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APPENDIX B

Early History of Agency Action

Chapter 2 provides a brief history of the initial agency and industry response to the raptor electrocution problems identified after a systematic campaign to kill eagles was uncovered in the early 1970s. This Appendix provides additional detail for those interested in the process and people involved in this first, cooperative response.

In May 1971, the carcasses of 11 bald eagles *(Haliaeetus leucocephalus)* and four golden eagles *(Aquila chrysaetos)* were discovered in Jackson Canyon, near Casper, Wyoming, a traditional roosting place for both species. The toll eventually reached 24 birds. External examinations revealed no gunshot wounds, and there were no power lines in the area on which the birds could have been electrocuted. It was determined that several antelope carcasses had been laced with thallium sulfate (then a widely used predator control poison), and left as bait.

Surveys in Wyoming and Colorado uncovered a major shooting campaign. During August 1971, a Wyoming helicopter pilot told the Senate Environmental Appropriations Subcommittee that he had piloted several eagle hunts in the preceding seven months where roughly 560 eagles were killed. The shooting was commissioned by the father-in-law of the sheep rancher who had poisoned the eagles in Jackson Canyon. Revised testimony by the helicopter pilot set the estimate of eagle kills at nearly 800, and implicated at least 12 other Wyoming ranching companies. During the surveys in Wyoming and Colorado, more than 300 eagles were found dead near power lines (Turner 1971; Laycock 1973).

When the Jackson Canyon, Wyoming, incident and subsequent investigation revealed a close connection between raptor deaths and power lines, individuals, agencies, and concerned groups collaborated to study the problem and begin corrective action. On 19 January 1972, agency representatives met in Washington, D.C. to discuss the electrocution problem (U.S. Fish and Wildlife Service 1972). Agencies included the Rural Electrification Administration (REA; now the Rural Utilities Service), U.S. Forest Service (USFS), Bureau of Land Management (BLM), the U.S. Fish and Wildlife Service (USFWS), National Park Service (NPS), and Bureau of Indian Affairs (BIA). The USFWS coordinated the search for lethal lines, while the REA began developing line modifications to minimize eagle electrocutions.

In January 1972, Robert K. Turner, Rocky Mountain Regional Representative of the National Audubon Society, wrote to Thomas Riley of the Pacific Gas and Electric Company drawing attention to the raptor electrocutions in Colorado and Wyoming (R. Turner,

National Audubon Society, pers. comm. in APLIC 1996). The letter, forwarded to Richards S. Thorsell of the Edison Electric Institute (EEI)[33] in New York City, became the impetus for utility company participation, fund-raising, and publications aimed at decreasing power line hazards to eagles. Thorsell coordinated representatives from a group of western utilities[34] to assess the problem. They determined that grounding practices of 4 kV- to 69 kV-distribution lines (along with certain configurations of transformer banks, fused cutouts, lightning arresters, and conductor phase spacings) could be a substantial cause of raptor deaths. Engineering solutions were then to be developed in a cooperative public/private effort to help solve the problem of raptor electrocutions.

On 6 April 1972, EEI hosted a meeting in Denver, Colorado, the first of several workshops on eagle electrocutions and their relationship to power outages and other related issues (Olendorff 1972c). It was attended by representatives of western power companies, the REA, state and federal wildlife agencies, and conservation organizations.[35] Three concrete actions resulted:

1. The participants agreed to seek and implement power line modifications and restrictions that would be biologically and economically feasible and that would reduce raptor electrocutions.
2. A raptor mortality reporting system was established, to be administered by the USFWS.
3. Participants would document modifications with drawings and suggestions that could be used by private and public entities.

The REA, an agency of the U.S. Department of Agriculture, lends money to cooperatives that supply electricity primarily to customers in rural areas. As part of loan conditions, the REA sets minimum standards for power line design. Even before the Denver meeting, it had been determined that older three-phase and single-phase power lines presented the most serious electrocution problems for eagles. REA Bulletin 61-10, *Powerline Contacts by Eagles and Other Large Birds*, describes causes of raptor electrocutions resulting from certain grounding practices and conductor spacing (U.S. REA 1972). The bulletin included suggestions on how member companies could correct existing problem lines or design new lines that would be safe for eagles.

The USFWS raptor electrocution reporting system was instituted in 1973.[36] About 300 eagle carcasses and skeletons were found between 1969 and 1972. Subsequently, the number of reported eagle mortalities along power lines dropped to 123 in 1973, 88 in 1974, and 65 in 1975. No conclusions can be drawn from these figures, however, because other variables were involved that affect the reliability of the data. For example, during the same period, mid-winter golden eagle populations trended downward in response to a steep jackrabbit population decline one to two years earlier. The number of golden eagles electrocuted in Idaho declined during those years (Kochert 1980) when fewer golden eagles fledged. Additionally, reporting system figures are contradicted by findings of substantial numbers of eagle mortalities along power lines in some western states (Benson 1981; PacifiCorp, unpubl. data; Idaho Power, unpubl. data).

[33] Now located in Washington, D.C., EEI is an association of investor-owned electric utility companies in the United States and provides a committee structure and coordination for the industry.

[34] Including Idaho Power Company, Pacific Gas and Electric Company, Public Service Company of Colorado, Tucson Gas & Electric, Pacific Power and Light Company and Utah Power & Light Company (both currently PacifiCorp).

[35] Including Colorado Division of Wildlife, National Audubon Society, National Wildlife Federation, and USFWS.

[36] The USFWS reporting system of the 1970s is no longer in effect, although an internet-based reporting system has been recently developed by USFWS (see APP Guidelines, Appendix C).

APPENDIX C

Avian Protection Plan Guidelines

Avian Protection Plan Guidelines (Guidelines) were developed by the Avian Power Line Interaction Committee (APLIC) and the U.S. Fish and Wildlife Service (USFWS) in 2005. This appendix contains excerpts from the Guidelines. To download the Guidelines in its entirety, see www.aplic.org or www.fws.gov.

The following appendix provides guidance for implementation of each of the Avian Protection Plan (APP) principles listed below:

1. CORPORATE POLICY

The following is an example of a utility Bird Management Policy.

EXAMPLE 1: Bird Management Policy.

[Company] Bird Management Policy

Bird interactions with power lines may cause bird injuries and mortalities, which, in turn, may result in outages, violations of bird protection laws, grass and forest fires, or raise concerns by employees, resource agencies and the public.

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

To fulfill this commitment, [Company] will:

- Implement and comply with its comprehensive Avian Protection Plan (APP).
- Ensure its actions comply with applicable laws, regulations, permits, and APP procedures.
- Document bird mortalities, problem poles and lines, and problem nests.
- Provide information, resources, and training to improve its employees' knowledge and awareness of the APP.
- Construct all new or rebuilt facilities in rural areas (outside city limits or beyond residential/commercial developments) and in areas of known raptor use, where appropriate, to [Company] avian-safe standards.
- Retrofit or modify power poles where a protected bird has died. Modifications will be in accordance with APP procedures.
- Participate with public and private organizations in programs and research to reduce detrimental effects of bird interactions with power lines.

[Company] customer service and regulatory compliance will be enhanced and risk to migratory birds will be reduced through the proactive and innovative resolutions of bird power line interactions guided by this policy.

Signature _____ Date _____

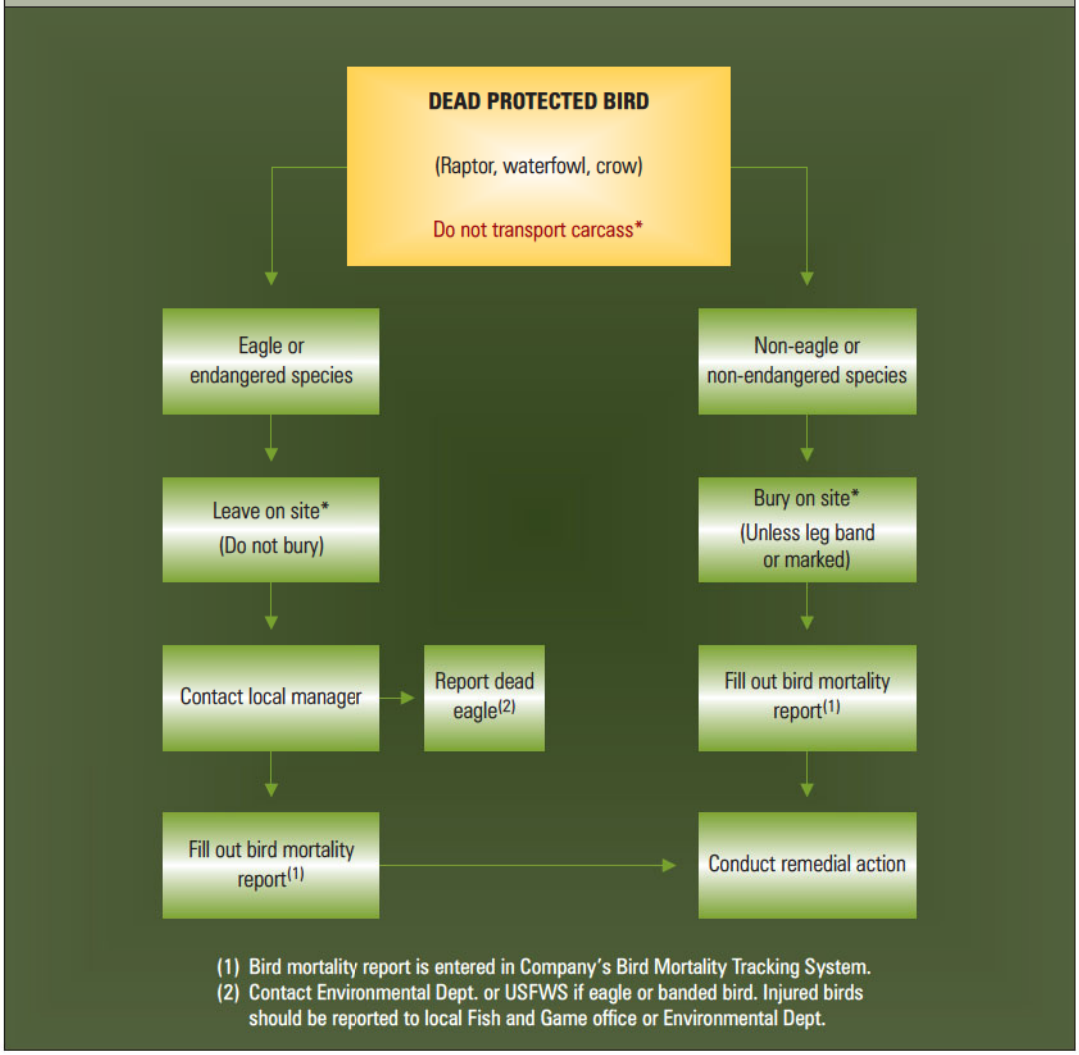
2. TRAINING

Training is an integral component of an APP. Workshops and short courses on avian/power line interactions are provided by APLIC (www.aplic.org) and the Edison Electric Institute (EEI, www.eei.org). A two-hour overview of avian electrocutions and collisions intended for training use is also available through the APLIC website as part of the APP "tool box."

The following are examples of PacifiCorp and Southern California Edison employee training materials, including:

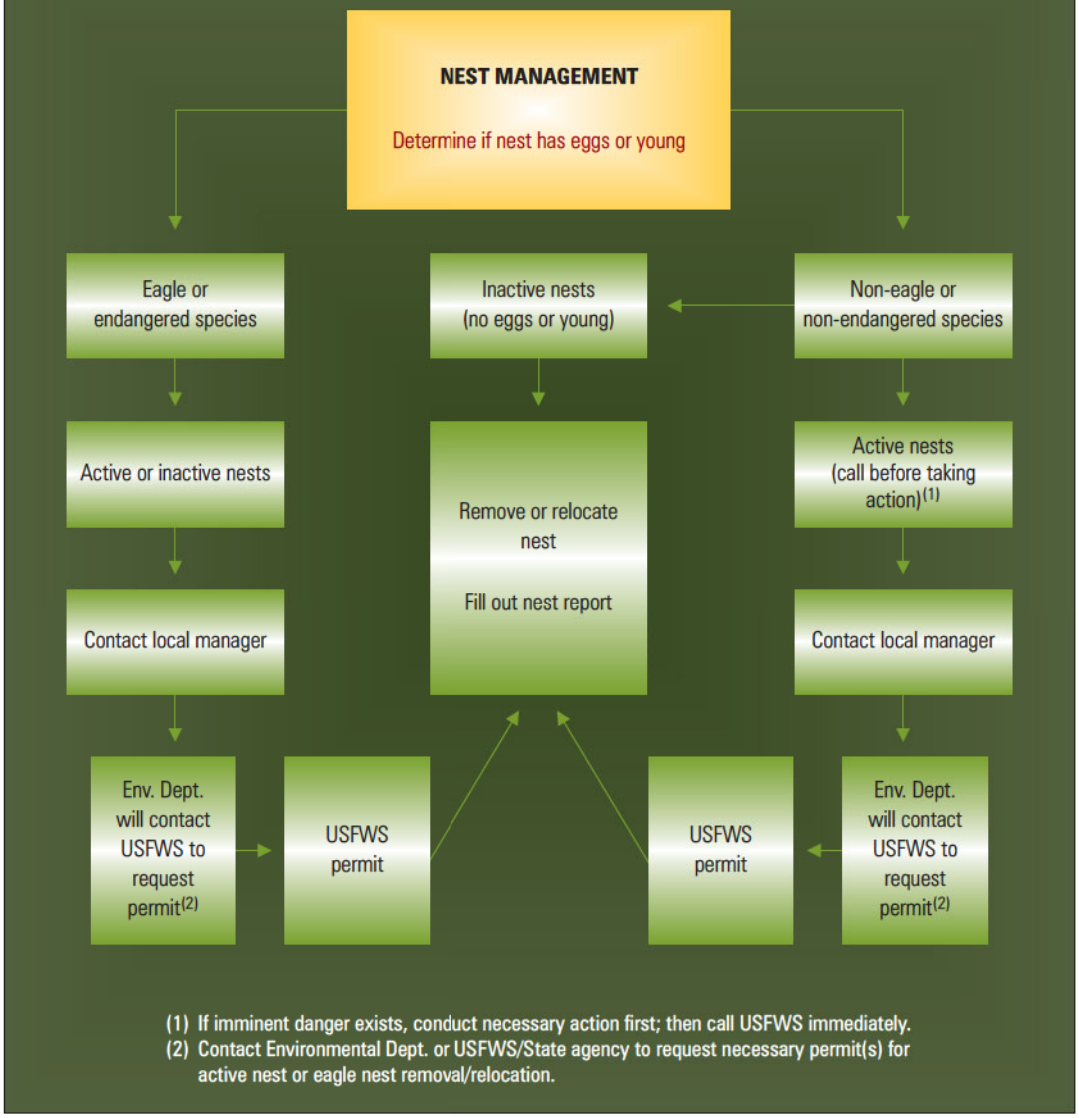
- Flow diagrams of company procedures for bird and nest management that can be distributed to field personnel as part of employee training.
- A brochure describing electrocution and nest issues and company raptor protection procedures.
- A brochure describing nest management procedures and protection.

EXAMPLE 2: Bird mortality flow diagram based on PacifiCorp training materials.*



* Individual utility permits may contain different conditions regarding transport or salvage of protected species.

EXAMPLE 3: Nest management flow diagram based on PacifiCorp training materials.*



(1) If imminent danger exists, conduct necessary action first; then call USFWS immediately.
(2) Contact Environmental Dept. or USFWS/State agency to request necessary permit(s) for active nest or eagle nest removal/relocation.

* Individual utility permits may contain different conditions regarding nest management of protected species.

EXAMPLE 4: "Raptor Protection Program" brochure, Southern California Edison.

SOUTHERN CALIFORNIA EDISON®
An *EDISON INTERNATIONAL®* Company

RAPTOR PROTECTION PROGRAM

Raptor Protection Program Goals

Raptors, or birds of prey, are meat-eating birds that include the hawks, eagles, and owls. Most species of raptors are protected under one or more laws and/or regulations.

Edison's Raptor Protection Program is designed to:

1. Reduce impacts to raptors.
2. Ensure compliance with state and federal laws and rules and regulations protecting these species.
3. Gather and provide information from operating divisions within Edison to Environmental Affairs on facility-caused electrocutions. This information will assist Environmental Affairs in responding to regulatory agency inquiries and provide informed responses to concerns expressed by the public.
4. Assist Company biologists in identifying problem areas where raptor protection may be required. Selectively identify and install cost-effective raptor protection devices to ensure Company compliance with existing laws and regulations.
5. Help identify and isolate where bird-caused outages occur so that these can be minimized, providing higher levels of quality service to our customers.

EXAMPLE 4: "Raptor Protection Program" brochure, Southern California Edison. (cont.)

Raptor Protection

Electrocutions

Raptors often perch or nest on transmission or distribution towers or poles. Occasionally, the birds will make accidental contact between phases or phase and ground, causing harm to or electrocuting the bird. These electrocutions are most common on distribution or subtransmission facilities where energized conductors are close together.

The number of electrocutions can be decreased by either designing the line to minimize contact between phases, or by retrofitting existing lines where necessary with a protective device that prevents this contact. Studies have demonstrated that raptors prefer certain poles for nesting and perching. By identifying these preferred poles, we can modify them, and thus greatly diminish the potential for raptor electrocutions in a cost-effective manner.

Nest Protection

In the absence of other suitable nest sites, raptors often use transmission towers and distribution poles for nesting. State and federal laws and regulations protect these nests from removal at certain times of the year without necessary permits. It is important that nests not be disturbed when eggs or young birds are in them.

Raptor Protection Program Procedures

1. All incidents of facility-related raptor mortality should be reported to your supervisor. You should then fill out the raptor mortality report form available in all district offices or from your supervisor. The completed form should be sent to Environmental Affairs in the General Office.
2. From February through June, nests should not be removed or disturbed. Under no circumstances should known eagle nests be disturbed at any time of the year.
3. If a nest is discovered during this February–June period that presents a hazardous situation for the continued safe operation of the line, try to trim the nest rather than remove it. If a nest must be removed, call Environmental Affairs. Environmental Affairs possesses or will obtain the necessary permits for removing nests.
4. If at any time you have questions regarding these procedures, please discuss them with your supervisor or call Environmental Affairs, Dan Pearson at PAX 29562, or Janet Baas at PAX 29541.

EXAMPLE 5: "Protection of Breeding Bird Nest Sites" brochure, Southern California Edison.

What to Do if You Are Working in Sensitive Areas or Find an Active Nest

- Avoid tree or shrub trimming to the extent feasible during the nesting season, especially in sensitive areas (riparian or sage scrub habitats).
- Limit noise during the nesting season to the extent feasible by turning off equipment when not in use and/or using equipment with mufflers.
- If a nest is found, **carefully** determine if the nest is active, that is, if it contains eggs or young. Do not touch the nest or its contents.
- If young are inadvertently knocked out of a nest or are found on the ground after trimming **call Environmental Affairs (EA) immediately.** If the young are small and the nest can be found and is intact, the young may be carefully replaced in the nest (using gloves). If the young are large and active or the nest can not be found or is not intact, the young should be protected and kept warm, if possible. EA will contact a rehabilitation expert for pick up.
- CONTACT EA IF YOU MUST WORK IN A SENSITIVE AREA DURING THE NESTING SEASON OR ENCOUNTER AN ACTIVE NEST THAT MUST BE REMOVED, TRIMMED, OR MAY BE DISTURBED BY VEGETATION CLEARING ACTIVITIES OR TO PROTECT PUBLIC HEALTH AND SAFETY. Note: eagle nests may never be removed or relocated at any time of year without clearance from the US Fish and Wildlife Service and the California Department of Fish and Game. Contact EA if it is necessary to handle an eagle nest in any way.

What to Do if You Have Questions

If you have any questions, such as whether or not you are working in a sensitive area, if there is the potential for sensitive species to be nesting where you will be working, or you find an active bird nest while you are working, contact your supervisor (first) or any of the following EA personnel:

Tracey Alsobrook	PAX 27547 or (626) 302-7547
Janet Baas	PAX 29541 or (626) 302-9541
Jill Farlss	PAX 28545 or (626) 302-8545
Dan Pearson	PAX 29562 or (626) 302-9562

Outside of normal business hours, you may contact these people through the Edison operator. All may be contacted by pager.

SOUTHERN CALIFORNIA EDISON®
An EDISON INTERNATIONAL® Company

PROTECTION OF BREEDING BIRD NEST SITES

Why SCE is Concerned About Bird Nests

Screech-owl (Cavity Nest)

EXAMPLE 5: "Protection of Breeding Bird Nest Sites" brochure, Southern California Edison. (cont.)

Virtually all birds in North America are protected by one or more state or federal laws. SCE must be in compliance with all laws and regulations protecting birds, their habitat, and nest sites. It is illegal to, among other things, pursue, hunt, harass, kill, or collect any migratory or listed bird species, including their eggs or nest. Fines and penalties, including jail, can be substantial for non-compliance.

When and Where Birds Nest

Most birds nest during the period from mid-February through August. The specific timing depends on several factors such as species of bird, its nest location (altitude and latitude), abundance of food, and weather. Birds nest in a wide variety of habitats, such as riparian areas (along streams, creeks, ponds), forests, beaches, deserts, and foothills. That is, anywhere adequate shelter and food for young can be found. Nesting sites within these habitats include trees, shrubs, holes and cavities in trees or dirt embankments, on cliff ledges, on the ground, and utility poles and towers.

Screech owl
(Cavity nest)

Killdeer
(Ground nest)

Cactus wren
(Twiggy mass in cactus or yucca)

Willow Flycatcher
(Small cup in willow shrubs)

Red-tailed hawk
(Moderately large twiggy nest in tall trees or other elevated locations)

Nest sizes range from very large, obvious structures made by eagles, to very small, inconspicuous, and camouflaged ones used by hummingbirds.

Bald eagle
(Branches in large tree or on rocky outcrop)

Anna's hummingbird
(Tiny cup in a shrub)

How to Locate and Avoid Disturbing Nesting Birds

- Be aware of when birds nest (**generally** mid-February through August).
- Be aware when working in especially sensitive habitats, such as riparian and sage scrub (at least partly natural areas with somewhat woody shrubs, below about 3,000 feet).
- Note any bird activity within shrubs or trees. If a bird appears agitated or reluctant to leave an area, it may indicate a nearby nest.
- Many nests are found between the ground and 10 meters high in shrubs and trees.
- Look for small dark, generally cup-shaped masses among the branches of shrubs or both small and larger masses in trees.
- Prior to trimming or cutting down trees, look for holes or cavities that may contain nests.

3. PERMIT COMPLIANCE[37]

A company should work with resource agencies to determine if permits are required for operational activities that may impact protected avian species. Particular attention should be given to activities that may require Special Purpose or related permits, including, but not limited to, nest relocation, temporary possession, depredation, salvage/disposal, and scientific collection.

While it is recommended that each utility developing an APP familiarize itself with the different permit types and their provisions located in 50 CFR part 21 (Migratory Bird Permits) (http://www.fws.gov/permits/mbpermits/regulations/regulations.htm), it is highly recommended that the utility make initial contact with the Migratory Bird Permit Examiner located in the USFWS Region where the utility is planning to implement its APP.

To acquire a permit application, contact the Migratory Bird Permit Office in the region where your business is headquartered or in the region (if it is different) where you propose to implement your APP. Information about regional boundaries can be accessed at http://permits.fws.gov/mbpermits/birdbasics.html then click on Regional Bird Permit Offices for locations and addresses. State permits may also be required to manage protected bird nests or for temporary possession of avian species. Specific information on required permits should be obtained from your state resource agency. Both state and federal agencies should be consulted as you develop your APP.

4. CONSTRUCTION DESIGN STANDARDS

In habitats that have electrical facilities and the potential for avian interactions, the design and installation of new facilities, as well as the operation and maintenance of existing facilities, should be avian-safe. Accepted construction standards for both new and retrofit techniques are highly recommended for inclusion in an APP. Companies can either rely upon construction design standards found in this document and in APLIC's Mitigating Bird Collisions with Power Lines: The State of the Art in 1994 (or current edition), or may develop their own internal construction standards that meet or exceed these guidelines. These standards should be used in areas where new construction should be avian-safe, as well as where existing infrastructure needs to be retrofitted. An APP may require that all new or rebuilt lines in identified avian use or potential problem areas be built to current avian-safe standards. Implementing avian-safe construction standards in such areas will reduce future legal and public relations problems and will enhance service reliability.

NEW CONSTRUCTION

Distribution, transmission and substation construction standards must meet National Electric Safety Code (NESC) requirements and should provide general information on specialized construction designs for avian use areas. Avian-safe construction, designed to prevent electrocutions, should provide conductor separation of 150 cm (60 in) (or a distance appropriate to the species expected in the area of the line) between energized conductors and grounded hardware, or utilities should cover energized parts and hardware if such spacing is not possible.[38]

MODIFICATION OF EXISTING FACILITIES

Modification of existing facilities is necessary when dead and/or injured birds are found,

[37] See Chapter 3 for additional information on regulations and permits.

[38] See Chapter 5 for additional information on construction design standards.

high-risk lines are identified, or legal compliance is an issue. A "problem pole" is one where there has been a documented avian collision, electrocution, or problem nest; or where there is a high risk of an avian mortality. The need for remedial action may result when "problem poles" are identified through bird mortality records, field surveys, or when the company is notified by agency representatives or concerned customers. System reliability concerns due to bird interactions may also result in requests from field operations staff.

SITE-SPECIFIC PLANS

The factors that create hazards for birds near power lines are complex and often site-specific. When a problem is identified, a site meeting with engineering and operations personnel along with company biologists or consultants brings the relevant expertise together for the most effective analysis. The timeframe for action will be based on agency requests, reliability concerns, public relations, budget, logistical and manpower constraints, and the biology of the affected species. Remediation of a few problem poles or spans often reduces problems over a wide area. Therefore, the most efficient solution for correcting a problem line is a site-specific plan that considers the local conditions (i.e., topography, avian populations, prey populations, land use practices, line configuration, habitat types, historical bird use areas). The plan should include recommendations for the most appropriate remedial action, and a timetable for job completion.

5. NEST MANAGEMENT

Raptors, and some other avian species, benefit from the presence of power line structures by using them for nesting.[39] Although electrocution of birds that nest on transmission towers is infrequent, nests themselves can cause operational problems. Nest removal generally does not solve the problem because most species are site-tenacious and rebuild shortly after the nest is removed. There are also regulatory and public relations components to nest removal (see Chapter 3). Further, companies may experience public relations and reliability benefits by providing safe nesting locations. All active nests (those with eggs or young present) of designated migratory birds are protected by the Migratory Bird Treaty Act. A permit issued by USFWS may be required before managing an active nest. If a problem with a nest is anticipated, permit requirements may be avoided by moving or removing the nest while it is inactive (excluding eagles and endangered/threatened species). The breeding season and nest activity varies by location and species, but for most North American raptors it falls between February 1 and August 31. However, a nest is considered active only when eggs or young are present. If there are questions about whether a problem nest is active or inactive, company environmental staff, USFWS, or state wildlife agencies should be consulted. A memorandum from USFWS on nest management and nest destruction is provided on the following page. This document can also be accessed online at http://permits.fws.gov/mbpermits/PoliciesHandbooks/MBPM-2.nest.PDF.

[39] See Chapter 6 for additional information on nest management.

United States Department of the Interior
FISH AND WILDLIFE SERVICE
Washington, D C 20240
MBPM-2
Date: APR 15, 2003

MIGRATORY BIRD PERMIT MEMORANDUM

SUBJECT: Nest Destruction

PURPOSE: The purpose of the memorandum is to clarify the application of the Migratory Bird Treaty Act (MBTA) to migratory bird nest destruction, and to provide guidance for advising the public regarding this issue.

POLICY: The MBTA does not contain any prohibition that applies to the destruction of a migratory bird nest alone (without birds or eggs), provided that no possession occurs during the destruction. To minimize MBTA violations, Service employees should make every effort to inform the public of how to minimize the risk of taking migratory bird species whose nesting behaviors make it difficult to determine occupancy status or continuing nest dependency.

The MBTA specifically protects migratory bird nests from *possession, sale, purchase, barter, transport, import,* and *export,* and *take*. The other prohibitions of the MBTA - *capture, pursue, hunt,* and *kill* - are inapplicable to nests. The regulatory definition of *take*, as defined by 50 CFR 10.12, *means to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt hunt, shoot, wound, kill, trap, capture, or collect.* Only *collect* applies to nests.

While it is illegal to collect, possess, and by any means transfer possession of any migratory bird nest, the MBTA does not contain any prohibition that applies to the destruction of a bird nest alone (without birds or eggs), provided that no possession occurs during the destruction. The MBTA does not authorize the Service to issue permits in situations in which the prohibitions of the Act do not apply, such as the destruction of unoccupied nests. (Some unoccupied nests are legally protected by statutes other than the MBTA, including nests of threatened and endangered migratory bird species and bald and golden eagles, within certain parameters.)

However, the public should be made aware that, while destruction of a nest by itself is not prohibited under the MBTA, nest destruction that results in the unpermitted take of migratory birds or their eggs, is illegal and fully prosecutable under the MBTA.

Due to the biological and behavioral characteristics of some migratory bird species, destruction of their nests entails an elevated degree of risk of violating the MBTA. For example, colonial nesting birds are highly vulnerable to disturbance; the destruction of unoccupied nests during or near the nesting season could result in a significant level of take. Another example involves ground nesting species such as burrowing owls and bank swallows, which nest in cavities in the ground, making it difficult to detect whether or not their nests are occupied by eggs or nestlings or are otherwise still essential to the survival of the juvenile birds. The Service should make every effort to raise public awareness regarding the possible presence of birds and the risk of violating the MBTA, the Endangered Species Act (ESA), and the Bald and Golden Eagle Protection Act (BGEPA), and should inform the public of factors that will help minimize the likelihood that take would occur should nests be destroyed (i.e., when active nesting season normally occurs).

The Service should also take care to discern that persons who request MBTA permits for nest destruction are not targeting nests of endangered or threatened species or bald or golden eagles, so that the public can be made aware of the prohibitions of the ESA and the BGEPA against nest destruction.

In situations where it is necessary (i.e., for public safety) to remove (destroy) a nest that is occupied by eggs or nestlings or is otherwise still essential to the survival of a juvenile bird, and a permit is available pursuant to 50 CFR parts 13 and 21, the Service may issue a permit to take individual birds.

Steve Williams
Director

6. AVIAN REPORTING SYSTEM

An important part of an APP is a utility's system for documenting bird mortalities and nest management activities. This system should be designed to meet the needs of the utility and be compatible with other data management and analysis programs. The system could be based on paper forms like the following examples or may be an internal web-based program. The information collected should be used to help a utility conduct risk assessments to identify avian problem areas and potential or known high risk structures. To protect birds and minimize outages, these data can be prioritized for corrective actions. Avian information collected by a utility should be maintained internally. Data may be required as a condition of an annual federal permit for direct take of birds or their nests. The USFWS does not issue "accidental, incidental or unintentional" take permits under authority of the MBTA.

In 2002, USFWS created an online bird electrocution reporting system for utilities (J. Birchell, pers. comm.). Initiated in Alaska, the system was developed to provide a central data repository and to encourage utilities to voluntarily report bird electrocutions. Information is collected on how, where, when, and why a bird electrocution or collision occurred and is used to help prevent future incidents. Utilities that use this reporting system hold an account to which only they can report and access their data. The online system also offers a forum for open discussion among utilities of retrofitting measures and their effectiveness. Though its use is growing, most of this system's current users are Alaska utilities. Since the inception of the USFWS reporting system, cooperation and communication between electric utilities in Alaska and USFWS have increased. By working together to address electrocution problems, USFWS is able to better protect wildlife resources while utilities are able to mitigate avian electrocution risks.

EXAMPLE 6: Dead bird/nest reporting form.

Dead Bird/Nest Form

Operations Area:

Dead Bird (circle one)	or	Nest (circle one)
Crow/magpie/raven		Active
Hawk/falcon/osprey		Inactive
Small bird (protected)		
Eagle		
Owl		
Waterfowl		
Unknown species		

Bird Count _____

Date Found _____ **Time Found** _____

Sign of Death (circle one)

Collision Electrocution Unknown Other _____

County _____

Finder's Name _____

Finder's Phone _____

Line Name/Circuit No. _____

Pole Identification No. _____

Recommended Action (circle)

Dead Bird Actions	*Nest Actions*
Cover transformer equipment	Install nest platform
Install insulator cover(s)	Relocate nest
Install triangle(s)	Trim nest
Reframe structure	Install nest discouragers
Replace structure	Remove nest
Remove pole	Evaluate to determine appropriate action
De-energize	No action
Install bird flight diverters/fireflies	
Continue to monitor line (Justification required)	
No action (Justification required)	

Comments _____

_____

_____

EXAMPLE 7: Dead Bird Reporting Form.

Animal/Bird Mortality Report

Date _____

Name _____

Work location _____ Phone _____

Describe the species of the animal or bird that was mortally injured (electrocution/collision)

_____

_____

If any bands or tags please return to Environmental Department or write number and agency here

_____

_____

Describe how the animal or bird was mortally injured (bird contacted transformer bushings, etc.)

_____

_____

_____

_____

Weather conditions at time of death if known (e.g. rainy and cold, sunny and warm, etc.)

_____

_____

_____

Circuit name & voltage _____

Specific problem location (e.g. pole #/address/cross streets, etc.)

_____

_____

_____

Description of terrain and vegetation in area (e.g. near agricultural area, urban area, residential, etc.)

_____

_____

_____

Recommended corrective action

_____

_____

Please attach picture of the bird or animal if possible.

EXAMPLE 8: Bird Nest Reporting Form.

Raptor/Bird Nesting Record

Date _____

Name _____

Work location _____ Phone _____

Species of raptor/bird (if known) _____

Circuit name and voltage _____

Specific nest location (pole no.) _____

Condition of nest

_____

_____

Are eggs or young birds apparent? If so, please describe.

_____

_____

_____

Description of terrain and vegetation in area (e.g. near agricultural area, urban area, residential, etc.)

_____

_____

_____

History of previous nesting on this circuit

_____

_____

_____

History of electrocutions/mortality on this circuit

_____

_____

_____

Recommendations

_____

_____

_____

Please attach picture of the bird and/or nest, if possible.

7. RISK ASSESSMENT METHODOLOGY

Thousands of utility poles are located in areas of suitable habitat for migratory birds. Because remedial actions on all poles in such areas are not economically or biologically necessary, a method is needed to identify configurations or locations of greatest risk. While utilities vary based on geographic scale, available data, and funding resources, risk assessment studies and models can be used by any utility to more effectively protect migratory birds.

Risk assessments may use existing data sources or new information collected specifically for the purpose. Electrocution risk assessment data may include habitat, topography, prey populations, avian nesting territories or concentration areas, avian use of poles, pole configuration, avian electrocutions, and bird-caused or unknown-cause outages. Although individual data layers alone may be inadequate for risk assessment, when all risk assessment data are overlaid, high-risk locations, configurations, or other factors may become apparent. Following a risk assessment, remedial actions can be prioritized throughout a utility's transmission and distribution system.

8. MORTALITY REDUCTION MEASURES

A utility can have its most cost-effective impact on reducing avian mortality by focusing efforts on the areas that pose the greatest risk to migratory birds. A risk assessment will often begin with an evaluation of available data that address areas of high avian use, avian mortality, nesting problems, established flyways, adjacent wetlands, prey populations, perch availability, and other factors that can increase avian interactions with utility facilities. The assessment may also include outage and circuit reliability information. Mortality reduction plans should use biological and electrical design information to prioritize poles in most need of repair. The causes of avian mortality and benefits to utility customers should be identified. A successful APP and mortality reduction plan require management support as well as the following:

- Assessment of facilities to identify risks
- Allocation of resources
- Standards for new or retrofit avian-safe construction
- Budget for operation and maintenance (O&M) and capital investment
- System for tracking remedial actions and associated costs
- Timely implementation of remedial measures
- Positive working relationship with agencies.

Mortality reduction plans may use strategies that include preventative, reactive, and proactive measures that focus on issues, risks, and reliability commitments facing a utility. The following are examples of how this multi-faceted approach may be used.

- **Preventative**: Construct all new or rebuilt lines in high avian use areas to Company avian-safe standards. Ensure that APP is in compliance with applicable laws, regulations and permits.
- **Reactive**: Document bird mortalities and problem nests; conduct assessment of problems and apply remedial measures where appropriate. Notify resource agencies in accordance with the company's permits and policy.
- **Proactive**: Provide resources and training to improve employee's knowledge and awareness. Partner with organizations that conduct research on effects of bird interactions with power lines. Evaluate electrocution and collision risks of existing lines in high avian use areas and modify structures where appropriate.

The USFWS and state agencies should be consulted on electrocutions and the remedial actions undertaken. Utilities should annually

review their APPs in the context of risk assessment and electrocution and collision incidents and modify as appropriate, ideally with agency input.

9. AVIAN ENHANCEMENT OPTIONS

While an APP will include measures to reduce avian mortality associated with electrical operations, it can also include opportunities to enhance avian populations by installing nest platforms, improving habitats, and collaborating with agencies or conservation organizations. USFWS and state wildlife resource agencies, as well as other experts, can be consulted for recommendations on habitat enhancement projects. Nest platforms can be erected on poles for birds such as osprey, eagles, hawks, owls, herons, and cormorants (see Chapter 6). In addition, nest boxes can be erected for cavity-nesting species such as kestrels, owls, bluebirds, swallows, chickadees, wrens, and others. Such boxes may also benefit bats and flying squirrels.

Nest box construction, maintenance, and monitoring can be done in conjunction with volunteers, such as Boy Scouts and Girl Scouts, or avian conservation organizations. These efforts are excellent opportunities to educate the public about the company's APP and its partnerships.

10. QUALITY CONTROL

A quality control mechanism can and should be incorporated into an APP to evaluate the effectiveness of a company's avian protection procedures. Some examples of quality control include assessing:

- the effectiveness of remedial action techniques in reducing avian mortality
- avian protection devices to identify products preferred for avian protection as well as ease of application and durability
- mortality reporting procedures to ensure that discoveries of avian mortalities are properly documented
- response to avian mortalities to ensure that appropriate actions are taken in a timely manner
- compliance with company procedures to ensure that personnel are consistently following company methods for avian-safe construction, mortality reporting, nest management, etc.
- public and agency opinions on system reliability and avian protection.

The quality control component of an APP is a continuous process. Information gathered during assessments of existing practices should be used to improve the effectiveness and timeliness of avian protection efforts, which, in turn, can help to reduce costs associated with such efforts.

11. PUBLIC AWARENESS

A public awareness program can be an integral part of an APP. It can be used to enhance public awareness and support for a company's APP. It allows stakeholders such as government agencies, tribes, non-profit organizations, wildlife rehabilitators, and other interested parties an opportunity to provide input to the decision-making process, enabling all parties to work openly and collaboratively towards recommendations that can be effectively implemented. This collaboration often leads to improved relationships within the community and to more efficient and positive projects. The relationships developed through this process may also encourage the public to report bird

mortalities and encourage them to seek assistance for birds that have been injured in power line-related accidents.

Effectively communicating an APP can be done through a variety of public outreach tools, including fact sheets, newsletters, brochures, videos, websites, and speaker bureau presentations. These tools can also be used to record the successes of an APP, thereby documenting the utility and electric industry's efforts to reduce avian mortalities. The goal of these outreach efforts is to convey to the public that electric utilities are responsible stewards of the environment, working cooperatively with wildlife agencies towards reducing avian mortalities while continuing to provide safe, reliable, affordable electricity to their customers.

Many utilities have examples of their environmental stewardship and of the innovative ways they have reduced environmental impacts through their business decisions. A company's efforts to minimize avian mortalities should be shared with the public and resource agencies.

12. KEY RESOURCES

Key resources may include utility personnel or external contacts. Internal personnel may include representatives from environmental, engineering, operations and maintenance, standards, procurement, outage management, and other departments. External resources may include biologists and law enforcement agents from state and federal agencies, as well as avian specialists from NGOs or universities, and wildlife rehabilitators. External utility industry resources include APLIC, Edison Electric Institute (EEI), Electric Power Research Institute (EPRI), Institute of Electrical and Electronics Engineers (IEEE), National Rural Electric Cooperative Association (NRECA), and Rural Utilities Service (RUS). Contact information and websites for a number of resources are available in the complete APP Guidelines (see www.aplic.org or www.fws.gov).

APPENDIX D

Glossary

adult
a bird that has acquired its final plumage.

air-gap
the empty space or "window" around conductors on a steel transmission structure. The empty space provides insulation for the conductors. A fault can occur when something bridges all or a sufficient portion of the air gap between the steel tower and an energized conductor.

ampere
unit measure of current.

avian-safe
a power pole configuration designed to minimize avian electrocution risk by providing sufficient separation between phases and between phases and grounds to accommodate the wrist-to-wrist or head-to-foot distance of a bird. If such separation cannot be provided, exposed parts are covered to reduce electrocution risk, or perch management is employed. This term has replaced the term "raptor-safe" used in the 1996 edition of *Suggested Practices*.

Basic Insulation Level (BIL)
the measure of a line's ability to withstand rapidly rising surge voltages such as those resulting from lightning strikes. It is provided by porcelain, wood, fiberglass, air, or combinations of these. Using the same insulators, a line built on wood poles will have a higher BIL than one built on concrete or steel poles unless the insulator bases are grounded on the wood poles. BIL is also affected by pole framing. For example, if the phase conductors and neutral conductors are both framed on wood crossarms, the BIL is reduced.

bushing (transformer)
an insulator inserted in the top of a transformer tank to isolate the electrical leads of the transformer winding from the tank. Bushings are usually made of porcelain, and are also used on circuit breakers and capacitor banks.

bushing cover
a covering installed over a bushing to prevent incidental contact by birds or other animals.

capacitance
the capacity of the condenser to hold an electrical charge; the property of an electrical nonconductor for storing energy.

capacitor
a device consisting of conductors isolated in a dielectric medium; each capacitor is attached to one side of a circuit only. It is used to increase the capacitance of a circuit. Capacitors are constructed in metal tanks and have bushings.

capacitor bank
a series of capacitors connected together and inserted into an electrical circuit to change the efficiency of the energy use.

circuit (single)
a conductor or system of conductors through which an electric current is intended to flow. The circuit is energized at a specified voltage.

circuit (multiple)
a configuration that supports more than one circuit.

conductivity
the capacity to transmit electrical energy.

conductor
the material (usually copper or aluminum)—usually in the form of a wire, cable or bus bar—suitable for carrying an electric current.

configuration
the arrangement of parts or equipment. A distribution configuration would include the necessary arrangement of crossarms, braces, insulators, etc. to support one or more electrical circuits.

corona ring
a device used on transmission suspension insulators to reduce the electrical field stress at the end fittings.

corvid
birds belonging to the family Corvidae; includes crows, ravens, magpies, and jays.

crossarm
a horizontal supporting member used to support electrical conductors and equipment for the purpose of distributing electrical energy. Can be made of wood, fiberglass, concrete, or steel, and manufactured in various lengths.

current
a movement or flow of electricity passing through a conductor. Current is measured in amperes.

davit arm
a formed, laminated wood or steel crossarm attached to wood or steel poles and used to support electrical conductors or overhead ground wires.

de-energized
any electrical conducting device disconnected from all sources of electricity.

dielectric strength
the ability of an insulating material to withstand the electrical voltage stress of the energized conductor.

distribution line
a circuit of low-voltage wires, energized at voltages from 2.4 kV to 60 kV, and used to distribute electricity to residential, industrial and commercial customers.

electrode
a conductor used to establish electrical contact with a nonmetallic part of a circuit. In the case of testing the conductivity of an eagle feather, electrodes were attached to both ends of the feather, and electrical current was passed through the feather.

energized
any electrical conducting device connected to any source of electricity.

fault
a power disturbance that interrupts the quality of electrical supply. A fault can have a variety of causes including fires, ice storms, lightning, animal electrocutions, or equipment failures.

fledgling
a bird that has recently left the nest and may still be dependent on its parents for food.

fused cutouts
electrical switches fitted with a fuse, so that the switch will open when the current rating of the fuse is exceeded. Fused cutouts are used to protect electrical equipment and circuits from lightning and short-circuiting caused by wires, wind, animals, or conductive equipment of all kinds.

generation plant
a facility that generates electricity.

ground
an object that makes an electrical connection with the earth.

ground rod
normally a copper-clad steel rod or galvanized steel rod, driven into the ground so that ground wires can be physically connected to the ground potential.

grounding conductor
a conductor used to bond all of the bolts and other pole/line hardware to the ground. Grounding conductors may be copper-clad, solid copper or stranded galvanized wires and are attached to poles with staples. Sometimes also called *downwire*.

guy
secures the upright position of a pole and offsets physical loads imposed by conductors, wind, ice, etc. Guys are normally attached to anchors that are securely placed in the ground to withstand loads within various limits.

hacking
the process of transitioning birds reared in captivity to independence in the wild. Hacking has been used to bolster populations of endangered species such as peregrine falcons, California condors, and bald eagles.

insulator
nonconductive material in a form designed to support a conductor physically and to separate it electrically from another conductor or object. Insulators are normally made of porcelain or polymer.

isokeraunic level
refers to the average number of thunderstorm (lightning) days per year that are present in a region. Electric lines in areas of high levels may have overhead grounding conductors (static wires) installed so that lightning strikes to the line can be diverted directly to earth away from the phase conductors.

jumper wire
a conductive wire, normally copper, used to connect various types of electrical equipment. Jumper wires are also used to make electrical conductors on lines continuous when it becomes necessary to change direction of the line (e.g., angle poles, dead-end poles).

juvenile
(plumage)—first plumage of a bird. *(bird)*—a young bird in its first year of life.

kilovolt
1000 volts, abbreviated kV.

latticework
the combination of steel members connected together to make complete structures, such as transmission towers or substation structures.

lightning arrester
an electrical protection device used to divert the energy of lightning strikes to the earth.

lightning days
lightning or thunderstorm days. One or several lightning storms in the same day would be classed as a lightning day.

nest substrate
the base upon which a nest is built, e.g. cliffs, trees, ground, power poles, boxes, platforms, etc.

nestling
a young bird that has not yet reached sufficient size and maturity to leave the nest.

neutral conductor
a conductor or wire that is at ground potential, i.e., grounded.

outage
event that occurs when the energy source is cut off from the load.

phase
an energized electrical conductor.

phase-to-ground
the contact of an energized phase conductor to ground potential. A bird can cause a phase-to-ground fault when fleshy parts of its body touch an energized phase and ground simultaneously.

phase-to-phase
the contact of two energized phase conductors. Birds can cause a phase-to-phase fault when the fleshy part of their wings or other body parts contact two energized phase conductors at the same time.

pole
a vertical structure used to support electrical conductors and equipment for the purpose of distributing electrical energy. It can be made of wood, fiberglass, concrete, or steel, and manufactured in various heights.

power line
a combination of conductors used to transmit or distribute electrical energy, normally supported by poles.