



AVIAN PROTECTION PLAN



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PACIFIC POWER AVIAN PROTECTION PLAN

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Executive Summary

This Avian Protection Plan (APP) details the efforts conducted by Pacific Power in the states of California, Oregon, and Washington to protect eagles, raptors, and other migratory birds from electrocution and collision mortality on Pacific Power's overhead power lines and substations. Since the 1980s, PacifiCorp has had a Bird Management Program in place to address bird issues in Pacific Power and Rocky Mountain Power. This Program was used as a template for the national Avian Protection Plan Guidelines (Avian Power Line Interaction Committee [APLIC] and U.S. Fish and Wildlife Service [USFWS] 2005) and includes the 12 principles identified in the Guidelines. This document includes Pacific Power's APP policies and procedures and details proactive risk assessment and retrofitting efforts. The USFWS has contributed to the development of Pacific Power's APP over the years and is anticipated to continue to provide guidance.

Purpose

Pacific Power's service area supports a diversity of migratory birds, including eagles, raptors, and waterfowl. The purpose of this APP is to reduce mortalities of migratory birds while enhancing power reliability. This APP is intended to be a living document that will be updated as appropriate.

Background

In 2004, PacifiCorp and USFWS signed the Avian Protection Plan for the Klamath Basin. The plan detailed efforts to be conducted by PacifiCorp in the Klamath Basin of Oregon and California to protect eagles, raptors, and other migratory birds from electrocution mortality on PacifiCorp's overhead power lines. This multi-year plan was developed in cooperation with USFWS and incorporated existing components of PacifiCorp's Bird Management Program with additional proactive efforts to identify and minimize avian electrocution risk within the Klamath Basin. In 2009 Pacific Power combined the Bird Management Program and Avian Protection Plan for the Klamath Basin to create an Avian Protection Plan, which included all of Pacific Power's service territory. This document is Pacific Power's current APP and replaces all prior documents related to the Bird Management Program and Avian Protection Plan for the Klamath Basin.

BIRD PROTECTION POLICIES

PacifiCorp Transmission and Distribution Operations has two policies that address management of avian interactions with electric facilities within both Pacific Power and Rocky Mountain Power as presented below. These policies are integral to the implementation of Pacific Power's APP.

Bird Management Program/Avian Protection Plan Policy- *Finalized 2009*

This policy is intended to ensure compliance with legal requirements, while improving distribution system reliability. Transmission and Distribution Operation's management and employees are responsible for managing bird interactions with power lines and are committed to reducing the detrimental effects of these interactions.

PacifiCorp will:

- Implement and comply with its comprehensive Bird Management Program (also referred to Avian Protection Plan).
- Ensure its actions comply with applicable laws, regulations, permits, and Bird Management Program/Avian Protection Plan procedures.
- Provide information, resources, and training to improve its employees' knowledge and awareness of the Bird Management Program/Avian Protection Plan.
- Document bird mortalities and problem nests (including nests that are removed or relocated).
- Construct all new or rebuilt lines in rural areas (outside city limits or beyond residential/commercial developments) and appropriate urban areas to comply with PacifiCorp avian-safe standards.
- Construct all new or rebuilt equipment poles in all areas (within and outside city limits) to comply with PacifiCorp avian-safe standards. This is intended to ensure that bushings, cutouts, arresters, and jumpers are appropriately covered.
- Retrofit or modify facilities where protected birds have been killed or caused an outage. Modifications will be in accordance with Bird Management Program/Avian Protection Plan procedures.
- Retrofit five distribution poles, as needed, in each direction of eagle mortality poles.
- Participate with public and private organizations in programs and research to reduce detrimental effects of bird interactions with power lines.

Bird Protection Policy for Substations- *Finalized 2009*

This policy is intended to ensure compliance with legal requirements, while improving system reliability. Substation Operation's management and employees are responsible for managing bird interactions with substations and are committed to reducing the detrimental effects of these interactions.

PacifiCorp will:

- Implement and comply with its comprehensive Bird Management Program.
- Ensure its actions comply with applicable laws, regulations, permits, and Bird Management Program procedures.
- Document bird mortalities and problem nests in substations.
- Provide information, resources, and training to improve its employees' knowledge and awareness of the Bird Management Program.
- New substations will comply with PacifiCorp avian-safe substations standards.
- Retrofit or modify (whenever feasible) substations that pose a high risk due to bird or animal caused outages or protected bird mortalities. Modifications will be in accordance with Bird Management Program procedures and company avian-safe substation design standards.

TRAINING

APP training and/or educational resources are provided as needed for various personnel within Pacific Power. Training may be delivered via bulletins, online information, or instructor/hands-on. Employees who are not present during instructor-led training are required to attend an online training session.

Table 1. Bird Management Program Training Schedules

Department/Job Titles	Training Type	Frequency
Transmission and Distribution (T&D) Field Operations and Substation Operations (foremen, journeymen, troublemen, etc.)	Instructor led, Online, and/or Information Bulletins	Annual or as needed
New Managers		
Estimators		
Engineering		
Service Coordinators		
Vegetation Management (training for employees and contractors regarding nest protection)		
Contract line construction crews and Inspectors		
Dispatch		
Other staff as determined necessary		

Instructor-led and online training presentations are modified as needed to include current policies, practices, standards, and materials. Online resources are available as training aids. Training materials include the following and are available online or through Environmental Services:

- Protected bird mortality/problem nest flowchart for T&D Wires Operations (*Appendix A, Figure 1*)
- Protected bird mortality/problem nest flowchart for T&D Substation Operations (*Appendix A, Figure 2*)
- PacifiCorp's Guide to Birds on Power Facilities (*Appendix A, Figure 3*)
- Protected species/bird-related outage cause codes handout (*Appendix A, Figure 4*)
- Documentation flowchart for service coordinators (*Appendix A, Figure 5*)
- SAP and WITS instructions for service coordinators (*Appendix A, Figure 6*)
- Protected bird nest flowchart for Vegetation Management (*Appendix A, Figure 7*)

PERMITS

PacifiCorp has a Special Purpose Utility Permit (SPUT) issued by the U.S. Fish and Wildlife Service Migratory Bird Treaty Office Region 1 that authorizes temporary possession for disposal of migratory birds and management of migratory bird nests (*Appendix B, Figure 1*).

As a condition of this permit, an annual report is submitted to USFWS detailing the number of protected bird mortalities, active and inactive nests removed or relocated, number of poles and substations retrofitted, dollars spent, nest platforms installed, and other items of significance (*Appendix B, Figure 2*). Data from the Wildlife Incident Tracking System and SAP are used to generate the information submitted in this report.

AVIAN-SAFE CONSTRUCTION DESIGN STANDARDS

PacifiCorp applies avian-safe construction design standards and bird protection products for distribution, transmission, and substation facilities. PacifiCorp's avian-safe construction standards meet or exceed current Avian Power Line Interaction Committee (APLIC) recommendations (*Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* and *Mitigating Bird Collisions with Power Lines: The State of the Art in 2012*). Avian-safe designs for transmission and distribution structures are achieved by framing poles with 60-inch horizontal and 40-inch vertical phase-to-phase and phase-to-ground separation, extending center phase of a three-phase crossarm design 36 inches from the crossarm (pole), or by using covers to insulate potential phase-to-phase and phase-to-ground interactions. The phase-to-phase and phase-to-ground separation distances are based on the dimensions of eagles as recommended by APLIC (2006) for utilities located in areas where eagle electrocutions may occur. Because eagle electrocutions in substations are unlikely, PacifiCorp's avian-safe substation standards are based on the measurements of the largest birds commonly observed in substations and are sufficient for the protection of birds such as hawks, owls, ravens, and smaller birds. Consequently, PacifiCorp's avian-safe substation designs apply covers or barriers where there is less than 30 inches of vertical separation and/or less than 46 inches of horizontal/diagonal separation between potential points of contact between phase to phase or phase to ground.

The "EV" section of the T&D Standards includes avian-safe construction requirements and descriptions, installation instructions, and stock item numbers for bird protection products (*Appendix C, Figure 1*). Installing covers or reframing structures are the preferred methods for avian protection.

Bird protection standards for substations are included in the "SV" section of the substation standards (*Appendix C, Figure 2*). Covers and/or barriers may be used for avian protection in substations in accordance with these standards.

All bird protection standards and products are reviewed periodically and updated to ensure that the best available products and methods are being used. Avian-safe designs are identified throughout the T&D and Substation Standards with the following symbol:



NEST MANAGEMENT

Some birds, including hawks, osprey and ravens, use distribution poles, transmission structures, and substations as substrates for nests. Birds nesting on utility facilities can result in bird electrocutions, fires, outages, and other operational problems. Active nests (those with eggs or young) are protected by the Migratory Bird Treaty Act (MBTA) and cannot be removed without a permit. In the case of emergency situation (circumstance where a bird nest poses impending danger of fire, safety risk to crew, avian electrocution, or threat to human life or property that requires immediate action), Pacific Power crews will take immediate appropriate action (trim nest material, move conductors, install bird guard, remove nest, or relocate nest) and must immediately contact Environmental Services to report emergency situation action taken. Practices to ensure the welfare of nestlings, such as contacting an avian rehabilitator or relocating a nest to a platform, must be followed. Environmental Services must be contacted to obtain approval, to relocate an active nest to a platform. Likewise, if a bird is taken to a licensed wildlife rehabilitator, Environmental Services must be contacted. The USFWS allows the public to transport birds to wildlife rehabilitation facilities without specific authorization as long as the bird is directly transported to the rehabilitation center. Inactive problem nests, that are on company infrastructure, of species other than eagles, or endangered/threatened species, or species where nests are afforded additional protections, can be removed without a permit. Any nest management activities must be documented in the Wildlife Incident Tracking System (see Reporting Section).

Eagle or Endangered Species Nests

All eagles (bald and golden) and endangered/threatened species, nests are protected by federal laws, regardless of whether they are active or inactive. Although eagle nests are uncommon on power equipment, they occasionally occur and can require management action. If a problem nest is suspected to be that of an eagle or endangered /threatened species or there are questions making this determination, Environmental Services must be contacted. In the exceptional case of an emergency situation, nest material may be trimmed, conductors moved or covered, nest removed, or other appropriate action taken immediately. A non-emergent eagle nest that needs removal will be submitted to USFWS under regulation 50 CFR 22.27. If USFWS authorizes the removal or relocation of an eagle nest appropriate action will be taken, including a summary report and potential follow up monitoring. Practices to ensure the welfare of nestlings, such as contacting an avian rehabilitator or relocating a nest to a platform, must be followed.

Problem Nest Management Options

Bird nests that do not pose safety, reliability, outage, or bird electrocution risk should be left in place. Nests that present safety, reliability, outage, or bird electrocution risks are referred to as “problem nests”. Managing problem nests involves several components:

- Discouraging birds from nesting in problem areas
- Providing an alternative nest site
- Ensuring that surrounding utility facilities are avian-safe

Bird nest management procedures for T&D field and substation operations are summarized in Appendix A. Nest removal or relocation is intended for problem nests or circumstances where there is an electrocution risk to nesting birds. Nests not interfering with power operations should

be left in place. If a problem with a specific nest is anticipated in the future, nest management actions should be taken during the non-breeding season (i.e., before the nest is active). The period when nests are active for most species falls between February 1 and August 31. If there are questions whether a problem nest is active or inactive, contact Environmental Services.

Birds exhibit strong fidelity to nest sites. Removing an inactive nest or nest material alone is often ineffective in preventing nesting. Drain pipe or PVC pipe split in half lengthwise and banded to the crossarms can be used to deter nesting on poles (*Appendix D, Figure 1*). Likewise, double wooden crossarms may be changed out with a single fiberglass arm to discourage nesting (*Appendix D, Figure 1*). Triangles or spikes should not be used to deter nesting as they can aid in the accumulation of nest material. Where possible, constructing a nest platform on a non-energized pole, set off the line, is preferred. Artificial nesting substrates in a variety of designs are accepted by nesting raptors, especially ospreys. A new nest platform pole should be equal height or taller than the existing pole.

Discouraging nesting in substations can be more difficult and typically involves site-specific measures. These measures may include moving the nest to a safe area within the substation or installation of a platform outside of the substation.

In cases where a new pole cannot be installed a nest platform can be mounted above the crossarm. Mounting a nest platform above energized equipment is not encouraged, as debris from the nest may fall into the conductor or equipment below posing a fire or outage risk.

Raptors and other birds can be sensitive to human activity near nesting sites. Prolonged human activity (such as line or substation construction) and noise near nest sites can result in nest abandonment or exposure of chicks and/or eggs to the elements (and potential mortality). Through coordination with Environmental Services, appropriate buffer distances established to minimize potential for take must be adhered to during construction, operations, and maintenance activities until the young have fledged or unless otherwise directed by Environmental Services and through coordination with the appropriate agency. Active or inactive nests should not be removed to facilitate construction schedules. When relocating active problem nests or performing maintenance near active nests, efforts should be made to minimize the amount of time adult birds are off the nest while maintaining proper safety practices. Environmental Services should be contacted if there are questions or if assistance is needed in nest relocation efforts.

REPORTING

Wildlife Incident Tracking System

Reporting protected bird mortalities and nest management activities are required components of Pacific Power's APP and SPUT permit. The Wildlife Incident Tracking System (WITS) is used to track both bird mortalities and nests on utility facilities. Data from WITS is used to generate weekly, monthly, and annual internal reports as well as external agency reports. WITS records also contain identification numbers of outages and SAP notifications, used to ensure that outages caused by protected bird mortalities or nests are documented, and that remedial actions and associated costs are tracked. Several key programs are used to identify and track bird incidents: WITS, SAP, outage data, GIS, and risk assessment survey data. Pacific Power's internal GIS mapping system, PowerMap, is linked with WITS. PowerMap data is spatial and updated every two weeks.

Data Entry

T&D Field and Substation Operations are responsible for entering protected bird mortalities and problem nests that they discover or that are reported to them (e.g., by customers or agencies). All protected active or inactive nests where a nest management action is needed or has been taken, or where the nest has caused an outage, must be reported in WITS. Field forms are available on company issued cell phones and should be used for reporting mortalities and problem nest activities. In addition, any company employee can access WITS online at the Environmental Services webpage (*Appendix E, Figure 1*). WITS records should include complete data on the incident with a clear description of remedial action taken, photos if available, and directions to the site for eagle mortalities (so that USFWS can recover the bird). In the case of eagle and federally listed threatened or endangered species mortalities, Environmental Services should be contacted immediately, as USFWS requires reporting no later than 48 hours from discovery, per SPUT permit timeline. WITS records should not be "closed out" (i.e., date of completion added) until the work has been done. When work is complete, the completion date should be added in WITS and the SAP notification should be closed. A SAP notification is required for all charges to district bird work orders (*Appendix E, Figure 2*). SAP training for bird work orders is available online, with screen-by-screen instructions. If there are questions or problems with WITS or SAP entry related to birds, contact Environmental Services.

RISK ASSESSMENTS

In 2001, PacifiCorp began conducting risk assessment surveys to identify locations with increased bird mortality risk and target proactive retrofitting efforts. Pilot surveys were conducted in Cedar City and Tooele, Utah in 2001. The survey methodology was developed by PacifiCorp, USFWS (Ecological Services and Law Enforcement), Utah Division of Wildlife Resources, and HawkWatch International. This methodology combines field data with existing GIS data to geographically identify and rank electrocution and collision risks (see Risk Assessment Survey Methodology). In 2002, surveys were conducted in rural Utah and southwestern Wyoming (Evanston and Pinedale districts). In 2004, surveys were conducted in Northern California (Butte Valley) as part of PacifiCorp's Klamath Falls Avian Protection Plan. Over the years, the survey methodology and process for developing remedial action plans has been updated to include, electronic data collection and photos taken of each pole surveyed. The risk assessment process will be continually refined as appropriate.

Prioritization of Circuits and Power Poles for Risk Assessment Surveys

Circuits and regions are prioritized throughout Pacific Power based on avian mortality history. Distribution circuits can be prioritized for risk assessment surveys based on the total number of protected bird mortalities (electrocutions and collisions) and the number of eagle mortalities on each circuit. The numbers of protected bird and eagle mortalities per circuit are plotted annually on histograms to identify mortality trends. Histograms can be represented by historical data and/or on a 5-year rolling basis. A circuit's category is subject to change based on availability of suitable avian habitat or population shifts. Once the identified area has been retrofitted the circuit can be reclassified. These histograms are used to identify the following five mortality risk categories:

Circuit Prioritization Category	Criteria <i>(number is total protected bird mortalities <u>and/or</u> eagle mortalities)</i>
1 (highest priority)	Total number protected bird mortalities: 21+ Number eagle mortalities: 7+
2	Total number protected bird mortalities: 16-20 Number eagle mortalities: 5-6
3	Total number protected bird mortalities: 11-15 Number eagle mortalities: 3-4
4	Total number protected bird mortalities: 6-10 Number eagle mortalities: 2
5	Total number protected bird mortalities: 1-5 Number eagle mortalities: 1
6 (lowest priority)	No eagle or other protected bird mortalities documented

Maps of historical (2001-2014) distribution circuit priorities for Pacific Power are shown in Appendix F, Figure 1.

Circuit based analysis may not provide the optimal solution to reduce bird mortalities in all cases. Circuit prioritization has the potential to not consider high risk and low risk avian environments. For example, multiple circuits can converge on a valley with low tree densities, high agriculture production, and a suitable prey base. In this scenario, a spatial based analysis may be a more appropriate indicator of where proactive retrofit activities should be focused to reduce mortalities. Spatial based analysis uses density and hot spot mapping within ArcGIS. Using GIS modeling, the highest risk poles in a specific area may be identified by considering variable such as the number of jumpers, number of phases, presence or absence of any pole-top grounding, and presence or absence of unpaved open habitats as the dominate land cover within 200m.

The appropriate analytical tool (circuit based or spatial based) or a combination of these tools will be used to identify where proactive retrofit actions should be focused.

Survey and retrofit locations for the next five years for Pacific Power are shown in Appendix F, Figure 3. Although this is a long-term ongoing plan, schedules are forecasted for five-year periods utilizing current data. Each year, the APP will be evaluated and the information for the subsequent five-year period will be updated. This will allow for prioritizations to be updated as additional information is obtained or new risk areas emerge based on changes in bird populations, land use, or other factors.

Prioritization of Substations for Risk Assessment Surveys

Historic bird mortalities in Pacific Power substations are mapped in Appendix E, Figure 2. Avian protection devices are installed or verified at substations where separation distances are not achieved, typically 46 kV and below during routine maintenance (proactive measure). However, if additional retrofitting actions are identified, substations would be included in the retrofitting schedule (*Appendix E, Figure 3*).

Risk Assessment Survey Methodology

Data Collection/Field Surveys

On an as needed basis surveys may be conducted to collect data to support proactive retrofit activities. Surveys are conducted in areas of suitable habitat for raptors including sagebrush, grasslands, meadows, pasture, cropland, pinyon/juniper, and similar habitats. Surveys are conducted in rural and remote areas, however locations with heavy development (e.g. urban or suburban areas) are not surveyed unless mortality data confirms avian interactions

Field surveys are conducted by personnel equipped with GPS units with maps of survey areas depicting the locations of poles. Observers walk power lines, visually inspecting the ground as well as poles and lines for evidence of bird use and carcasses. They search an area encompassing 4.5m (15ft.) on each side of the central line and a 7.6m (25ft.) radius around each pole for carcasses, prey remains, pellets, molted feathers, and whitewash.

At each pole, data is recorded on the habitat type, pole configuration, avian mortalities, species observed, evidence of raptor use, and presence of bird nests. Pole configuration data may include: configuration type, number of energized phases, number of transformers, presence of exposed equipment, material of crossarm and brace, location of ground wire, and presence of bird protection devices (insulator covers, bushing caps, arrester caps, cutout covers, hose, covered conductor, line markers, perch discouragers, perches, etc.). In addition, the surveyor assesses

whether or not the structure is up to current avian-safe standards. If an avian mortality is discovered, the species, number of individuals, distance to nearest pole, and cause of death (if known) along with supporting evidence is documented. Remains of all birds excluding eagles and threatened/ endangered species are buried on site. In the event of an eagle or threatened/endangered species mortality, USFWS is notified and salvages the bird. For observations of live raptors, corvids, waterfowl, wading birds, cranes, and sage-grouse, the species, number of individuals, and behavior(s) are recorded. Evidence of prey populations and raptor use, including presence of pellets, whitewash, molted feathers, or prey remains, are documented. If a nest is observed, the species and status of nest (active/inactive) are recorded if known.

GIS Data Analysis

The infrastructure GIS layer of PacifiCorp's database is used as a base map to which survey data is linked. The field data is then analyzed spatially with other existing datasets such as bird-caused outages, historic bird mortalities, nest locations, etc.

To assess the risk of electrocution, variables are analyzed to determine the best method of reducing avian mortalities. Structures with recorded mortalities are priorities when determining what poles to retrofit. The below variables are used in determining high risk structures, along with GIS modeling to rate structures based on mortality potential. This model factors in the number of jumpers, phases, presence or absence of any pole-top grounding, and presence or absence of unpaved open habitats.

- Poles adjacent to mortality poles
- Poles near mortality poles with a similar configuration
- Circuits, lines, or taps where multiple mortalities have occurred
- Dead-end equipment poles in remote or rural areas
- Configurations that have been documented to have a heightened risk in a district
- Portions of circuits or lines with a history of bird-caused or unknown-cause outages

Once all poles are identified, a comprehensive remedial action plan is developed with the appropriate service district that identifies a course of action, timeline, and resources required. A spreadsheet is prepared by Environmental Services and T&D Field Operations that includes a list of bird protection materials to be installed at each facility point. Line crews conducting the retrofitting are given the job packet spreadsheet and maps. Once retrofits are complete, documentation is provided through after photos of each pole.

Within five years after retrofitting, follow-up surveys are conducted at 25% of the poles originally surveyed to evaluate the effectiveness of remedial actions and risk assessments. Poles selected for follow-up surveys include retrofitted poles, previous mortality poles, and poles that were not previously identified as a high risk. Based on the results of follow-up surveys, additional remedial actions may be conducted or risk assessment and retrofitting materials may be modified. Additional follow-up surveys may also be conducted as needed to evaluate long-term effectiveness.

In addition to the immediate application of using the risk assessment data to implement remedial actions at high risk poles, the data can also be used to enhance our understanding of electrocution and collision causes and solutions. For example, the data can be analyzed to identify factors that influence avian electrocution and collision risks; evaluate the effectiveness of bird protection devices; identify the overall percentage of poles that cause electrocutions and compare this spatially within the company's service territory; and identify species or habitat-related differences in risk.

Results from Risk Assessment Surveys

Risk assessment survey data from each survey area is compiled, analyzed, summarized, and compared to the results from other survey areas. A standardized summary report is generated after surveys are conducted in each area and contains information on percent of poles where mortalities were found, percent of poles that are avian-safe, presence of existing bird protection devices, evidence of bird use, and species and causes of mortalities.

Poles with recent eagle mortalities (intact fresh carcass), that are documented during risk assessment surveys, will be retrofitted within 30 days. In addition, five poles in each direction of the mortality pole, if not already avian-safe, will be retrofitted as soon as possible. Poles with other protected bird and old eagle mortalities (bones or old feathers) will be included in the APP retrofit schedule, and addressed during the circuit retrofitting job. However, if there is an immediate concern regarding protected species (e.g., multiple mortalities in close proximity, high avian use, high risk nests, or other circumstances that pose a high immediate risk), Environmental Services and Field Operations will evaluate and determine an appropriate action.

MORTALITY REDUCTION EFFORTS (PROACTIVE RETROFITTING)

Transmission and Distribution Lines

Annual Budget for Avian Protection Efforts

Pacific Power has committed to an annual budget of \$ [REDACTED] for targeted proactive retrofitting efforts and associated risk assessment and follow-up surveys in identified priority areas. In addition to this proactive retrofitting, Pacific Power will continue to retrofit poles per our APP policy (including retrofits in response to mortality poles, bird-caused outages, and nests; retrofitting of poles adjacent to eagle mortality poles; avian-safe new construction outside city limits; avian-safe construction of rebuilt poles outside city limits; and retrofitting of rebuilt equipment poles in all areas). Pacific Power will also respond to “hot spots” (previously unidentified high risk areas) as appropriate in a timely manner. To maintain a current perspective on risk areas and allow for flexibility if priority areas change, the APP will forecast areas for risk assessment surveys and proactive retrofitting within a rolling five-year window which will be reviewed annually with the Service and updated as needed. This annual review will include assessments of current avian risks and priority areas and current estimates for percentage of poles needing retrofitting. Although proactive retrofitting will be forecast within a rolling five-year window, the APP will continue to be a long-term commitment.

Proactive Efforts

Risk assessment surveys are conducted as needed throughout Pacific Power to identify high risk structures for proactive retrofitting (see Risk Assessments Section). Appendix F, Figure 3 includes locations of survey/retrofitting efforts in upcoming years and within-year schedules and milestones are included in Table 2. Prioritizations may be modified as needed to address future mortality risks as they arise. Proactive retrofitting plans identify which structures are to be retrofitted, remedial actions, materials, estimated costs, and timelines for completion. As retrofitting work is conducted, trained inspectors will ensure that current avian-safe practices are being followed. Documentation is provided to Environmental Services through photos. Pacific Power will provide the USFWS with summary reports of work completed during regularly scheduled meetings and through annual permit reports.

Preventative Efforts

Pacific Power’s APP requires avian-safe construction for all new lines and rebuilds outside city limits and new and repaired equipment poles in all areas (both within and outside city limits). This is intended to ensure that bushings, cutouts, arresters, and jumpers are appropriately covered.

Response to Avian Mortalities

In response to eagle mortalities associated with Pacific Power’s distribution facilities, five adjacent structures in each direction of the mortality pole will be inspected and retrofitted if not already avian-safe. This is intended to reduce the likelihood of subsequent eagle mortalities in the area. An assessment of the 2008 Worland, Wyoming, survey data was conducted to determine the appropriate number of adjacent poles to be retrofitted to most effectively reduce subsequent risk. This analysis showed a linear increase in the number of additional mortalities that were included in buffers of one to five poles adjacent to mortality poles and a leveling-off of mortality numbers

from six to ten adjacent poles. Consequently, PacifiCorp adopted a policy of retrofitting five poles adjacent to eagle mortality poles.

Remedial action is required at eagle mortality poles within 30 days of discovery. The adjacent poles should be retrofitted as soon as possible and are typically completed within 30 days. Environmental Services will develop a remedial action plan that identifies adjacent facility points and work to be conducted. T&D Field Operations is responsible for creating and closing out SAP notifications associated with this work.

In response to other protected bird mortalities associated with Pacific Power's distribution facilities, the mortality pole will be inspected and retrofitted within 90 days of discovery. T&D Field Operation is responsible for creating and closing out SAP notifications associated with this work.

Procedures for Mortalities Found During APP Surveys

Poles with recent eagle mortalities (intact fresh carcass), that are documented during risk assessment, surveys will be retrofitted within 30 days along with five poles in each direction, if not already avian-safe. Poles with old eagle mortalities (bones or old feathers) and other protected bird mortalities will be included in the APP retrofit schedule, and addressed during the circuit retrofitting job. However, if there is an immediate concern regarding protected species (e.g., multiple mortalities in close proximity, high avian use, high risk nests, or other circumstances that pose a high immediate risk), Environmental Services and Field Operations will evaluate and determine an appropriate action.

Hot Spots

Pacific Power will identify "hot spot" areas as they emerge. Hot spots are locations where the bird mortality risk was previously thought to be low, but suddenly increased due to a shift in bird populations, habitat, prey availability, or other factors. For example, a distribution line adjacent to an open farm field may have no prior waterfowl collisions, however, a change in land use practices causes this field to be flooded. The flooded field now attracts concentrations of migratory swans, and numerous collisions with the adjacent distribution line have occurred. This area may be considered a hot spot. In addition to changes in the landscape, hot spots may emerge due to changes in prey populations. For example, cyclical jackrabbit populations may result in large differences in golden eagle numbers in an area over several years. When rabbit and eagle numbers are low, no electrocutions may occur; however, in years when rabbit and eagle numbers are high, if numerous eagle electrocutions occurred, this would be considered a hot spot.

Environmental Services regularly monitors bird mortality records entered into WITS. If numerous mortality events are documented in close geographic proximity within a short period of time, Environmental Services will work with the local T&D Field Operations district to assess the hazard. Likewise, T&D Field Operations may raise areas of concern as potential hot spots due to mortalities, outages, or other observations. If an area is identified as a hot spot, the location will be evaluated and appropriate remedial action taken. The prioritization of a hot spot circuit may be modified in the APP survey/retrofitting schedule as appropriate to reflect the new risk category.

Substations

New distribution substations will be built using avian-safe construction practices and applying bird/animal protection materials. Likewise, avian protection devices are installed (or the presence of existing avian protection devices is verified) at all substations during routine maintenance. Such avian protection devices include covers at equipment locations where there is an increased risk of electrocution (e.g., circuit breaker bushings, substation transformer bushings and arresters, and station service transformers, cutouts, and arresters). Avian electrocution risk at substations will likely be reduced through this proactive measure. However, if a need for additional retrofitting at high electrocution risk substations is identified, these substations will be included in the APP and added to the retrofit schedule in Appendix F, Figure 3. In response to substation bird mortalities Pacific Power will develop a remedial corrective action plan within 60 days.

Table 2. Typical implementation schedule for risk assessments and proactive retrofitting.

Action Items:	Responsible Department:	Milestone (Due Date)
Meet with USFWS to discuss Pacific Power APP.	Executive Management Environmental Services T&D Field Operations T&D Substation Operations	Annual; December 31st
Conduct risk assessment surveys of identified circuits to evaluate electrocution risk.	Environmental Services	As needed
Conduct follow-up surveys at 25% of poles previously surveyed.	Environmental Services	As needed
Develop remedial action work plans that identify actions to be completed, materials needed, and target date of completion for each survey location.	Environmental Services Procurement Logistics T&D Field Operations T&D Substation Operations	Annual
Conduct actions at facilities identified in remedial action work plans. Inspect work to ensure that it meets avian-safe standards.	T&D Field Operations	Annual
Report all documented mortalities of protected avian species as part of USFWS Special Purpose Utility Permit annual report.	Environmental Services	Annual
Continue to implement Pacific Power's Bird Management Program.	All affected Pacific Power employees	Ongoing

AVIAN ENHANCEMENT OPTIONS

Pacific Power works in partnership with agencies, environmental organizations, scout groups, and others to identify and implement projects to improve wildlife habitat or further wildlife conservation research. Examples include the installation of nest platforms and boxes for various species, including red-tailed hawks, and ospreys.

QUALITY CONTROL

System Monitoring

Pacific Power will monitor mortalities to identify “hot spots” as they occur throughout Pacific Power. Environmental Services will conduct field spot checks and communicate with USFWS and T&D Field and Substation Operations to identify areas that may emerge as mortality “hot spots.” Pacific Power will also incorporate mortality or population trend data received from agencies. By monitoring, Pacific Power will be able to respond quickly to mortality problem areas as they arise and modify Pacific Power’s APP survey and retrofit schedules accordingly.

Site Audits

Pacific Power will conduct site audits as needed to ensure that avian-safe construction requirements are being met. These efforts will be done as needed for distribution and transmission lines as well as substations. Pacific Power will continue to evaluate its avian-safe construction standards to ensure that current best practices and bird protection materials are used.

Inspections During Proactive Retrofitting

Training and inspections will be conducted during proactive retrofitting to ensure that bird protection materials are installed properly. At the beginning of a retrofitting job, the line crew (either contract or internal) will be trained by Environmental Services and/or T&D Field Operations on materials, proper installation, and avian-safe designs. In addition, each completed job will be reviewed by an inspector to ensure that poles are retrofitted appropriately. The line crew will photograph each completed pole for review by the inspector. Jobs will not be signed off on without approval by the inspector, T&D Field Operations, and/or Environmental Services.

For substation retrofits, Environmental Services will work with T&D Substation Operations to identify material needs, proper installation, and avian-safe designs. In addition, manufacturers of bird protection devices may provide on-site guidance on appropriate cover-up materials and proper installation.

Risk Assessment Follow-up Surveys

Follow-ups surveys at circuits where risk assessments and proactive retrofitting were conducted can be used as a method of quality control (see Risk Assessments Section). Data from the follow-up surveys is analyzed to evaluate the effectiveness of risk assessments in predicting high risk locations and the effectiveness and durability of bird protection devices for poles and substations. Information obtained from these surveys is used to enhance future surveys, prioritizations, and retrofitting.

PUBLIC OUTREACH

Pacific Power has been an active leader in educating the public, wildlife and natural resource professionals, and other utilities on avian/power line interactions. PacifiCorp was a founding member of the Avian Power Line Interaction Committee (APLIC) and continues to be an active APLIC member. Outreach is also conducted with the public and our customers through events, classroom presentations, and as needed or requested. The following table summarizes professional and public outreach activities in which Pacific Power may participate.

Table 3. List of Pacific Power professional and public activities/organizations.

Group/ Organization/ Event	Audience Type	Frequency
Avian Power Line Interaction Committee (APLIC)	Utilities, state and federal wildlife agencies	Meetings twice per year (spring and fall) Short courses twice per year or as needed Conference calls and other meetings, etc. as needed
Agency meetings	USFWS, Bureau of Land Management (BLM), U.S. Forest Service (USFS), and state resource agencies	As needed to discuss avian/environmental issues associated with existing lines, new projects, permit renewals, etc.
Winter Wings Festival, Klamath Falls	Public	Annual
Other	Public and schools	As appropriate

KEY RESOURCES

The successful implementation of this Pacific Power APP relies on the efforts of Pacific Power employees with support from external resources such as the USFWS. The following tables identify internal departments and their responsibilities to APP commitments and external resources that provide guidance, support, or other assistance. The identified responsibilities for company personnel is not an exhaustive list. All responsible departments will communicate and work together to implement APP commitments.

Internal Communication

Pacific Power continues to provide internal communication to ensure that Executive Management, T&D Field Operations, T&D Substation Operations, Environmental Services, Logistics, Asset Management, and Legal are sharing information on bird mortalities, survey results, retrofitting efforts, material needs, budgets, and other aspects/commitments of the Pacific Power's APP.

Pacific Power developed an APP Steering Committee, comprised of individuals responsible for successful APP implementation. The group includes the Pacific Power Vice President, T&D Operations Directors (for NW Wires, SW Wires, and Substations), Logistics, Asset Management, and Environmental Services. The group meets quarterly, or as needed, to discuss APP progress, current and upcoming projects, material needs, bird mortality "hot spots", risk assessment survey progress, APP budget, and other relevant topics.

Table 4. List of internal resources and responsibilities.

Department	Responsibilities
Executive Management	• Ensure compliance with Bird Management Program Policies (<i>Bird Protection Policies Section</i>), USFWS Special Purpose Utility permit requirements (<i>Appendix B, Figure 1</i>), and APP commitments • Allocate appropriate budgets for bird-related commitments • Participate in meetings with USFWS • Participate in APP Steering Group
T&D Field Operations	• Ensure compliance with Bird Management Program Policy (<i>Bird Protection Policies Section</i>), USFWS Special Purpose Utility permit requirements (<i>Appendix B, Figure 1</i>), and APP commitments • Apply avian-safe construction requirements identified in Bird Management Program Policy • Implement proactive remedial action plans • Inspect proactive retrofitting efforts to ensure that complete and appropriate bird protection is installed • Participate in meetings with USFWS • Report protected bird mortalities, bird-caused outages, and problem nests; track related expenditures through SAP notifications and bird work orders • Complete remedial actions at poles with eagle mortalities within 30 days and within 90 days for other protected bird mortalities. Work with Environmental Services to develop remedial action plans in

Department	Responsibilities
	response to eagle mortalities that include 5 distribution poles in each direction. • Participate in Bird Program Training as needed. Training may be delivered via bulletins, online information, or instructor/hands-on. • Provide input on effectiveness of bird protection products • Collaborate with Procurement and Environmental Services to identify bird protection material needs • Ensure that contract line crews are appropriately trained on Bird Management Program procedures, e.g. bird protection standards and retrofitting products, nest management, and reporting of protected bird mortalities • Consult with Environmental Services and ensure that avian issues are considered during siting and construction of new transmission and distribution lines • Participate in APP Steering Group
T&D Substation Operations	• Ensure compliance with Bird Management Program Policy (<i>Bird Protection Policies Section</i>), USFWS Special Purpose Utility permit requirements (<i>Appendix B, Figure 1</i>), and APP commitments • Apply avian-safe construction requirements identified in Bird Protection Policy for Substations • Inspect proactive retrofitting efforts to ensure that complete and appropriate bird protection is installed • Participate in meetings with USFWS as needed • Report protected bird mortalities, bird-caused outages, and problem nests; track related expenditures through SAP notifications and bird work orders • Participate in Bird Program Training as needed. Training may be delivered via bulletins, online information, or instructor/hands-on. • Provide input on effectiveness of bird protection products • Collaborate with Procurement and Environmental Services to identify bird protection material needs • Collaborate with Environmental Services to implement remedial actions at high risk substations identified in APP • Ensure that contract substation crews are appropriately trained on Bird Management Program procedures, e.g. bird protection standards and retrofitting products, nest management, and reporting of protected bird mortalities • Consult with Environmental Services and ensure that avian issues are considered during siting and construction of new substations • Participate in APP Steering Group
Asset Management	• Allocate appropriate budgets for bird-related commitments (including proactive retrofitting, risk assessments, “hot spot” response, and mortality pole/problem nest response) • Participate in APP Steering Group

Department	Responsibilities
Environmental Services	• Ensure compliance with Bird Management Program Policies (<i>Bird Protection Policies Section</i>), USFWS Special Purpose Utility permit requirements (<i>Appendix B, Figure 1</i>), and APP commitments • Provide technical support and resources to aid in implementation of Bird Management Program/APP • Track and report bird mortalities, problem nests, bird-caused outages, and retrofitting efforts • Conduct risk assessment surveys and prepare proactive remedial action plans • Work with T&D Field Operations to develop remedial action plans in response to eagle mortalities that include 5 distribution poles in each direction • Develop and update training resources and guidance documents including Avian Protection Plans • Collaborate with T&D Field Operations and Standards to update bird protection standards as needed • Collaborate with T&D Field Operations, Logistics, and Procurement to identify bird protection material needs • Renew federal permit and submit required annual report • Notify USFWS per SPUT permit timeline in regards to eagle mortalities • Contact USFWS as needed for active nest management permits • Conduct Bird Program Training and/or provide training resources as needed. Training may be delivered via bulletins, online information, or instructor/hands-on. • Collaborate with T&D Substation Operations to implement remedial actions at high risk substations • Participate in APLIC and other stakeholder, professional, or outreach activities • Participate in meetings with USFWS • Participate in APP Steering Group
Logistics and Procurement	• Maintain appropriate inventory levels of bird protection products for day-to-day use and large-scale proactive projects • Participate in APP Steering Group
Standards	• Review bird protection materials and modify standards as needed to include current state-of-the-art products • Review bird protection standards and modify as needed to ensure that standards meet or exceed recommended APLIC guidelines • Add standards for avian-safe new designs as needed or requested • Participate in APP Steering Group as needed
Vegetation Management	• Conduct training as needed with tree trimming crews regarding protection of bird nests

Department	Responsibilities
Information Technology and GIS Department	• Work with Environmental Services to identify and implement updates to Wildlife Incident Tracking System as needed • Maintain bird data in Power Map
Legal	• Ensure compliance with Bird Management Program Policies (<i>Bird Protection Policies Section</i>), USFWS Special Purpose Utility permit requirements (<i>Appendix B, Figure 1</i>) and APP commitments • Provide expertise on legal issues

Communication with U.S. Fish and Wildlife Service

Meetings will be held annually (more often if needed) between Pacific Power Executive Management, T&D Operations, and Environmental Services personnel and USFWS to review Pacific Power's progress on its APP (Table 2). Local meetings will also be held annually or as needed with USFWS and Pacific Power T&D Operations and Environmental Services personnel to review retrofitting work completed and upcoming surveys and work plans.

External Communication

Pacific Power communicates with multiple external resources to implement the APP (Table 5).

Table 5. List of External Resources.

Agency/Group/ Organization	Resources Provided
U.S. Fish and Wildlife Service	• Notification of protected bird mortalities and nests • Guidance in selection of priority areas for risk assessment surveys and proactive retrofitting • Feedback on Avian Protection Plan efforts • Retrieval of eagle carcasses • Management of Special Purpose Permit
State fish and wildlife agencies	• Notification of protected bird mortalities and nests
APLIC	• Information on current avian-protection practices • Training materials and guidance documents
Manufacturers of avian protection products	• Development of new products and improvement of existing products to meet our needs • Training on product installation
Licensed wildlife rehabilitators	• Rehabilitation of injured wildlife • List of rehabilitators included in Bird Management Program Guidelines and on Environmental Services website

CONTACT INFORMATION

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REVIEW & AMENDMENT RECORD

Version	Date Issued	Purpose of Issue and Description of Amendment
006	10/17/2013	Updated Figures 10, 11, 13, 14, 22 and 24. Removed figure 21. Updated contact information Updated VIII. Mortality Reduction Efforts (Proactive retrofitting)
007	10/1/2014	Updated Background information (Page i) Updated Figure 9,10,11,12,13,14,15,22,23,and 26 Updated VI. Reporting (Data Entry) Updated Figure 28 (Environmental Services) Updated contact information Updated table of contents
008	11/7/2018	Updated Sections: Training, Permits, Avian-safe Construction Design Standards, Nest Management, Reporting, Risk Assessments, Mortality Reduction Measures (Proactive Retrofitting), Avian Enhancement Options, Quality Control, Public Outreach, Key Resources, and Contact Information Updated Appendix Section will Figures

APPENDIX

APPENDIX A

Training Material

Dead Protected Bird
 (Do not transport carcass)

Golden Eagle, Bald Eagle, or
 endangered species (e.g. California Condor)



Leave on site (do not bury)

All protected birds



Bury on site (unless banded or marked)

Contact local manager

Notify Environmental Services of eagle/endangered species (Sherry Liguori 801-220-4736, Meggin Weinandt 801-220-4537, or Eric Kasprzak 503-813-6093)

Conduct remedial action (at time of outage if possible). Cover all exposed energized equipment.
 Remedial action required within 30 days for eagles and 90 days for other protected birds.



Avian-safe configuration
 EV Standards



Bushing cap
 EV921



Arrester cap
 EV985X



Cutout cover
 EV151



Covered conductor
 EC951



Insulator cover
 EV971



Firefly
 EV121

Enter Bird Mortality Tracking System (BMTS) record (on Intranet under "Environment" tab)
 Provide manager or clerk with information for SAP notification (pole number, corrective action taken)

Problem bird nest

Eagle or colonial waterbird*
(*includes cormorants and herons)



All protected birds



Active or inactive nests

Active nest (eggs
or young present)

Inactive nests (no eggs
or young)

Contact local manager

In the case of imminent danger (extremely rare situation) take necessary action first, then contact manager

Contact Environmental Services (Sherry Liguori 801-220-4736, Meggin Weinandt 801-220-4537, or
Eric Kasprzak 503-813-6093) to obtain permit to relocate or remove nest

Conduct appropriate action.

Nest management should be conducted (if possible) when nests are inactive. Nests that do not pose an operational, safety, or electrocution hazard should not be removed. Where nest platforms are installed, adjacent poles should be retrofitted to prevent electrocutions and nest discouragers should be installed on the original nest pole.



Nest discouragers (PVC pipe and drain pipe)



Installing platform



Retrofitting nearby pole

Enter problem nest record in Bird Mortality Tracking System (BMTS) (on Intranet under "Environment" tab)

Provide manager or clerk with information for SAP notification (pole number, action taken)

Figure 1

Dead Protected Bird
 (Do not transport carcass)

Golden Eagle, Bald Eagle, or
 endangered species (e.g. California Condor)



All protected birds
 (includes magpies, crows, ravens, hawks, owls, songbirds, etc.)



Leave on site (do not bury)

Bury (unless banded or marked)

Contact local manager.
 Operations to enter Bird Mortality Tracking System (BMTS) record (<http://bmts.pacificorp.us/bmts/>)

Manager to notify Environmental Services of eagle or endangered species (Sherry Liguori (RMP/PP) 801-220-4736, Meggin Weinandt (RMP) 801-220-4537, or Eric Kasprzak (PP) 503-813-6093)

Within 60 days, work with Environmental Services to evaluate site and develop remedial action plan. Retrofitting should be completed within 90 days of mortality; if work cannot be done within 90 days, identify schedule in retrofitting plan. Remedial action plan will include installation of covers and/or barriers (see SV Standards, Bird Protection). Operations to close out BMTS record when work is complete.



Problem bird nest

Eagle nests



All protected bird nests (includes hawks, owls, songbirds, magpies, ravens, crows, etc.)



Active or inactive nests

Active nest (eggs
or young present)

Inactive nests (no eggs
or young)

Contact local manager.

In the case of imminent danger (extremely rare situation) take necessary action first, then contact manager

Contact Environmental Services (Sherry Liguori (RMP/PP) 801-220-4736, Meggin Weinandt (RMP) 801-220-4537, or Eric Kasprzak (PP) 503-813-6093) to obtain permit to relocate or remove nest.

Operations to enter problem nest record in Bird Mortality Tracking System (BMTS) (<http://bmts.pacificorp.us/bmts/>).

Conduct appropriate action.

Nest management should be conducted (if possible) when nests are inactive. Inactive hawk nests may be relocated to platforms installed outside the substation to prevent birds from returning to nest in the sub. Environmental Services should be contacted for guidance regarding nest management.

Figure 2

PacifiCorp's Guide to Birds on Power Facilities



Figure 3

Bird species that are NOT protected

Photo by Marshall Illiff



European Starling



House Sparrow

Photo by Peter S. Weber



Pigeon (rock dove)

Birds that ARE PROTECTED



Eagles



Owls



Hawks



Pelicans



Woodpeckers



Jays



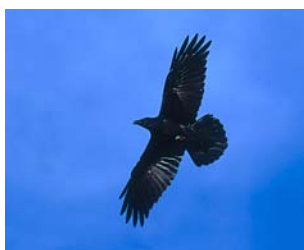
Songbirds



Blackbirds



Magpies



Ravens/crows



Gulls



Sandpipers/plovers



Geese/swans



Ducks



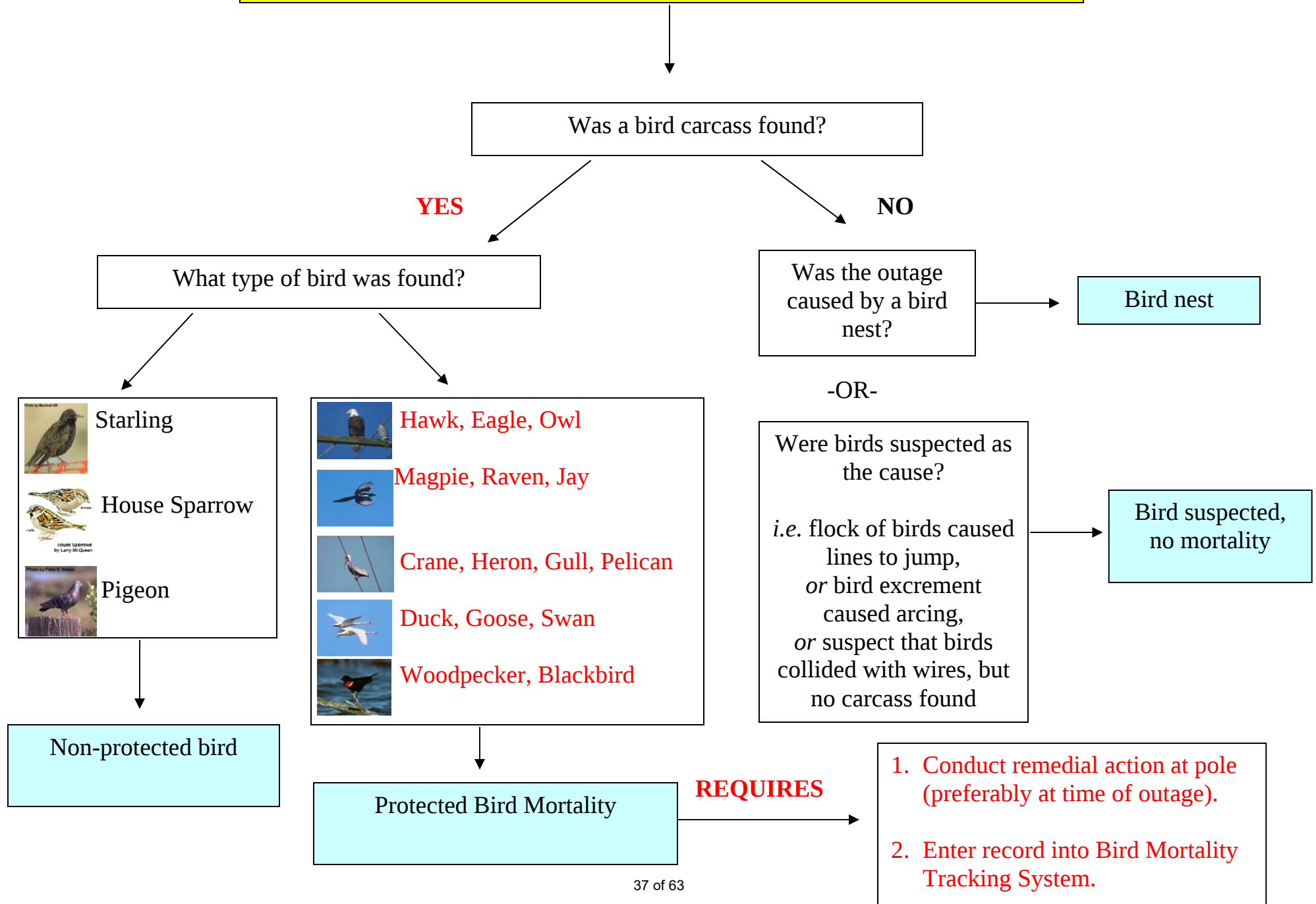
Hérons/egrets



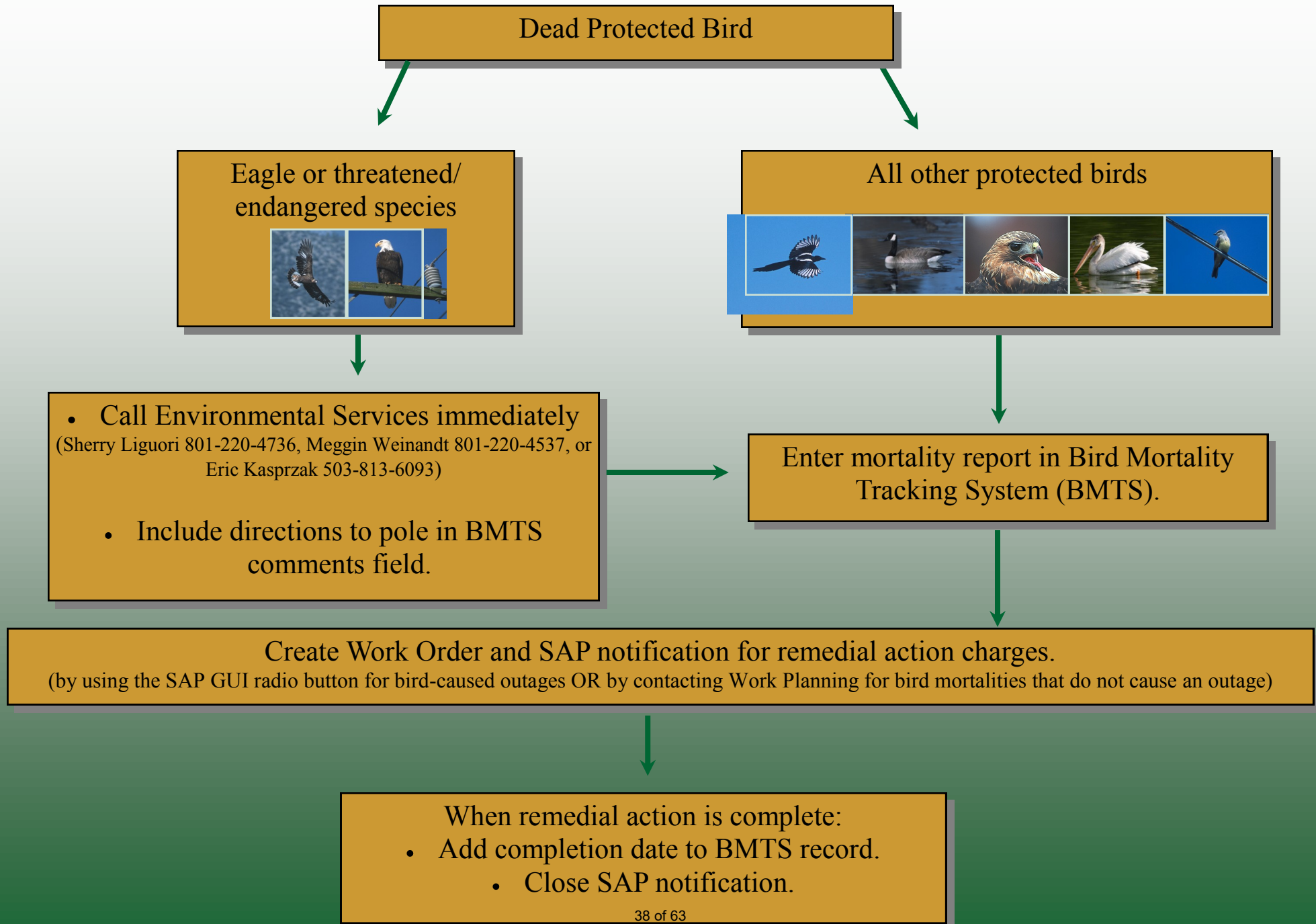
Cranes

Company policy requires remedial action at all poles where a protected bird was killed. Nearly all North American birds are protected (836 species) except starlings, house (English) sparrows, and pigeons.

Bird-caused outage
Follow this flow chart to determine an outage cause (blue boxes)



Service Coordinator Bird Flowchart



Raptor Orders & Guidelines



[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Avian Protection - Capital & Expense Order Guidelines

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Vegetation Management

Bird Nest

Eagle, threatened/endangered species, or colonial waterbird (includes cormorants and herons)



All other protected birds
 (see next page for examples of species)



Active or inactive nests

Active nest (eggs or young present)

Inactive nests (no eggs or young)

Stop work.

Contact PacifiCorp Forester and Environmental Services.

Note: Eagle and threatened/endangered species nests cannot be removed at any time, unless permitted to do so. PacifiCorp Forester and Environmental Services must be contacted if eagle or threatened/endangered species nests are found. In addition, buffers restricting activity may be placed around nests of eagles, other raptors, threatened/endangered species, and other birds.

Work can proceed.

*Note: Bird nests may be active from February through August.
 PacifiCorp Environmental Services contacts: Sherry Liguori 801-220-4736,
 Meggin Weinandt 801-220-4537, or Eric Kasprzak 503-813-6093*

Figure 7

APPENDIX B

Permits



Standard Conditions Migratory Bird Special Purpose Utility Permits 50 CFR 21.27

All of the provisions and conditions of the governing regulations at 50 CFR part 13 and 50 CFR 21.27 are conditions of your permit. Failure to comply with the conditions of your permit could be cause for suspension of the permit. The standard conditions below are a continuation of your permit conditions and must remain with your permit. If you have any questions regarding these conditions, refer to the regulations or, if necessary, contact your migratory bird permit issuing office. For copies of the regulations and forms, or to obtain contact information for your issuing office, visit: <http://www.fws.gov/migratorybirds/mbpermits.html>.

1. **Personal use.** This permit does not authorize personal use of any migratory birds, parts, nests or eggs salvaged, transported, or temporarily possessed under the authority of this permit.
2. **Banded Birds** (carcasses collected and injured birds) must be reported to the U.S. Geological Survey Bird Banding Laboratory at 1-800-327-2263 or <http://www.reportband.gov>. Information provided must include, as accurately as possible, species of bird, band number, date recovered, recovery location, and name and contact information of the person who recovered the carcass or bird.
3. **Subpermittees.** A subpermittee is an individual to whom you have provided written authorization to conduct some or all of the permitted activities in your absence. Subpermittees must be at least 18 years of age. As the permittee, you are legally responsible for ensuring that anyone conducting activities under your permit is adequately trained and adheres to the terms of your permit. You are responsible for maintaining current records of who you have designated as a subpermittee, including copies of designation letters you have provided.
4. **Carrying your permit.** You and any subpermittees must carry a legible copy of this permit and display it upon request of any duly authorized federal, state or tribal officer whenever exercising its authority. Subpermittees must also carry your written subpermittee designation letter.
5. **Records.** You must maintain complete and accurate records of the activities conducted and the data collected under this permit. You must keep all required records and collected wildlife parts relating to permitted activities at the location you identified in writing to the migratory bird permit issuing office. (50 CFR 13.46 and 21.27)
6. **Site inspections.** Acceptance of this permit authorizes the Director's agent to enter the utility property at any reasonable hour as necessary to inspect the wildlife, records, facilities, property, and associated infrastructure for wildlife impacted by the utility, and for compliance with the terms of this permit and governing regulations. (50 CFR 13.47)
7. **Applicable laws.** You may not conduct the activities authorized by this permit if doing so would violate the laws of the applicable State, county, municipal or tribal government or any other applicable law.
8. **Other permissions.** This permit does not authorize salvage of specimens on Federal, State, tribal, or other public or private property without additional prior written permits or permission from the agency/landowner/custodian.

(SPUT - 3/26/2014)

[illegible][illegible]

APPENDIX C

Examples of Common Avian Protection Standards

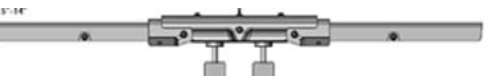
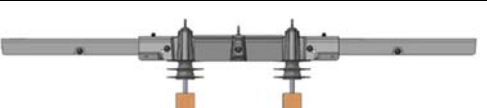
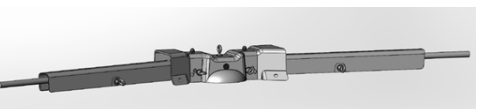
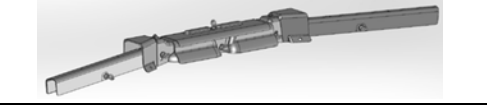
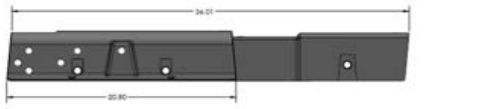
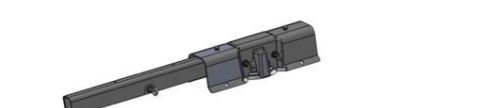
AVIAN PROTECTION MATERIAL					
Updated 2/8/18					
Manufacturer & Product description	Application	Standard	Manufacturer Part #	SI #	Photo
EcoElectrial - extra small tangent insulator cover	Designed to fit ANSI 55-2 & 55-3 porcelain insulators.	EV971I	EICG-9B-NP	8003880	
EcoElectrical -small single pin tangent insulator cover	All conductors and 25kV and 35kV glass insulators. 55-4 & 55-5 porcelain insulators.	EV 971C	EICG-1	7999268	
EcoElectrical -large single pin tangent insulator cover	All conductors and 35kV glass insulators and flower pot insulators. 55-6 porcelain insulator.	EV 971H	EICG-2	7999312	
EcoElectrical -Post insulator cover (3-piece cover fits tangent post insulators with built-in metal clamps)	All conductors and post insulators (stacked glass) with built-in clamps. ANSI Class 57 Series 57-11, 57-12 & 57-13.	EV 971L	ECT-1B-V	8000306	
EcoElectrical -Lindsey clamp tangent insulator cover (3-piece cover fits tangent insulators with lindsey clamps)	All insulators with Lindsey clamps	EV 971M	ELC-1B	8001203	
EcoElectrical -Vise-top single pin TANGENT insulator cover	All conductors and TANGENT vise-top (clamp-top) insulators	EV 971K	EVT-1B-H	8002161	
EcoElectrical -Vise-top single pin ANGLE insulator cover	All conductors and ANGLE vise-top (clamp-top) insulators	EV 971	EVTA-1B-NP	8004279	
EcoElectrical - small double-pin tangent insulator cover	All conductors and 25kV glass insulators. 55-4 & 55-5 porcelain insulators	EV 971F	EICG-1-DP	7999269	
EcoElectrical - large double-pin tangent insulator cover	All conductors and 35kV glass insulators. 55-6 porcelain insulator.	EV 971O	EICG-2B-DP-NP	8002955	
EcoElectrical --Vise-top double-pin tangent insulator cover	All vise-top (clamp-top) insulators	EV 971Q	EVT-1B-DP-NP	8002958	
EcoElectrical - small single pin angle insulator cover	All conductors and 25kV glass insulators. 55-4 & 55-5 porcelain insulators	EV 971A	EICG-4B-NP	8002960	
EcoElectrical - large single pin angle insulator cover	All conductors and 35kV glass insulators. 55-6 porcelain insulator.	EV 971B	EICG-5B-NP	8002971	
EcoElectrical - small double-pin angle insulator cover	All conductors and 25kV glass insulators. 55-4 & 55-5 porcelain insulators	EV 971P	EICG-4B-DPA-NP	8002956	
EcoElectrical - large double-pin angle insulator cover	All conductors and 35kV glass insulators. 55-6 porcelain insulator.	EV 971E	EICG-5B-DPA-NP	8002943	
EcoElectric - 2pc deadend insulator cover	Provides additional protection beyond length of deadend insulator (need to achieve 36 " total)	EV 971G	EDE-2	8002457	
EcoElectric -deadend insulator key	Used in addition to round pins on bolted dead ends to keep dead end cover upright	EV 971T	DEKey-1	8001243	
EcoElectric -Post insulator slack span cover (2-piece cover fits post insulator slack spans)	All conductors and post insulators (stacked glass) with built-in clamps in slack span situations. ANSI Class 57 Series 57-11, 57-12 & 57-13	EV 971R	ECTSS-1B	8000307	
EcoElectric - insulator cover pins	Additional pins for all EcoElectric insulator covers (covers come with pins)	EV 971U	BGP-6000	8000134	
Hendrix -Clamp-top Insulator	Used as jumper pin/stick pin insulators; to be used with covered wire or hose	EF 301	HPI-25VTP-01 HPI-35VTP-01	25kV:7999665 35kV:7999666	
Hendrix -Bolt for Clamp-top Insulator	Extra bolts for clamp-top insulators	EF 301	B-1	8001144	
Central Maloney -Spring-loaded Bushing cap	Transformer bushing cover that can be installed with a hot-stick	EV 921B	70380473	7999796	
Tyco Raychem - Bushing cap (for regulators)	Bushing cover to prevent animal contact	EV 921C	BCAC-7D/10	7999573	
Tyco Raychem- 12" inspection bushing cover	Bushing cover to prevent animal contact	SV 471	BCAC-IC-7D/12	8000319	
Tyco Raychem - Bushing cap (for reclosers)	Bushing cover to prevent animal contact	EV 921D	BCIC-4411	7999544	

Figure 1

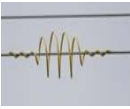
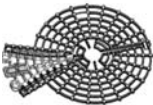
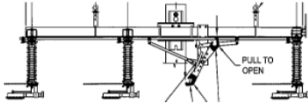
Tyco Raychem - 4"x 4" arrester/bushing cover	Will require outage for installation; may eliminate bug/pecking issues	SV 451	BCIC-4D/4	7999572	
Tyco Raychem - 5"x 6" arrester/bushing cover	Will require outage for installation; may eliminate bug/pecking issues	SV 451	BCIC-5D/6	7889165	
Tyco Raychem - 5" Arrester cap	Arrester cap cover to prevent animal contact	EV 985X	BCAC-G-AR-5D-2	7992710	
TycoRaychem -3.75" Arrester cap Cooper -3.75" Arrester cap	Arrester cap cover to prevent animal contact	EV 985D	BCAC-G-AR-3.75D-2 AV698X1-24PK	8001235	 
Arrester Bracket/Bolt Cover	Cover for the bracket of transformer mounted arresters	EV 983A	AV402X1	7992055	
Central Moloney -Arrester Bracket Cap	Cover for the bracket of transformer mounted arresters	EV 983B	70380349	8002623	
Tyco Raychem -Regulator series arrester cover	Regulator surge protector cover	EV 985B	BCIC-4D/7-20	7999500	
EcoElectric - Cutout cover (110-125 BIL)	Cutout cover to prevent animal contact but still allow fuse operation; can be installed hot	EV 151A	ECC-1	7992182	
EcoElectric - Cutout cover (150 BIL porcelain)	Cutout cover to prevent animal contact but still allow fuse operation; can be installed hot	EV 151B	ECC-3	7992181	
EcoElectric - Cutout cover (150 BIL polymer)	Cutout cover to prevent animal contact but still allow fuse operation; can be installed hot	EV 151C	ECC-2	7992738	
EcoElectric - Cutout cover (SMD-20 power fuses)	Cutout cover to prevent animal contact but still allow fuse operation; can be installed hot	EV 151D	ECC-10	7999498	
Tyco Raychem -Current Transformer Bushing Cover	Current transformer bushing cover (precut box cover) to prevent animal contact	EV 921F	BCIC-7/12/7-1(B3)	3091184	
Central Maloney -Voltage Transformer Bushing Cover	Voltage transformer bushing cover to prevent animal contact	EV 921E	70380340	3091183	
Covered conductor (#6-7 Str., Cu-covered, 80 mils)	Covered jumper wire, provides some insulating protection for animals	EC 951I	Various	7999036	
Covered conductor (#4-7 Str., Cu-covered, 80 mils)	Covered jumper wire, provides some insulating protection for animals	EC 951J	Various	7992803	
Covered conductor (#2-7 Str., Cu-covered, 80 mils)	Covered jumper wire, provides some insulating protection for animals	EC 951H	Various	8000301	
MidSun -Split Hose (0.5-in) Non-Split Hose (0.5-in) Split Hose (0.75-in) Split Hose (1.0-in) Split Hose (1.25-in) Split Hose (1.75-in)	Jumper wire and conductor covering, provides some insulation protection	EV 901A-E	E/INS-050-G E/TUBE-050/094-G E/INS-075-G E/INS-100-G E/INS-125-G E/INS-175-G	7991284 7999413 7889508 7885024 7991311 7885025	
Mid-Sun - Split hose installation tool	Tool that allows hot application of split hose on conductors		2494	7999699	
Ampact Connector Cover (Large) Ampact Connector Cover (Small)	Covers energized jumper connectors	DE 541	602107 602080	1310211 1310210	
Firefly -Fixed fireflies	Used to reduce risks of collisions with static or energized conductors up to 115 kV. Conductor size #2 and larger.	EV 121E	FF-HW	7991245	
BirdMark Diverter - SMALL clamp	Used to reduce risks of collisions with static or energized conductors up to 115 kV. Conductor size #2 and smaller.	EV 121L	BM-AG-SF6-16	8004274	
BirdMark Diverter	Used to reduce risks of collisions with static or energized conductors up to 115 kV. Conductor size 1/0 and larger.	EV 121J	BM-AG	8001251	
Firefly/BirdMark Installation Tool	Used to install Firefly and Bird Mark line markers	EV 121K		8003603	
Bird Flight Diverters	Used to reduce risks of collisions with static or energized conductors up to 115 kV	EV 121A-D	Various-dependent on wire size	Various; See EV121	
Swan Flight Diverters	Used to reduce risks of collisions with static or energized conductors up to 115 kV	EV 121F-I	Various-dependent on wire size	Various; See EV121	

Figure 1

Tyco Raychem- Barrier Disk (Squirrel Guard)	Physical barrier that can be installed by one person with hot stick to prevent animal contact	EV 935A	BISG-24-01	8000316	
Inverted Switch (25KV) Inverted Switch (35KV)	Reduces the risk of animal contact due to the location of the swithces below the crossarm	EM121	L26SLSUG3E23 L36SLSUG3E23	7999530 7999531	
Nest Platform (Wood)	Used for relocated raptor nests	EV131		Contact Eric if needed (503-813-6093)	
Fiberglass Crossarm	Used to discourage nesting by replacing double wooden crossarms on deadend and corner structures	EE741	Various	10ft= 7992709	

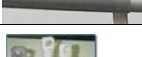
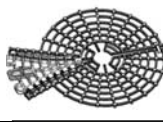
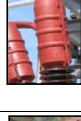
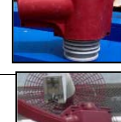
Description (Updated 2/16/17)	Photo		Manufacturer/part #	Stock Item Number
		Standard		
Small split hose 0.45-0.75" (quantity in feet)		SV 601	Tyco/Raychem - MVCC-G-19/.75(B50)	7999758
Medium split hose 0.75-1.125" (quantity in feet)		SV 601	Tyco/Raychem - MVCC-G-25/1.0(B25)	7999759
Split hose 0.5" & ≤ 0.4" (quantity in feet)		SV 601	Midsun-E/INS-050-G Tyco/Raychem-MVCC-G-10/.40	7991284
Split hose 0.75" (quantity in feet)		SV 601	Midsun-E/INS-075-G	7889508
Split hose 1.0" (quantity in feet)		SV 601	Midsun-E/INS-100-G	7885024
Split hose 1.25" (quantity in feet)		SV 601	Midsun-E/INS-125-G	7991311
Split hose 1.75" & 1.125-1.75" (quantity in feet)		SV 601	Midsun-E/INS-175-G Tyco/Raychem - MVCC-45/1.75x4(B24)	7885025
Split Hose 2.5 inch (quantity in feet)		SV 601	Midsun-E/INS-250-G	7885026
Split Hose 3.5 inch (quantity in feet)		SV 601	Midsun-E/INS-350-G	7885027
Split Hose 4.5 inch (quantity in feet)		SV 601	Midsun-E/INS-450-G	8004112
Grounding stud cover		SV 612	Midsun-E/GSC	7888726
Self-adhesive silicone tape		SV 602	Tyco/Raychem - MVFT-G-2-12	7999756
Heat-shrink tape - 2 inch		SV 603	Tyco/Raychem - HVBT-2-R	1005004
Covered wire (#6-7 Str., Cu-covered, 80 mils)		SV 611	Various	7999036
Covered wire (#4-7 Str., Cu-covered, 80 mils)		SV 611	Various	7992803
Covered wire (#2-7 Str., Cu-covered, 80 mils)		SV 611	Various	8000301
Wildlife Barrier Disk ("Squirrel Guard")		SV 621	Tyco/Raychem - BISG-G-24-01	8000316
Bus Support Insulator Cover ("T-cover")		SV 625	Tyco/Raychem - BCIC-7.5D/18-3	8000322
Large Bushing/Surge Arrester Cover		SV 455	Tyco/Raychem - BCIC-13D/13-HO	7992997
Medium Flared-bottom Bushing Cover		SV 475	Tyco/Raychem - BCIC-8D/15-HO	7889141
Large Flared-bottom Bushing Cover		SV 475	Tyco/Raychem - BCIC-8D/18-HO	7889164
Large Straight, Tall Bushing Cover		SV 491	Tyco/Raychem - BCIC-5.5D/16	7999545
Medium Straight, Tall Bushing Cover		SV 491	Tyco/Raychem - BCIC-5.5D/11	7999570
Large Right Angle Bushing Cover		SV 483	Tyco/Raychem - BCIC-10D/18-3	7992998
Medium Right Angle Bushing Cover		SV 483	Tyco/Raychem - BCIC-4411	7999544
Medium Hard-sided 2-piece Bushing Cover (10.5" tall)		SV 481	Tyco/Raychem - BCAC-7D/10	7999573
Large Hard-sided 2-piece Bushing Cover (14" tall)		SV 481	Tyco/Raychem - BCAC-8D/14	7999574
Large Inspection Bushing cover (18" tall)		SV 471	Tyco/Raychem BCAC-IC-8D/18	8000321
Medium Inspection Bushing cover (12" tall)		SV 471	Tyco/Raychem BCAC-IC-7D/12	8000319
Large Silicone Bushing Cover		SV 473	Midsun-E/BHC-L Midsun-E/BUSH-CV-LARGE	7886238
Large Silicone Bushing Cover Expansion Panel		SV 473	Midsun-E/BC-Lg-X-W	7886366
Large Silicone Bushing Cover Right Angle Expansion Panel		SV 473	Midsun-E/BC-Lg-X-WRA	7888329

Figure 2

Description (Updated 2/16/17)	Photo		Manufacturer/part #	Stock Item Number
		Standard		
Medium Silicone Bushing Cover		SV 473	Midsun-E/BHC-FS Midsun-E/BUSH-CV-FULL	7886237
Small Silicone Bushing Cover		SV 473	Midsun-E/BHC-HS	7886236
Regulator Series Arrester Cover		SV 411	Tyco/Raychem BCIC-4D/7-20	7999500
Spring-loaded Bushing Cover		SV 485	Central Maloney-70380473	7999796
Bushing/Arrester Cover (4"x 4")		SV 451	Tyco/Raychem - BCIC-4D/4	7999572
Bushing/Arrester Cover (5"x 6")		SV 451	Tyco/Raychem - BCIC-5D/6	7889165
Arrester Cover, 5" diameter		SV 401	Tyco/Raychem - BCAC-G-AR-5D-2	7992710
Arrester Cover, 3.75" diameter		SV 401	Tyco/Raychem-BCAC-G-AR-3.75D-2 Cooper-AV698X1-24PK	8001235
Cutout cover (110-125 BIL)		SV 305	EcoElectrical-ECC-1	7992182
Cutout cover (150 BIL porcelain)		SV 305	Eco Electrical-ECC-3	7992181
Cutout cover (150 BIL polymer)		SV 305	EcoElectrical-ECC-2	7992738
Cutout cover (SMD-20 power fuses)		SV 305	Eco Electrical-ECC-10	7999498
Voltage/Potential Transformer Bushing Cover		EV921	Central Maloney-70380340	3091183
Current Transformer Bushing Cover		SV 421	Tyco/Raychem-BCIC-7/12/7-1(B3)	3091184
Vacuum Switch Cover		SV 315	Tyco/Raychem-BCIC-8/12/2	7889142
Box Cover: 24"x 11"x 12"		SV 301	Tyco/Raychem BCIC-24/11/12-U	7999753
Box Cover: 12"x 12"x 5"		SV 301	Tyco/Raychem-BCIC-12/12/5-H	7999751
Box Cover: 14"x 19"x 6"		SV 301	Tyco/Raychem-BCIC-14/19/6-U	7999752
Box Cover: 4"x 12"x 4"		SV 301	Tyco/Raychem - BCIC-4/12/4-H	7999754
Box Cover: 4"x 16"x 4"		SV 301	Tyco/Raychem - BCIC-4/16/4-H	7999755
Box Cover: 7"x 12"x 7"		SV 301	Tyco/Raychem - BCIC-7/12/7-H	7999571
Hinged, Conical Termination Cover		SV 311	Tyco/Raychem - BCIC-SG-101-H2	7999750
Hard-sided 2-piece Termination Cover		SV 311	Tyco-Raychem - BCAC-4D/13-2	7999429
Barrier Board (44" square; 0.25" thick)		SV 640	Tyco/Raychem - RRBB-6.1.25M-B	7999569
Black Push Pins		SV 651	Tyco/Raychem - BCIC-Latch	7889168
Silicone Pins		SV 651	Midsun-E/Push Pins	7889461

Figure 2

APPENDIX D

Examples of Common Nest Management

Examples of problem nests and nest management practices



Potential problem nest



Problem nest in substation



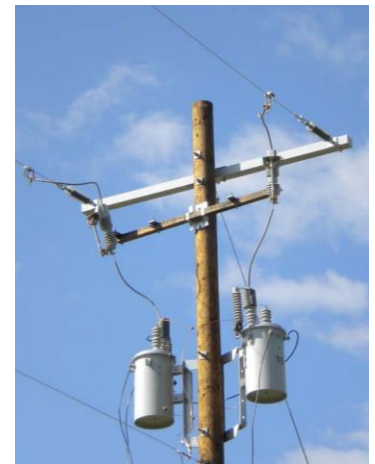
Ineffective nest discouragers



Problem nest relocated from above insulator string to nest tub



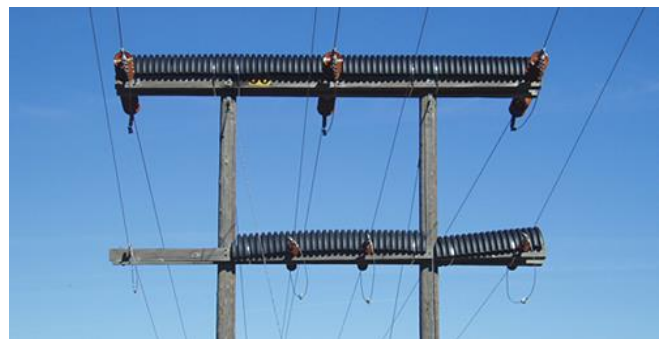
Separate pole with nest platform



Fiberglass deadend arm



Split PVC pipe nest discourager



Split drain pipe nest discourager

APPENDIX E

Reporting



Add Bird Mortality

Select Mortality: ▼

Save Undo Save as Draft

Mortality Id:

Bird Category*:

! Bird Category is required

Species:

Sign of Death*:

Company*:

State*:

County*:

Ops Area*:

Facility Type:

Circuit*:

Map String:

Facility Point*:

Number of birds*:

Date Found*:

Finder's Name*:

Finder's Phone:

Entered By:

Outage #:

SAP Notification #:

SAP Work Order #:

Remedial Action Due Date:

Remedial Action Complete Date:

Disposition of carcass:

Avian Protection - Capital Orders

Location	Order
CALIFORNIA	
[REDACTED]	[REDACTED]
OREGON	
[REDACTED]	[REDACTED]
WASHINGTON	
[REDACTED]	[REDACTED]

Avian Protection- O&M Orders

Location	Order
CALIFORNIA	
[REDACTED]	[REDACTED]
OREGON	
[REDACTED]	[REDACTED]
WASHINGTON	
[REDACTED]	[REDACTED]

If you have any questions please contact:

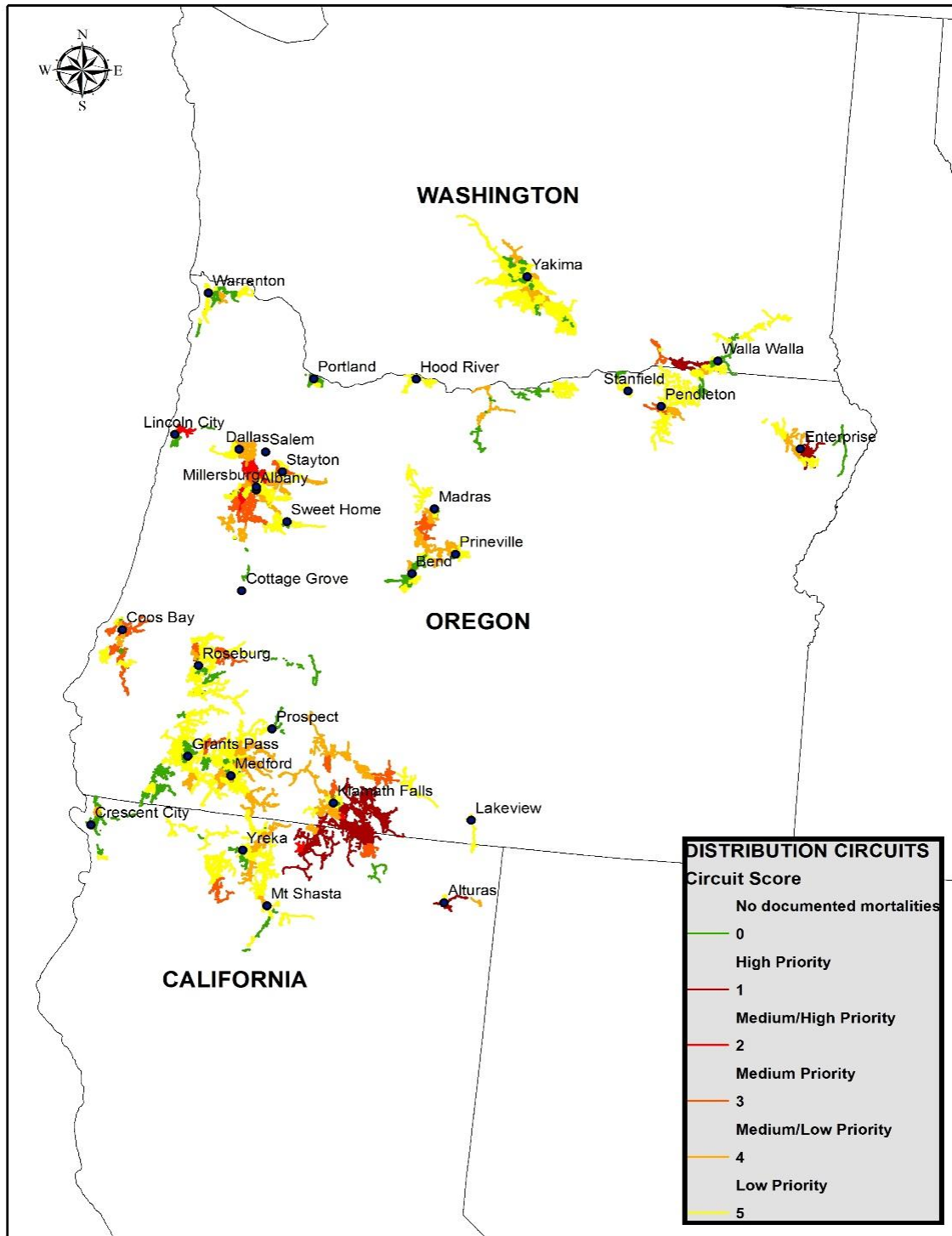
- *Use of these work orders - Carol Huston (NWW) or Jennifer Dwyer (SWW).*
- *Avian Protection or BMTS - Sherry Liguori (801)220-4736 or Meggin Weinandt (801)220-4537 or Eric Kasprzak (503)813-7026*

APPENDIX F

Risk Assessment

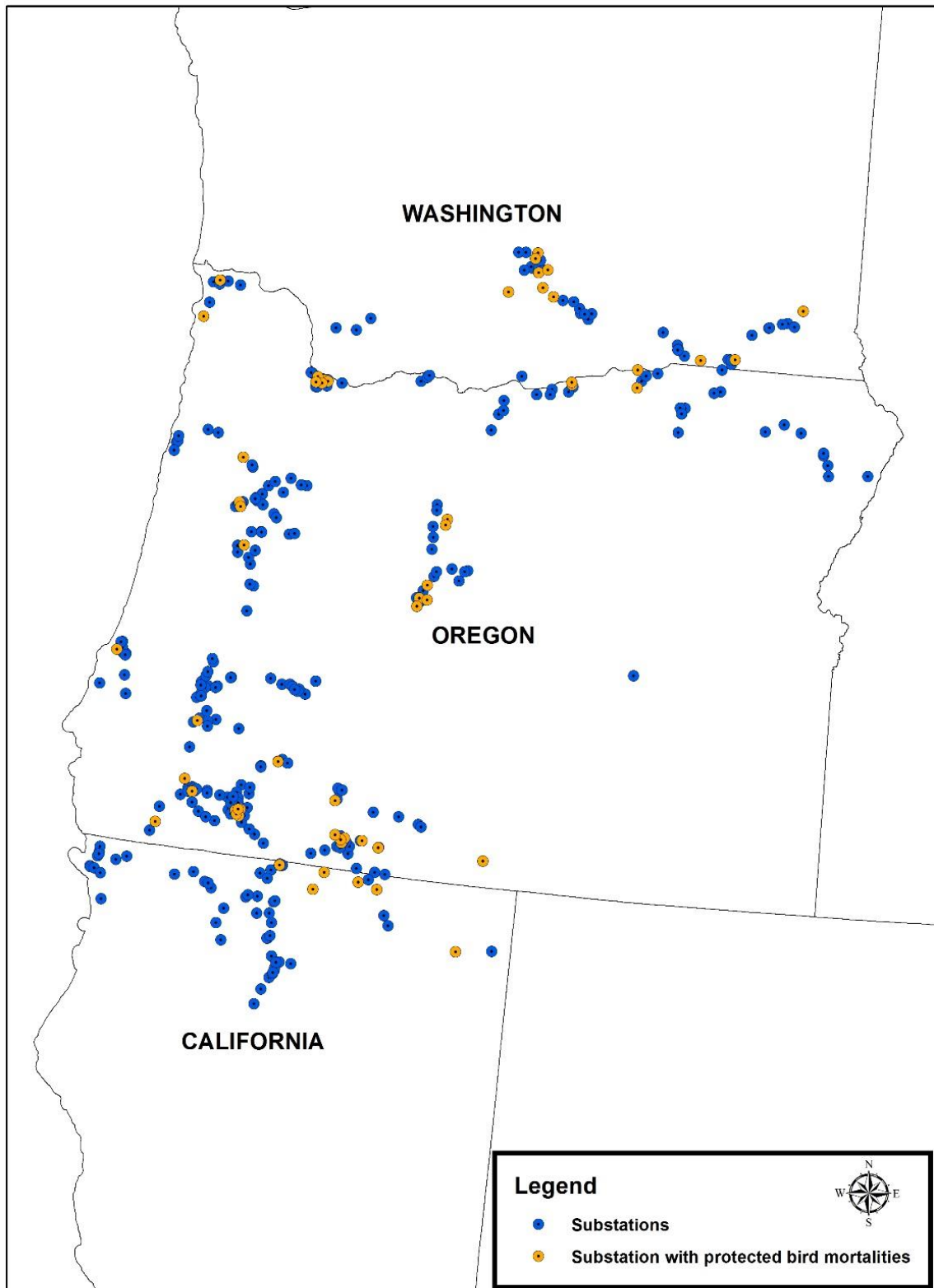
Bird Mortality Risk Areas, Pacific Power Distribution Lines

Mortality data from 1/1/2001 to 9/20/2014



Protected Bird Mortalities in Pacific Power Substations

Mortality data from 1/1/2001 to 9/20/2014



[illegible]