and markers consist of materials approved by, and are installed in conformance with, the MUTCD and EM7100-15.
47. Clean sign faces to restore legibility when they have become obscured by dust, road film, mud, or other debris (use water and nonabrasive detergents or other suitable cleaners).
48. Ensure that replacement materials for all signs, delineators, and markers are similar to the original materials being replaced, unless such original materials are not in conformance with the MUTCD and EM7100-15.
49. Ensure that new and replacement sign faces have retroreflective sheeting. Repair any defaced or damaged signs using materials conforming to the MUTCD and EM7100-15.
50. Treat all sign posts for decay resistance using chemical solutions approved by the Forest.

51. Clear an area a minimum of 6 feet in diameter around all traffic signs or devices, and keep the area free of weeds, grass, brush, and limbs (greater clearing distances may be necessary depending on viewing direction and sight distances).
52. Install and maintain standard red-and-white barricade markers, Type 2 object markers, and end-of-roadway or "Road Closed" markers on all gates, barriers, and barricades. Ensure that reflective material is clean, in good repair, and replaced when necessary.

Snow Removal Standard Provisions

1. Remove snow from the entire width of the road surface, including turnouts.
53. Remove snow slides, earth slides, fallen timber, and boulders that obstruct the road surface.
54. Remove snow, ice, and debris from ditches and culverts so that the drainage system will function efficiently at all times.
55. Deposit all debris, except snow and ice, removed from the road surface and ditches at locations approved by the Forest and away from stream channels.
56. Leave at least 2 inches of snow to protect the road.
57. Restore any damage resulting from snow removal in a timely manner.
58. Do not undercut constructed slopes or remove gravel or other surfacing material from the road surface.
59. Do not leave snow berms on the road surface. Berms on the shoulder of the road will be removed, or drainage holes will be opened and maintained. Drainage holes shall be spaced as necessary to obtain satisfactory surface drainage without discharge on erodible fills.

NOTE: Snow removal using cleated or tracked equipment requires prior written approval from the Forest and is a Class II activity.

Appendix C
Best Management Practices

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Attachment C-1 Invasive Species Management

Appendix C

Best Management Practices

Best management practices (BMPs) are standard practices the Utility (collectively refers to Pacific Gas and Electric Company and Southern California Edison) implements while carrying out operations and maintenance (O&M) activities; these are practices or combinations of practices that are determined to be effective and practicable means of preventing or reducing the negative impacts of an activity.

The Utility will include any applicable BMPs from the following list in its notification package submittals. Where indicated, the following measures are taken from the *National Best Management Practices for Water Quality Management on National Forest System Lands*¹ (referred to as *the Forest Service guidance* below) and reflect the components of the measures related to utility work.

C.1 Worker Environmental Awareness Training

The Utility will prepare an environmental awareness training regarding special-status species that could be encountered during work activities. The training will include information about how to identify pertinent species, their habitat requirements, and resource protection measures (RPMs) to be implemented. Tailboard trainings also will be conducted as necessary.

General restrictions and guidelines that will be followed by project personnel are listed below. The project foreman will be responsible for ensuring that crew members adhere to these guidelines and restrictions.

- Personnel driving vehicles in the action area will observe the posted speed limit on hard-surfaced roads and on all unpaved Forest Service roads.
- Off-road travel will be restricted to the designated work areas.
- All trash will be disposed of and removed from the work area daily.
- As necessary, temporary signs, staking, or flagging will be used to identify suitable or potential habitat for special-status species; and project personnel will be advised to minimize disturbance in these areas.
- Any worker who inadvertently injures or kills a special-status species or finds one dead, injured, or entrapped, will immediately report the incident to the project foreman, who will immediately report the incident to the Utility biologist. The Utility biologist will notify the Forest within 24 hours, and the Forest will provide oral notification to the appropriate U.S. Fish and Wildlife Service (USFWS) or National Oceanic and Atmospheric Administration Fisheries Service (NOAA) office and local California Department of Fish and Wildlife (CDFW) warden or biologist within 1 working day. The Forest will follow up with written notification to USFWS, NOAA, and CDFW (if necessary) within 5 working days.

¹ U.S. Department of Agriculture Forest Service. 2012. *National Best Management Practices for Water Quality Management on National Forest System Lands*. FS-990a. April. Volume 1: National Core BMP Technical Guide.

- Refueling or maintenance of vehicles and equipment will occur outside of water courses and riparian habitat. All project equipment will be equipped with hazardous spill prevention and containment equipment to minimize the effects of a fuel spill or hydraulic leak.

C.2 Introduction or Spread of Invasive Plant Species

One or more of the following measures will be implemented to prevent the introduction or spread of invasive plant species.

- Provide pre-work awareness training to appropriate personnel about the identification of noxious weeds, the importance of noxious-weed control, and measures to minimize the spread of such weeds.
- Consult with the Forest or Ranger District annually and more often as necessary to discuss weed prevention and management needs.
- Schedule activities to minimize potential for introduction and spread of weeds.
- Plan travel routes to avoid areas infested with weeds when feasible.
- Clean all tools, construction equipment, and heavy-duty vehicles before entering NFS lands.
- Prepare worksites to restrict the introduction and spread of weeds.
- Use weed-free sources for imported project materials (e.g., gravel, straw, and fill) to the extent practicable (e.g., where and when sources are available).
- Maintain facilities and infrastructure (e.g. spur roads, towers, staging areas, etc.) to limit the introduction and spread of weeds.

Additional information on these measures is provided in Attachment C-1.

C.3 Operations in Aquatic Ecosystems

The Utility will coordinate stream channel, shoreline, lake, pond, and wetland activities with appropriate state and federal agencies.

The following measure is referred to in the Forest Service guidance as *AqECO-2*.

- Coordinate stream channel, shoreline, lake, pond, and wetland activities with appropriate State and federal agencies.
 - Incorporate Clean Water Act 404 permit requirements and other federal, State, and local permits or requirements into the project design and plan.
- Use suitable measures to avoid or minimize impacts to the waterbody when implementing construction and maintenance activities.
 - Minimize heavy equipment entry into or crossing water as is practicable.
 - Conduct operations during dry periods.
 - Stage construction operations as needed to limit the extent of disturbed areas without installed stabilization measures.

- Promptly install and appropriately maintain erosion control measures. Plant-based erosion control measures shall be certified weed free mulch or gravel if available.
- Promptly install and appropriately maintain spill prevention and containment measures.
- Promptly rehabilitate or stabilize disturbed areas as needed following construction or maintenance activities.
- Stockpile and protect topsoil for reuse in site revegetation.
- Minimize bank and riparian area excavation during construction to the extent practicable.
- Keep excavated materials out of the waterbody.
- Use only clean, suitable materials that are free of toxins and invasive species for fill.
- Properly compact fills to avoid or minimize erosion.
- Balance cuts and fills to minimize disposal needs.
- Remove all project debris from the waterbody in a manner that will cause the least disturbance.
- Identify suitable areas offsite or away from waterbodies for disposal sites before beginning operations.
- Contour site to disperse runoff, minimize erosion, stabilize slopes, and provide a favorable environment for plant growth.
- Use suitable species and establishment techniques to revegetate the site in compliance with Forest direction and requirements per FSM 2070 and FSM 2080 for vegetation ecology and prevention and control of invasive species.

C.4 Facility Construction and Stormwater Control

This measure is referred to in the Forest Service guidance as *FAC-2*.

- Establish designated areas for equipment staging, stockpiling materials, and parking to minimize the area of ground disturbance (see *Road-9* [Parking and Staging Areas] and *Road-10* [Equipment Refueling and Servicing]).
- Refer to State or local construction and stormwater BMP manuals, guidebooks, and trade publications for effective techniques to:
 - Apply soil protective cover on disturbed areas where natural revegetation is inadequate to prevent accelerated erosion during construction or before the next growing season.
 - Maintain the natural drainage pattern of the area wherever practicable.
 - Control, collect, detain, treat, and disperse stormwater runoff from the site.
 - Divert surface runoff around bare areas with appropriate energy dissipation and sediment filters.
 - Stabilize steep excavated slopes.
- Install sediment and stormwater controls before initiating surface-disturbing activities to the extent practicable.

- Schedule, to the extent practicable, construction activities to avoid direct soil and water disturbance during periods of the year when heavy precipitation and runoff are likely to occur.
 - Limit the amount of exposed or disturbed soil at any one time to the minimum necessary to complete construction operations.
 - Limit operation of equipment when ground conditions could result in excessive rutting, soil puddling, or runoff of sediments directly into waterbodies.
- Maintain erosion and stormwater controls as necessary to ensure proper and effective functioning.
 - Prepare for unexpected failures of erosion control measures.
 - Implement corrective actions without delay when failures are discovered to prevent pollutant discharge to nearby waterbodies.
- Routinely inspect construction sites to verify that erosion and stormwater controls are implemented and functioning as designed and are appropriately maintained.
- Use suitable measures in compliance with local direction to prevent and control invasive species.

C.5 Solid Waste Management

This measure is referred to in the Forest Service guidance as *FAC-5*.

- Dispose of collected garbage at properly designed and operated municipal-, county-, or State authorized sanitary landfills or waste recycling sites where groundwater and surface water are adequately protected.

C.6 Hazardous Materials

This measure is referred to in the Forest Service guidance as *FAC-6*.

- Manage the use, storage, discharge, or disposal of pollutants and hazardous or toxic substances generated by the facility in compliance with applicable regulations and requirements.
- Ensure that all employees involved in the use, storage, transportation, and disposal of hazardous materials receive proper training.
- Limit the acquisition, storage, and use of hazardous, toxic, and extremely hazardous substances to only those necessary and consistent with mission requirements.
- Respond to hazardous materials releases or spills using the established site-specific contingency plan for incidental releases and an Emergency Response Plan, where applicable, for larger releases.
- Train employees to understand these plans; the materials involved; and their responsibilities for safety, notification, containment, and removal.
- Provide adequate communication to all downstream water users, such as municipal drinking water providers and fish hatcheries, as necessary.

- Ensure that hazardous spill kits are adequately stocked with necessary supplies and are maintained in accessible locations.

C.7 Pipelines, Transmission Facilities, and Rights-of-Way

This measure is referred to in the Forest Service guidance as *FAC-9*.

- Aggressively address unauthorized uses of the corridor, such as motorized vehicle use, that are exposing soils, increasing erosion, or damaging the facilities.

C.8 Road Operations and Maintenance

This measure is referred to in the Forest Service guidance as *Road-1*.

- Identify and evaluate road segments causing, or with the potential to cause, adverse effects to soil, water quality, and riparian resources.

This measure is referred to in the Forest Service guidance as *Road-4*.

- Designate class of vehicle and type of uses suitable for the road width, location, waterbody crossings, and road surfaces to avoid or minimize adverse effects to soil, water quality, or riparian resources to the extent practicable.
- Use suitable measures to communicate and enforce road use restrictions.
- Use suitable measures to avoid or minimize adverse effects to soil, water quality, or riparian resources when proposed operations involve use of roads by traffic and during periods for which the road was not designed.
 - Strengthen the road surface in areas where surfaces are vulnerable to movement such as corners and steep sections.
 - Upgrade drainage structures to avoid, to the extent practicable, or minimize direct discharges into nearby waterbodies.
 - Restrict use to low-ground-pressure vehicles or frozen ground conditions.
 - Strengthen the road base if roads are tending to rut.
 - Adjust maintenance to handle the traffic while minimizing excessive erosion and damage to the road surface.
- Ensure that drainage features are fully functional on completion of seasonal operations.
 - Shape road surfaces to drain as designed.
 - Construct or reconstruct drainage control structures as needed.
 - Ensure that ditches and culverts are clean and functioning.
 - Remove berms unless specifically designed for erosion control purposes.

- Periodically inspect system travel routes to evaluate condition and assist in setting maintenance and improvement priorities.
 - Give inspection priority to roads at high risk of failure to reduce risk of diversions and cascading failures.
- Inspect drainage structures and road surfaces after major storm events and perform any necessary maintenance (see *Road-11* [Road Storm-Damage Surveys]).
 - Repair and temporarily stabilize road failures actively producing and transporting sediment as soon as practicable and safe to do so.
- Inspect roads frequently during all operations.
 - Restrict use if road damage such as unacceptable surface displacement or rutting is occurring.
- Develop and implement annual maintenance plans that prioritize road maintenance work for the forest or district.
 - Increase priority for road maintenance work on road sections where road damage is causing, or potentially would cause, adverse effects to soil, water quality, and riparian resources.
 - Consider the risk and consequence of future failure at the site when prioritizing repair of road failures.
- Maintain the road surface drainage system to intercept, collect, and remove water from the road surface and surrounding slopes in a manner that reduces concentrated flow in ditches, culverts, and over fill slopes and road surfaces.
 - Clean ditches and catch basins only as needed to keep them functioning.
 - Do not undercut the toe of the cut slope when cleaning ditches or catch basins.
 - Use suitable measures to avoid, to the extent practicable, or minimize direct discharges from road drainage structures to nearby waterbodies.
- Identify diversion potential on roads and prioritize for treatment.
 - Minimize diversion potential through installation and maintenance of dips, drains, or other suitable measures.
- Maintain road surface treatments to stabilize the roadbed, reduce dust, and control erosion consistent with anticipated traffic and use.
- Grade road surfaces only as necessary to meet the smoothness requirements of the assigned operational maintenance level and to provide adequate surface drainage.
 - Do not undercut the toe of the cut slope when grading roads.
 - Do not permit sidecasting of maintenance-generated debris within the Aquatic Management Zone (AMZ) to avoid or minimize excavated materials entering waterbodies or riparian areas.
 - Avoid over widening of roads due to repeated grading over time, especially where sidecast material would encroach on waterbodies.
 - Use potential sidecast or other waste materials on the road surface where practicable.

- Dispose of unusable waste materials in designated disposal sites.
- Remove vegetation from swales, ditches, and shoulders, and cut and fill slopes only when it impedes adequate drainage, vehicle passage, or obstructs necessary sight distance to avoid or minimize unnecessary or excessive vegetation disturbance.
- Maintain permanent stream crossings and associated fills and approaches to reduce the likelihood that water would be diverted onto the road or erode the fill if the structure becomes obstructed.

C.9 Stream Crossings

This measure is referred to in the Forest Service guidance as *Road-7*.

- Use suitable measures to avoid, minimize, or mitigate damage to the waterbody and banks when transporting materials across the waterbody or AMZ during construction activities.
- Regularly inspect culverts and clean as necessary.
- Provide for sufficient cross drainage to minimize changes to, and avoid restricting, natural surface and subsurface water flow of the wetland under the road to the extent practicable.
 - Avoid or minimize actions that would significantly alter the natural drainage for flow patterns on lands immediately adjacent to wetlands.

C.10 Low-Water Crossings

This measure is referred to in the Forest Service guidance as *Road-7*.

- Consider low-water crossings on roads with low traffic volume and slow speeds, and where water depth is safe for vehicle travel.
- Install and remove temporary crossing structures in a timely manner as needed to provide access during use periods and minimize risk of washout.
- Consider using temporary crossings on roads that provide short-term or intermittent access to avoid, minimize, or mitigate erosion, damage to streambed or channel, and flooding.
- Consider low-water crossings to cross ephemeral streams, streams with relatively low baseflow and shallow water depth or streams with highly variable flows or in areas prone to landslides or debris flows.

C.11 Parking and Staging Areas

This measure is referred to in the Forest Service guidance as *Road-9*.

- Limit the size and extent of temporary parking or staging areas.
 - Take advantage of existing openings, sites away from waterbodies, and areas that are apt to be more easily restored to the extent practicable.
 - Use temporary stormwater and erosion control measures as needed.

- Use applicable practices of *Fac-10* (Facility Site Reclamation) to rehabilitate temporary parking or staging areas as soon as practicable following use.
- If feasible, do not stage or park equipment in areas with invasive plant species.

C.12 Equipment Refueling and Servicing

This measure is referred to in the Forest Service guidance as *Road-10*.

- Plan for suitable equipment refueling and servicing sites during project design.
 - Allow temporary refueling and servicing only at approved locations, located well away from the AMZ, groundwater recharge areas, and waterbodies.
- Provide training for all agency personnel handling fuels and chemicals in their proper use, handling, storage, and disposal.
 - Ensure that contractors and permit holders provide documentation of proper training in handling hazardous materials.
- Use suitable measures to avoid spilling fuels, lubricants, cleaners, and other chemicals during handling and transporting.
- Prohibit excess chemicals or wastes from being stored or accumulated in the project area.
- Clean up and dispose of spilled materials according to specified requirements in the appropriate guiding document.
- Prepare and implement a certified Spill Prevention, Control, and Countermeasure Plan for each facility, including mobile and portable facilities, as required by federal regulations.
- Report spills and initiate suitable cleanup action in accordance with applicable State and federal laws, rules, and regulations.
 - Remove contaminated soil and other material from NFS lands and dispose of this material in a manner consistent with controlling regulations.

C.13 Vegetation and Management Planning

This measure is referred to in the Forest Service guidance as *Veg-2*.

- Evaluate and field verify site conditions in the project area to design mechanical vegetation treatment prescriptions that avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources, including the risk of introduction and spread of annosus root disease through the use of Sporax.

C.14 Erosion Prevention and Control

This measure is referred to in the Forest Service guidance as *Veg-2*.

- Establish designated areas for equipment staging and parking to minimize the area of ground disturbance (see *Road-9* [Parking Sites and Staging Areas]).

- Provide and apply the erosion control materials, including seed, plantings, mulch, wattles, and fiber mats, as specified by the Forest Service or approved in annual meetings.
- Conform to applicable manufacturer's standards in performing vegetation establishment treatments when the ground is not frozen or excessively dry. The Utility will suspend application operations during periods when wind, precipitation, or other factors are likely to cause inconsistent treatment rates or ineffective vegetation establishment.
- Use suitable species and establishment techniques to cover or revegetate disturbed areas in compliance with Forest direction and requirements per FSM 2070 and FSM 2080 for vegetation ecology and prevention and control of invasive species.
- Use suitable measures in compliance with Forest direction to prevent and control invasive species.
- Install sediment and stormwater controls before initiating surface-disturbing activities to the extent practicable.
- Refer to State or local forestry or silviculture BMP manuals, guidebooks, and trade publications for effective structural and nonstructural measures to—
 - Apply soil protective cover on disturbed areas where natural revegetation is inadequate to prevent accelerated erosion before the next growing season.
 - Maintain the natural drainage pattern of the area wherever practicable.
 - Control, collect, detain, treat, and disperse stormwater runoff from disturbed areas.
 - Divert surface runoff around bare areas with appropriate energy dissipation and sediment filters.
 - Stabilize steep excavated slopes.
- Operate equipment when soil compaction, displacement, erosion, and sediment runoff would be minimized.
 - Avoid ground equipment operations on unstable, wet, or easily compacted soils and on steep slopes unless operation can be conducted without causing excessive rutting, soil puddling, or runoff of sediments directly into waterbodies.
 - Evaluate site conditions frequently to assess changing conditions.
- Adjust equipment operations as necessary to protect the site while maintaining efficient project operations.
- Maintain erosion and stormwater controls as necessary to ensure proper and effective functioning.
- Routinely inspect disturbed areas to verify that erosion and stormwater controls are implemented and functioning as designed and are suitably maintained.

C.15 Mechanical Site Treatment

This measure is referred to in the Forest Service guidance as *Veg-8*.

- Evaluate multiple site factors, including soil conditions, slope, topography, and weather, to prescribe the most suitable mechanical treatment and equipment to avoid or minimize unacceptable impacts to soil while achieving treatment objectives.
 - Consider the condition of the material and the site resulting from the treatment in comparison to desired conditions, goals, and objectives for the site when analyzing treatment options (e.g., a mastication treatment will result in a very different condition than a grapple pile and burn treatment, presence of invasive plant species may influence how work is conducted).
 - Use land management plan direction, or other local guidance, to establish residual ground cover requirements and soil disturbance limits suitable to the site to minimize erosion.
 - Consider offsite use options for the biomass material to reduce onsite treatment and disposal.
- Use applicable practices of *Veg-2* (Erosion Prevention and Control) to minimize and control erosion.
 - Conduct mechanical activities when soil conditions are such that unacceptable soil disturbance, compaction, displacement, and erosion would be avoided or minimized.
 - Consider using low ground-pressure equipment, booms, or similar equipment to minimize soil disturbance.
- Operate mechanical equipment so that furrows and soil indentations are aligned on the contour.

Attachment C-1

Invasive Species Management

This attachment provides guidance on measures to support prevention and management of the accidental introduction or spread of noxious and nonnative invasive weeds on National Forest System (NFS) lands. In this attachment, the term *weed* is used interchangeably with nonnative invasive plants. The language and best management practices (BMPs) in this attachment do not overrule, override, or supersede a Forest Plan. This attachment should be used in conjunction with the biological assessments and biological evaluations created for the master permits and easements (MPEs).

Utility corridors are strips of land that contain linear facilities, including roads, powerlines, and other infrastructure. Pacific Gas and Electric Company and Southern California Edison, referred to in this document as the *Utility*, access these corridors to inspect, maintain, and operate infrastructure. Regular use and the potential for soil disturbance within corridors provide opportunities for the movement of weeds through the landscape. The Utility can greatly reduce the introduction and spread of invasive plants by incorporating BMPs into their daily management activities. If present, preventing the spread of weeds within the Utility corridors will also be an important measure to reduce the risk of their introduction onto other portions of NFS lands.

To accomplish this goal, the Utility will work with the Department of Agriculture, U.S. Forest Service Region 5 (Region 5) to develop an overarching approach that will be implemented over the life of the MPEs. The Utility is one of Region 5's many partners cooperating to help identify joint strategies that will avoid the introduction and spread; support the control; and where feasible, eradicate known weed populations.

Elements of this joint approach include the following.

- Each National Forest (Forest) providing both the Utility and the Region with initial information about the weeds considered high priority in each Forest and information about current infestations with a clear nexus to the Utility's operation and maintenance (O&M) activities.
- Ongoing sharing (e.g., at the annual meeting) of weed occurrence data that may be gathered by each entity.
- Within infested areas, identification of outside, non-Utility-related factors currently contributing to the spread of weeds within Utility rights-of-way to facilitate a collaborative approach to implementation of appropriate BMPs.
- Identification of Utility-related factors contributing to the spread of weeds to facilitate a collaborative approach to implementation of appropriate BMPs.
- Implementation of BMPs (presented below) for Class I, Class II, and Class III O&M activities that present a low risk of weed introduction or spread.
- Implementation of additional species-specific, project-specific surveys or other spread prevention measures for Class II and Class III O&M activities that present a high risk of weed introduction or spread.

The information obtained from these efforts may be used to develop additional BMPs or other measures needed to further reduce the risk of weed introduction and spread. Given that the Utility, Region 5, and the Forests have limited financial and staffing resources, the goal is to implement practices that can be used in a prudent and coordinated manner when addressing invasive weeds in order to minimize the risk of invasive species spreading from ongoing O&M activities.

Invasive Plant Best Management Practices

Invasive plant BMPs are methods or techniques found to be the most effective and practical in preventing or minimizing weed spread, while making optimal use of resources. BMPs that minimize weed spread can help to meet the following objectives on NFS lands:

- Protect native plant species and their habitats
- Protect existing wildlife habitat
- Enhance visibility, access, and safety
- Reduce fire hazards
- Reduce future maintenance needs and costs
- Maintain good public relations

When performing Class I, Class II, and Class III O&M activities, the Utility will implement the following BMPs to reduce the risk of introducing or spreading invasive plants or weeds.

1. Provide pre-work awareness training to appropriate personnel about the identification of noxious weeds, the importance of noxious weed control, and measures to minimize the spread of such weeds.
 - a. Clearly determine the target audiences for training and ensure that the materials and messages for those audiences are appropriate.
 - b. Develop educational materials for use in field identification of priority weeds.
 - c. Update training materials with weed location information as new data become available.
2. Consult with the Forest or Ranger District annually and more often as necessary to discuss weed prevention and management needs.
 - a. Provide data of new weed infestation occurrences detected incidentally or as part of pre-activity surveys to the Forest as soon as possible. Data will be documented using Forest Service survey and mapping protocols and compatible with the Forest Service database National Resource Information System (NRIS).
 - b. Review the invasive plant inventory developed by the Utility, Forest, and Region 5 and update as necessary. Discuss any new findings or eradication of weed infestations.
 - c. Discuss weed prevention and management needs based on work performed, information shared, and strategies developed for prevention or treatment of known infestations for Utility Class II and Class III activities. Needs are based on the scope, scale, and context of work activities.

- d. Review BMPs to avoid or minimize contact with known infestations when performing O&M activities and determine whether modifications to the BMPs are necessary. Review invasive plant management approach and update with new information as necessary.
 - e. Discuss successes and challenges from the past year in achieving management goals and objectives described in the strategy.
3. Schedule activities to minimize the potential for introduction or spread of weeds.
 - a. Consider the timing of weed control efforts; determine whether planned efforts should occur before, during, or after the O&M activity based on the plant life cycle.
 - b. Conduct work in a way that minimizes the risk of weed spread.
 - c. Conduct O&M activities in areas of low weed plant cover before operating in areas of high weed plant cover.
 4. Plan travel routes to avoid areas infested with weeds when feasible.
 - a. Keep vehicles on roads to limit the spread of weeds. Avoid parking on the side of the road in areas infested with weeds if it is safe to do so.
 - b. Minimize any unnecessary staging areas, turn-around points, or other disturbance not critical to work activity completion.
 - c. Limit the number of roads and access points used in order to minimize soil disturbance and limit the risk of unintentionally transporting weeds into uninfested areas.
 - d. Clean the vehicle before leaving the road when off-road travel is necessary and in the vicinity of invasive weeds as determined by the Utility's environmental screening process.
 5. Clean all tools, construction equipment, and heavy-duty vehicles before entering NFS lands.
 - a. Prior to entering NFS lands, keep all tools and construction equipment clean (e.g., air pressure, brushes, or water washed) and free of soil, seeds, vegetative material, or debris that could contain or hold seeds.
 - b. If items cannot be adequately cleaned using air pressure, brushes, water, or similar mobile methods—and when the risk of weed introduction or spread is high, use a commercial or Utility-owned high-pressure wash system that captures wastewater, where available. If a weed wash station is required on NFS lands, the Forest and Utility will determine the location and method of washing and what conditions warrant a wash station to be located onsite.
 - c. If a work site location is known to contain weeds, clean equipment before moving to another location on NFS lands.
 6. Prepare work sites to restrict the introduction and spread of weeds.
 - a. Minimize soil and vegetation disturbance by retaining native vegetation in and around O&M activities to the maximum extent possible.
 - b. If feasible, remove small infestations in work areas prior to ground disturbance. Dispose of weed seed and other viable plant parts (i.e., root or stem parts) in an appropriate manner (e.g., bagged and taken off NFS lands) as determined by the Forest. Do not chip weeds with viable seeds or plant parts that propagate by fragments and use them as mulch.

- c. Consider the impacts of different types of equipment and use equipment that minimizes disturbance of soil and vegetation.
7. Use weed-free sources for imported O&M materials (e.g., gravel, straw, and fill) to the extent practicable (i.e., where and when sources are available).
 - a. Recognizing that certified, weed-free materials may not always be readily available, work together with the Forest to develop practicable source lists for weed-free materials.
 - b. Maintain stockpiled uninfested materials in a weed-free condition. If erosion control is needed, use only documented (i.e., certified or other means of record) weed-free straw and mulch.
8. Maintain facilities and infrastructure (e.g., spur roads, towers, and staging areas) to limit the introduction and spread of weeds.
 - a. Verify on the O&M activity notification to the Forest for Class II and Class III activities that the proposed work area was screened against the California Invasive Plant Council Weed Mapper.

Additional species-specific or project-specific measures and pre-activity surveys may be required for Class II and Class III O&M activities when ground disturbance is expected that presents a high risk of weed introduction or spread. These requirements would be determined during the Utility's environmental screening process and review of site-specific activities that result in ground disturbance. High risk ground disturbance factors include activities that result in vegetation grubbing in the work area or access route where removal of the root structures and one or more of the following are required:

- Equipment (e.g., a line truck, boom truck, bucket loader, or crane) that must travel off road and perform soil-disturbing activities for access (excluding parking on the shoulder) to implement the repair.
- Heavy equipment (e.g., a backhoe, bucket loader, or bulldozer) that is used to perform soil-disturbing activities where native vegetation and root structures will be disturbed.
- Lay down areas designated on native surface or established vegetation where soil-disturbing activities are performed.
- Slide removal and slump repair outside of the road prism and not part of minor surface blading described as a Class I activity.

In the event that the Utility's Class II or Class III work activities include high-risk ground disturbance with one or more of the above-referenced activities, the Utility or Forest may stipulate the following:

1. Conduct a pre-activity survey for invasive plants.
2. Identify in the O&M activity notification to the Forest any known invasive plant risks along with any additional proposed spread prevention measures beyond standard BMPs.

Appendix D
**Resource Protection Measures for Federally Listed
Species in the Utility Action Area**

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Appendix D

Resource Protection Measures for Federally Listed Species in the Utility Action Area

D.1 Conservation Measures for Not Likely to Adversely Affect Determinations¹

D.1.1 Invertebrates

D.1.1.1 Kern Primrose Sphinx Moth (KPSM) (Both PG&E and SCE)

1. Activities that could kill Kern primrose sphinx moth eggs, larvae, and pupae, including vegetation removal, ground-disturbing activities, driving off-road, and driving on or maintaining roads that have been colonized with vegetation, will not be conducted in occupied habitat or suitable habitat that has not been surveyed unless a habitat assessment indicates there are no host plants in the project area because there is no suitable habitat for the plant or moth (see Measure 6).
2. If the Utility determines that activities may kill Kern primrose sphinx moth eggs, larvae, and pupae, a habitat assessment will be conducted.
 - a. If habitat is unsuitable for the plant, proceed with all activities and follow Measure 6.
 - b. If habitat is suitable for the plant, then surveys for the plant will be conducted prior to work activities during the appropriate blooming period.
3. If habitat is suitable, the Utility will propose and the Forest Service will review and approve² which plant species survey method is appropriate based on project activities, duration, project size, and project timing.
 - a. Pre-construction survey
 - i. The survey will be conducted prior to project implementation when the host plant is most likely to be found, as determined by blooming periods and reference populations. With this survey method, the work activity does not have to occur during the blooming period and other measures will be followed.
 - b. On-site survey
 - i. Conduct an on-site survey immediately prior to project implementation during the appropriate blooming period (March to May).
 - ii. The on-site survey will be conducted when host plants can be observed (March to May) and a botanist can sufficiently survey the impact area prior to project implementation.

¹ These measures are in addition to the proposed best management practices.

² Approval will be done as part of the Forest Service review process and is intended to ensure that the Forest Service has affirmative approval authority (i.e., the work will not be released automatically without Forest Service input in the form of annual/regular meetings or case-by-case approval).

4. Survey results
 - a. If host plants are detected on surveys, the area will be accurately marked, the work activity will be conducted in the same year the survey was conducted (or prior to the next blooming season), and the plants will be avoided (whether they are readily visible or not).
 - b. If no host plants are detected, then proceed with work activities, following Measure 6.
5. A biological monitor will be present during ground- and/or vegetation-disturbing activities that have been found to have host plant within the activity boundaries. The monitor will oversee the activity to ensure that impacts on host plants and diapausing larvae or pupae adjacent to the host plants are avoided (e.g., designating a buffer around host plants, establishing alternative access routes).
6. Similar to Measure 1 above, no activities will occur in sandy washes that may contain pupae. Kern primrose sphinx moths spend years underground in sandy washes at depths of 4.5 inches or less before they emerge. The Forest Service biologist or biological monitor will ensure that impacts on sandy washes are avoided.
7. During the flight season (mid-January to late March), vehicles will travel no faster than 15 miles per hour (mph) on roads through occupied habitat or within suitable habitat that has not been surveyed.

D.1.1.2 Smith's Blue Butterfly (SMBB) (PG&E)

1. Activities that could kill Smith's blue butterfly eggs, larvae, and pupae, including vegetation removal, ground-disturbing activities, driving off road, and driving on or maintaining roads that have been colonized with vegetation, will not be conducted in Smith's blue butterfly occupied habitat or suitable habitat that has not been surveyed unless a qualified biologist determines that no host plants are in the project area. If a biologist or biological monitor observes host plants in the vicinity of the project area, the biologist/monitor will oversee the activity to ensure that impacts on host plants and diapausing larvae or pupae adjacent to the host plants are avoided (e.g., designating a buffer around host plants, establishing alternative access routes).
2. During the flight season (June 1 to September 15), vehicles will travel no faster than 15 mph on roads through occupied habitat or within suitable habitat in the Smith's blue butterfly survey area that has not been surveyed.

D.1.1.3 Quino Checkerspot Butterfly (QCB) (SCE)

1. Activities that could kill Quino checkerspot butterfly eggs, larvae, and pupae, including vegetation removal, ground-disturbing activities, driving off road, and driving on or maintaining roads that have been colonized with vegetation, will not be conducted in Quino checkerspot butterfly occupied habitat or suitable habitat that has not been surveyed unless a habitat assessment indicates that no host plants are in the project area. If host plants occur in the vicinity of the project area, project activities will occur during a year and at the time of year when host plants can be observed; and a biologist or biological monitor will oversee the activity to ensure that impacts on host plants and diapausing larvae or pupae adjacent to the host plants are avoided (e.g., designating a buffer around host plants, establishing alternative access routes).

2. During the flight season (March 1 to June 30), vehicles will travel no faster than 15 mph on roads through occupied habitat or within suitable habitat in the Quino checkerspot butterfly recommended survey area (U.S. Fish and Wildlife Service 2014) that has not been surveyed.

D.1.1.4 Vernal Pool Species (VPS) (Both PG&E and SCE)

(Includes vernal pool tadpole shrimp, Conservancy fairy shrimp, vernal pool fairy shrimp, and Slender Orcutt grass)

1. Projects that require work within a vernal pool at any time of year will require Forest Service review and approval.²
2. Projects that involve ground disturbance within 250 feet of vernal pools will require Forest Service review and approval.²
3. Non-ground-disturbing activities that require vehicle travel within 250 feet of vernal pools will occur only once the ground surface is completely dry (typically June 1 to October 31, but will vary year to year). If this is not feasible and overland travel by vehicles is required, the Forest Service will determine whether a biological monitor must be present (see below).
4. A biological monitor will be present for ground- and vegetation-disturbing activities conducted within 250 feet of vernal pool habitat. For activities such as patrolling existing facilities on existing roads, or if marking and flagging will ensure avoidance, the Forest Service may determine that a biological monitor is not required.
5. Utility personnel will utilize existing roadways within 250 feet of vernal pools whenever possible. If not using an existing roadway, only rubber-tired vehicles will be utilized within vernal pool upland areas. Driving through vernal pools at any time of year will be avoided.

D.1.2 Amphibians

D.1.2.1 Arroyo Toad (ARTO) (Both PG&E and SCE)

1. Within occupied habitat, identified as (1) aquatic and terrestrial habitat with known extant occurrences of the species; and (2) upland habitat (including unpaved roads and staging areas) within 82 feet in elevation (i.e., vertical distance) of known breeding habitat, project activities will be restricted as follows.
 - a. No activities other than foot traffic will be conducted during the Arroyo toad active season (March 1 to October 1);
 - b. No activities will be conducted within the wetted stream channel or aquatic habitat;
 - c. No activities involving vegetation removal/maintenance, hazard tree removal, off-road vehicle traffic, or ground disturbance will be conducted.
2. For areas within the species range where the Forest Service determines that sufficient surveys have not been conducted to determine presence/absence, the Utility will either treat the habitat as occupied or conduct a habitat assessment and, if necessary, pre-project surveys.
 - a. Habitat Assessment: If an assessment is necessary, the Utility will begin with a desktop habitat assessment within and adjacent to the project area to determine habitat suitability. If a desktop habitat assessment is inconclusive, then a qualified biologist will conduct a site

visit to determine habitat suitability. The Forest Service biologist will review the habitat assessment in the work notification.

- b. Species-specific surveys: If the Forest Service biologist determines that the project site supports suitable habitat, the Utility will conduct U.S. Fish and Wildlife Service (Service) protocol surveys prior to project implementation. In some cases, the Utility may determine the habitat is suitable and conduct species-specific surveys before the Forest Service has reviewed the habitat assessment. In these cases, the Utility will provide the results of both the habitat assessment and the survey results to the Forest Service prior to project implementation.
 - i. If the species is detected during the survey, the Utility will immediately contact the Forest Service to report the observation and will implement the project consistent with Measures 1 and 3.
 - ii. If the species is not detected during the survey, the project site will not be considered occupied. Protocol surveys are generally considered valid for 1 year, but the Forest Service may determine that a project location has been sufficiently surveyed and that the site is unoccupied by Arroyo toads.
3. Additional Minimization Measures
- a. Within occupied habitat, no work will occur within 24 hours of a 0.25-inch rain event. If there is a 70% or greater forecasted rain event, activities will be postponed until site conditions are dry enough to avoid potential impacts.
 - b. Project activities in occupied Arroyo toad habitat will be conducted during daylight hours.

D.1.2.2 Yosemite Toad (YOTO) (Both PG&E and SCE)

1. For all known occurrences (including all upland habitat within 0.78 mile from known occurrences):
 - a. No habitat assessment or survey needed.
 - b. Forest Service project specific review²: No activities involving vegetation removal/maintenance, hazard tree removal, off-road vehicle traffic, or ground disturbance will be conducted, unless the Forest Service biologist reviews the activities and determines that they can be implemented without adversely affecting Yosemite toads. The Forest Service may determine that some activities, such as patrolling or working in a bucket truck from existing roads, are not expected to adversely affect the species with adherence to Measure 4, below.
2. For areas where sufficient surveys have not been conducted to determine presence/absence within the species range:
 - a. Habitat Assessment: The Forest Service biologist will determine whether it is necessary to conduct a habitat assessment, pending the specific project activity. The Utility will begin with a desktop habitat assessment within and adjacent to the project area to determine habitat suitability. If a desktop habitat assessment is inconclusive, a qualified biologist will conduct a site visit to determine habitat suitability. The Forest Service biologist will review the habitat assessment in the work notification. In some cases, the Utility may determine that the habitat is suitable and may simultaneously conduct the habitat assessment and

- species-specific surveys. The Utility will provide the results of the combined visit to the Forest Service biologist.
- i. If suitable habitat is determined to be present, the Utility will also follow Measures 2b and 3, unless the Forest Service biologist determines that other sufficient avoidance measures can be implemented and Measures 2b and/or 3 are not necessary.
 - ii. If the Forest Service biologist determines that habitat is unsuitable, the Utility does not need to follow Measure 2b or 3.
- b. Species-specific surveys: If the Forest Service biologist determines that it is necessary to conduct surveys, the Utility will conduct one visual encounter survey within 5 days prior to project implementation.³The survey will be conducted by a qualified biologist and will cover all suitable aquatic and upland habitat areas that could be adversely affected by the activity. The biologist will pay specific attention to aestivation and cover sites for Yosemite toad, including entrances of animal burrows, root wads, large cracks in the soil, logs, downed large branches, and other appropriate habitat.
- i. If species are detected during the survey, the Utility will immediately contact the Forest Service to report the encounter and receive further guidance to ensure compliance with the Endangered Species Act (ESA).
 - ii. Even if surveys are negative, the Forest Service may determine that formal consultation is necessary due to the cryptic nature of the species and the difficulty of detecting the species in upland habitat. For example, projects that would entail heavy ground disturbance or vegetation management that occur in habitat with lots of aestivation and cover sites may require formal consultation.
3. Biological monitor: All activities that occur within occupied or suitable habitat will be monitored by a qualified biologist, unless Forest Service biologists determine that a project location has been sufficiently surveyed (with no detections) and does not support Yosemite toads, or that avoidance measures are sufficient to forego a biological monitor for specific work activities (e.g., patrolling existing facilities or working on a power line in a bucket truck). The Forest Service biologist may also determine that more than one biological monitor is necessary if the work activities will be conducted over an area that is too large for one monitor to sufficiently cover. The biological monitor will inspect the work area during project activities. If the biological monitor encounters a Yosemite toad, employees will stop all work in the immediate area and allow the animal to leave on its own accord. The area where work is halted will include all immediate areas that would provide the animal with an exit route. The biological monitor will immediately contact the Forest Service biologist to report the encounter and receive further guidance to ensure compliance with the ESA.
4. For all activities in occupied or suitable habitat, if there is a 70% or greater forecasted rain event of 0.25-inch or greater, work activities will be postponed until site conditions are dry enough to avoid potential impacts.

³ The Utility could also proactively elect to conduct the surveys, in which case, the Utility will coordinate with the Forest Service to confirm that the survey area and timing are appropriate.

D.1.2.3 California Red-Legged Frog (CRLF) (Both PG&E and SCE)

1. For all known occurrences (including in-stream reaches 0.3 mile upstream and downstream, and terrestrial habitat within 0.3 mile):
 - a. No habitat assessment or survey needed.
 - b. Forest Service project specific review²: No activities involving vegetation removal/maintenance, hazard tree removal, off-road vehicle traffic, or ground disturbance will be conducted, unless the Forest Service biologist reviews the activities and determines that they can be implemented without adversely affecting California red-legged frogs. The Forest Service may determine that some activities, such as patrolling or working in a bucket truck from existing roads, are not expected to adversely affect the species with adherence to Measure 4, below.
2. For areas where sufficient surveys have not been conducted to determine presence/absence within the species range:
 - a. Habitat Assessment: The Forest Service biologist will determine if it is necessary to conduct a habitat assessment, pending the specific project activity. The Utility will begin with a desktop habitat assessment within and adjacent to the project area to determine habitat suitability. If a desktop habitat assessment is inconclusive then a qualified biologist will conduct a site visit to determine habitat suitability. The Forest Service biologist will review the habitat assessment in the work notification. In some cases, the Utility may determine the habitat is suitable, and may simultaneously conduct the habitat assessment and species-specific surveys. The Utilities will provide the results of the combined visit to the Forest Service biologist.
 - i. If suitable habitat is determined to be present, the Utility will also follow Measure 2b and 3, unless the Forest Service biologist determines other sufficient avoidance measures can be implemented and Measure 2b and/or 3 are not necessary.
 - ii. If the Forest Service biologist determines that habitat is unsuitable then they do not need to follow Measure 2b or 3.
 - b. Species-specific surveys: If the Forest Service biologist determines that it is necessary to conduct surveys, the Utility will conduct one nocturnal survey within 5 days prior to project implementation.³ The survey will cover all suitable aquatic and upland habitat areas that could be adversely affected by the activity.
 - i. If species are detected during the survey, the Utility will immediately contact the Forest Service to report the encounter and receive further guidance to ensure compliance with the ESA.
3. Biological monitor: All vegetation removal/maintenance, hazard tree removal, off-road vehicle traffic, or ground disturbance activities that occur within suitable habitat will be monitored by a qualified biologist, unless Forest Service biologists determine that a project location has been sufficiently surveyed and does not support California red-legged frogs or that avoidance measures are sufficient to forego a biological monitor for specific work activities. The Forest Service may determine on a case by case basis if additional activities (outside of those described above) conducted by the Utility will also require a biological monitor. The Forest Service biologist may also determine that more than one biological monitor is necessary if the work activities will be conducted over an area that is too large for one monitor to sufficiently cover.

The biological monitor will inspect the work area during project activities. If the biological monitor encounters a California red-legged frog, employees will stop all work in the immediate area and allow the animal to leave on its own accord. The area where work is halted will include all immediate areas that would provide the animal with an exit route. The biological monitor will immediately contact the Forest Service biologist to report the encounter and receive further guidance to ensure compliance with the ESA.

4. For all activities in occupied or suitable habitat, if there is a 70% or greater forecasted rain event of 0.25-inch or greater, work activities will be postponed until site conditions are dry enough to avoid potential impacts.

D.1.2.4 California Tiger Salamander (CTS) (PG&E)

1. All ground-disturbing activities that occur within the San Joaquin Experimental Range will require Forest Service review and approval.²
2. No activities will occur within inundated stock ponds within the San Joaquin Experimental Range.
3. Within the San Joaquin Experimental Range, if there is a 70% or greater forecasted rain event of 0.25-inch or greater, activities will be postponed until site conditions are dry enough to avoid potential impacts.

D.1.2.5 Sierra Nevada Yellow-Legged Frog and Mountain Yellow-Legged Frog (Northern and Southern DPS) (SNYLF) (MYLF) (Both PG&E and SCE)

1. For all known occurrences (including in-stream reaches 0.3 mile upstream and downstream, and terrestrial habitat within 82 feet of aquatic habitat),
 - a. No habitat assessment or survey needed.
 - b. Forest Service project specific review²: No activities involving vegetation removal/maintenance, hazard tree removal, off-road vehicle traffic, or ground disturbance will be conducted, unless the Forest Service biologist reviews the activities and determines that they can be implemented without adversely affecting Sierra Nevada or mountain yellow-legged frogs. The Forest Service may determine that some activities, such as patrolling or working in a bucket truck from existing roads, are not expected to adversely affect the species with adherence to Measure 4, below.
2. For areas where sufficient surveys have not been conducted to determine presence/absence within the species range:
 - a. **Habitat Assessment:** The Forest Service biologist will determine whether it is necessary to conduct a habitat assessment, pending the specific project activity. If an assessment is necessary, the Utility will begin with a desktop habitat assessment within and adjacent to the project area to determine habitat suitability. If a desktop habitat assessment is inconclusive, then a qualified biologist will conduct a site visit to determine habitat suitability. The Forest Service biologist will review the habitat assessment in the work notification. In some cases, the Utility may determine that the habitat is suitable, and may simultaneously conduct the habitat assessment and species-specific surveys. The Utilities will provide the results of the combined visit to the Forest Service biologist.

- i. If suitable habitat is determined to be present, the Utility will also follow Measure 2b and 3, unless the Forest Service biologist determines other sufficient avoidance measures can be implemented and Measures 2b and/or 3 are not necessary.
 - ii. If the Forest Service biologist determines that habitat is unsuitable then they do not need to follow Measure 2b or 3.
 - b. Species-specific surveys: If the Forest Service biologist determines that it is necessary to conduct surveys, the Utility will conduct one survey within 5 days prior to project implementation.³ The survey will cover all suitable aquatic and upland habitat areas that could be adversely affected by the activity.
 - i. If species are detected during the survey, the Utility will immediately contact the Forest Service to report the encounter and receive further guidance to ensure compliance with the ESA.
3. Biological monitor: All vegetation removal/maintenance, hazard tree removal, off-road vehicle traffic, or ground disturbance activities that occur within suitable habitat will be monitored by a qualified biologist, unless Forest Service biologists determine that a project location has been sufficiently surveyed and does not support Sierra Nevada or mountain yellow-legged frogs or that avoidance measures are sufficient to forego a biological monitor for specific work activities. The Forest Service may determine on a case by case basis if additional activities (outside of those described above) conducted by the Utility will also require a biological monitor. The Forest Service biologist may also determine that more than one biological monitor is necessary if the work activities will be conducted over an area that is too large for one monitor to sufficiently cover. The biological monitor will inspect the work area during project activities. If the biological monitor encounters a Sierra Nevada or mountain yellow-legged frog, employees will stop all work in the immediate area and allow the animal to leave on its own accord. The area where work is halted will include all immediate areas that would provide the animal with an exit route. The biological monitor will immediately contact the Forest Service biologist to report the encounter and receive further guidance to ensure compliance with the ESA.
4. For all activities in occupied or suitable habitat, if there is a 70% or greater forecasted rain event of 0.25-inch or greater, work activities will be postponed until site conditions are dry enough to avoid potential impacts.

D.1.3 Reptiles

D.1.3.1 Desert Tortoise (DETO) (SCE)

1. Class 2 activities occurring within suitable desert tortoise habitat will be supervised by a qualified biological monitor approved by the Service.⁴
 - a. For Class 2 activities in suitable desert tortoise habitat during the tortoise active season, currently identified as September 1 through October 31 and May 1 through June 30, a

⁴ Prior to initiating project-related activities, the Forest Service will submit to the Service for review and authorization, the names and qualifications of biologists that they believe meet the minimum requirements to serve as qualified biologists (forms available at Carlsbad Fish and Wildlife Office website, or by contacting the Palm Springs Fish and Wildlife Office). Once a biologist has been authorized by the Service, that individual may work on subsequent projects without additional approvals, provided that their performance remains satisfactory. The Forest Service will maintain a record of all SCE authorized biologists.

Service-approved biologist will conduct focused surveys no more than 14 days prior to project implementation. Focused surveys will follow the Service's most recent desert tortoise survey protocol.

- b. Should desert tortoise burrows be observed within 300 feet of the project work location, a 300-foot avoidance buffer will be established. Personnel will not be allowed to enter avoidance areas, unless escorted by the qualified biological monitor.
 - c. In the absence of desert tortoise sign, a qualified biological monitor will clear the project's active footprint prior to commencement of project-related actions. Should Class 2 activities last longer than 1 workday, the biological monitor will clear the project's active footprint at the beginning of each subsequent day.
2. Prior to conducting Class 2 activities in suitable desert tortoise habitat, the biological monitor will brief all personnel on avoidance areas. The biological monitor will ensure that the proposed activities will not impact desert tortoise.
 3. If a desert tortoise is observed within or adjacent to the work area, all work with the potential to impact desert tortoise will be stopped, and the Forest Service notified. If the desert tortoise leaves the work area of its own accord, work may proceed.
 4. Immediately prior to moving any vehicles/equipment parked in suitable desert tortoise habitat, drivers must look underneath the vehicle/equipment and around all tires to ensure that desert tortoises are not resting under the vehicle.

D.1.4 Birds

D.1.4.1 Coastal California Gnatcatcher, Least Bell's Vireo, Southwestern Willow Flycatcher, and Western Yellow-Billed Cuckoo (CAGN) (LBVI) (SWFL) (WYBC) (SCE); WYBC, LBVI, and SWFL (PG&E)

5. No more than 0.05 acre (2,178 square feet) of suitable habitat will be removed or significantly degraded (e.g., from vegetation clearing around poles or tree trimming or removal) from any one location. Impacts at one location will consist of all impacts within 500 feet of each other.
6. Removal of suitable habitat will be conducted outside the breeding season, unless protocol surveys have been conducted within the past year with negative results. The breeding season for these birds is as follows:
 - a. Southwestern willow flycatcher: May 1 to September 30,
 - b. Least Bell's vireo: March 1 to August 31,
 - c. Coastal California gnatcatcher: February 15 to August 31, and
 - d. Western yellow-billed cuckoo: May 15 to September 15
7. Activities resulting in removal of occupied habitat will be overseen by a qualified biological monitor to ensure that impacts are restricted to the anticipated impact area and that there are no adverse effects on listed bird species from project activities.
8. To the extent practicable, activities adjacent to occupied habitat will be conducted outside the breeding season. If activities adjacent to occupied habitat are conducted during the breeding season, one of the following measures will be implemented:

- a. Service protocol surveys will be conducted to ensure that the adjacent habitat is unoccupied;
- b. A qualified biological monitor will oversee the activities and establish a 500-foot buffer (300-foot buffer for gnatcatchers) between activities and occupied habitat; or
- c. For activities that do not involve any habitat impacts and are limited to less than 1 day at any location, a biological monitor will evaluate and oversee the proposed activity to ensure that it does not result in habitat impacts, disruption of breeding activity, or other potential adverse effects.

D.1.4.2 Western Snowy Plover (WSPL) (SCE and PG&E)

1. No more than 0.05 acres (2,178 square feet) of suitable habitat will be removed or significantly degraded (e.g., from vegetation clearing around poles or tree trimming or removal) from any one location. Impacts at one location will consist of all impacts within 500 feet of each other.
2. Removal of suitable habitat will be conducted outside the breeding season, unless surveys are conducted by a qualified biological monitor and coordinated with the Service. The breeding season for these birds is as follows:
 - a. Western snowy plover: March 1 to September 30
3. Activities resulting in removal of occupied habitat will be overseen by a qualified biological monitor to ensure that impacts are restricted to the anticipated impact area and that there are no adverse effects to listed bird species from project activities.
4. To the extent practicable, activities adjacent to occupied habitat will be conducted outside the breeding season. If activities adjacent to occupied habitat are conducted during the breeding season, one of the following measures will be implemented:
 - a. A qualified biological monitor will oversee the activities and establish a 500-foot buffer between activities and occupied habitat; or
 - b. For activities that do not involve any habitat impacts and are limited to less than one day at any location, a biological monitor will evaluate and oversee the proposed activity to ensure that it does not result in habitat impacts, disruption of breeding activity, or other potential adverse effects.

Proposed Additional Measures:

5. If activities must occur in occupied habitat during the breeding season, the Utility will contact the Service to determine if additional conservation measures can be implemented, or if formal consultation is necessary.
6. The applicant should avoid placement of structures that could provide perches for predatory birds, such as posts, high fences, tall equipment, etc.
7. When essential project-related or emergency activities must occur, vehicles should remain below a maximum 10 mile per hour speed limit. If western snowy plovers are encountered, the driver should back up at least 50 feet and/or alter their route to avoid flushing plovers.
8. Sand grooming should be avoided to the greatest extent feasible. This activity both flushes the birds and removes important foraging resources (e.g. surf-cast kelp). Trash removal may be implemented by hand crews trained in western snowy plover avoidance; kelp and other natural

materials should not be removed. If mechanical clean-up is necessary, it should be done in the presence of a qualified western snowy plover monitor who can locate roosting or foraging plovers and ensure machinery does not flush or disturb them.

D.1.4.3 California Condor (CACO) (Both PG&E and SCE)

1. The Utility environmental screening process will review activities in California condor habitat to avoid impacts on this species based on the measures below. A biologist will review all activities in suitable condor habitat for potential adverse effects on the California condor before they are implemented. If the activity will potentially impact condors, the biologist will notify the Forest Service following the environmental screening process² and will work to minimize impacts by altering or moving the activity or rescheduling it. If the biologist determines that a risk to California condor exists, work will halt until the risk has been mitigated or eliminated.
2. To the extent practicable, avoid work within 0.25 mile of active nests during the fledging period, which extends from August 15 through December 31.
3. No work generating sound levels > 90 decibels will occur within 0.25 mile of a known active nest site during the nesting season (unless there is a landscape feature that attenuates sound).
4. Diligent microtrash (e.g., bottle caps, pull-tabs, pieces of glass) removal efforts will occur daily during project activities generated by crew activities in suitable condor habitat by inspecting and cleaning within the project area until the maintenance work is completed.
5. The Utility will notify the Forest Service to report the sighting along with any identification information observed, such as wing tag number and color. The Forest Service will notify the Service.
6. The Service guidance regarding hazing of California condors, as described in the September 3, 2014, letter from the Service, will be followed.
7. If any helicopters are to be used in condor habitat within 0.25 mile of a known active nests, a biologist will be on the project site and will maintain radio contact with the project foreman, who will be in radio contact with the helicopter pilot. The biologist will have the authority to restrict use of any landing zones when California condors are present in the area or if there are any concerns to California condor safety. The biologist will also be authorized to assist with determining helicopter flight paths to avoid roosting or nesting individuals.
8. Helicopter operations will avoid all known active nests by a minimum of 1,000 feet; helicopter operators will transit to and from work sites at a minimum of 200 feet above ground level when near nests, unless carrying loads and otherwise consistent with FAA regulations; and will minimize hover time.

D.1.4.4 Northern Spotted Owl (NOSO) (PG&E)

1. No noise greater than 90 decibels will occur within a 0.25 mile buffer of any unsurveyed nesting/roosting or foraging habitat or known activity center from February 1 through July 9, unless surveys determine the site to be unoccupied or the owls to be non-nesting. The Utility may propose reduced buffers for work in areas with moderate to high ambient (existing pre-project) noise levels based on *Estimating the Effects of Auditory and Visual Disturbance to Northern Spotted Owls and Marbled Murrelets in Northwestern California* (U.S. Fish and Wildlife Service 2006). The Forest Service will review the proposed changes to determine if they are

acceptable. There is no restriction on noise less than 90 decibels, and no noise restriction from July 10 through January 31.

2. No habitat modification (i.e., vegetation management) will occur within the nest grove of a known NSO territory.

D.1.5 Fish

D.1.5.1 Lahontan Cutthroat Trout (LCT) (SCE)

1. No activities will be conducted within the active stream channel or aquatic habitat that is occupied by Lahontan cutthroat trout.
2. A qualified biological monitor will be onsite during project activities involving ground disturbance (e.g. grading existing roads or replacing anchor lines) and/or vegetation removal within 25 feet of occupied Lahontan cutthroat trout habitat to ensure that adverse effects on the species and its habitat are avoided.
3. Activities involving ground disturbance and/or vegetation removal within 25 feet of occupied Lahontan cutthroat trout habitat will occur outside the primary spawning season, which extends from March through July.

D.1.5.2 Owen Tui Chub (OWTC) (SCE)

1. No activities will be conducted within the active stream channel or aquatic habitat that is occupied by Owens tui chub.
2. A biological monitor will be onsite during project activities involving ground disturbance (e.g., grading existing roads or replacing anchor lines) and/or vegetation removal within 25 feet of occupied Owens tui chub habitat to ensure that adverse effects on the species and its habitat are avoided.
3. No ground-disturbing activities will occur within critical habitat.
4. Activities involving ground disturbance and/or vegetation removal within 25 feet of occupied Owens tui chub habitat will occur outside the primary spawning season, which extends from March through July.

D.1.5.3 Santa Ana Sucker (SASU) (SCE)

1. No activities will be conducted within the active stream channel or aquatic habitat that is occupied by Santa Ana sucker.
2. A biological monitor will be onsite during project activities involving ground disturbance and/or vegetation removal within 25 feet of occupied Santa Ana sucker habitat to ensure that adverse effects on the species and its habitat are avoided.
3. Activities involving ground disturbance and/or vegetation removal within 25 feet of occupied Santa Ana sucker habitat will occur outside the primary spawning season, which extends from March through July.

D.1.6 Mammals

D.1.6.1 San Bernardino Kangaroo Rat (SBKR) (SCE)

1. In suitable or occupied habitat, a qualified biological monitor will be present during project activities with the potential to impact San Bernardino kangaroo rats, unless protocol surveys (valid for 1 year) demonstrate species absence. Project activities with the potential to impact San Bernardino kangaroo rat include, but are not limited to, driving vehicles off of established roadways, ground-disturbing activities, or vegetation removal. The biological monitor will ensure that the measures described in this consultation are implemented and that adverse effects on San Bernardino kangaroo rats are avoided.
 - a. Suitable habitat is identified floodplains, alluvial fans, hydrological systems and adjacent upland habitat containing friable soils (predominantly sand, loamy sand, sandy loam, or loam), and various alluvial sage scrub and associated vegetation series with pioneer to intermediate seral stages within the Lytle and Cajon Creeks and the San Jacinto River area.
2. If burrows are observed within vehicular access routes, plywood sheets (4 by 8 feet) will be placed over burrows to distribute vehicle weight and prevent the collapse of the burrow system. Plywood will be removed nightly to prevent animals being trapped in place. If the biological monitor anticipates that project activities may damage or collapse burrows or otherwise adversely affect San Bernardino kangaroo rats, project activities will be halted. The Forest Service will work with the Service to determine appropriate next steps.
3. Excavated, steep-walled holes or trenches more than 2 feet deep will be backfilled or covered at the close of each working day to help prevent entrapment of San Bernardino kangaroo rats during construction.
4. Unburied pipes or conduit laid in trenches overnight will be capped. All pipes or conduit, with a bore-diameter of 1.5 inches or greater, stored overnight within the construction site for 1 or more nights, will be thoroughly inspected for the presence of San Bernardino kangaroo rats before the pipe is subsequently buried, capped, or otherwise used or moved in any way.

D.1.6.2 Gray Wolf (GRWO) (PG&E)

1. The Forest Service will notify the Utility if dens or rendezvous sites are within 1 mile of the work activity. If records exist, then the biologist, in coordination with the Forest Service, will establish a buffer of no work between the proposed activity and the den site/rendezvous site. The buffer will be at least 1 mile, but is likely to be larger and irregularly shaped based on topography and concerns for revealing the exact site location. The Forest Service is expected to coordinate with the California Department of Fish and Wildlife (CDFW) when determining whether dens or rendezvous sites are present and when designating buffers. Activities within the buffer will be seasonally restricted from April 1 to July 15.
2. If work cannot be avoided within an avoidance buffer, the Forest Service will undergo further consultation with the Service.

D.1.6.3 San Joaquin Kit Fox (SJKF) (Both PG&E and SCE)

1. A Forest Service-approved biologist will conduct a pre-construction survey no less than 14 days and no more than 30 days before the beginning of ground disturbance, vegetation removal, or hazard tree removal within suitable San Joaquin kit fox habitat on the Los Padres National Forest. Surveys will identify San Joaquin kit fox habitat features on the project site and evaluate use by kit fox, primarily focusing on den sites and rodent burrow density. If possible, the biologist should assess the potential impacts on the San Joaquin kit fox by the proposed activity. The Forest Service-approved biologist will survey the proposed construction area and a 200-foot buffer area around the construction area to identify suitable dens. If dens (defined as burrows at least 4 inches in diameter that open up within 2 feet) are found during the survey, the Forest Service-approved biologist will map the location of each den as well as record the size and shape of the den entrance; the presence of tracks, scat, and prey remains; and if the den was recently excavated. When surveys identify potential dens, potential den entrances shall be dusted or a remote camera used for 4 calendar days to register and track activity of any San Joaquin kit fox present. If an active San Joaquin kit fox den that cannot be avoided is detected, then the Utility will submit the activity for Forest Service review, and the Forest Service will formally consult with the Service through a separate consultation. Written results of the surveys will be submitted to the Forest Service within 1 week of the completion of surveys and prior to the beginning of ground disturbance and/or construction activities likely to affect San Joaquin kit fox.
2. If potential dens are present, their disturbance and destruction will be avoided. Exclusion zones for known dens or any discovered during surveys will be implemented following Service procedures (U.S. Fish and Wildlife Service 2011) or the latest Service procedures available at the time. The radius of these zones will follow current standards or will be as follows: Potential Den—50 feet; Known Den—100 feet; Natal or Popping Den—Forest Service must be contacted. The Forest Service will contact the Service.
3. If potential dens are located within the proposed work area and cannot be avoided during construction, a qualified biologist will determine if the dens are occupied or were recently occupied using methodology coordinated with the Forest Service. If unoccupied, the qualified biologist will collapse these dens by hand in accordance with Service procedures (U.S. Fish and Wildlife Service 2011). The Forest Service will be notified of all locations, and the Forest Service will notify the Service.
4. Night-time construction should be minimized to the extent possible. However if it does occur, then the 15-mph diurnal speed limit should be reduced to 10 mph.
5. Off-road traffic outside of designated project areas should be prohibited.
6. To prevent inadvertent entrapment of kit foxes or other animals during the construction phase of a project, all excavated, steep-walled holes or trenches more than 2-feet deep should be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed. Areas that are covered will be inspected daily, for as long as they are covered, to ensure that no kit fox have become trapped despite the presence of covers. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the Forest Service shall be contacted, and the Forest Service will contact the Service.

7. Kit foxes are attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar structures with a diameter of 4 inches or greater that are stored at a construction site for 1 or more overnight periods should be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe should not be moved until the Forest Service has been consulted. The Forest Service will contact the Service to determine next steps.

D.1.6.4 Sierra Nevada Red Fox (SNRF) (Candidate Species) (Both PG&E and SCE)

1. Prior to conducting activities within 5 miles of any verified extant Sierra Nevada red fox sightings, the Utility will notify the Forest Service, and the Utility will conduct an analysis to determine if activities have a potential to affect any Sierra Nevada red foxes that may be present. If the activities have the potential to affect an individual Sierra Nevada red fox, the Forest Service will determine if it is necessary to apply a limited operating period (no work between January 1 and June 30 within 5 miles of the sighting).
2. No work will occur within 330 feet of a known or suspected den site between January 1 and June 30.

D.1.6.5 Sierra Nevada Bighorn Sheep (SNBS) (SCE)

1. No helicopters or drones will be flown within 1 mile of any SNBS herd unit boundary during the SNBS lambing season (April 15–July 15) to avoid disturbance to SNBS.
2. Except as provided in Measure 2a, no tree felling will occur within any herd unit boundary during the SNBS lambing season (April 15–July 15) to avoid disturbance to SNBS.
 - a. If tree felling is necessary during the SNBS lambing season, the Utility will contact CDFW within 48 hours of the scheduled activity to determine if SNBS are in the area. All SNBS are not collared. If SNBS are in the area as indicated by CDFW, work will be rescheduled. If SNBS are seen in the area after work has begun, work will be stopped and rescheduled. The Utility will document the interactions with CDFW and notify the Forest Service.
3. During the SNBS lambing season (April 15–July 15), activities within 1 mile of any SNBS herd unit boundary will be restricted to Utility inspections and patrols on existing roads and other Class I activities (with the exception of aerial patrols as described in Measure 1).
4. Employees will adhere to (or reduce) vehicle speed limits on existing roads within 1 mile of any SNBS herd unit boundary to reduce collision risk/disturbance of SNBS.
5. Except as provided in Measure 5a, outside of the SNBS lambing season, helicopters and drones will fly above 1,640.5 feet (500 meters) within 1 mile of any SNBS herd unit boundary to minimize disturbance to SNBS.
 - a. If it is necessary for helicopters or drones to fly below 1,640.5 feet (500 meters) outside of the lambing period, the Utility will contact CDFW within 48 hours of the scheduled activity to determine if SNBS are in the area. All SNBS are not collared. If SNBS are in the area as indicated by CDFW, work will be rescheduled. If SNBS are seen in the area after work has begun, work will be stopped and rescheduled. The Utility will document the interactions with CDFW and notify the Forest Service.

D.1.6.6 Peninsular Bighorn Sheep (PEBS) (SCE)

1. Avoid project related actions within 1 mile of a known herd's range during lambing season. Lambing dates for PEBS fall between January 1 and June 30.
2. If work is located within 1 mile of a known herd's range, a qualified biological monitor will be present for the duration of activities to monitor for PEBS. Work activities will be temporarily halted in a safe manner to avoid disturbance to PEBS, and the biological monitor will coordinate with the Forest Service for guidance with specific questions as necessary.
 - a. If the activities are conducted on foot or in a vehicle, the biological monitor will be the first to enter an area where work will occur.
 - b. If activities are conducted by helicopter, the first helicopter flight of the day will have a qualified biological monitor on-board, and the flight would be as close to the 820 feet above ground level as possible, flying between 30 and 40 knots. A pass will be made to determine the location of bighorn sheep.
3. Within 1 mile of a known herd's range, helicopters used during aerial surveys or crew transport will stay at least 820 feet (250 meters) above the ground, or horizontally away from if adjacent to slope, with no hovering permitted unless to assist in pilot orientation during descent to a helicopter landing pad.
 - a. If drones are used, the horizontal distance remains 820 feet (250 meters), with the vertical avoidance zone reduced to 500 feet. Drone hovering is permitted at these distances.
4. The San Bernardino National Forest (SBNF) will contact the Service's Palm Springs Fish and Wildlife Office (PSFWO) annually to obtain the latest PEBS range information for the purposes of implementing conservation measures 1 through 3. This request may be submitted via email or hardcopy, and will occur annually by March 1 for the duration of the Special Use Permit. Should the Service not respond within 30 days (i.e., by March 31), the SBNF may authorize SCE operations to proceed based on the previous year's range data. However, the PSFWO may provide the SBNF updated PEBS range information at any time of the year, and, once received, this information will be used to avoid and minimize potential effects to PEBS consistent with conservation measures 2 and 3.
5. If workers have any potential contact with grounds occupied by sheep or goats (e.g., at home, visiting a farm, attending a County fair, or going to a petting zoo), they will disinfect their boots at a boot disinfection station before going to a work site in suitable bighorn sheep habitat. Alternatively, personnel may be required to change their footwear so that contaminated footwear are not used in work vehicles or on the project site.

D.1.7 Plant Species

D.1.7.1 PG&E Species

Chorro creek bog thistle, Keck's checker mallow, Kern mallow, Layne's butterweed, purple amole, Camatta Canyon amole, Springville clarkia, Gaviota tarplant,

D.1.7.2 SCE Species

Ash-gray paintbrush, Bakersfield cactus, Big Bear Valley sandwort, Braunton's milk-vetch, California dandelion, California jewelflower, Cushenbury buckwheat, Cushenbury milk-vetch, Cushenbury oxytheca, fleshy owl's clover, Gaviota tarplant, Kern mallow, Keck's checker-mallow, Mariposa pussypaws, Munz's onion, Nevin's barberry, Parish's daisy, pedate checker-mallow, San Bernardino Mountains bladderpod, San Bernardino bluegrass, San Diego button-celery, San Jacinto Valley crownscale, San Joaquin adobe sunburst, San Joaquin wooly-threads, Santa Ana River woollystar, slender-horned spineflower, slender-petaled mustard, Southern mountain wild-buckwheat, spreading navarretia, Springville clarkia, thread-leaved brodiaea, triple-ribbed milk-vetch, Vail Lake ceanothus, whitebark pine.

D.1.7.3 Plant Measures

1. Prior to conducting project activities with the potential to impact listed plant species (e.g., ground-disturbing activity, vegetation removal, and off-road vehicle use) and within the species range for any listed plant species, conduct a desktop habitat assessment⁵ within and adjacent to the project area to determine habitat suitability for each species potentially present. If a desktop habitat assessment is inconclusive, then a botanist familiar with the species will conduct a site visit to determine habitat suitability. If suitable habitat is present, follow Measure 2.
2. Conduct field surveys to determine species presence; the survey period will occur when nearby reference populations are in bloom, using known blooming periods and local Forest blooming data as a guide. The activity will be conducted in the same year following the survey, or prior to the next blooming season. If a nearby reference population is not available, a qualified botanist will conduct early-, mid-, and late-blooming period⁶ site surveys when the species is most likely to be found. If the species can be found year-round (e.g., perennial evergreen species such as Bakersfield cactus or whitebark pine), one survey may be appropriate. If nearby reference populations are present, perform one site survey when the reference population is in bloom. A second year of surveys may be needed for ongoing multi-year activities, or if surveys occur during years with variable climatic conditions⁷ (e.g., below-average precipitation). The Forest Service may determine that additional surveys every year are not necessary for a certain amount of time if enough negative surveys are completed. The Forest or District biologist or botanist may determine that an activity should undergo additional Forest Service review if additional data indicate that the species could be present and affected by the activity.
3. Occurrences/sightings of a federally listed plant species found by Utility biologists/botanists (or their contractors) will be reported to the Forest Service to ensure ESA compliance. The reports will include GPS locations, geospatial data (e.g., shapefile or geodatabase), and an Element Occurrence report. Following notification, the Forest Service will determine if sufficient avoidance measures can be implemented to avoid impacts on the species.

⁵ The desktop habitat assessment will consist of analyzing recent and shared databases (e.g., NRIS, CNDDDB, USFS, BISON, CRPR, NCRS, Service critical habitat, and Service occurrence data.) for occurrences. Plant information (i.e., soil requirements, elevation, habitat, bloom period, and topography) will be cross referenced with known habitat layers and assessed for project impacts.

⁶ Generally accepted blooming periods are identified in the *Jepson Manual – Vascular Plants of California* (2nd Edition or current version), Jepson eFlora (<http://ucjeps.berkeley.edu/eflora/>), or by contacting the Forest or District botanist for species occurring within their jurisdictional area.

⁷ Amount and time of precipitation, heat waves, snow pack, etc.

- a. Avoidance measures may include the presence of a qualified biological monitor and/or flagging avoidance areas prior to project activities. If the Forest Service botanist determines that the activity will not result in impacts on listed plants, then the activity may proceed.
4. If no federally listed plant species are detected on surveys, wherever suitable habitat exists for the species there is potential for a viable seedbank to exist; therefore, the following measures will be followed:
 - a. Topsoil will be collected and retained onsite prior to disturbance, and replaced in the same approximate location following project activities.
 - b. All habitats subject to temporary ground disturbances will be restored to previously existing conditions or better. For example, if surface topography was altered, re-contour and replace managed topsoil.
5. A botanical monitor must be onsite during work in designated critical habitat to ensure that impacts on known physical and biological features are avoided.

D.1.7.4 Additional Plant Conservation Measures Specific to SBNF Meadow, Carbonate, and Pebble Plains Plants (SCE)

Cushenbury puncturebract, Cushenbury milk-vetch, Parish's daisy, Cushenbury buckwheat, San Bernardino Mountains bladderpod, San Bernardino Mountains bluegrass, California dandelion, pedate checker-mallow, slender-petaled mustard, ash-gray paintbrush, Bear Valley sandwort, Southern mountain wild buckwheat

1. Utilize updated SBNF Habitat Suitability Criteria and Survey Protocols for the twelve (12) listed mountain plants. Field survey protocols can be completed for any of the 12 listed species in one visit, but contingent on finding that the species is readily detectable and identifiable at a nearby representative reference occurrence. Survey determines suitable habitat presence.
2. No Utility activities, other than driving or walking along existing administrative roads, will occur within meadow, carbonate, or pebble plain habitat types when soil is wet, or where access requires crossing any of these habitat types unless soils are completely dry based on the best professional judgement of the biological monitor.

D.1.8 General Measures for All Species (Both PG&E and SCE)

1. The Utility will provide environmental awareness training regarding federally listed species to their staff and contractors. This will include, at a minimum, information about how to identify federally listed species (including photographs), their habitat requirements, the avoidance and minimization measures to be implemented to protect these species, and any other pertinent information necessary to ensure that crews avoid adverse impacts on listed species that have potential to occur within the project area. The biological monitor (or the crew foreman when the Forest Service determines that a biological monitor is not necessary) will provide the training to all personnel before conducting project work and as new personnel are brought onto the project. Proof of personnel attendance will be kept on file. Direction regarding what to do if listed species are encountered will also be provided (i.e., the crew member will immediately notify the biological monitor or crew foreman, who will then immediately contact the Forest Service biologist or botanist). During Forest Service review of specific projects, the Forest or

District biologist or botanist may require additional information to be discussed during the environmental awareness training.

2. As necessary, temporary signs, staking, or flagging will be used to identify occupied suitable or potential habitat for federally listed species; and project personnel will be advised to completely avoid disturbance in these areas unless species-specific conservation measures allow work to be conducted in these areas.
3. When biological monitors are present, they will ensure that activities are conducted in the smallest amount of area possible and that existing roads or disturbed areas are utilized whenever possible. The work area will be marked by flagging or other similar method, and the biological monitor will ensure that work crews do not conduct work activities outside of the defined project area (this includes staging areas and vehicle parking).
4. Brush, loose soils, or other similar debris material will not be deposited or stockpiled within occupied habitat or other sensitive resource areas identified by the Forest Service for federally listed species.
5. All project sites will be kept clean of human-created debris. All food-related trash items will be placed in closed containers and removed from sites daily.
6. Pets of project personnel and employees will not be allowed on sites in occupied habitat for federally listed species.
7. All vehicles and equipment conducting maintenance activities will be inspected daily by the operator to ensure that they are free of any leaks of fuel, cooling, lubricating, or other potentially hazardous fluid.
8. Equipment storage, hazardous materials, fueling, parking, and staging areas will be located outside of occupied habitat for federally listed species. Where infeasible, a pre-approved/designated site with minimal risk of impacts on riparian habitat will be used. In cases where storage/use of chemicals is necessary within the buffer area, containment systems will be used to ensure that the chemicals do not enter into waterways or locations where federally listed species occur or might occur.
9. Vehicles must be kept on access roads and in designated work areas, and a 15-mph speed limit will be used throughout the site in all project areas, except on county roads, state and federal highways, and other roads with established speed limits in federally listed species occupied habitat or suitable habitat that has not been surveyed.
10. Directional felling of trees will avoid impacts on all sensitive resource areas, including occupied habitat or suitable habitat that has not been surveyed, to the maximum extent practicable.
11. Maintenance activities will retain as much litter/ground cover as feasible to reduce the spread and abundance of nonnative plant species. If chipping is to be performed onsite, material will be spread or scattered in such a manner to achieve a maximum depth of 1 inch.
12. All off-road equipment and vehicles used will be cleaned before entering the action area. Vehicles will be clean of all mud, dirt, plant parts, and other debris.
13. Mechanical treatments of weed-free areas will be scheduled to occur before treatments of weed-infested areas, to the extent feasible. Equipment will be cleaned prior to entering weed-infested area.

14. Staging areas will avoid invasive and nonnative plant-infested areas and utilize existing disturbed areas, to the extent feasible.
15. Known nonnative plant infestations within the action area will be flagged and avoided. If infestations cannot be avoided, all off-road equipment will be cleaned prior to leaving areas infested with nonnative plant species.
16. Soil disturbance will be minimized.
17. Erosion and sediment control devices, including certified weed-free straw, mulch, fiber rolls, and bonded fiber matrix, will be made from biodegradable materials such as jute, with no plastic mesh, to avoid creating a wildlife entanglement hazard.
18. Certified weed-free mulch will be used, as appropriate.
19. New roads, bypasses due to washouts, or other actions outside the existing road prism are not part of the proposed project. All vehicles, including equipment used in vegetation treatments, such as boom-arm brush mowers, will remain on paved or previously disturbed surfaces;
 - a. If unauthorized routes are found to originate from the project area following treatments, the Utility will work with the Forest Service to install and maintain barriers to deter their use and monitor barrier effectiveness;
 - b. Should barriers prove ineffective, the Utility will coordinate with the Forest Service and the Service to identify alternative solutions.
20. Use of pesticides (e.g., rodenticides, herbicides, insecticides, fungicides, or other chemicals) that could potentially harm federally listed species are not part of the proposed action.
21. Care will be exercised when driving and parking vehicles where catalytic converters can ignite dry vegetation. All vehicles will carry a fire extinguisher and shovel. Personnel will not smoke or extinguish cigarettes except in a vehicle or where there is an area cleared to bare mineral soil. Current Forest Service fire restrictions should be followed.
22. Helicopter flight paths and altitudes for accessing the project area will be coordinated with the Forest or District biologist to avoid low-level flights over sensitive wildlife areas (e.g., spotted owl nest stands, bald/golden eagle perch and nest sites, riparian habitat, bighorn sheep habitat, and raptor nests).
23. Reporting of Mortality or Injury: The Utility will immediately report any animal mortalities, whatever the cause, to the Forest and/or District biologist as soon as possible after the observation. If possible, the carcasses will be covered and left in place until the Forest Service can examine it and determine the proper disposal method.

D.1.9 Definitions for Conservation Measures

Habitat assessment is a tool used to identify species-specific suitable habitat. In most cases, particularly for species with little prior survey information, an onsite visual habitat assessment will be required. Onsite habitat assessments will be documented on datasheets, and photos are necessary. Where suitable habitat has been previously defined, the Utility may conduct a GIS habitat analysis. Utility biologists will determine which habitat assessment method is appropriate for a given species or location, and the Forest Service will review conclusions.

Occupied habitat is habitat that is either known to be occupied by a species or is suitable habitat that has not been surveyed sufficiently to demonstrate that it is unoccupied.

Suitable habitat is habitat that has the potential to support federally listed species. Habitat suitability will be initially assessed by the Forest Service (or by the Utility and reviewed and approved by the Forest Service) based on species range and habitat characteristics (e.g., vegetation community, soil type, and elevation). Some species have specific conservation measures that require a habitat assessment to identify suitable habitat.

Surveys: If not defined in the species-specific avoidance and minimization measures, the survey methodology will be developed by the Forest Service in coordination with the Service.

Qualified biological monitor: Unless otherwise stated, the qualified biological monitors identified in all of the species-specific conservation measures will be trained biologists with at least 40 hours of documented experience surveying for and observing the listed species.

D.2 Conservation Measures for No Effect Determination for Anadromous Fish

D.2.1 Fish

D.2.1.1 PG&E Species

PG&E's activities could affect the following listed anadromous species:

- South-central California coast steelhead (SCCCS) Distinct Population Segment (DPS) and their habitat.
- California Central Valley steelhead (CCVS) DPS and their habitat.
- Northern California steelhead (NCS) DPS and their habitat.
- Central Valley spring-run Chinook salmon (CVSRCS) evolutionary significant unit (ESU) and their habitat.
- Sacramento River winter-run Chinook salmon (SRWRCS) ESU and their habitat.
- California coastal Chinook salmon (CCCS) ESU and their habitat.
- Southern Oregon/Northern California coasts (SONCC) Coho salmon ESU and their habitat.
- Upper Klamath-Trinity River Chinook salmon (UKTRCS) ESU and their habitat.
- Southern green sturgeon (SGS) DPS and their habitat.

D.2.1.2 SCE Species

SCE's activities could affect the following listed anadromous species:

- Southern California steelhead DPS and their habitat.

D.2.1.3 Fish Measures

The following measures will be applied when working in and near anadromous fish habitat.

1. No work activities will be conducted within the active stream channel or aquatic habitat that is occupied by the species.
2. No work will occur within 250 feet of a stream channel where the species is known to occur.
3. No work will occur within 250 feet of critical habitat, if designated, for the species.
4. Activities involving ground disturbance or vegetation removal within 250 feet of suitable habitat for the species will occur outside the primary spawning season.
5. No activities within the active stream channel or aquatic habitat that is designated essential fish habitat (EFH), if designated.
6. Activities within 250 feet of EFH will occur outside the primary spawning season.

The Utility will also implement BMPs to protect water quality.

Appendix E

Heritage Resources Management Plan

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Appendix E

Heritage Resources Management Plan

E.1 Overview

This Heritage Resources Management Plan (HRMP) serves as a nexus between the Amendment #1: Programmatic Agreement among the U.S.D.A. Forest Service, Pacific Southwest Region (Region 5), California State Historic Preservation Officer, Nevada State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Processes for Compliance with Section 106 of the National Historic Preservation Act for Management of Historic Properties by the National Forests of the Pacific Southwest Region 2018 (R5 PA) and the master permits and easements (MPEs) authorized by the Forest Service for Utility operations and maintenance (O&M) activities to demonstrate compliance with the National Historic Preservation Act (NHPA) and other applicable laws and regulations. The HRMP also establishes heritage resources screening processes (HRSPs) to streamline and drive consistency for the management of heritage resources on National Forest System (NFS) lands within the Pacific Southwest Region.

E.1.1 Undertaking [36 Code of Federal Regulations [CFR] Part 800.16(y)]

The initial Undertaking is the issuance of MPEs by the local National Forests (Forests) in Region 5 to utilities for the O&M of electric facilities on NFS lands within the Pacific Southwest Region (R5 PA Heritage Resources Screened Undertaking: Exemption Category Appendix D, 2.3[f]). The *Operations and Maintenance Plan for Electric Facilities on National Forest System Lands within the Pacific Southwest Region* (referred to in this document as the *Plan*) describes Pacific Gas and Electric Company's and Southern California Edison's (collectively referred to as *the Utility*) required activities to operate and maintain safe and reliable electric and ancillary facilities throughout the 15 Forests within Region 5. The Utility's routine maintenance activities are considered Undertakings as defined by 36 CFR Part 800.16(y); they will be screened separately using the HRSP and are divided into Classes I–IV (see Chapter 3 in the Plan).

E.2 Description of O&M Activities

Inspection and maintenance requirements for transmission facilities are contained in the Transmission Owner Maintenance Practices Agreements between the Utility and the California Independent System Operator (CAISO). This agreement establishes a circuit priority ranking that further defines the type and frequency of inspections of poles and towers, equipment, roads, trails, and vegetation. Circuit priority considers the general age of the circuit, the number and types of customers on the circuit, surrounding geography and environmental constraints, accessibility, and impact of circuit failure on the transmission network. Additional timing factors to inspection and maintenance include the level of dirt, dust, bird droppings, etc., present in a particular geographic area; the level of vandalism of facilities (e.g., gunshot insulators); the severity of storms (e.g., snow and winds) and other natural disasters (fires, floods, and earthquakes); and accidents.

Inspection and maintenance requirements for distribution facilities are specified by Public Resources Codes 4292 and 4293, California Public Utilities Commission (CPUC) General Order 95, Rule 35, and CPUC General Order 165, among others. The CAISO does not formally categorize the timing of inspections and maintenance of distribution circuits. Those activities generally follow the same guidance of the Transmission Owner Maintenance Practices Agreements as appropriate.

In general, regular O&M activities of electrical facilities are performed from established roads and foot trails with minimal surface disturbance (see Section 2.5.1 in the Plan). O&M activities are broken down into the following categories:

- Class I – Routine Patrols, Inspections, and de Minimis Activities*
- Class II – Routine O&M
 - Class IIa – Routine activities in locations with no resources**
 - Class IIb – Routine activities in proximity to resources that can be avoided when implementing standard best management practices (BMPs) and/or the established resource protection measures (RPMs).
 - Class IIc – Routine activities in areas supporting resources where modified or additional RPMs require R5 authorization prior to performing work. In these instances, the Utility will propose modified or additional measures and must request authorization from the Forest Service prior to performing the work. Class IIc activities require mandatory Heritage Program Manager (HPM) validation and represent a very small percentage of the total volume of work completed by the Utility.
- Class III – Project Proposals
- Class IV – Emergency Response

*Class I activities have a very low/no likelihood of affecting heritage resources. As a result, they are too minor to merit consideration and are managed as Exempt Undertakings (R5 PA Stipulation 7.1 and Appendix D). Table 1 provides a summary of the Plan's O&M activities. An annual meeting will include a review of Class I work and whether to reclassify specific components based on the risk of potential impacts to known heritage resources. As necessary, the HRMP shall be amended to reflect any and all agreed upon changes (see Section 5.1.4 in the Plan).

**Class IIa activities have a very low/no likelihood of affecting heritage resources. When the HRSP for O&M activities demonstrates adequate survey coverage with no heritage resources or Traditional Cultural Properties (National Register of Historic Places [NRHP] Section 101[d][6]) in the Area of Potential Effect (APE), such activities are considered Exempt Undertakings (R5 PA Stipulation 7.1 and Appendix D). See Table 1 and Section E.3.3 for additional discussion.

E.3 Heritage Program Manager Role and Responsibility [Stipulation 2.5 – R5 PA]

The HPM is the designated Forest-wide coordinator and lead for heritage program activities. The HPM coordinates consultation with the California State Historic Preservation Officer (SHPO), Advisory Council on Historic Preservation (ACHP), and other parties on behalf of the Forest Supervisor and line officers. The HPM, without formal SHPO consultation for exempt and screened

undertakings, determines the APE, certifies limited determinations of NRHP eligibility per the R5 PA, and determines no adverse effect or no historic properties affected by an undertaking. The HPM also certifies that findings, determinations, and recommendations regarding the identification and management of historic properties meet the R5 PA professional standards and requirements (R5 PA Stipulation 10.0). The HPM may delegate some of these responsibilities to other qualified Forest Service Heritage Program staff.

This HRMP enhances the HPM's role and responsibility as defined in the R5 PA for Utility O&M activities. The following enhancements streamline and drive consistency in the validation of the HRSP results supporting routine Utility O&M activities.

E.3.1 Pre-Qualification for Adequate Survey [Stipulation 7.4(b) – R5 PA]

The HPM or Heritage Program staff will pre-qualify adequate survey coverage (see Section E9: Adequate Survey Coverage) to programmatically and proactively clear Forest-specific Utility corridors from additional heritage resource surveys for O&M activities. To facilitate the pre-qualification process, the Utility will provide its respective Forest with an Adequate Survey Coverage Catalog (Catalog), which will include all reports that meet established criteria. The Utility will actively manage the Catalog with annual updates or more frequently as needed to keep the information current. HPM approval shall be considered adequate for the life of the MPE unless there is a significant change within the Utility corridor (e.g. wildfire, land slide, new development, etc.).

E.3.2 No HPM Validation Required

HPM or Heritage Program staff validation is not required for Exempt Undertakings, which include Class I and Class IIa Utility O&M activities. This reduces administrative burden and focuses HPM engagement on O&M activities that require heritage resources management.

Class I activities have a very low/no likelihood of affecting heritage resources. As a result, they are too minor to merit consideration and are managed as Exempt Undertakings (R5 PA Stipulation 7.1 and Appendix D). No HRSP or notification packages are provided for Class I activities. Instead, Class I activities are reviewed during Utility/Forest Service annual meetings (see Section 5.1.1 in the Plan).

Class IIa activities are defined as routine activities in locations with no resources. When the HRSP for O&M activities demonstrates adequate survey coverage with no heritage resources in the APE, such activities are considered Exempt Undertakings (R5 PA Stipulation 7.1 and Appendix D). "No Heritage Resources" will be indicated in the notification package, and summary results will be captured in annual reports to the Forest Service.

In addition to Class I and Class IIa activities, validation also is not required when the following resource types are within the APE:

1. Heritage resources with a SHPO concurrence for a Determination of Non-Eligibility; and
2. Linear heritage resources (i.e., access roads, transmission lines, and railroads) that will not be affected by the activity.

Table 1. Activity Class Descriptions

Class I	Class II	Class III	Class IV
<i>Routine Patrols, Inspections, and de Minimis Activities</i>	<i>Routine O&M</i>	<i>Project Proposals</i>	<i>Emergency Response</i>
<p>Class I activities are routine activities with minimal to no ground disturbance and environmental impact (see Section B.1 in the Plan). These activities are considered <i>de minimis</i> – lacking significance – and are minor; they do not warrant in-depth analysis. Class I activities include routine patrols (aerial patrols, ground patrols) (see Section B.1.1 in the Plan); inspections (internal communications equipment; towers, poles, and equipment; wood poles; sections of overhead and underground conductors, cables, and wires; substations, and helicopter pads) (see Section B.1.2 in the Plan); and <i>de minimis</i> activities (land surveys, outage repairs, pole/tower clearing and limbing/pruning*, minor road maintenance, and anchor/guy wire replacements) (see Section B.1.3 in the Plan).</p>	<p>Class II work consists of routine O&M activities and are categorized into three subclasses (see Section B.2 in the Plan). Class IIa includes routine activities in locations with no resources. Class IIb includes routine activities proposed in proximity to resources that can be avoided through implementation of standard BMPs or the established resource-specific RPMs. Class IIc represents routine activities proposed near or within an area supporting resources for which modified or additional resource-specific RPMs may be needed in order to avoid impacts. Class II activities include pole replacements, tower replacements, reconductoring/underground work, vegetation maintenance, internal communications maintenance, shoo-fly installations/interset installations, and routine road maintenance (see Sections B.2.1 – B.2.7 in the Plan).</p>	<p>Activities that do not fit the scope and scale of Class I and Class II are considered Class III (see Section B.3 in the Plan). In many cases, these activities are considered “projects” because they are broader in scope, encompass areas outside of the permitted boundary, and may be proposed in areas supporting resources. These activities typically require more extensive environmental analysis and review prior to initiating work. Class III activities include reconductoring projects, new pole construction or alignment changes, major road construction/reconstruction, new underground projects, specialized right-of-way vegetation management, and wood product removal (see Sections B.3.1 – B.3.6 in the Plan).</p>	<p>Emergency work addresses immediate threats to public safety, electric reliability, or property. Emergency response can involve activities that require crews to respond immediately to address an imminent threat (see Section B.4 in the Plan). An emergency also is considered in instances where a system failure “breakdown” has occurred as a result of multiple towers, poles, and conductors being down. Repairing the damage requires immediate attention. Examples of emergency repairs include replacing downed poles or towers, reconductoring segments of line, pulling new line, removing vegetation, or felling trees that pose an imminent threat to facilities. Emergency response may include helicopter flights below 200 feet of the tree line, overland travel on non-permitted lands, and access for emergency equipment used to address the hazards and restore power.</p>

E.3.3 HPM Validation Required

HPM or Heritage Program Staff validation is required when the HRSP for O&M activities results in heritage resources in the APE. This includes Class IIb, Class IIc, and Class III activities. Such activities are considered Screened Undertakings (R5 PA Stipulation 7.2 and Appendix D). The Utility will indicate applicable RPMs in the notification package. Any activity with adverse effects to historic properties no longer qualifies as a Screened Undertaking and triggers Forest Service consultation with the SHPO. HPM validation includes the following:

1. Validation must occur within the notification package review period (see Section E.3.4: HPM Validation Time Frame).
2. If no response is received from the HPM or designee for O&M activities with avoidable heritage resources within the notification package review period, the Utility may proceed.
3. Validation or comment is required when RPMs are proposed to avoid impacts to heritage resources in the APE.
4. Validation and subsequent consultation are required for O&M activities that will result in unavoidable impacts to heritage resources.
5. RPMs shall be consistent with Appendix E of the R5 PA and align with Table 4 of this HRMP.
6. Utilities will use Table 4 to identify applicable RPMs based on the type of O&M activity, method of construction, and impact avoidance strategy.

E.3.4 HPM Validation Time Frame

Exempt Undertakings (Class I and Class IIa) do not require HPM validation or comment. For Screened Undertakings (Class IIb and Class IIc) where heritage resources are within the APE, HPMs or Heritage Program staff will provide validation or comment on HRSP results and recommended RPMs within the applicable notification/work authorization package review timeframes (see Sections 3.2.2 and 3.3.2 in the Plan):

1. Class IIa: 5 business days*
2. Class IIb: 10 business days
3. Class IIc: 15 business days
4. Class III: 30 business days (initial HPM response)

When comments are provided that differ from Utility-proposed RPMs, HPMs or Heritage Program staff will work with the Utility on a mutually agreeable course of action to avoid impacts to heritage resources within the respective review periods, or refer back to the R5 PA when appropriate. These timeframes are critical for the Utility, which must comply with specific outage schedules when performing O&M. This work affects customers and must be kept to a very specific schedule. As a result, HPM and Heritage Program staff engagement on heritage resource management for O&M activities must be accomplished within the established timeframes.

*Class IIa notification package will include a “No Heritage Resources” checked-box for each O&M activity. No HPM validation is required. The Utility will notify the Forest and proceed with the

activity after 5 business days using standard BMPs given that no resources are present (see Section 3.2.2 in the Plan).

E.4 Heritage Resource Permitting

The Utility and/or their consultants shall secure from each Forest the appropriate permits (Organic Act, Archaeological Resources Protection Act [ARPA], and Antiquities Act permits) prior to conducting heritage resource investigations in support of O&M activities on that Forest. Blanket permits covering O&M activities under a Utility's authorization (under the applicable law and at the discretion of the Forest Service) shall be issued at the Forest level for heritage file searches, non-disturbing field survey, and remote sensing for a term not to exceed 5 years, thus eliminating project-specific permits (R5 PA Stipulation 7.7[h]). Blanket permits will be renewed at 5-year intervals. Activities that require data recovery or other invasive resource investigations may require project-specific permitting. Region 5 may issue a permit on multiple Forests where the permit activity crosses Forest Service administrative unit boundaries (Forest Service Manual [FSM] 2360, Section 2367.13).

In accordance with FSM 2360, Section 2367.1, the Permit for Archaeological Investigations is a special use permit for heritage resources on Forest Service lands that may be issued under the authority of the Antiquities Act, ARPA, or the Organic Act, depending on the activity being permitted and the age of the heritage resources involved. FSM 2724.4, Forest Service Handbook [FSH] 2709.11, and Uniform Regulations for ARPA at 36 CFR Part 296 include specific permit procedures for heritage resources. To comply with blanket and project-specific permit deliverable stipulations, quarterly GIS coverages will be submitted to Forests. The geographic information system (GIS) coverage and associated attribute table data will include, but not be limited to, positive and negative survey coverage GIS shapefiles, heritage resource data (if any), and any relevant heritage resource monitoring observations. The remaining data will be captured in the annual report (see Section E.5).

Permit issuance is not in itself an Undertaking subject to NHPA Section 106, but certain permitted activities are subject to NHPA Section 106. Heritage permitting under the MPEs is not subject to the National Environmental Policy Act (NEPA). Table 2 summarizes the three authorities.

Table 2. Forest Service Heritage Resource Permit Authority Descriptions

Authority	Resource	Activity
Antiquities Act	Less than 100 years old	Field survey, testing, excavation, research
Organic Act	Over 100 years old	Non-disturbing (e.g., field survey, remote sensing, probing or testing for the presence or absence of cultural materials)
Archaeological Resources Protection Act	Over 100 years old	Disturbing (e.g., evaluative testing, data recovery, ruin stabilization involving excavation and artifact removal, or surface collecting)

Permits for Archaeological Investigation are subject to cost recovery fees (36 CFR 251.58), and a land use fee of \$2 per professional workday for actual fieldwork or the regional minimum fee, whichever is greater (FSM 2715). All or part of land use and cost recovery fees for a Permit for

Archaeological Investigations may be waived by the authorized officer in accordance with 36 CFR 251.57 and 251.58, respectively.

E.5 Reporting [Stipulation 4.2 – R5 PA]

Quarterly check-ins (e.g., conference call, meeting) shall take place between the Region 5 HPM, all Forest HPMs/Heritage Staff, and all Utility Cultural Resource Leads or designees during the first year of implementation of this HRMP. An assessment at the end of the first year shall be made by the participants and, if there is agreement, the quarterly reporting may be reduced to twice a year, or annually. The R5 Heritage Program Manager shall work with the Utility Cultural Resource Leads to set up the quarterly check-ins.

The purpose of the quarterly check-ins is to assure the consistency of HRSPs for Exempt and Screened Undertakings and RPM implementation, to discuss project-specific heritage resource management issues and opportunities for improvement, and to review the overall application of the HRMP across R5 by the Utility and their consultants. Quarterly check-ins may result in mutually agreed-upon HRMP amendments and minor modifications to address new cultural resource laws and improved heritage resource management practices. Implementation of proposed amendments and minor modifications will follow the process outlined in Section 5.1.4 in the Plan. Data obtained from the quarterly check-ins shall be incorporated into the Forest Service annual reports prepared for the California and Nevada SHPOs per Stipulation 4.2 of the R5 PA. Region 5 will provide the Utility the content and format of the annual reports.

E.6 Area of Potential Effect [Stipulation 7.3 – R5 PA]

The classes of activities, for the most part, represent maintenance of existing facilities. The Forest Service has concluded that the APE for the initial Undertakings (NEPA MPE issuance) is defined as the transmission and distribution easement corridors, routes of travel, and lay down/staging areas, and the direct footprint of each.

O&M activities authorized under the MPEs are separate Undertakings and will use standardized APEs (Table 3). For those activities that may extend outside of the standard APE (e.g., hazard tree felling), the APE will be modified to include any direct effects on Forest Service lands. O&M activities with modified APEs that differ from the standard APEs defined in this section will be discussed during the quarterly check-ins and documented in the Utility's annual report to the Forest Service. Further, the HRMP is a living document. Additional standard APEs for routine O&M activities may be added as needed to facilitate the Plan's streamlined approval process.

For actions involving new construction (i.e., Class III activities), the APE will be based on the evaluation of potential effects and in consultation with the applicable Forest and stakeholders.

Table 3. Standard Areas of Potential Effects

Operations and Maintenance Activity	Standard Area of Potential Effect
Electrical facility repair/installation/replacement (e.g., towers, poles, shoo-fly, conductor, communications)	100-foot (30-meter) radius
Existing underground repair/installation/replacement (e.g., vaults, conduits)	30-foot (~10-meter) radius
Hazard tree felling	Height of hazard tree
Overland travel	15 to 30 feet (~5 to ~10 meters) off center line
Routine road maintenance	Road prism (see Section B.2.7 in the Plan)
Additional activities to be added	To be determined

E.7 Tribal Consultation [Stipulations 6.0, 7.5 – R5 PA]

The process outlined in R5 PA Stipulations 6.0 and 7.5, FSM 2360 (Appendix B), and 36 CFR 800.2(c)(2) (Appendix C) shall be followed. The tribal community participated in the NEPA public scoping process for the MPE. Tribal comments were received and addressed by the Forest Service.

It is at the discretion of the Forest HPM whether to perform tribal consultation for activities authorized under the MPE on a project-specific basis. Validation processes and timeframes outlined in Section E.3 of this document shall apply. The Forest Service shall consult when tribes request government-to-government consultation. Tribal consultation is not required for Exempt Undertakings where no heritage resources are within the APE for O&M activities (i.e., Class I, Class IIa).

E.8 Identification and Inventory Needs [Stipulation 7.4 – R5 PA]

The Utility will comply with Section 7.4 of the R5 PA for Heritage Resource Identification and Inventory Needs. If intensive inventory is not feasible due to steep slopes (>30%), impenetrable brush, hindered access, obscured visibility, or other safety concerns, the Utility shall use a combination of the non-intensive inventory strategies outlined below. The inclusion of these strategies in the HRMP complies with Section 7.4(c) of the R5 PA and eliminates the need for SHPO consultation when non-intensive inventory is performed. It is at the discretion of the HPM whether additional SHPO consultation is warranted. Additionally, the Utility and HPMS may collaborate to design alternative inventory strategies not included in the HRMP, with prescribed coverage methods within the APE of electrical Utility corridors and facilities. The Utility will document implementation of non-intensive inventory strategies in notification packages, quarterly check-ins, and/or annual reports.

When implementing non-intensive inventory strategies, the Utility will consider factors that influence the likelihood of encountering heritage resources during pre-field analysis, in survey planning, and when implementing preconstruction survey strategies. Those considerations include:

- Topographical and environmental setting
- Local and regional settlement patterns
- Proximity to ethnographic locations

- Presence of Holocene to historic landforms
- Depositional environments
- Proximity to heritage resources with buried deposits
- Proximity to areas identified by a tribal community as sensitive
- Previously disturbed APEs

Additional heritage resource identification and inventory considerations include the following:

- Unsurveyed portions of the APE that are located on slopes <30% will be surveyed where safety is not compromised and access is not restricted.
- Reconnaissance/cursory survey coverage (>30-meter transects) will be implemented where intensive inventory is not feasible (i.e., slopes >30%).
- Inaccessible areas will be spot-checked to verify assumed conditions.
- Binoculars may be used to locate visible heritage resources (e.g., structures, abandoned water conveyance features, mining features, and rock art).
- Aerial visualization (i.e., light detection and rating, unmanned aerial vehicles) may be used to identify areas with potential for heritage resources. Forest permission is required prior to use.
- If heritage resources are avoidable, they will be managed as assumed eligible for listing in the NRHP.

The Utility will comply with the R5 PA Appendix F, Section 4.0 to record heritage resources.

E.9 Adequate Survey Coverage [Stipulation 7.4 – R5 PA]

The Utility will use results from existing heritage resource inventories if those inventories demonstrate adequate survey coverage, which is reflected in industry-standard field methods and application of Forest Service requirements. Adequate survey coverage is defined as:

1. <30 meter transects
2. Dates 1995-present. Pre-1995 surveys approved as adequate by the HPM or designee on a case-by-case basis also may be used.
3. Survey methodology accounts for prehistoric and historic resources
4. Adequate survey report documentation follows Forest Service guidelines (FSM 2363.16; FSH 2309.12, Chapters 32.11 and 32.23), and includes at a minimum:
 - a. Existing data review
 - b. Description of field survey methods
 - c. Description of identified heritage resources (including site record forms)
 - d. Survey coverage and cultural resource maps
 - e. Photographs – original JPG photos with photo log (if applicable)

- f. Artifact collections and catalogues as appropriate (if applicable)

Survey report results from 1995 to present that meet the standards and methods outlined above are considered sufficient sources of existing data because standardized and reliable field methods existed in 1995 and land use within Utility corridors seldom changes, creating relatively static conditions. Pre-1995 surveys approved as adequate by the HPM or designee on a case-by-case basis also may be used. Survey report adequacy is good for the life of the MPE, unless surveyed areas were subjected to wild fire or other significant landform modifications. Survey reports also will be judged for adequacy by the HPM or designee on a case-by-case basis. Survey reports will be actively managed in the Catalog, which will include all reports that meet established criteria in this section. The Utility will actively manage the Catalog with annual updates or as needed to keep the information current. Active management of the Catalog also will include removing past survey reports HPMS deem inadequate, based on new data that changes the adequacy of a past report.

E.10 Heritage Resources Screening Process

E.10.1 Class I Activities (Section 3.1 in the Plan)

Class I Activities are Exempt Undertakings (R5 PA Stipulation 7.1 and Appendix D). No additional screening or notification is required. Scheduling and documentation are presented to Region 5 during annual meetings. Class I activities will be jointly reviewed by the Utility and the Forest at each annual meeting, or more frequently as needed. Further, Class I activities are performed by implementing applicable BMPs and RPMs. No further action is required by the HPMS or designees.

E.10.2 Class II Activities (Section 3.2 in the Plan)

Class II activities represent the majority of Utility routine O&M ground-disturbing work. The HRMP provides an overarching screening process driven by the outcome of pre-field research and adequate survey coverage. Pre-field research includes reviewing Forest Service Heritage Files, California Historical Resource Information System (CHRIS) records, or other R5-approved data sources. This is followed by confirming HPM-approved adequate survey coverage of the APE or performing a new heritage resources survey. Class II activity-specific surveys will be consistent with the appropriate professional standards in FSM 2360 (Appendix B), and to the extent prudent and feasible, with respective guidelines of the California Office of Historic Preservation and the Secretary of Interior's (SOI) Standards and Guidelines (R5 PA Section 7.4: Identification and Inventory Needs). Where applicable, the non-intensive survey strategies outlined in this HRMP (Section E.8) will be applied. When Class II activity-specific surveys cannot conform to the aforementioned professional standards and guidelines or other guidance provided in this document, the Utility will consult with the HPM to define a mutually-agreeable field methodology for heritage resources inventory (see Section E.8 Identification and Inventory Needs).

E.10.3 HRSP for Class II Routine Road Maintenance

The Utility uses two main classes of roads on NFS lands to access and maintain their infrastructure. These include Forest Service System roads (System roads) and roads permitted to the Utility by the Forest Service for exclusive motorized use by the Utility in order to access their infrastructure (Utility roads). See Section 2.5.1 in the Plan for further details.

Utility roads will be maintained at a Level 2 Maintenance Standard (Level 2) consistent with *Forest Service December 2005 Guidelines for Road Maintenance Levels*. System road repairs or maintenance activities will be made in the event that damage occurs as a result of localized O&M activities; conditions will be coordinated by Forests via project-specific permits/road use agreements.

Due to existing levels of disturbance (baseline conditions) of System and Utility roads, comprehensive heritage resources survey is not required for Class IIa routine road maintenance (Section B.2.7 in the Plan), unless deemed necessary by the Forest HPM. The HRSP for routine road maintenance shall use a modified HRSP consisting of the following:

1. Desktop screening of approved data sources for known heritage resources.
2. RPMs (avoidance) implemented for known heritage resources within the existing road prism.
3. Targeted pedestrian survey of high-risk locations with an increased likelihood of encountering unrecorded heritage resources. Criteria for these locations include:
 - a. Within 100 meters of fresh water (e.g., spring, intermittent/perennial water course)
 - b. Within 100 meters of a high concentration of previously recorded heritage resources
 - c. Within 100 meters of Areas of Critical Environmental Concerns/Priority Heritage Assets (FSH 2309.12)
4. Notification and deliverables
 - a. Class IIa: Annual meeting and report
 - b. Class IIb: Notification package with applicable RPMs
 - c. Class IIc: Notification package, consult with Forest on next steps

E.10.4 HRSP for Class II Activities

With the exception of Class II routine road maintenance, the APE for all other Class II activities must have complete survey coverage for heritage resources prior to ground-disturbing activities. The HRSP for Class II activities, excluding road maintenance, consists of the following:

1. Desktop screening of approved data sources for known heritage resources and adequate survey coverage performed by archaeologists who meets Secretary of the Interior Standards and Guidelines (36 CFR Part 61).
2. If the APE does not have adequate survey coverage, a heritage resources survey is conducted prior to the work activity.

Both scenarios result in one of following potential outcomes (Figure 1):

1. Adequate survey with no heritage resources (Class IIa)
 - a. Exempt Undertaking: No HPM validation required
 - b. No further heritage resources management required
 - c. Document in annual report

2. Adequate survey with avoidable impacts to heritage resources when RPMs are applied (Class IIb)
 - a. Screened Undertaking: HPM validation required
 - b. Submit heritage resource data (e.g., primary number, summary, GIS, coordinates)
 - c. Utility identifies applicable RPMs
 - d. Document in Class II notification package
 - e. HPM validation (see Section E.3 HPM Role and Responsibility)
 - f. Document in annual report
3. Adequate survey with heritage resources present and HPM validation required (Class IIc)
 - a. Screened Undertaking: HPM validation required
 - b. Submit heritage resource data (e.g., primary number, summary, GIS, coordinates)
 - c. Utility identifies applicable RPMs or proposed additional action
 - d. Document in Class II notification package and consult on next steps:
 - i. HPM validation and refer to R5 PA Stipulation 7.8(c)
 - ii. 36 CFR Part 800.5-800.6 as necessary
 - e. Document in annual report

The Utility will make every effort to avoid impacts to heritage resources by applying one or more RPMs. For any outcome where potential impacts to heritage resources are unavoidable when RPMs are applied, or when additional RPMs will not sufficiently protect the resource, the Utility will consult with the HPM on the Class II activity, which reverts back to Section 7.8(c) of the R5 PA or 36 CFR Part 800.5-800.6. Table 4 provides a sample of general construction descriptions for O&M ground-disturbing activities and applicable RPMs. Only those RPMs necessary for avoiding heritage resources will be prescribed. The Utility will identify the applicable RPMs, which are conveyed to the HPM in the work notification package, and then to heritage resource consultants and construction crews for implementation via the Utility's environmental clearance process.

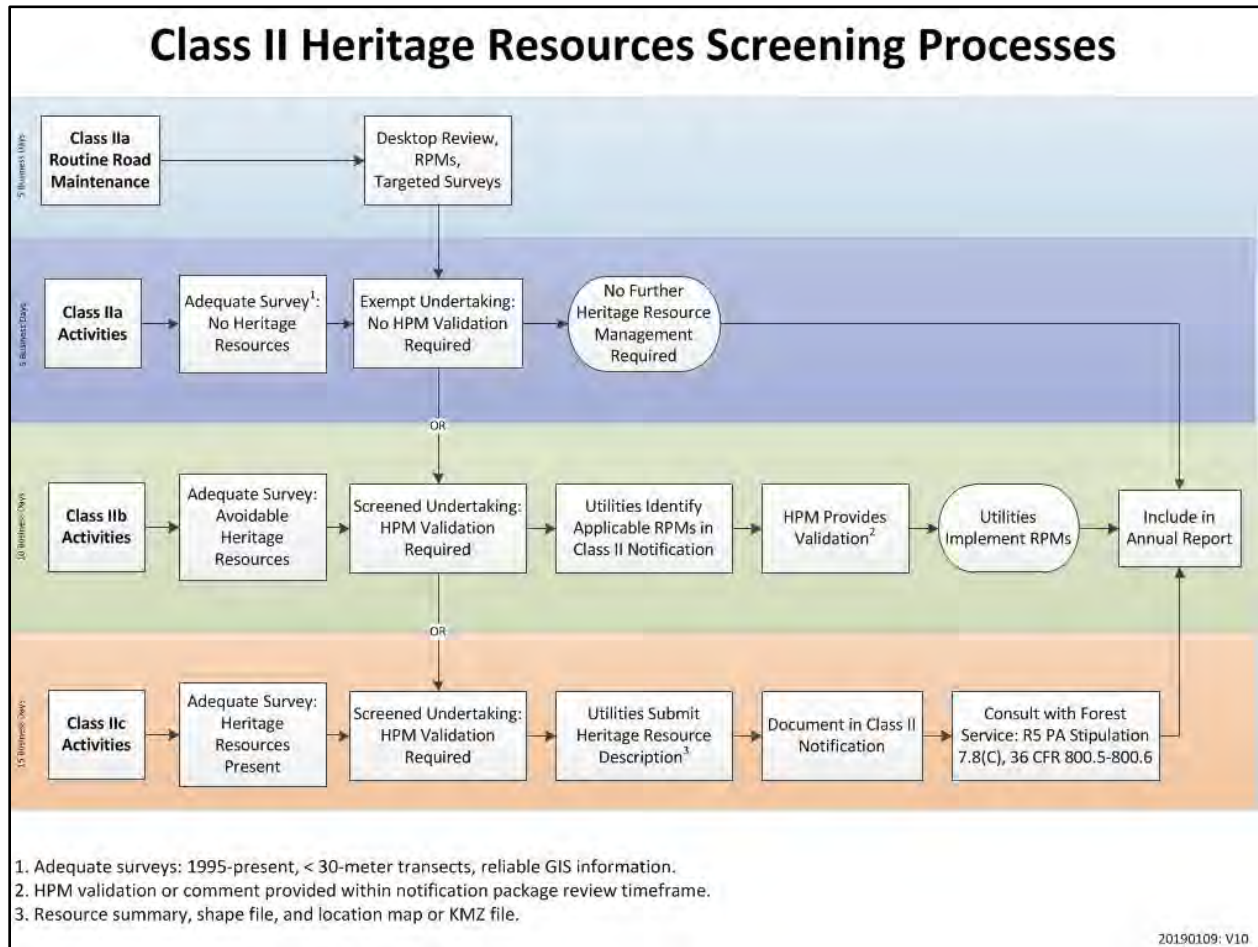


Figure 1. Class II – Heritage Resources Screening Processes

Table 4. Utility Operations and Maintenance Activities with Applicable Resource Protection Measures

Utility Operations and Maintenance Activity*	Type/Amount of Disturbance	Applicable Resource Protection Measures
Pole repair/replacement (see Section B.2.1 in the Plan)	<ul style="list-style-type: none"> • Typically replaced like-for-like (wood, composite, concrete or tubular steel) • Poles placed adjacent to (within 5 feet) or in same hole as existing pole • Pole holes excavated via mechanical auger attached to bucket truck – minimal spoils • Poles set via bucket truck, line truck, crane, or helicopter • Poles typically accessible from existing roads; some road improvement or overland travel by vehicle or on foot may be required • Typical work area varies • Additional laydown areas, guy wires, anchor holes, ground rods, and other appurtenances for new poles sometimes required 	<p>1.1(a): Avoidance; standard 20-foot buffer 1.2: Restrict activities to existing transportation systems 1.3(1): Historic property delineation 1.4: Project changes 1.5: Archaeological monitoring 2.1(a): Limit crossings of linear features 2.1(b): Sufficient snow coverage 2.1(c): Foreign material surface protection 2.1(d): protective barriers</p>
Tower repair/replacement (see Section B.2.2 in the Plan)	<ul style="list-style-type: none"> • Typically replaced like-for-like • Requires excavation for concrete footings • Footings excavated via backhoe, mechanical auger ,or hand – minimal spoils • Tower set via bucket truck, line truck, crane, or helicopter • Some road improvement or overland travel by vehicle or on foot may be required • Typical work area varies • Additional laydown and staging areas often required 	<p>1.1(a): Avoidance; standard 20-foot buffer 1.2: Restrict activities to existing transportation systems 1.3(1): Historic property delineation 1.4: Project changes 1.5: Archaeological monitoring 2.1(a): Limit crossings of linear features 2.1(b): Sufficient snow coverage 2.1(c): Foreign material surface protection 2.1(d): Protective barriers</p>

Utility Operations and Maintenance Activity*	Type/Amount of Disturbance	Applicable Resource Protection Measures
Conductor repair/replacement (reconductoring) (see Section B.2.3 in the Plan)	<ul style="list-style-type: none"> • Typically replaced like-for-like • Includes repair/replacement of conductor, insulators, and other hardware • Occasional installation via helicopter • Tensioning conducted via boom truck staged at tower/pole locations • No excavation required • Work locations typically accessible from existing roads; some road improvement or overland travel by vehicle or on foot may be required • Typical work area varies • Additional laydown/staging areas sometimes required 	<ul style="list-style-type: none"> 1.1(a): Avoidance; standard 20-foot buffer 1.2: Restrict activities to existing transportation systems 1.3(1): Historic property delineation 1.4: Project changes 1.5: Archaeological monitoring 2.1(a): Limit crossings of linear features 2.1(b): Sufficient Snow Coverage 2.1(c): Foreign material surface protection 2.1(d): Protective barriers
Communications repair (see Section B.2.5 in the Plan)	<ul style="list-style-type: none"> • Repairs typically within fenced communication site or on existing tower • Replacement of microwave antenna, covers, struts, other tower hardware • Repairs conducted with boom truck, crane, rigging or helicopter • Replacement of buried ground wires or fiber optic cables require minor excavation and specialized equipment (e.g., forklift, cable dollies, tugger, and spinner) • Typical work area varies • Additional laydown/staging areas sometimes required 	<ul style="list-style-type: none"> 1.1(a): Avoidance; standard 20-foot buffer 1.2: Restrict activities to existing transportation systems 1.3(1): Historic property delineation 1.4: Project changes 1.5: Archaeological monitoring 2.1(a): Limit crossings of linear features 2.1(b): Sufficient snow coverage 2.1(c): Foreign material surface protection 2.1(d): Protective barriers
Existing underground repair/replacement (see Section B.2.3 in the Plan)	<ul style="list-style-type: none"> • Typically replaced like-for-like • Restricted to existing underground facilities (e.g. vaults, conduits) • No/minimal excavation • Typical work area varies 	<ul style="list-style-type: none"> 1.1(a): Avoidance; standard 20-foot buffer 1.2: Restrict activities to existing transportation systems 1.3(1): Historic property delineation 1.4: Project changes 1.5: Archaeological monitoring 2.1(a): Limit crossings of linear features

Utility Operations and Maintenance Activity*	Type/Amount of Disturbance	Applicable Resource Protection Measures
Shoo-fly installation (see Section B.2.6 in the Plan)	<ul style="list-style-type: none"> • Additional laydown/staging areas sometimes required • Install temporary pole or structure around existing facilities while crews make repairs • Pole holes excavated via mechanical auger attached to bucket truck – minimal spoils • Poles set via bucket truck, line truck, crane, or helicopter • Poles typically accessible from existing roads; some road improvement or overland travel by vehicle or on foot may be required • Typical work area varies • Additional laydown/staging areas sometimes required 	<p>2.1(b): Sufficient snow coverage 2.1(c): Foreign material surface protection 2.1(d): Protective barriers</p> <p>1.1(a): Avoidance; standard 20-foot buffer 1.2: Restrict activities to existing transportation systems 1.3(1): Historic property delineation 1.4: Project changes 1.5: Archaeological monitoring 2.1(a): Limit crossings of linear features 2.1(b): Sufficient snow coverage 2.1(c): Foreign material surface protection 2.1(d): Protective barriers</p>
Routine road maintenance (see Section B.2.7 in the Plan)	<ul style="list-style-type: none"> • Erosion control device maintenance/repairs/replacements (e.g., berms, water bars, culverts, over-side drains). Maintenance conducted via road graders, bulldozers, loaders, and backhoes • Typical work area varies • No additional work areas required 	<p>1.1(a): Avoidance; standard 20-foot buffer 1.2: Restrict activities to existing transportation systems 1.3(1): Historic property delineation 1.4: Project changes 1.5: Archaeological monitoring 2.1(a): Limit crossings of linear features 2.1(c): Foreign material surface protection 2.1(d): Protective barriers 2.2(b)(1)(C): Vegetation removal (hand tools) 2.2(b)(1)(D): Protective materials or equipment 2.2(b)(1)(G): Hazard tree directional felling 2.2(b)(1)(I): Vegetation removal (hand carry, off-site equipment or rubber tired vehicle) 2.2(b)(1)(J): Chipping woody material</p>

Utility Operations and Maintenance Activity*	Type/Amount of Disturbance	Applicable Resource Protection Measures
Hazard tree cutting/felling (see Section B.2.4.1 in the Plan)	<ul style="list-style-type: none"> • Removal of vegetation identified as hazardous to power and telecommunication facilities • Conducted using power tools and hand tools (e.g., chainsaws, hand saws) • Debris mulched onsite or removed to approved disposal location • No excavation • Typical work area varies (equal to height of subject tree) • Additional laydown/staging areas sometimes required 	<p>1.1(a): Avoidance; standard 20-foot buffer 1.2: Restrict activities to existing transportation systems 1.3(1): Historic property delineation 1.4: Project changes 1.5: Archaeological monitoring 2.1(a): Limit crossings of linear features 2.1(b): Sufficient snow coverage 2.1(c): Foreign material surface protection 2.1(d): Protective barriers 2.2(a)(1): Topping/limbing trees 2.2(a)(3): Tree removal by non-ground-disturbing methods 2.2(a)(4): Equipment operator training 2.2(a)(5): No skidding or tracked equipment 2.2(b)(1)(c): Vegetation removal (hand tools) 2.2(b)(1)(d): Protective materials or equipment 2.2(b)(1)(g): Hazard tree directional felling 2.2(b)(1)(i): Vegetation removal (hand carry, offsite equipment, or rubber-tired vehicle) 2.2(b)(1)(j): Chipping woody material</p>
Vegetation management (see Section B.2.4.2 in the Plan)	<ul style="list-style-type: none"> • Promotes stable, low-growing vegetation within the right-of-way • Biological, mechanical, or manual treatments to maintain favorable plant communities or remove incompatible vegetation • Mechanical treatments include mowing, grubbing, and chainsaws • No excavation, possible surface disturbance from tracked mechanical equipment • Typical work area varies (width of right-of-way plus length of proposed span) • Includes pruning limbs, removing scattered vegetation that has grown into wire or border zone, and mechanically mowing brush and 	<p>1.1(a): Avoidance; standard 20-foot buffer 1.2: Restrict activities to existing transportation systems 1.3(1): Historic property delineation 1.4: Project changes 1.5: Archaeological monitoring 2.1(a): Limit crossings of linear features 2.1(b): Sufficient snow coverage 2.1(c): Foreign material surface protection 2.1(d): Protective barriers 2.2(a)(1): Topping/limbing trees 2.2(a)(3): Tree removal by non-ground-disturbing methods 2.2(a)(4): Equipment operator training 2.2(a)(5): No skidding or tracked equipment</p>

Utility Operations and Maintenance Activity*	Type/Amount of Disturbance	Applicable Resource Protection Measures
	small ingrowth trees, and corridor maintenance (see Section B.2.4 and Table B-2: Class II-Vegetation Management in the Plan) <ul style="list-style-type: none"> • Additional staging/laydown areas sometimes required 	2.2(b)(1)(c): Vegetation removal (hand tools) 2.2(b)(1)(d): Protective materials or equipment 2.2(b)(1)(g): Hazard tree directional felling 2.2(b)(1)(i): Vegetation removal (hand carry, offsite equipment, or rubber tired vehicle) 2.2(b)(1)(j): Chipping woody material
<p>*The O&M activities described above are not comprehensive but represent the majority of routine activities performed. Please refer to referenced Plan sections for further details.</p>		

E.10.5 Class II Activity Deliverables

There are three Class II activity deliverables. The first is a notification or work authorization package. At least 5, 10, or 15 business days prior to initiating a Class II activity, the Utility submits a notification or work authorization package to the Forest that will be distributed to Forest subject matter experts (e.g., HPMS) as determined by the Forest. The package contains key information on the Class II activity scope, including but not limited to, the following:

- Location, area (if applicable) and type of work
- Anticipated schedule
- Contact information for lead Utility person conducting the work
- Equipment to be used
- Anticipated square footage of ground disturbance if greater than 1,000 square feet
- Number, location, size, height, and species of trees to be cut (if applicable)
- RPMs, as prescribed, to be followed
- Forest Service and Utility contacts
- Pertinent cultural resource information
 - Applicable survey coverage and resource information with report citation (tabular format)
 - Notification that the APE will be surveyed prior to ground disturbance, if necessary
 - Results from any recent or pre-activity surveys
 - Proposed RPMs for avoidance of impacts to known heritage resources.

The second deliverable, if new heritage resources are identified, is a resource description (summary, shape file, and location map or KMZ file; and original JPG photos, including photo log). This deliverable is submitted if a new Department of Parks and Recreation (DPR) site record cannot be generated prior to notification/work authorization package submittal to assist the HPM or designee's validation and comment of proposed RPMs. A completed DPR will be submitted within 15 business days of the notification/work authorization package.

The third deliverable is an annual report detailing all heritage resources management performed in support of O&M activities executed under a Utility's existing authorization. The annual report will document all new heritage resources surveys (positive and negative), newly recorded heritage resources and associated DPR forms, historic properties affected (if any), associated GIS deliverables; will conform to the R5 PA Sections 4.2 and 7.7(e); and will be submitted in time to align with the R5 annual report submittal to the SHPO. The submittal date will be determined in consultation between the R5 HPM and Utility cultural resource leads.

E.10.6 Class III Activities (Section 3.3 in the Plan)

Activities that cannot be characterized as routine and ongoing, and do not fit the scope and scale of Class I and Class II activities, are considered Class III. These activities typically will require more extensive environmental analysis, review, and reporting prior to initiating work activities. The

Utility will provide the Forest with a complete project description, which will include the need for the action; proposed activities; mapping and shape files; and a description of the equipment to be used, access, timelines, and initial screening for resources, including heritage resources (see Section 4.3 in the Plan).

Class III O&M activities require validation from the HPM or designee regardless of the presence or absence of heritage resources. The HPM or designee will provide validation or comment on the HRSP results and may request additional documentation within the 30-business-day work authorization package timeframe. The Class III HRSP begins with the same screening and notification as the Class II HRSP (see Section E.10.4) and is supplemented as described below.

The Class III HRSP begins with determining whether adequate survey was performed. If not, a heritage resources survey is conducted. Both scenarios result in one of following potential outcomes:

1. Adequate survey with no heritage resources
 - a. Exempt Undertaking: HPM validation required
 - b. Document in Class III work authorization package
 - c. Submit heritage resource documentation
 - d. No further heritage resources management required
 - e. Document in annual report
2. Adequate survey with avoidable impacts to heritage resources when RPMs are applied
 - a. Screened Undertaking: HPM validation required
 - b. Document in Class III work authorization package and consult on next steps
 - c. Submit heritage resource documentation
 - d. Document in annual report
3. Adequate survey with heritage resources present and HPM validation required
 - a. Screened Undertaking: HPM validation required
 - b. Document in Class III work authorization package and consult on next steps
 - c. Submit heritage resource documentation
 - d. Refer to R5 PA Stipulation 7.8(c) or 36 CFR Part 800.5-800.6 as necessary
 - e. Document in annual report

The heritage resource deliverables for a Class III activity begins with a work authorization package, which will include the results of the Class III HRSP. Additional documentation such as resource records, survey results, letter report, or archaeological survey report, may be required depending on the scope of the Class III activity and/or heritage resources management considerations. The level of Class III heritage resource reporting will be determined by the Utility and the HPM. Requests for additional documentation will be made by the HPM or designee within the 30-business-day work authorization package review period. All Class III activities will be documented in the annual report.

E.10.7 Class IV Activities – Emergencies (Section 3.4 in the Plan)

Electrical utilities will comply with Stipulation 7.11 of the R5 PA and 36 CFR 800.12 for emergencies.

E.11 Data Exchange [Stipulation 5.3(b) – R5 PA]

Region 5 has developed and maintains corporate databases that include information about heritage resources and heritage resource investigations (Natural Resource Manager [NRM] Heritage Database) and geospatial data (GIS) in accordance with Section 112(2) of the NHPA and FSM 2360. Region 5 Forests will share with the Utility all NRM GIS data that intersect Utility facilities (e.g., transmission and distribution facilities, roads) on all NFS lands. The Utility will submit quarterly GIS data sets to the Forests for NRM system uploads.

E.12 Evaluation and Determination of NRHP Eligibility [Stipulation 7.7 – R5 PA]

The process outlined in the R5 PA, Stipulation 7.7 shall be followed.

Within 3 years of MPE execution, the Utility shall work with the R5 heritage resources lead and Forest HPMPs and their heritage staff to prepare a Historic Properties Management Plan (HPMP) for completing NRHP evaluations and determinations of eligibility for heritage resources directly associated with Utility O&M activities authorized under the MPE (e.g., heritage resources with Utility facilities within their mapped boundaries, heritage resources within Utility road prisms) in accordance with Stipulation 7.7 of the R5 PA. Each Utility may create a single, service territory-specific plan for their respective Forests. The plan shall be written in such a manner as to phase NRHP evaluations and determinations over a 10-year maximum timeframe until all heritage resources within the HPMP are evaluated and submitted to the SHPO for consensus determinations. The HPMP is intended to supplement the HRMP. All activities, definitions, HRSPs, RPMs, and other terms and conditions shall be consistent with the Plan and the HRMP.

The HPMPs will prioritize NRHP evaluations of any Priority Heritage Assets (PHAs) located within and adjacent to Utility O&M activities authorized under the MPE. The goal of the HPMP, which is different than this document's annual reporting requirements, is to assist each Forest in its historic property management and protection during O&M activities.

E.13 Determination of Effects to Historic Properties [Stipulation 7.8 – R5 PA]

The process outlined in the R5 PA, Stipulation 7.8 shall be followed.

E.14 Discoveries and Inadvertent Effects [Stipulation 7.1 – R5 PA]

The process outlined in the R5 PA, Stipulation 7.1 shall be followed.

E.15 Emergency Undertakings [Stipulation 7.11 – R5 PA]

The process outlined in the R5 PA, Stipulation 7.11 and in 36 CFR Part 800.12 and 36 CFR Part 78 shall be followed.

E.16 Dispute Resolution [Stipulation 12.0 – R5 PA] and Non-Compliance

The process outlined in the R5 PA, Stipulation 12.0 shall be followed. The Utility also will comply with Section 5.1.6 in the Plan.

E.16.1 Incident Management

If an incident occurs, the Utility will, at a minimum, provide the Forest with the following information:

1. Notification to the Forest HPM or designee as soon as possible (typically within 48 hours of the incident)
2. A description of the incident
3. A description of the heritage resource(s) involved and its NRHP status

E.17 Modifications, Clarifications, and Revisions [Stipulation 12.2 – R5 PA]

This HRMP is intended to be responsive to changing circumstances. Therefore, it will track and align with future R5 PA revisions. It also will align with Section 5.1.4 in the Plan to address periodic modifications, clarifications, or revisions. Any minor modifications or amendments will be in accordance with applicable legal requirements.

Appendix F
Fire Plan

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Attachment F-1 Project Activity Level Contact List

F.1 Scope

The provisions below outline the Utility's responsibility for fire prevention and extinguishment of fires that inadvertently start from Utility operations and maintenance (O&M) activities within the Pacific Southwest Region (Region 5) of the U.S. Department of Agriculture, Forest Service (Forest Service). The provisions in this Fire Plan also specify conditions under which O&M activities are authorized to occur, identify a system for determining fire risk, and detail conditions under which O&M activities will be curtailed or shut down.

F.2 Responsibilities

The Utility shall:

- Abide by the requirements of this Fire Plan for the duration of the master permits and easements (MPEs) issued by the Forest Service.
- Take all steps necessary to prevent its employees, its subcontractors, and its subcontractors' employees from starting fires when conducting O&M activities.
- Take reasonable steps to extinguish all such fires that may start and to notify the appropriate emergency response agency immediately or as soon as reasonably possible.
- Permit and assist in periodic testing and inspection of required fire equipment, including requiring contractors to test and inspect their equipment.
- Demonstrate compliance with all applicable fire activity requirements as defined in this Fire Plan during each local Forest's established Fire Precautionary Periods.
- Share and confirm emergency contact information for the Utility, the Forest Service, and any other fire response agencies as needed or at the Utility's annual meeting with each Forest
- Comply with each Forest's Project Activity Level (PAL) activity and use restrictions.

The Forest Service may conduct periodic field inspections for compliance with the Fire Plan. The number, timing, and scope of such inspections will be at the discretion of Forest Service employees responsible for permit administration. Such inspections do not relieve the Utility of responsibility for correcting violations of the Fire Plan or for fire safety in general, as outlined above.

F.3 Definitions

F.3.1 Fire Patrol Person

The fire patrol person is a member of the work crew assigned the responsibilities for fire prevention and fire risk mitigation on the job site. Under certain PALs, the fire patrol person is required for

mechanical operations from cessation of operations until 2 hours after operations cease or sunset, whichever occurs first.

F.3.2 Fire Precautionary Periods

Fire Precautionary Periods will be specified by each Forest and may change annually based on the weather conditions and other factors. The Utility will comply with the Fire Plan's regulations, requirements, measures, and activities during the Fire Precautionary Period. The Fire Precautionary Period will cease upon the Forest's declaration of the end of fire season, if applicable.

F.3.3 Fire Supervisor

The Fire Supervisor is the designated Utility point of contact responsible for communicating fire-related information between the Forest and the Utility work crews.

F.3.4 Hot Saw

A hot saw is a harvesting system that uses a high-speed (>1,100 revolutions per minute) rotating felling head (i.e., full rotation lateral tilt head).

F.3.5 Mechanical Operations

Mechanical operations describe the process of felling, skidding, chipping, shredding, masticating, piling, log processing, and/or yarding that requires the use of motorized power tools, such as chainsaws, chippers, motorized carriers, masticators, stroke delimiters, skidders, loaders, and dozers.

F.4 Project Activity Level

The PAL is a decision support tool designed to help fire and timber resource managers establish the level of industrial precaution for the following day. This tool utilizes outputs from the National Fire Danger Rating System, the accepted interagency fire danger model that represents the interaction between fuels, weather, topography, and fire occurrence. The PAL is designed to reduce the risk of large, damaging wildfires and the legal vulnerability of the Forest Service, its contractors, and permittees.

Any work being conducted on National Forest Service (NFS) lands must be in compliance with the applicable PAL restrictions and activity requirements, as described in Table F-1. The Utility shall conform to the limitations or requirements of the PAL obtained from the Forest before starting work each day. If practicable, the Forest will determine the following day's activity level by 4:00 p.m. local time each afternoon. The Utility can obtain the PAL for the following day by calling the phone number associated with the applicable Forest, as provided in Attachment F-1 Project Activity Level Contact List after 4 p.m. The Forest may change the PAL at any time if the fire danger is higher or lower than predicted and the change is consistent with forest management objectives. The Forests have the discretion to decide when to change the PAL and to what level, and how weather observations should be used to determine the appropriate PAL.

Table F-1. Activity Requirements and Restrictions by Project Activity Level

Work Activity	Project Activity Level					
	A	B	C	D	Ev	E
Diesel- and gasoline-operated engines	Standard tools (as defined in this Fire Plan)	Standard tools	Standard tools <ul style="list-style-type: none"> • A properly installed spark arrestor on all equipment 	Standard tools <ul style="list-style-type: none"> • A properly installed spark arrestor on all equipment 	Standard tools <ul style="list-style-type: none"> • A properly installed spark arrestor on all equipment • Designated fire patrol person 	Activity not permitted
Chipping	Standard tools	Standard tools	Standard tools <ul style="list-style-type: none"> • At least two fully charged 2A:10B:C fire extinguishers per chipper • Area must be sufficiently wet down 	Standard tools <ul style="list-style-type: none"> • Area must be sufficiently wet down • Designated fire patrol person • A water tank or truck onsite with at least 300 gallons of water and a fire hose 	Activity not permitted	Activity not permitted
Welding or metal cutting (hot work)	Standard tools <ul style="list-style-type: none"> • Minimum clearance of 10-foot radius around welding point • Designated fire patrol person 	Standard tools <ul style="list-style-type: none"> • Minimum clearance of 10-foot radius around welding point • Area must be sufficiently wet down • Designated fire patrol person 	Standard tools <ul style="list-style-type: none"> • Minimum clearance of 10-foot radius around welding point • Area must be sufficiently wet down • Designated fire patrol person • Welding tent, blankets, or metal shield must be used 	Activity not permitted	Activity not permitted	Activity not permitted
Road maintenance	Standard tools	Standard tools	Standard tools <ul style="list-style-type: none"> • Designated fire patrol person 	Standard tools <ul style="list-style-type: none"> • Designated fire patrol person 	Activity not permitted	Activity not permitted
Chainsaw operations (spark arrestors required)	Standard tools <ul style="list-style-type: none"> • One 5-gallon backpack-pump-type fire extinguisher • Assign a spotter/swamper during operations • A properly installed spark arrestor on all equipment 	Standard tools <ul style="list-style-type: none"> • One 5-gallon backpack-pump-type fire extinguisher • Assign a spotter/swamper during operations • A properly installed spark arrestor on all equipment 	Standard tools <ul style="list-style-type: none"> • One 5-gallon backpack-pump-type fire extinguisher • Assign a spotter/swamper during operations • A properly installed spark arrestor on all equipment 	Standard tools <ul style="list-style-type: none"> • One 5-gallon backpack-pump-type fire extinguisher • Assign a spotter/swamper during operations • A properly installed spark arrestor on all equipment • Designated fire patrol person 	Standard tools <ul style="list-style-type: none"> • One 5-gallon backpack-pump-type fire extinguisher • Assign a spotter/swamper during operations • A properly installed spark arrestor on all equipment • Designated fire patrol person • A water tank or truck onsite with at least 300 gallons of water and a fire hose 	Activity not permitted
Vegetation clearing	Standard tools	Standard tools <ul style="list-style-type: none"> • One 5-gallon backpack-pump-type fire extinguisher 	Standard tools <ul style="list-style-type: none"> • One 5-gallon backpack-pump-type fire extinguisher • Designated fire patrol person 	Standard tools <ul style="list-style-type: none"> • One 5-gallon backpack-pump-type fire extinguisher • Designated fire patrol person 	Activity not permitted	Activity not permitted
Refueling	Equipment may be refueled after cooling and in an area with at least 10 feet of clearance	Equipment may be refueled after cooling and in an area with at least 10 feet of clearance	Equipment may be refueled after cooling and in an area with at least 10 feet of clearance	<ul style="list-style-type: none"> • Equipment may be refueled after cooling and in an area with at least 10 feet of clearance • Designated fire patrol person 	<ul style="list-style-type: none"> • Equipment may be refueled after cooling and in an area with at least 10 feet of clearance; • Designated fire patrol person • A water tank or truck onsite with at least 300 gallons of water and a fire hose 	Activity not permitted

Work Activity	Project Activity Level					
	A	B	C	D	Ev	E
Hazard tree work	Standard tools	Standard tools • One 5-gallon backpack-pump-type fire extinguisher	Standard tools • One 5-gallon backpack-pump-type fire extinguisher • Designated fire patrol person	Standard tools • One 5-gallon backpack-pump-type fire extinguisher • Designated fire patrol person • A water tank or truck onsite with at least 300 gallons of water and a fire hose	Activity not permitted	Activity not permitted
Skidding/yarding	Standard tools • Area must be sufficiently wet down • A water tank or truck onsite with at least 300 gallons of water and a fire hose	Standard tools • Area must be sufficiently wet down • A water tank or truck onsite with at least 300 gallons of water and a fire hose Wet down surrounding areas	Standard tools • Area must be sufficiently wet down • A water tank or truck onsite with at least 300 gallons of water and a fire hose • Wet down surrounding areas • Designated fire patrol person	Standard tools • Area must be sufficiently wet down • A water tank or truck onsite with at least 300 gallons of water and a fire hose • Wet down surrounding areas • Designated fire patrol person	Standard tools • Area must be sufficiently wet down • A water tank or truck onsite with at least 300 gallons of water and a fire hose • Wet down surrounding areas • Designated fire patrol person	Activity not permitted
Blasting	Standard tools • Area must be sufficiently wet down • Designated fire patrol person	Standard tools • Area must be sufficiently wet down • Designated fire patrol person	Standard tools • Area must be sufficiently wet down • Designated fire patrol person • A water tank or truck onsite with at least 300 gallons of water and a fire hose	Standard tools • Area must be sufficiently wet down • Designated fire patrol person • A water tank or truck onsite with at least 300 gallons of water and a fire hose	Activity not permitted	Activity not permitted

The Utility and the Forests may agree to a variance for operations at levels B, C, D & Ev. When approved by a Forest Supervisor or delegated Forest Service staff specified by the Forest, a Variance Agreement can be implemented when the criteria specified in the agreement are met and the necessary fire activity requirements are in place. This approval is good for 10 calendar days unless cancelled sooner or extended by the Forest Supervisor or designated representative for an additional 10 calendar days. Variance approval can be withdrawn at the sole discretion of the Forest. The Forest will specify to the Utility the information necessary to make a variance request.

F.5 Tools, Equipment, and Restrictions

Tool and equipment specifications for fire prevention and suppression are described below. Unless waived in writing, the Utility shall comply with the following requirements at all times.

F.5.1 Standard Tools

For each piece of equipment used for O&M activities, the Utility shall furnish and have available the following emergency use hand tools and/or equipment (see California Public Resources Code PRC [PRC] 4427, 4428, and 4431):

- One shovel, one axe (or pulaski) and a fully charged chemical or compressed air foam fire extinguisher Underwriters Laboratories minimum rating of 2A:10-B:C, on each truck, personnel vehicle, tractor, grader, and other heavy equipment.
- At least one 4A:80-B:C fire extinguisher or equivalent on each mechanized harvesting machine with hydraulic systems, powered by an internal combustion engine (e.g., chipper, feller/buncher, harvester, forwarder, stroke delimeter).
- One shovel and one filled 5-gallon or larger backpack-pump type fire extinguisher with hand pump with each welder.
- One shovel and one 16-ounce or larger pressurized chemical fire extinguisher when using gasoline-powered tools, including but not restricted to, chain saws, soil augers, and rock drills. Fire tools shall at no time be farther from the point of operation of the portable gasoline-powered tool than 25 feet with unrestricted access for the operator from the point of operation. Fire extinguishers shall be a standard multi-use extinguisher unless otherwise specified. The shovel must be kept on hand when chain saws are used off cleared landing areas.

All tools and equipment required above shall be in good workable condition and shall meet Forest Service requirements for fire tools as follows:

- Shovels shall be size "O" or larger and no less than 46 inches in overall length.
- Axes (or pulaskis) shall have 2-1/2 pound or larger heads and be no less than 28 inches in overall length.

Concentrations of wood dust and debris shall be removed from all equipment daily or more frequently as required. Standard tools must be kept directly accessible to workers at all times when engaged in work activities described in this Fire Plan.

F.5.2 Spark Arrestors

All diesel and gasoline-operated engines, both stationary and mobile, and all flues used in O&M activities shall be equipped with spark arresters that meet current Forest Service standards set forth in the applicable Forest Service manuals and guidance, including FSM 5100—Fire Management and the San Dimas Technology & Development Center Spark Arrestor Guide. Spark arresters are not required on equipment powered by exhaust-driven turbo-charged engines or on motor vehicles equipped with a maintained muffler, as defined in California PRC 4442 and 4443.

F.5.3 Water Tank Truck/Trailer

The Utility is required to furnish a water tank truck or trailer on-site or within 0.25 mile to work areas during some fire danger conditions where bulldozers, masticators, or other heavy equipment are planned for use¹. The water tank truck or trailer must be in good working order and must contain and meet the following minimum specifications:

- At least 300 gallons of water.
- A combination straight stream-fog nozzle with a discharge rating of 6 to 20 gallons per minute. The closed nozzle must be capable of withstanding 200 pounds per square inch (psi) pump pressure without leaking, slipping of couplings, distortions, or other failures.
- 100 feet of 1-inch fire hose, with no segment longer than 50 feet.
- A pump capable of delivering at least 23 gallons per minute at 175 psi at sea level equipped with a discharge pipe having 1.5-inch National Standard Fire Hose thread.
- A power unit for the pump with fuel for at least 2 hours of operation, with ample transport available for immediate and safe movement of the tank over roads serving the work areas.

F.5.4 Welding or Metal Cutting

Prior to initiating any welding or metal cutting, the Utility will obtain and comply with any local welding or other applicable, nondiscretionary permits or approvals needed to conduct the work. The Utility shall confine all welding or metal cutting activity to cleared areas with a minimum **radius of 10 feet** measured from the place of welding and, depending on the assigned PAL, may need to utilize a welding tent or metal shield to deflect sparks. A 30-minute fire watch is required after completion of all hot work.

F.5.5 Smoking and Fire Rules

The Utility should adhere to each Forest's smoking and fire rules. The Utility will not permit smoking during fire season, except in a barren area or in an area cleared to mineral soil at least 3 feet in diameter (PRC 4423.4). The Utility shall sign designated smoking areas. The Utility will post signs regarding smoking and fire rules in conspicuous places for all employees to see. The Utility's supervisory personnel should require compliance with these rules. Under no circumstances should smoking be permitted during fire season while employees are operating light or heavy equipment, or are walking or working in grass or woodlands.

¹ If only hand equipment is used a full, functioning backpack pump per crew may be substituted.

F.5.6 Utility Fire Contacts

The Utility shall coordinate with the Forest to obtain and confirm emergency contact information and verify emergency reporting procedures, including providing Utility fire contacts for each project or planned work activity. The Utility and Forest shall also confirm PAL contact/recording information where work is anticipated. The Utility shall identify and make known to the Forest a qualified Fire Supervisor as defined in this Fire Plan each operating day when PAL B or higher is in effect. The Fire Supervisor shall ensure clear and open communication between the Utility and the Forest Service regarding any changes in fire condition, incidents, or other fire-related information.

When required according to work activity and the PAL, the Utility shall designate a fire patrol person whose sole responsibility shall be to patrol the job site for prevention and detection of fires; take suppression action where necessary; and notify the Fire Supervisor and Forest as required of any changes in fire condition, incidents, or fires. The designated fire patrol person is required to be on foot unless other agreements have been made. Prior to commencing work, the Utility shall identify and make available the designated Fire Supervisor and Fire Patrolperson's contact information.

F.5.7 Reporting Fires

The Utility will notify the Forest Service of any fires in work areas or along roads used by the Utility immediately or as soon as reasonably possible. The Fire Supervisor shall report all fires as soon as possible to the Forest Service facilities and/or personnel listed in Attachment F-1. When reporting a fire, the Utility shall provide the following information:

- Name
- Call-back telephone number
- Project name (if applicable) or Utility job number
- Location: legal description (township, range, section) or GPS coordinates and a descriptive location or local reference point
- Fire information, including approximate number of acres, rate of spread, and wind conditions

F.5.8 Investigation of Utility Related Fires

The Utility agrees to engage in mutual cooperation with the Forest Service on all fire investigations.

F.5.9 Communications

The Utility shall furnish an agreed-upon communication system connecting each operation with the designated Forest Service Dispatch Center. The communications system shall be capable of contacting the designated Forest Service Dispatch Center within 15 minutes of discovery of a fire in the Utility's work area. The communications system shall be operable during the duration of all O&M activities. The individual responsible for communications must understand how to operate this device and possess it on his/her person at all times or be within a reasonable distance for access.

F.5.10 Clearing of Fuels from Equipment Areas

Welding equipment and stationary log loaders, yarders, and other equipment listed in California State Law shall be cleared of all fuels and logging debris for a slope distance of at least **10 feet**.

F.5.11 Storage and Parking Areas

Equipment service areas, parking areas, and gas and oil storage areas shall be cleared of all flammable material for a radius of at least **10 feet** unless otherwise specified by the local administrative unit. Small mobile or stationary internal combustion engine sites shall be cleared of flammable material for a slope distance of at least **10 feet** from such engine. The appropriate project personnel shall approve such sites in writing.

F.5.12 Oil Filter and Glass Jugs

The Utility shall remove all oily rags and used oil filters from NFS land. The Utility shall prohibit the use of glass bottles and jugs during O&M activities.

Attachment F-1

Project Activity Level Contact List

National Forest	PALS Dispatch Number
Angeles	661-723-3620
Cleveland	619-557-5262
Eldorado	644-0200
Inyo	760-873-2405
Lassen	530-257-9553
Los Padres	805-938-9142 or website https://gacc.nifc.gov/oscc/ecc/lpcc/intelligence.php
Mendocino	530-934-1240
Plumas	800-847-7766
San Bernardino	909-382-2997
Sequoia	559-782-3120
Shasta - Trinity	530-226-2400
Sierra	559-500-4544
Six Rivers	707-457-3875
Stanislaus	209-288-6247
Tahoe	530-478-6111

