Avian Protection Plan
Seattle City Light

October 2023
Version 3

Prepared by:

Natural Resources & Hydro Licensing Division
Seattle City Light

Table of Contents

List of Figures

List of Tables

List of Appendices

1 Introduction

Seattle City Light (City Light) first submitted an Avian Protection Plan to the U.S. Fish and Wildlife Service (USFWS) in 2014 to provide a basis for compliance with the Migratory Bird Treaty Act (MBTA). Since then, City Light has been implementing protective and mitigative measures under the Plan. This 2020 version presents updated information on applicable laws and regulations, avian-caused power outages and new protection standards.

The purpose of City Light's **Avian Protection Program (APP)** is to minimize bird injuries and mortalities caused by City Light power lines and other equipment. The basis for the APP is provided by City Light **Standard Operating Procedure (SOP) I-1000**, Avian Protection and System Reliability (Appendix A). Implementation of the APP ensures compliance with state and federal regulations, guidelines and best practices; increases system reliability; and promotes positive recognition from regulators and the public. The APP applies to all City Light-owned facilities, equipment, and power lines and is administered by the Natural Resources and Hydro Licensing (NRHL) Division within the Environment, Land and Licensing Business Unit (ELLBU). City Light's APP was developed using the guidance prepared by the USFWS and Edison Electric Institute's Avian Power Line Interaction Committee (APLIC).

This **Avian Protection Plan (Plan)** provides the framework for the APP. It documents City Light's policies and procedures for 1) responding to and documenting bird/electrical equipment interactions when they occur, and 2) reducing overall avian risk to electrical generation, transmission and distribution systems, and related infrastructure. The Plan also describes the 12 major components of the APP and summarizes the recent history of power line-avian interaction problems at City Light.

The Plan is intended to serve as a reference to assist City Light personnel in managing avian related issues. The Plan will be updated periodically by the NRHL Division, in coordination with federal and state authorities, to incorporate new information and maintenance procedures. The most recent version of this Plan can be downloaded from the APP page on the City Light's website (http://www.seattle.gov/light/enviro/avian/); hard copies can be obtained by contacting City Light's NRHL Division at (206) 386-4506.

The remainder of this introductory chapter provides additional background on regulatory requirements, City Light's environmental stewardship policy, and energy reliability considerations of the APP.

1.1 Regulatory Requirements

There are three federal laws that protect birds in the United States: 1) the Migratory Bird Treaty Act of 1918 (16 USC 703-712), 2) the Bald and Golden Eagle Protection Act, and3) the Endangered Species Act. These Acts generally prohibit "take", which is any activity that results in harassing, harming, pursuing, wounding, killing, trapping, capturing, or collecting a protected species. The USFWS is the federal agency principally responsible for enforcement of the three Acts. Under Washington State law (RCW 77.15.130) the nests of birds, with few exceptions, are protected from removal or disturbance. The Washington Department of Fish and Wildlife (WDFW) is responsible for enforcement of this statute.

1.1.1 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918, as amended, makes it "*…unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or in part, of any such bird or any part, nest, or egg thereof.... (The Act) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of Interior.*"

It is a misdemeanor offense to take a bird species protected by the MBTA. The law also includes a provision for strict liability, meaning there is no need for the USFWS to prove intent, negligence or fault. Individuals, as well as corporations, have been prosecuted under the MBTA with corporate officers subject to imprisonment. Several electric utilities in the western U.S., including PacifiCorp, Pacific Gas and Electric, and Moon Lake Electric, were taken to court and fined under the MBTA in the 1990s and early 2000s for the unintentional electrocution of golden eagles and other raptors. For years, many industries and other organizations have lobbied Congress and successive administration to change the strict liability provision of the MBTA.

On January 10, 2017, the U.S. Department of the Interior, Office of the Solicitor, issued Opinion M-37041 that reinforced the strict liability provision, concluding that the MBTA, as written, did indeed prohibit the taking and killing of migratory birds by any means and in any manner, including the incidental taking and killing. Incidental take is defined as take that results from an activity but is not the purpose of that activity. In other words, it is accidental. Opinion M-37041 was suspended, pending legal review on

February 6, 2017, and on December 22, 2017 the Office of the Solicitor issued a memorandum (M-37050) permanently withdrawing and replacing this opinion. M-37050 concluded that the "MBTA's prohibition on pursuing, hunting, taking, capturing, killing, or attempting to do the same applies only to direct and affirmative purposeful actions that reduce migratory birds, their eggs, or their nests, by killing or capturing, to human control."

In January 2020, the Department of Interior proposed a rule to codify M-37050, narrowing the scope of the MBTA to include only the intentional injury or death of birds. However, the proposed rule was set aside by the United States District Court on August 11, 2020. As stated by the Court, the law of the land has, for decades, interpreted the MBTA to "broadly criminalize killing migratory birds as a misdemeanor, subject to reasonable agency regulation and case-by-case adjudication". As a result, the MBTA continues to prohibit the incidental/unintentional/accidental take from an otherwise lawful activity and may result in criminal prosecution subject to USFWS's enforcement discretion.

The MBTA protects the nearly 1,000 species of migratory birds (50 CFR 10.13) native to the United States. The list of protected species includes waterfowl, shorebirds, seabirds, wading birds, raptors (eagles, hawks, falcons, and owls), and passerines ("songbirds"). Generally, the only species not protected in the area covered by City Light's APP are gallinaceous birds (pheasant and quail), and the non-native pigeon (*Columba livia*), European starling (*Sturnus vulgaris*), Eurasian collard dove (*Streptopelia decaocto*) and English house sparrow (*Passer domesticus*).

1.1.2 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) of 1940 (16 USC 668-688d) prohibits taking or killing these two species. The definition of take in the BGEPA has not changed and applies to incidental death or injury as well as intentional. The BGEPA imposes criminal and civil penalties, including enhanced penalties for subsequent offenses. Penalties for violations of the BGEPA are up to $250,000 and/or 2 years imprisonment), with fines doubled for organizations. Violations are defined as felonies.

Bald eagles (*Haliaeetus leucocephalus*) are relatively common throughout Washington and could be impacted by City Light power lines in Seattle and at all the hydro plants. Golden eagles (*Aquila chrysaetos*) occur primarily east of the Cascade Mountains. Although there are records of this species in western Washington, including a nest along the Skagit River, golden eagles are mostly likely to be found near the Boundary Project.

1.1.3 Endangered Species Act

The Endangered Species Act (ESA) of 1973 (16 USC 1531-1543) was passed to protect endangered and threatened species and to provide a means to conserve their ecosystems. This law directs federal agencies to use their authorities to conserve listed species, as well as "candidate" species that may be listed in the near future and ensure that the agency's actions do not jeopardize the continued existence of these species. Under Section 9 of the ESA, it is unlawful to "take" a listed species. Take is defined as "…to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." The Secretary of the Interior has defined the term "harm" as "an act which actually kills or injures wildlife by significantly impairing essential behavioral pattern, including breeding, feeding, or sheltering." Violations of the ESA are punishable by fines and imprisonment

Currently, there are six bird species in Washington State that are protected under the ESA: northern spotted owl (*Strix occidentalis*), marbled murrelet (*Brachyramphus marmoratus*), western snowy plover (*Charadrius nivosus*), yellow-billed cuckoo (*Coccyzus americanus*), streaked horned lark (*Eremphila alpestris strigata*), and short-tailed albatross (*Phoebastria albatrus*). The snowy plover and short-tailed albatross are strictly coastal species, well away from City Light transmission, distribution, and generation systems. The occurrence of spotted owls, marbled murrelets, streaked horned larks, or yellow-billed cuckoos in the vicinity of City Light's facilities is possible but would be very unusual.

1.2 Environmental Stewardship

City Light's mission is *to deliver customers affordable, reliable and environmentally responsible electrical services*. City Light's mission is further defined by its commitment to values of environmental stewardship, excellence, and customer care. Protecting birds from the negative effects of our operations is environmentally responsible and increases the reliable delivery of electricity to our customers.

1.3 Energy Reliability

City Light must operate the utility in a manner that provides maximum electricity reliability, while controlling costs to ratepayers. Avian electrocutions and collisions can be significant causes of power outages. For example, between 2007 and 2018, birds caused over 2,500 power outages, an average of 227 per year, in City Light's Service Territory. These outages not only negatively affect customers who lose power, but also increase the overall cost to the utility. One outcome of implementing an APP is a reduction in the long-term frequency of avian-caused outages. By making small investments to prevent electrocutions and collisions from reoccurring in the same locations, energy reliability can be improved, and cost savings passed on to customers.

2 Background

2.1 Summary of Avian-Power Line Issues

Birds can be injured or killed by power lines through electrocution or collision. Observations of eagle deaths in the 1970s raised some of the first serious concerns about the effects of power lines on raptors and other birds. Large birds, particularly raptors (eagles, hawks, ospreys), often use power poles for perching for hunting, feeding, or roosting. Some species also occasionally use, or attempt to use, power poles and other electrical equipment as structures for nesting. In a survey conducted by APLIC in 2005, electric utilities reported that birds caused up to 10% of all outages (APLIC 2006).

2.1.1 Electrocution

A bird can be electrocuted when it completes an electrical circuit by simultaneously touching two uninsulated energized parts or energized and grounded equipment. Avian electrocutions generally occur on distribution lines because conductors on of most these lines are narrowly spaced and can be bridged by birds, particularly those with large wing spans. Similarly, electrical equipment, such as transformers, with numerous closely spaced energized parts can present an electrocution hazard to even small birds. Transmission lines that carry more than 138 KV have much wider spacing between conductors than do distribution lines and cause relatively few avian electrocutions (APLIC 2006, 2018). Factors influencing avian electrocution include:

- Species with large wingspan (eagles, hawks, owls, osprey, vultures)
- Presence of nests
- Open habitat – power poles provide hunting and perching sites in open areas
- Weather – wet feathers are conductive, dry feathers act as insulation
- Conductor spacing – < 60-inches separation between conductors and/or other energized equipment
- Under-built transmission lines (APLIC 2006)

Bald and golden eagles have the largest wingspan of any bird in North America, which the exception of the California condor (*Gymnogyps californiacus*), and eagle electrocutions have been documented frequently throughout the western U.S. (APLIC 2018). Bald eagles are far more common in Washington than golden eagles and much more likely to be found in urban and suburban areas. APLIC (2018) reports that bald eagles in urban/suburban areas are more susceptible to being electrocuted than those in rural areas, in large part due to the higher density of power lines. This can be particularly problematic near food sources such as dumps and rendering plants.

Further, the higher level of human presence and associated disturbance may cause roosting bald eagles to flush at night when visibility is poor (APLIC 2018).

2.1.2 Collisions

In addition to electrocution from power lines and other electrical equipment, birds can be killed or injured by colliding with electrical or fiber optic cables, on either transmission towers or distribution poles. Raptors typically are agile fliers, have keen eyesight, and are therefore usually at lower risk of colliding with power lines. Waterfowl (e.g. ducks, geese) and waterbirds (e.g. loons, herons, cormorants) are more prone to colliding with power lines because they have relatively large wingspans and lack agility. Low altitude flight and flocking behavior also limits flight maneuverability, which can be problematic if flocks are taking off or landing in conditions where visibility is poor (fog, rain, low light). Therefore, power lines near wetlands and waterbodies or in terrestrial feeding areas used by waterfowl and waterbirds pose a higher risk for collisions than lines in other locations (APLIC 2012). Another factor influencing bird-power line collisions, especially on transmission lines, is the presence of a static wire or optical ground wire; this is typically the highest wire and has the smallest diameter, making it more difficult to see (APLIC 2012).

Eagle collisions with power lines are not well understood or documented. The biology of these species would suggest that they are not particularly susceptible to collision (APLIC 2018). Both bald and golden eagles are thermal soarers and aerial hunters with excellent maneuverability and eyesight. Their eyes are at the front their heads, which give them binocular vision and better depth perception than birds with eyes at the sides. However, eagles pursue their prey at high speeds and may not be able to perceive the presence of a power line in time to maneuver to avoid collision (APLIC 2018). For this reason, power lines in foraging areas may present a greater collision hazard than those in areas that the birds are simply traversing.

Birds also collide with buildings, and in fact, buildings represent the largest source of avian collision mortality in North America, causing up to 1.5 billion deaths annually (Loss et. al. 2019). Bird-building collisions tend to be most common in urban areas and occur most frequently during the spring and fall migration periods. At a local scale, collision risk seems to be most influenced by building size, height, window/glass area, nighttime lighting, and proximity to vegetation and greenspace (Loss et. al. 2019). Bird-building collisions are very difficult to document unless methodical monitoring is undertaken.

2.1.3 Nesting

Power poles and other equipment provide attractive nest locations for some birds, particularly in open habitats where there are few trees. Transmission towers in eastern

Washington are sometimes used for nesting by a variety of raptors, including red-tailed hawks (*Buteo jamaicensis*), Swainson's hawks (*Buteo swainsoni*), and ferruginous hawks (*Buteo regalis*), (APLIC 2006) as well as by ravens (*Corvus corvax*) and great-horned owls (*Bubo virginianus*). Ospreys (*Pandion haliaetus*), however, use utility structures for nesting more than any other North American bird (APLIC 2006). Transmission towers and double dead-end distribution configurations that have relatively broad cross arms or narrow lattice structure on top, are most frequently used by osprey and some other raptors as nest sites (APLIC 2006). In urban areas, American crows (*Corvus brachyrhynchos*), English house sparrows, and pigeons are commonly observed nesting in substations and on other utility structures. Woodpeckers have been known to excavate nesting cavities in wooden power poles, and several swallow species often build nest on dams and other structures near water. Cavity-nesting species such as black-capped chickadees (*Poecile atricapillus*) commonly use holes in power poles.

At many locations, such as some transmission towers and buildings, bird nests present no risk for electric operations. Nests at other sites, for example in substations and on distribution poles, can pose a risk of fire or an outage if nest material, prey remains, or excrement were to drop onto energized equipment (APLIC 2006).

2.2 History of Avian Issues at City Light

2.2.1 Electrocution

Between 1962 and 1990, City Light changed its entire distribution system from 4 kV to the current 26 kV. As the system transition progressed, City Light crews noticed that the placement of terminals on top of transformers, instead of on the sides, seemed to increase the risk of electrocution of crows. Employees occasionally observed crows pecking at energized components on transformers or getting their feathers under terminal covers. To provide the data needed to address the increasing problem, City Light began tracking crow-caused outages in 1973. Between 1973 and 1996, data on crow-caused outages were systematically collected, providing information on the number, distribution and timing of electrocutions. Beginning in 1997, City Light began collecting data on all bird species killed by electrocution. Unfortunately, data collected between 1997 and 2006 lacked quality control and appear to have substantially under-reported bird-caused outages in the service territory. In 2007, City Light was asked by the USFWS to begin annual reporting of avian mortalities. Since then, City Light's NRHL Division has been responsible for coordinating avian reporting and has incorporated rigorous data quality control procedures to ensure accuracy.

Between 1973 and 1988, documented avian mortalities increased from slightly more than 100 per year to a peak of 602; by the early 1990s, the annual mortalities declined to

a range of 340-370 (Figure 2.1). In the 11 years between 2007 and 2018, mortalities have fluctuated between 90 and 280, with an average of 210 annually. A geospatial analysis of outages in City Light's service territory that resulted in avian mortality did not show any discernable pattern.

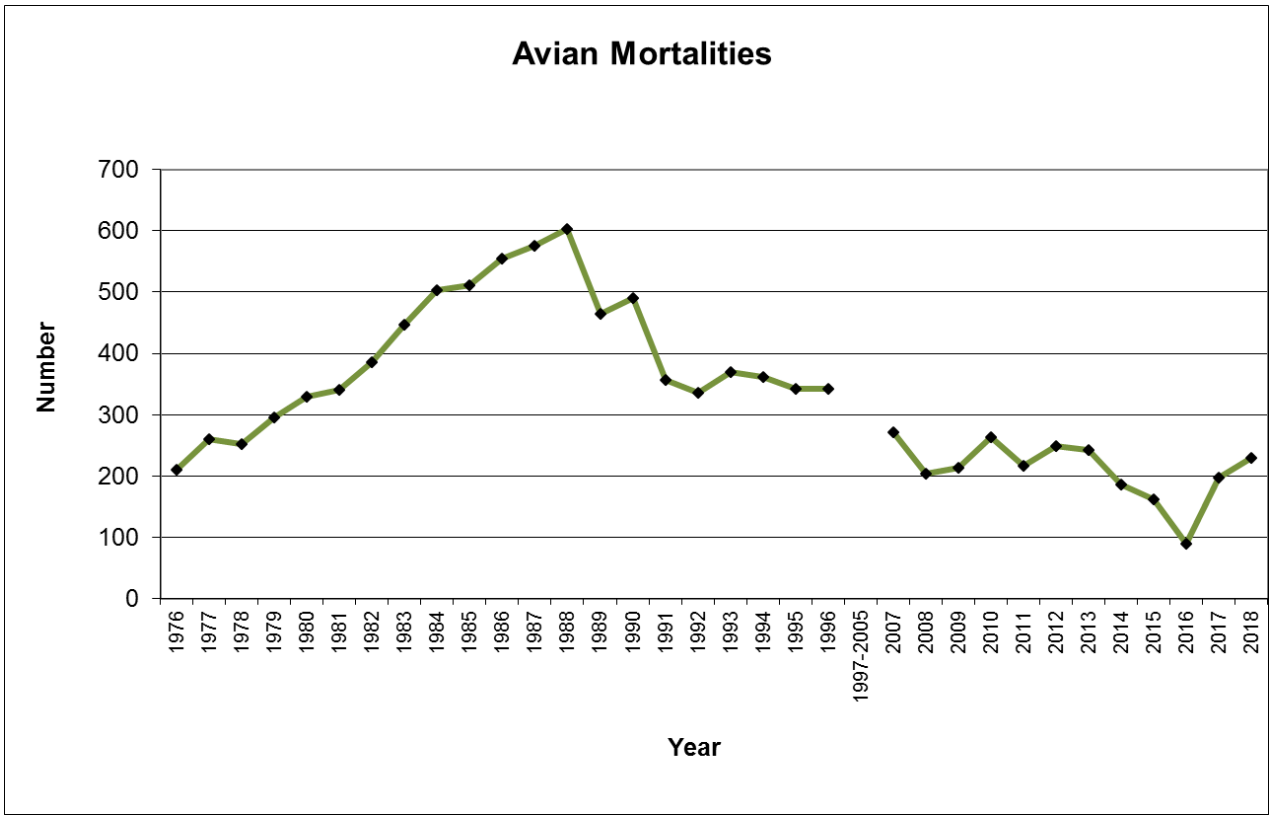


Figure 2.1 Documented avian mortalities in City Light service territory

In the 1980s, crows represented 97-99 percent of all avian mortalities caused by electrocution the service territory; the remaining mortalities were listed simply as unidentified species. Data from the 2000s indicate that crows still represent over 90 percent of reported mortalities but other native bird species, including gulls, woodpeckers, hawks, ospreys, and bald eagles have also been electrocuted over the last 20 years. Non-native species—pigeons, starlings, and English house sparrows—typically represent less than 3 percent of reported mortalities in any given year. In all years, avian mortalities from electrocution peak in the early summer, shortly after young birds have fledged.

There have been nine bald eagles electrocuted by City Light equipment since 2000. One in occurred in 2001, another in 2003 and seven between 2015-2019, perhaps reflecting the increasing numbers of bald eagles inhabiting Seattle. Other raptors electrocuted since 2007 include one Cooper's hawk (2012); three ospreys (2012, 2014, and 2018); and

four red-tailed hawks (2013); owls have also been killed occasionally. It is likely that some of these raptor and owl mortalities resulted from collisions that then caused the birds to be electrocuted.

Bird electrocutions do not necessarily result in power outages. Based on data from Puget Sound Energy, only 16% of bald eagle electrocutions between 2000 and 2005 caused outages (APLIC 2006). It is therefore likely that the number of birds electrocuted by City Light's power lines is greater than can be estimated from the outage data.

2.2.2 Collisions

By virtue of geography, much of Seattle is adjacent to or near water and substantial numbers of waterfowl and waterbirds use City parks, waterways, and natural areas. However, the feeding areas in the City are usually small and dispersed and large flocks typical of more rural areas are rare. While of City Light's distribution system does pose a collision risk to waterfowl and waterbirds, many of the lines that cross waterways are clustered with other wires and/or near bridges or other structures, making them visible even in low-light conditions.

Large bird collisions with distribution lines typically cause outages and are easily documented. Within the service territory, Canada geese *(Branta canadensis*) appear to be the species that most commonly collides with power lines, with 18 outage-related mortalities recorded between 2007 and 2018. However, several of the bald eagle mortalities since 2000 have likely been distribution line collisions that occurred during flights in low light conditions (very early morning or late evening). Similarly, a great blue heron collision recorded in 2019 occurred in the very early morning hours.

Bird collisions with transmission lines often do not cause outages or any noticeable impacts to the system; therefore, the only way to identify collisions is by observation. To assess the collision risk posed to bald eagles by the transmission lines from the Skagit River Hydroelectric Project, City Light monitored several sites where the lines cross the river for hundreds of hours in 1996-1998. The monitoring found that 35 percent of eagle flights at altitudes similar to the electrical lines included sudden maneuvers ("flaring") to avoid the line (Springwood Associates, Inc. 1998). The only documented bald eagle mortality along any of City Light's transmission lines occurred in or prior to 1973 where the Skagit lines cross the Skagit River near Corkindale Creek (Springwood Associates, Inc. 2000).

The most significant known incident of bird collisions with a City Light transmission line occurred in December 2019. Nine trumpeter swans (*Cygnus buccinator*) were documented flying into the optical ground wire on the Skagit transmission D-line near

the town of Snohomish over a period of three days; at least six were killed. The swans were maneuvering to land in a small fallow corn field surrounded by acres of blueberries and bordered by a major road. City Light and BPA transmission lines and Snohomish County PUD distribution lines all crossed the field overhead making the access to the field very difficult. Over the years, it is likely that trumpeter swans, as well as other waterfowl, have collided with City Light's transmission lines but not been observed and/or reported. In the last 12 years, there have also been a few records of Canada geese colliding with distribution lines near the Duwamish River and the Lake Washington Ship Canal.

There are only a few incidental observations of bird collisions with City Light-owned buildings. The carcass of a juvenile northern goshawk (*Accipter gentilis*) was found near Diablo Powerhouse and appeared to have been killed by hitting one of the windows. Staff at the North Cascades Environmental Learning Center on Diablo Lake reported that passerine collisions with the windows at this facility, which is surrounded by forest, were fairly common until preventative measures were taken.

2.2.3 Nesting

City Light does not keep track of bird nests on or in electrical equipment. Nests are not reported unless a power outage occurs, or it is determined that there is a risk of an outage or fire. Western Washington has numerous large trees, so power poles are less attractive as nest sites than they are in more open areas. Nonetheless, ospreys, crows, pigeons, starlings, woodpeckers, and swallows have all been observed nesting on or in City Light power poles and/or other electrical equipment. Other birds use City Light buildings for nesting; the mud nests of cliff and barn swallows (*Hirundo pyrrhonota* and *H. rustica*) are particularly common on City Light dams and buildings near water.

In a small number of cases each year, City Light has had to remove nests (always outside of the nesting season or prior to egg laying) to eliminate the risk of the nest material causing a fire and power outage. In recent years, an increasing number of osprey nests have been constructed on top of City Light transmission towers and distribution poles. While there have been no documented cases of osprey fatalities related to nesting, there have been incidents when osprey nests have caught fire or posed a risk of fire and had to be removed. For example, after the 2010 nesting season, a pole-top nest caught fire and was removed, and a second nest had to be removed because nest material was in contact with the energized conductors. City Light has also delayed scheduled replacement of wooden poles if being used by native cavity-nesting birds.

2.2.4 Other

One other avian issue noted over past years is the entrapment of birds in buildings. This has occurred in only one location—at the Diablo Boathouse on the Skagit Project. In the years immediately after its construction City Light personnel observed that birds often entered the Diablo Boathouse and perched on the rafters, but some then had difficulty exiting the building. These birds occasionally succumbed to heat or stress unless personnel successfully chased birds out. During the first years of the boathouse operation, as many as 5 to 10 dead hummingbirds were found each week in summer months. Other small birds, as well as owls and accipiters, were also found dead.

2.3 History of City Light Corrective Actions

Several factors in City Light's service territory contribute to a lower number of avian mortalities from electrocution than many other utilities. Fewer raptors, which tend to be at greatest risk for electrocution, inhabit the urban and suburban areas of Seattle compared to more rural service territories. In addition, the 10-ft long cross arms that are standard for much of City Light's distribution system probably reduce the number of birds electrocuted by conductor-to-conductor or ground contact.

2.3.1 Measures to Reduce Electrocutions

Transformers have long been identified as the major source of avian mortality associated with City Light's distribution system. To address this problem, in about 1975, City Light began installing plastic bushing covers (bird guards) on all new 26 kV distribution transformers in the service territory and on transformers where avian electrocutions were documented. A 2009 inventory of City Light distribution equipment found 25,592 (47.7%) of the 53,599 transformers in the service territory had bird guards; the percentage would be higher now. Three of the 119,886 support structures (poles) had perch preventers to prevent raptors, including bald eagles, from perching in dangerous locations. Additional perch preventers have been installed since then at sites were avian mortalities have occurred.

At sites where bald eagles, ospreys or other raptors have been electrocuted City Light has taken one or more of the following actions to reduce the risk of future incidents:

- De-energized center lines to eliminate the risk of birds touching two phases simultaneously;
- Installed bird flight diverters on lines;
- Installed and maintained conductor covers on power pole crossarms;
- Added bird guards (if not present or damaged), cutout covers, arrestor covers and jumper cable insulation to transformers;
- Insulated wires;

- Added perch deterrents, including triangles and spikes, on the cross arms of power poles.

Ospreys commonly nest on power poles and the population of this species in the Seattle area has been increasing over the last 20 years. Since 2000 City Light has relocated several osprey nests from power poles to nearby artificial nesting platforms to reduce electrocution risk to the birds as well as to protect electrical equipment (Figure 2.2). In several incidents, City Light has also worked with other entities (Sound Transit, Seattle Parks and Recreation Department) and private landowners to move osprey nests from light poles or cell towers to artificial platforms to discourage the birds from building nests on nearby power poles. Osprey nests that do not pose a risk to energized equipment or to the birds themselves are not moved. These are most often those on the tops of transmission towers for 230 kV lines.

Figure 2.2 Osprey nest platform along Duwamish River

City Light crews routinely remove nesting material from ospreys and other birds, either before egg-laying or after the nesting season, from substations, power poles, and other electrical equipment. However, ospreys have strong nest site fidelity and at some sites additional measures have been needed to discourage continued nest-building attempts. Half-pipe covers were installed on cross arms of poles at two sites in south Seattle and have effectively prevented the addition of new nest material (Figure 2.3). A transmission tower near the Boeing Wind Tunnel required a customized solution involving a combination of tent-like covers to prevent continued nesting attempts and metal spikes to reduce the risk of electrocution from perching (Figure 2.4).

Figure 2.4 Half pipe cover

Figure 2.3 Custom cover with spikes

2.3.2 Measures to Reduce Collision Risk

Based on monitoring observations that wintering bald eagles regularly modified their flight paths where the Skagit transmission lines cross the Skagit River near Corkindale Creek, City Light prepared an Avian Marker Plan that was approved by the Federal Energy Regulatory Commission (FERC) and USFWS in 1998 and subsequently implemented. In 1999 bird flight diverters (BFDs) (Preformed Line Products, Inc.) were installed at six sites between Rockport and Newhalem where the transmission lines cross the Skagit River or a tributary stream. These streams included: Corkindale, Illabot, Diobsud, Bacon, Pinky's, Shovel Spur, and Goodell creeks. At each site, the BFDs were installed at a 15-30 feet spacing. In 1999, a study determined that the transmission lines crossing the Stillaguamish and Snohomish rivers are located well above the typical flight path altitude of bald eagles and represented a very low collision risk.

Data from tracking avian mortality documented two Canada goose collisions with City Light power lines along the Duwamish River near Boeing within a 3-year timeframe. These lines were marked with bird flight diverters in October 2011. Since then, several other sites where Canada geese have collided with lines have been marked with bird flight diverters as well.

The site near Snohomish where six trumpeter swans collided with the Skagit transmission D-Line required a phased approach—short term measures to discourage the birds from attempting to land in the field while a long-term solution could be developed. As soon as the problem was identified City Light worked with the Northwest Swan Conservation Association to haze the birds and to mark the field with mylar flagging. This effectively deterred the swans from landing in the field for the time it

took to order and plan the installation of bird-flight diverters. A drone was used to install 24 stationary Firefly HW Bird Diverters every 50 feet along approximately 1,200 feet of the optical ground wire on the D Line.

2.3.3 Other Remedial Measures

In 2004-2005, City Light installed mesh netting (0.75-inch openings) in the Diablo and the Ross Powerhouse boathouses to prevent birds from becoming entrapped in the buildings. Since the installation, the incidence of bird fatalities has declined to near zero. Only 3-4 hummingbird fatalities were documented between 2005 and 2012. At the North Cascades Environmental Learning Center, decals were installed on all the windows and appear to have been effective at preventing bird collisions.

3 Program Overview

The overarching goal of the APP is to prevent avian mortality from City Light's electrical distribution and generation facilities to comply with state and federal laws and improve system reliability.

3.1 Program Elements

City Light's APP incorporates the guidelines provided by the APLIC and USFWS (2005) and includes the following 12 elements:

- **Corporate Policy** – A statement of City Light's commitment to minimizing its impacts on migratory birds and complying with state and federal laws protecting birds (Chapter 4).

- **Key Resources** – Roles and responsibilities of City Light divisions charged with implementing the APP and a list of external experts and/or organizations that can provide assistance as needed (Chapter 4).

- **Permit Compliance** – A list of all necessary avian-related permits, their requirements, and the process for obtaining them (Chapter 5).

- **Training** – Education for City Light employees and contractors about avian protection issues, policies, and procedures (Chapter 5).

- **Nest Management** – Procedures for assessing and managing nests on utility structures (Chapter 6).

- **Avian Mortality/Injury Response and Documentation** – Methods for responding to and documenting incidents of avian mortality to comply with state and federal permits and regulations (Chapter 7).

- **Mortality Reduction Measures** – Corrective and preventative measures that City Light will take to reduce avian mortality (Chapter 8).

- **Risk Assessment** – Methods used to identify specific areas within City Light's service territory that represent elevated risk to migratory birds and that will be prioritized for avian safe retrofit efforts (Chapter 8).

- **Design Standards** – Guidelines for installing protective devices on equipment where avian incidents have occurred and design standards for retrofitting and

constructing new equipment and power lines that reduce risk of avian mortalities (Chapter 8).

- **Quality Control** – Procedures City Light will use to periodically assess the effectiveness of the APP (Chapter 8).

- **Avian Enhancement Options** – Proactive measures that have been or will be taken to benefit migratory bird populations within City Light's service territory and hydroelectric project areas (Chapter 9).

- **Public Awareness** – A description of how City Light will coordinate internally and with the media to inform the public about bird electrocution and collision issues and City Light's successful avian protection efforts and enhancement actions (Chapter 10).

Each of these elements is addressed in the subsequent chapters of this Plan.

3.2 Definitions

Definitions of the terms are commonly used throughout this Plan are provided below.

Avian Protection Program (APP): City Light's program for reducing impacts to migratory birds from energy delivery and generation facilities. The APP is defined and established in the Avian Protection Plan (Plan) and is implemented by an APP manager and lead biologist from the Department's NRHL Division.

Avian Safe Standards: Separation distances between conductors and other protective devices used on power lines and associated energy delivery equipment and facilities to provide adequate insulation or isolation to prevent avian electrocution (see APLIC 2006).

Avian Sensitive Areas: Areas near water and forested parks that are typically more heavily used by native birds than urban sites and areas near known bald eagle nest locations. In these areas power lines may represent more of an electrocution risk.

Avian Species: Bird species; there are over 300 bird species in Washington.

Corrective Action: Actions taken to prevent future avian mortality at equipment that has killed or injured a protected bird. Corrective actions may include

installation of appropriate protective devices (i.e. bird guards, perch guards, flight diverters) and/or increased spacing between energized conductors or equipment.

Energy Delivery Equipment: Cables, wires, conductors, transformers, switches, poles, bushings, relays, and other devises associated with electricity delivery.

Energy Delivery Facilities: Distribution (≤ 26 kV) and transmission (≥ 115 kV) power lines, substations, and switchyards.

Field Crews: General term for all crews responsible for responding to power outages; inspecting, maintaining, repairing or retrofitting energy delivery equipment or facilities; or maintaining ROW clearances. Includes operators, line crews, civil crews, substation crews and vegetation management crews.

Listed Species: Any bird protected by the Endangered Species Act.

Migratory Bird: Species that traverse certain parts of the United States, Canada, Mexico, Russia, or Japan in the course of their annual migration. This includes not only neotropical (long-distance) migrants, but also temperate (short distance) migrants and resident species. In practical terms it is all bird species native to the United States.

Mortality Reduction Measures: Includes (1) corrective actions at sites where Department equipment has resulted in avian mortality and (2) preventative measures at existing or new equipment identified during the risk assessment as potentially representing a high risk of electrocution or collision.

Nesting Season: The period during the year when birds build nests, lay eggs, and raise young. This period is species-dependent and influenced by weather but is typically from early-April through mid-August in Washington.

Nuisance Nest: The nest of a protected species that is (1) in a location where nest material or bird droppings could foul electrical equipment over time; (2) in a building; (3) in a streetlight; or (4) near a frequently used door. These nests do not represent an immediate risk to equipment or facilities.

Non-protected species: Bird species that are not protected by the Migratory Bird Treaty Act. In the City Light Service Area, non-protected species include pheasant and quail and three non-native introduced species: pigeon, European starling, Eurasian collared dove and English house sparrow.

Outage Management System (OMS): City Light's database for recording and tracking outages and crew response. Information on outages is provided by field crews to the dispatchers in System Operations who enter it into the database. The OMS fields include outage cause, location, and corrective actions taken. Outages caused by birds include data on bird species.

Power Line: Two or more cables used to deliver electricity from one location to another.

Problem Nest: An active bird nest that presents an imminent risk to electrical equipment or facilities or prevents or impedes safe access for maintenance of facilities and that needs to be relocated or removed.

Protected Bird/Species: All bird species protected under the Migratory Bird Treaty Act.

Protective Devices: Materials that can be installed on electrical equipment to prevent electrocution or collisions including, but not limited to:

- *Bird Guard*: A cover installed over transformer bushings to prevent birds from contacting the conductor.
- *Perch Guard*: A triangle of plastic or row of plastic spikes that are mounted on power line cross arms to prevent birds from perching.
- *Bird Flight Diverter (BFDs)*: Small devices that can be installed on power lines to make them more visible to birds in flight and easier to avoid, particularly under low light conditions. Includes various types of line markers, such as coils made from colored polyvinyl chloride, "flappers", and fireflies.
- *Nest Deterrent*: Materials installed on cross arms to prevent birds, particularly raptors, from nesting.
- I*nsulation*: Silicon tape or hose installed on lines to insulate them from contact.
- *Raptor Construction Retrofits*: Various measures and materials used to make power lines safe for raptors, including (1) modifying the configuration of conductors and/or grounded equipment to ensure there is at least 60 inches between them (avian-safe spacing) or (2) installing a silicon guard on the primary insulator to mitigate lines that cannot be modified to avian-safe spacing standards. See Material Standards for Avian

Protection Products, (http://sclweb/engStds/docs/6910.10.pdf) for a comprehensive list of available materials.

Raptors: Birds of prey (eat other birds, mammals, or reptiles); including eagles, hawks, owls, falcons, and osprey.

Retrofit: Actions taken and/or devices installed on existing equipment or facilities that represent a high risk for electrocution as identified by a risk assessment.

Service Territory: The area served by City Light's electrical distribution facilities.

U.S. Fish and Wildlife Service: The federal agency charged with managing and enforcing the Migratory Bird Treaty Act, Endangered Species Act, and Bald and Golden Eagle Protection Act.

Washington Department of Fish and Wildlife: The state agency responsible for protecting and managing wildlife, including birds, within Washington.

4 Policy & Key Resources

4.1 Policy

City Light is committed to implementing an Avian Protection Program (APP) to minimize impacts on migratory birds from its facilities and to comply with all applicable laws and regulations related to avian protection. City Light believes that its APP is consistent with the utility's mission *to deliver customers affordable, reliable and environmentally responsible electrical services*. City Light will allocate the financial, management, and staff resources necessary to implement all elements of the APP throughout all divisions of the utility.

City Light understands that its APP represents a binding commitment to the USFWS and to reduce its impacts on birds. To demonstrate this commitment City Light has prepared and will implement the Avian Protection and System Reliability SOP, I-1000 (Appendix A).

4.2 Key Resources

Implementation of the APP is primarily the responsibility of City Light but there are a number of key agency contacts and external experts who can provide technical assistance. City Light roles and responsibilities, as well as agency and external contacts, are summarized in the following sections.

4.2.1 City Light

Implementation of the APP will involve seven divisions within City Light.

4.2.1.1 Environment, Land, and Licensing Business Unit

City Light's NRHL Division with the Environment, Land, and Licensing Business Unit (ELLBU coordinates the implementation of City Light's APP. Within the NRHL Division, there is an APP biologist who is responsible for the following:

- **External Coordination** – Serve as the primary point of contact for communicating with and reporting avian issues to the USFWS, WDFW, local jurisdictions, non-governmental organizations, and the public.

- **Permit Acquisition** – Obtain necessary authorizations from federal and state agencies to manage occupied nests and remove dead or injured birds. Comply with permit conditions for coordination and reporting.

- **First Response** – Respond to avian mortalities and injuries (protected bird events not involving crows or gulls), or ongoing problems (e.g., problem nests endangering the electrical system or property) to assess the situation and collect data. Work with City Light engineers and line crews to identify and implement appropriate measures or remedies, as required.

- **Landowner Permission** – Obtain legal permission to use property for designated nest platform poles or to access property to implement corrective actions or install protective devises on power lines or poles. Acquire any needed easements or permits.

- **Data Management** – Download avian incident data from City Light's Outage Management System (OMS). Develop, maintain and quality control check the database that tracks avian issue locations, species affected, and implemented corrective actions.

- **Report Preparation** – Prepare annual reports for submission to the USFWS and WDFW to comply with permit requirements. Reports are based on the avian document annual avian mortality and associated prevention measures.

- **APP Update and Implementation** – Work with City Light engineers to develop standards and implement measures under the APP. Oversee continual improvements in the APP as new information and products become available.

- **Education and Training** – Provide training to staff and field personnel on City Light policy, regulatory requirements, documentation and reporting procedures, field techniques, and safety concerns when dealing with avian issues.

In addition, ELLBU's Spill Responders are responsible for providing after-hours assistance to crews on avian mortalities. This includes contacting the APP Biologist; helping with species identification; and providing information on where and how to store the carcasses of dead raptors until they can be picked up by the APP Biologist and how to safely dispose of other dead birds.

Environment Land & Licensing BU (2020)		
Ron Tressler **Senior Wildlife Biologist** (206) 386-4506 (office) (206) 858-3760 (cell 1) (425) 890-9001 (cell 2) Ron.Tressler@seattle.gov	**After Hours Contact** **Spill Response** (206) 684-0248 (24/7 contact)	**General Assistance** **ELLBU Admin** (206) 684-3270

4.2.1.2 System Operations Division

System Operations Dispatchers receive information from field crews on avian incidents and problem nests and are responsible for entering the information into the OMS, which records and tracks all electrical outages in City Light's service territory. Fields in the OMS include outage cause, location, and corrective actions taken; bird species is recorded for avian-caused outages. The Dispatcher contacts the APP biologist or the ELLBU Spill Responder on duty if the incident involves a bird nest or an injury to or death of a protected species (other than crow or gull). The APP biologist communicates with the Dispatchers to obtain additional information on specific avian incidents, as necessary. The Chief Power Dispatcher is responsible for maintaining the OMS.

Operators with the System Operations Division are often the first responders to an outage and are responsible for providing the Dispatcher with information on a bird-caused incident and/or requesting that the APP biologist or Spill Responder on duty be contacted.

System Operations (2020)	
Pawel Krupa **Director** (206) 706-0240 (office) (206) 949-6256 Pawel.Krupa@seattle.gov	**James Noblin** **Chief Power Dispatcher** (206) 706-0241 (office) James.Noblin@seattle.gov

4.2.1.3 Transmission and Distribution Operations Division

Line crews in the Transmission and Distribution Operations Division are responsible for reporting all avian injuries or mortalities, and problem nests to the Dispatcher and/or APP biologist. Line crews also document all bird-related outages and any birds that might have been electrocuted by, or collided with, Department equipment in the Dispatcher Logging System. In addition, the line crews identify and implement appropriate corrective actions to prevent future avian mortality at sites where birds have been killed. Measures are based on APP guidelines and specific work plans provided to them by supervisors and may include installation of specific protective devices (i.e. bird guards, perch guards, nest deterrents). Crew chiefs also ensure that personnel under their supervision properly implement APP procedures and inform the APP biologist the need for APP training.

Other crews within Transmission and Distribution Operations Division that may encounter dead birds or problem nests include the civil, substation and vegetation management crews. Personnel on these crews are responsible for contacting the APP biologist if they find nuisance or problem nests, carcasses of birds that may have been

killed by City Light equipment, or wildlife that have become trapped in City Light facilities (substation yards). Vegetation management crews are also responsible for coordinating with the APP biologist if an active bird nest is found in the course of hazard tree removal or routine vegetation management activities in transmission ROWs or along distribution lines.

Transmission and Distribution Operations (2020)			
Dan Rizzo **Director** (206) 637-3206 (office) (206) 637-3206 (cell) Dan.Rizzo@seattle.gov	**Kevin McClaskey** **Supervisor, South Line Field** (206) 386-1872 (office) (206) 255-2869 (cell) Kevin.McClaskey@seattle.gov	**Kerwin VandeGiend** **Manager, North Area Field Operations** (206) 684-4902 (office) (206) 459-6025 (cell) Kerwin.VandeGriend@seattle.gov	**Tom Greely** **Manager, Substations & Switching Operations** (206) 386-1784 (office) (206) 730-1055 (cell) Tom.Greely@seattle.gov

4.2.1.4 Asset Management and Large Projects Division

The Standards Group within the Assessment Management and Large Projects Division is responsible for preparing Materials Standards and Construction Standards for all avian protection devices and construction. These standards must be approved by the APP biologist. For complicated sites, the Standards Engineer and the APP biologist coordinate to identify the protection device(s) expected to be most effective, any necessary line reconfiguration, and the number of poles needing corrective action.

Asset Management – Standards (2020)	
John Shipek **Supervisor** (206) 684-3950 (office) John.Shipek@seattle.gov	**Curtis Lu** **Electric Power Systems Engineer** (206) 684-3048 (office) Curtis.Lu@seattle.gov

4.2.1.5 Engineering and Technology Operations Division

The Engineering and Technology Operations Division is responsible for designing new and upgraded power lines and other facilities to avian safe standards. Engineers coordinate with the APP biologist to determine if new or upgraded facilities should have other devices installed to reduce the probability of avian mortality from electrocution or collision.

Engineering and Transmission Operations (2020)	
Alan Hall **Manager, North & South Distribution Design** (206) 615-0177 (office) (206) 718-8612 (cell) Alan.Hall@seattle.gov	**Bob Risch** **Manager, Transmission Engineering** (206) 684-3269 (office) (206) 718-8625 (cell) Bob.Risch@seattle.gov

4.2.1.6 Generation Operations Division

City Light-owned hydroelectric projects are in forested rural areas that support a wide variety of native birds, some of which are listed as sensitive by the WDFW. Generation personnel in the Engineering and Technology Operations Division also coordinate, as needed, with the NRHL Division on construction and maintenance activities that may affect birds at City Light dams, powerhouses, and associated facilities.

Generation Operations (2020)		
William Andersen **Manager, Skagit River Project Operations** (206) 386-4481 (office) William.Andersen@seattle.gov	**Janet Hart** **Manager, Boundary Project Operations** PAX-28-3203 (office) (206) 549-3829 (cell) Janet.Hart@seattle.gov	**Paul Larson** **Manager, SF Tolt, Cedar Falls Operations** (206) 684-3045 (office) Paul.Larson@seattle.gov

4.2.1.7 Communications Division

The Communications Division handles public inquiries and media related to avian issues on City Light facilities and equipment.

Communications (2020)
Julie Moore **Manager, Media Relations** (206) 615-0978 (office) Julie.Moore@seattle.gov

4.2.2 Regulatory Contacts

The U.S. Fish and Wildlife Service is the federal agency responsible for administering and enforcing the Migratory Bird Treaty Act, Endangered Species Act, and Bald and Golden Eagle Protection Acts. USFWS is the main agency point of contact for the APP and can also provide technical assistance on avian issues. USFWS must be contacted prior to removing eagle nests or nests of threatened or endangered species.

The Washington Department of Fish and Wildlife (WDFW) manages all wildlife within Washington and can provide information on species and habitats. WDFW is the main agency point of contact for activities that involve disturbing, removing, or relocating nests of native species other than eagles or threatened or endangered species.

Agencies (2020)		
U.S. Fish and Wildlife Service **Migratory Bird Permits** (503) 872-2715 permitsR1MB@fws.gov	**U.S. Fish and Wildlife Service** **Enforcement** (425) 883-8122	**Washington Department of Fish and Wildlife** **Chris Anderson, Wildlife Biologist** 425-775-1311 Ext 111 Christopher.Anderson@dfw.wa.gov

4.2.3 Other Contacts

The Urban Raptor Conservancy is a volunteer-based organization that can provide information or assistance with peregrine falcons and other raptors that may be interacting with City Light equipment or facilities.

Urban Raptor Conservancy
Patti Loesche
(206) 784-7958
patti.loesche@gmail.com

The WDFW maintains an updated list of rehabilitators with permits to work with injured wildlife (https://wdfw.wa.gov/species-habitats/living/injured-wildlife/rehabilitation/find). Several rehabilitation centers in the Seattle area and near the Skagit and Hydroelectric Projects are listed below.

- **PAWS Wildlife Center**
  Seattle area - all injured/orphaned wildlife
  15305 44th Ave W
  Lynnwood 98046
  425-787-2500 ext 817
  http://www.paws.org/wildlife/

- **Northwest Wildlife Rescue and Rehabilitation**
  Whatcom and Skagit counties only. All species, provides transportation to appropriate facility.
  3671 Mt. Baker Highway
  Everson 98247

360-592-8845
http://www.northwestwildlife.org

- **Sarvey Wildlife Center**
  Western Washington. Ambulance service to pick up injured or sick wildlife, call numeric pager number
  206-609-1611
  13106 148th St NE
  Arlington, WA 98223
  360-435-4817
  http://www.sarveywildlife.org/

- **Island Wildlife Shelter**
  Injured or orphaned wildlife
  7501 NE Dolphin Dr
  Bainbridge Is., WA 98110
  206-855-9057
  http://www.islandwildlife.org/

There are no wildlife rehabilitation centers near the Boundary Hydroelectric Project; the closest are in Ferry and Spokane counties and are listed below:

- **Kettle River Raptor Center**
  Raptors only
  Kettle Falls, WA 99141
  (509) 738-2760
  (509) 675-2760

- **Ponti Veterinary Hospital**
  All injured wildlife except raccoons and baby birds
  25007 E Wellesley
  Otis Orchards, WA 99027
  (509) 922-7465

5 Permit Compliance & Training Program

5.1 Permit Compliance

City Light holds federal and state permits that allow certain utility employees to handle injured birds, dispose of dead birds and move nests. These permits are applied for by, and issued to, the APP biologist.

- **Federal Fish and Wildlife Permit** – The Federal Fish and Wildlife Permit is issued by the USFWS, typically for a 3-year period, upon request by City Light. It authorizes salvage of migratory birds found dead or injured near utility lines and other electrical equipment. It also authorizes City Light to take, transport, and relocate active nests from transformers and conductors when there is a threat of fire or power outage. City Light is required to document birds killed or injured by its equipment and report this information annually to the USFWS. There are special handling and reporting requirements for bald and golden eagles and for threatened and endangered species. A current copy of City Light's federal fish and wildlife permit (MB-161960-0) is kept on file in the NRHL Division.

- **Washington Department of Fish and Wildlife Take Letter** –City Light annually requests authorization from the WDFW to, under specified conditions, remove or relocate nests of native bird species as required for the safe operation of electric facilities. This permit covers the removal of active nests as well as material from inactive nests. City Light is required to file an annual summary with WDFW that details the number of birds impacted by nest removal activities. The take letter is kept on file in the NRHL Division.

It is important to note that neither of these permits authorize City Light to kill or injure a migratory bird. It is unlawful at any time, by any means, or in any manner, to pursue, hunt, take, capture, kill, or attempt to do these acts.

5.2 Training

The APP biologist is responsible for providing avian protection training to field crews (electrical, civil and vegetation management), dispatchers, and operators at least every two years, or more frequently if requested. The training covers regulations, best industry practices, the history of avian-power line issues in North America and at City Light, field procedures, safety precautions, corrective actions, and internal requirements for reporting dead or injured birds or a bird nest on electrical equipment. The training workshop material consists of a Power Point (Microsoft, Inc.) presentation and laminated handouts with reporting procedures for avian incidents and problem nests, and bird

species identification aids (see Appendix B for APP training power point presentation and handouts).

In addition, the APP biologist coordinates with the managers of the Vegetation Management Organizational Unit to provide directions to crews and contractors to protect bird nests and report bird injuries or mortalities during the tree trimming, brush cutting, and mowing activities along the transmission and distribution lines. The APP biologist offers training to Energy Delivery Engineers and Asset Management that is focused on the rationale for the APP and the corrective actions and protective devises that can be used to reduce outages and avian mortality. The BU also maintains an APP web page where employees can review training materials, maps, and other data, and this Plan.

6 Bird Nest Management

City Light facilities and energy delivery equipment provide structures that can attractive to a variety of birds for nesting; with the type of equipment used dependent on the species. Crows commonly construct nests on power pole transformers and cross-arms and on equipment in substations. English house sparrows and starlings frequently nest in streetlights. Pigeons tend to nest in the eves of substations and other buildings. Norther flickers (*Colaptes auratus*) and other woodpeckers, which nest only in cavities, will excavate nest holes in power poles; these cavities are then often used by other species, such as chickadees and starlings, in subsequent years.

The only raptor species known to nest on City Light equipment is the osprey. While ospreys typically nest in the tops of large trees and snags, they will readily use distribution poles and transmission towers. Populations of this species in western Washington have increased greatly over the last 20 years and ospreys are relatively common in Seattle as well as at the Skagit River and Boundary projects. Bald eagle populations have expanded as well, but not to as great of an extent, and they only rarely nest on power poles or transmission towers. There are several nesting pairs along Ross Lake at the Skagit River Project and four nesting territories along Boundary Reservoir. There is a Bald Eagle Nest Management Plan for the Boundary Project that includes annual nest site monitoring. Bald eagle nest sites at the Skagit River Project are monitored annually by the National Park Service.

Bird nests on City Light poles, towers, substations, and other infrastructure that could interfere with safe operations are defined as "problem nests". For City Light, osprey and crow nests typically result in the most operational problems. "Nuisance nests" are those that are not a concern for operations, but constitute a nuisance because they are (1) in a location where nest material or bird droppings could foul sensitive equipment over time and/or create extra maintenance; (2) on or in a building; (3) in a streetlight; or (4) near a frequently used door or near HVAC equipment on building roofs. At City Light facilities, nuisance nests typically belong to pigeons, gulls, starlings, English house sparrows, and barn swallows (*Hirundo rustica*).

6.1 Permit Requirements

The MBTA prohibits the take, possession or transportation of a nest from any migratory bird species. All active or occupied nests of migratory birds are protected by the MBTA and cannot be disturbed without specific authorization from the WDFW and/or USFWS Regional Office in Portland, Oregon. To do so without permission is a violation of laws and can result in prosecution.

City Light's Federal Fish and Wildlife Permit authorizes the take, transport, and relocation of active (eggs or young present) migratory bird nests from electrical equipment when there is the threat of a fire or power outage or when maintenance is required to avoid an imminent outage. Removal of empty nests or partially completed nests does not require federal authorization.

City Light's State Wildlife Permit, issued by the WDFW, includes the following nest management requirements:

- All nests are to be left in place if they do not represent a threat to reliable operations or to the nesting birds themselves, prevent or impede safe access for equipment maintenance, or constitute a nuisance;
- If possible, nests that represent a threat to reliable operations or safety will be removed when the nest is inactive or prior to egg laying;
- Nuisance nests will be removed only when the nesting season is complete, and the nest is inactive;
- If it is necessary to remove a nest with eggs or young the WDFW will be contacted to ensure the disposition of nests, eggs, offspring to the most appropriate recipients.

6.2 Nest Management Considerations

As a general rule, nests that are not a problem or nuisance will be left in place. Before removing or otherwise disturbing any nest on City Light facilities between the months of January and August, personnel must get authorization and instruction from the APP biologists It is critical that the APP biologist or a qualified agency biologist evaluate the nest to determine the species involved and the nesting status (occupied vs. unoccupied and active vs. inactive). Only in the case of imminent danger (see Section 6.3) can personnel move nest material prior to authorization. Even under imminent danger conditions, an attempt should be made to contact the APP biologist prior to initiating the action. The APP biologist will coordinate with the USFWS and WDFW and ensure that the necessary permits are in hand. The workflow for dealing with problem nests is presented in Figure 6.1.

City Light personnel can help ensure compliance with regulations and provide maximum flexibility for managing problem nests by reporting all problem or nuisance bird nests on City Light infrastructure as soon as they are detected. For example, corrective actions can often be implemented before or after the nesting season (eggs or young present in nest) without agency approval provided the APP biologist is involved in decisions. Similarly, nests identified as belonging to pigeons, starlings, or English house sparrows

can be removed at any time and without agency approval because these species are not protected by the MBTA or state law.

Nests or nest material on City Light equipment can be removed without contacting the APP biologist and/or the agencies at any time in the months of September, October, November, and December. These months are outside the nesting season for all bird species that breed in Washington and any nests found during this period are inactive. However, it is desirable to coordinate the removal of any raptor nests (i.e. hawks, osprey) with the APP biologist as there are often public relations issues.

Active nests encountered in the course of routine vegetation management activities along ROWs should be left in place and not disturbed by leaving a buffer of trees and shrubs around the nest site. The tree or shrub with the nest and the surround buffer vegetation can be removed in late summer or fall after the birds have fledged. This will require mapping the location and a return visit to the site. Nests that are inadvertently removed should be reported to the APP biologist. If an active nest is found in a hazard tree that must be removed, the vegetation management crew chief should contact the APP biologist. Instructions are provided to crews and contractors conducting this work (see Section 6.0).

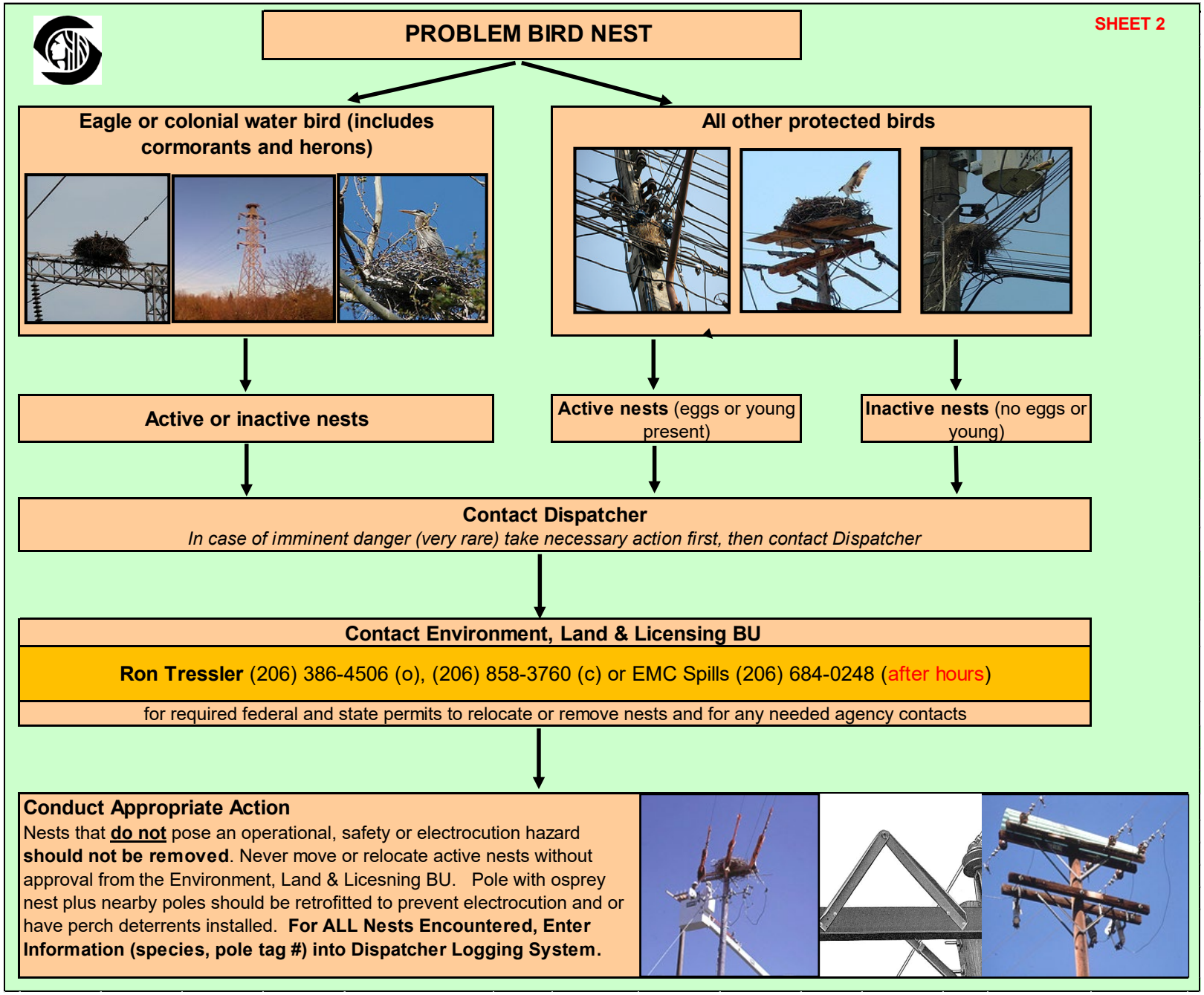


Figure 6.1 Field procedures for dealing with problem nests

In some cases, nests will be encountered during routine maintenance or construction projects on or near City Light facilities and lands. Bank swallows (*Riparia riparia*) will nest in soil piles left over winter; killdeer (*Charadrius vociferous*) nest on the ground in open areas with gravel or cobble (Figure 6.2); and nests of gulls and terns are often found on the flat roofs of industrial buildings. Peregrine falcons (*Falco peregrinus*) nest on several bridges and buildings in Seattle that are in proximity to City Light infrastructure. Unless the work is critical, bird nests must be left in place until the young fledge from the nest. Nests can also be removed before the nesting season. To minimize conflicts on buildings, City Light Facility Management personnel are instructed to keep roof tops clean of moss, leave litter, and other debris that sometimes attracts nesting and to remove nests outside of the nesting season.

Figure 6.2 Killdeer nest in gravel protected by cones

6.3 Imminent Danger

Nests defined as an "imminent danger" are those that pose an obvious risk of fire, compromised public safety, property damage, or avian electrocution. In cases of imminent danger nest material may be trimmed or moved, conductors moved, or other appropriate action taken prior to receiving a permit. However, every attempt should be made to coordinate with the APP biologist prior to the action. In these situations, it may be necessary to temporarily handle eggs or young birds while working with the nest material. If a nest needs to be moved it will be important to minimize agitating the adult birds and to keep the young birds and/or eggs warm during the transfer process.

The State Wildlife Permit requires City Light to immediately contact WDFW when an active nest needs to be handled; the APP biologist is responsible for communication

with WDFW. If the APP biologist cannot be contacted prior to the action, they should be contacted as soon as possible after the work is completed, so that agencies can be notified, and permits received retroactively.

6.4 Actions Associated with Osprey Nest Removal

Ospreys have a high fidelity to a site once they have begun to build a nest and will continue to attempt nest construction even if the branches and other materials are removed repeatedly. If an osprey nest or nest material needs to be removed from a power pole or transmission tower City Light will install an "excluder" (Figure 6.3) on the pole to prevent re-nesting attempts. Osprey nest site excluders to cover cross arms are often site-specific designs but in general, they will be constructed to specifications developed for City Light by Osprey Solutions, LLC in 2011. Insulated conductor covers will be installed concurrently with the excluder to prevent electrocution if ospreys land on the wires in an attempt to re-nest. Installation will be by City Light crews.

Figure 6.3 Osprey nest excluder and insulted conductor cover

Solutions to prevent ospreys from nesting on transmission towers will be customized to fit the tower type and site logistics and will incorporate other perch deterrents as needed. For H-frame towers City Light will install tent covers, similar to those used at the Boeing Wind Tunnel sites (Figure 6.4). For other tower types the APP biologist will coordinate with the Engineering Technology and Operations Division and Osprey Solutions LLC (http://www.osprey-solutions.com/) or other expert consultants to identify effective designs to deter nesting. City Light crews will fabricate and install the cover or excluders.

Figure 6.4 Tent covers on H-frame transmission towers

When possible, City Light will also install an osprey platform (Figure 6.5) on a dedicated pole located near the original nest site, as determined by the following steps:

- An APP biologist will assess the surrounding area to determine if the osprey pair has relocated from a nearby tree or platform nest. If a nearby nest has been abandoned, the APP biologist will coordinate with City Light electrical crews and property owners to check the nest and vicinity to identify any problems that may have prevented the site

Figure 6.5 Osprey nest platform example

from being reused. These could include (1) the presence of dead birds, large dead fish, or trash in the nest bowl; (2) a structural problem with the nest or platform; (3) a nearby bald eagle or great horned owl nest; (4) adjacent trees that have grown too tall and over topped the nest; (5) increased disturbance in the area; or (6) nest removal by the landowner of the structure (i.e. cell phone tower or railroad trestle). Removing debris from the nest bowl or fixing a nest or platform may result in ospreys returning to the site.

- If there are no nearby osprey nest sites or platforms the APP biologist and an energy delivery engineer will evaluate the surrounding area for a potentially suitable location to install a dedicated pole with an osprey nest platform. A suitable site for an osprey platform must:
    1) be within 300 ft of the former nest site;
    2) be close to water;
    3) be away from exiting power lines and poles;
    4) not be adjacent to trees or structures that are taller than the pole/platform;
    5) not be in a location where debris from the nest or excrement could drop onto buildings or vehicles;
    6) have an owner willing to agree to installation of the pole and platform; and
    7) have access suitable for bucket trucks and other heavy equipment.

- If a suitable site is available, the APP biologist will coordinate landowner permission and any needed permits or approvals for installation.

The APP biologist will facilitate construction and installation of the platform. Osprey platforms will be constructed to the specifications provided by APLIC (2006) or Osprey Solutions, LLC (http://www.osprey-solutions.com/). Platforms will include an elevated perch and nest material to attract osprey. In addition, perch guards will be installed on any nearby poles.

7 Avian Mortality/Injury Response, Documentation, & Reporting

The success of the APP and City Light's compliance with federal and state laws is dependent on personnel dealing appropriately with dead or injured birds, accurately reporting avian incidents, and implementing corrective measures to reduce future risks to birds. This section presents guidelines and procedures for dealing with incidents of avian mortality or injury as well as City Light's documentation and reporting requirements.

7.1 Avian-Electrical Equipment Incident Response

All avian injuries and mortalities resulting from an interaction with City Light's electrical system or infrastructure must be reported, even if the interaction does not result in a power outage. It is expected that most avian-electrical equipment incidents will be discovered by City Light operators or field operations crews. However, any City Light personnel who discover or confirm a bird electrocution or collision, or receives notification from the public or other sources regarding a bird injury or mortality should follow the "Bird Incident Work Flow Diagram" (Figure 7.1) to immediately document the incident. The following sections describe the methods for dealing with avian mortalities and injured birds.

7.1.1 Bird Mortalities

Upon finding a dead bird, personnel should enter the following data into the OMS and/or Dispatcher's Log: species, date/time, location (address), pole identification number, problem (outage, flicker, etc.) and any corrective actions taken to eliminate future mortality risk. Disposition of the carcass and further reporting requirements depend on the species involved:

- **Crow, gull, English house sparrow, European starling, Eurasian collard dove or pigeon**. The carcass should be buried or moved to a less conspicuous location, as warranted. Carcasses that cannot be moved to an inconspicuous location or buried on site (i.e. areas consisting primarily of buildings and pavement or with high people presence) may be put in a bag and disposed in approved dumpsters at one of City Light's field service centers. See Bird Incident Work Flow Diagram (Figure 7.1).

- **Bald eagle, marbled murrelet, spotted owl, or a bird marked with leg bands, collars, or other markings**. Personnel should leave the carcass in place and immediately contact the Dispatcher, who will call the APP biologist. The APP

biologist will pick up the carcass or provide instructions to the crew on how to deal with it and inform the USFWS and/or state agency, as required by law. In some cases, personnel may be asked to remain with the carcass until the APP biologist or federal or state agency personnel can take possession of it. For other incidents the APP biologist may direct the crew to photograph the carcass in place, put it in a bag and then transport it to a cooler at one of the service centers for later pick up. See Bird Incident Work Flow Diagram (Figure 7.1).

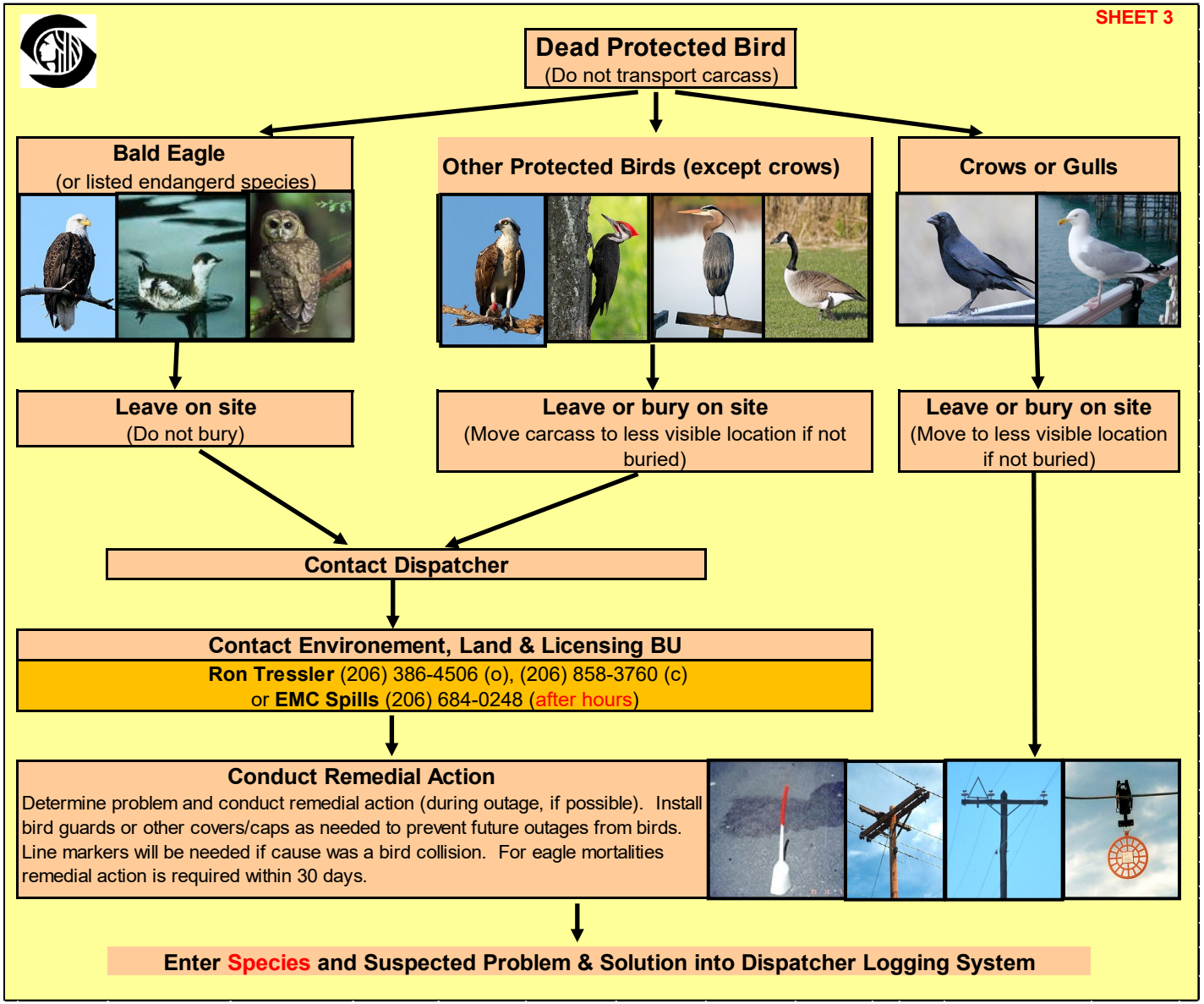


Figure 7.1 Field procedures when finding a dead bird

- **Other Species (Osprey, Canada Goose, Owls, Etc).** If the bird found is not a species listed above, personnel must immediately report it to the System Dispatcher, who will contact the APP biologist as described in the Bird Incident Work Flow Diagram (Figure 7.1). Field operations crews may be asked by the APP biologist to photograph the carcass. The carcass should be buried or moved to an inconspicuous location unless directed otherwise by the APP biologist.

When reporting avian incident information to the System Dispatcher for transmittal to the APP biologist, field operations crews or operators should provide the following additional information:

- Date and time of discovery
- Location (address)
- Pole/tower Identification Number
- Species of bird(s) and condition
- Evidence of bird of collision or electrocution
- Presence of any leg bands, neck collars, or other markers on the bird, in addition to any color or numbers on the band.
- Names and contact information for incident reporter and witnesses, if applicable.
- Type and condition of City Light equipment involved
- Remedial action taken (see Chapter 8)

City Light employees can also report dead birds to an APP biologist via e-mail: SCL_Wildlife_Report@seattle.gov. This e-mail address is listed on the APP web page. This may be a more efficient way for employees to report dead birds that did not cause an outage. The e-mail address is also available for use by members of the public who find dead birds or other wildlife and suspect the cause was from City Light equipment.

7.1.2 Injured Birds

If an injured bird is found, personnel should contact the Dispatcher who will contact one of the APP biologists and/or the nearest animal care or qualified wildlife rehabilitation facility (see Section 4.2.3) for further instructions. If the bird is entrapped by a City Light structure, personnel should attempt to free it, but only if it is safe to do so and the bird appears to be in condition to fly. However, no attempt should be made to capture or restrain the injured bird until receiving direction from the APP biologist or a wildlife rehabilitator. City Light personnel should take appropriate action to secure the area and to alert staff and the public (motorists or pedestrians). Personnel should remain at the site until receiving direction on dealing with the injured bird from the Dispatcher, APP biologist, or wildlife rehabilitator.

Personnel should provide the Dispatcher with the same information as listed for bird mortalities, plus type and severity of injuries.

7.1.3 Handling Bird Carcasses or Injured Birds

The Federal Fish and Wildlife Permit (MB-161960-0) and the permit from WDFW allow City Light personnel to dispose of dead birds on site. However, no personnel should transport any live bird, nest, or carcass until receiving approval from an APP biologist and/or authorization by the USFWS and/or WDFW, as applicable. The permits do not authorize the salvage or transport of live or dead birds or body parts, including feathers. Any City Light employee who takes bird parts is breaking federal law. Violations could result in fines to City Light and the individual and possible prosecution.

City Light personnel should always use caution when handling birds or bird carcasses because they can carry diseases. Shovels, leather gloves, and other personal protective equipment (PPE) should be used when handling dead or injured birds. Safety glasses and heavy gloves are particularly important when handling large injured birds such as Canada geese, herons, or hawks. The best way to capture larger birds is to cover them completely with a towel, blanket, or coat. Injured birds authorized for transport to a rehabilitation facility should be put in a well-ventilated, covered box of a size appropriate to the bird (small box for small bird). The APP biologist and/or rehabilitation facility can provide additional instructions for handling and transporting injured birds or other wildlife.

7.2 Data Management and Reporting

City Light's federal and state permits require tracking and annual reporting of birds that are killed or injured by electrical equipment. Tracking is also important to assess the effectiveness of corrective actions over the long term and to identify sites with recurring problems. City Light's documentation and tracking process is based on the data entered into the OMS and Dispatcher's Logging System for bird-caused outages by System Dispatchers and field crews and direct reporting of other avian incidents (nests, avian mortality not resulting in an outage) to the APP biologist.

The NRHL Division also maintains a web page where employees can report observations of dead or injured birds that did not result in an outage and would therefore not be included in the OMS. This web page is also accessible to the public and includes an e-mail contact and phone number for reporting avian incidents to City Light's APP biologist.

7.2.1 Outage Management System

All power outages in the service territory are entered into the OMS that is maintained by the Asset Management and Large Projects Division. Outage data are entered into the OMS by System Dispatchers based on information provided by the line crews. The APP biologist frequently reviews the OMS database to identify outages involving birds and that may require corrective additional actions or follow-up with field crews or engineers.

7.2.2 Dispatcher Logging System

Routine power outage outages are recorded in the Dispatcher Log. Line crews enter relevant data on the outage cause, location, date and time; for bird-related outages the

species is recorded if it can be identified, along with any remedial actions that were taken at the site to prevent future problems. These data are then added into the OMS by the Dispatcher. However, the Dispatcher Log is also used to report other problems encountered by line crews on energy delivery equipment that do not result in outages. Examples include responses to incidents of "light flicker" when a dead or injured bird was found, or repair calls for damage to equipment that was caused by wildlife. The APP biologists reviews the Dispatchers Log to identify sites where birds were involved in non-outage incidents that may require additional actions.

7.2.3 Bird Incident Tracking Database

The NRHL Division maintains an Excel spreadsheet of all recorded incidents involving birds from the OMS and Dispatchers Logging System, as well as all other reported avian incidents and problem nests received from City Light employees. For each incident, the spreadsheet includes date, address, asset identification number, species, type of issue, and any corrective action. The avian incident spreadsheet is updated when poles or transformers are retrofitted, or new structures are added to the system. This spreadsheet is linked to GIS data layers that contain geographic coordinates and other information. The GIS data are also integrated into an Avian Protection Program Viewer that allows the APP biologist to see avian sensitive areas, existing infrastructure (e.g., poles, transformers, substations, etc.), avian protection devices that have been installed and create maps showing locations of avian incidences and corrective actions for each year.

7.2.4 Agency Reporting

The APP biologist serves as the primary point of contact with the USFWS and WDFW for avian related issues. Each year, the APP biologist summarizes the number of bird injuries and mortalities, by species, location, and cause. These data are provided to USFWS via an online reporting system. The report form includes fields for corrective actions and nest management issues. Data on nest removals and management actions are reported annually to WDFW as part of the permit renewal process.

8 Mortality Reduction Measures & Avian Protection Standards

A primary objective of the City Light APP is to reduce avian mortality. There are two ways to reduce avian mortality from electrocution and collision:

- **Corrective measures**, which are implemented at specific sites in response to bird fatalities or injuries.
- **Preventative measures**, which involve using avian-safe designs and materials when installing new, or re-building existing, lines and electrical equipment. While some preventative measures are standard for all new construction or rebuilds, others are installed only in areas with high levels of avian use. City Light has identified these "Avian Sensitive Areas" by conducting risk assessments of its Service Territory and major transmission lines.

City Light's Materials Standard Avian Protection Products (Standard No. 6910.10) specifies the avian protective devices suitable for use on its 26 kV distribution system (Standard 6910.10.pdf). The document also includes design standards for preventative measures to be applied in the construction of new or rebuilt electrical equipment in areas with high level of avian use or in areas with a history of repeated avian issues. The Standards Document is continually re-evaluated to refine the locations and boundaries of high avian use areas and to incorporate new techniques and equipment.

8.1 Corrective Measures at Existing Equipment & Facilities

When a dead or injured protected bird is found, City Light, as standard practice, retrofits structures with appropriate avian protection devices to prevent future electrocutions and collisions at that site. In addition, field crews may request approval to retrofit structures known on circuits that have had repeated avian-caused outage problems in the past. All corrective actions and materials used must follow City Light's Materials Standard Avian Protection Products (Standard No. 6910.10) (Standard 6910.10.pdf) and Avian Protection Construction Standard (Standard No. 0072.01) (Standard 0072.01.pdf). The primary measures used during the retrofitting can include the following:

- Modifying the configuration of conductors and/or grounded equipment to ensure there is at least 60 inches between them (avian-safe spacing).
- Installing covers or insulation on exposed hardware to prevent simultaneous contact of two phases or ground when avian-safe spacing is not feasible.
- Installing bushing covers (bird guards) on transformers.
- Installing perch preventers or other devices on distribution cross arms that lack avian-safe spacing at locations where raptors, such as ospreys or great horned owls, may attempt to perch or nest.

- Installing line markers such as bird-flight-diverters (BFDs) on distribution and transmission lines that pose collision risk for raptors, wading birds, waterfowl, and waterbirds.
- Installing alternative nesting/perching structures (e.g., osprey nest platforms) in a safe location that is near problem site (see Chapter 6).

In some cases, it is necessary to implement a combination of actions at multiple structures in an area where avian mortalities or injuries are documented. For example, if multiple transformers in the immediate vicinity of an avian incident lack bushing covers and it cannot be determined which one was the source of the problem, each transformer should have bushing covers installed. Another example is that installation of perch preventers on unsafe pole cross-arms to prevent osprey use should not be limited to just one pole but should include all poles that are close to water. In some cases, it will be necessary for the APP biologists and City Light engineers to develop Site-Specific Plans (see example in Appendix C) with estimated costs and timeline for completing the work. Due to the need for planning these activities, it is important to coordinate with the APP biologists as early as possible.

8.2 Preventative Measures for New Construction & Re-Builds

The spacing of conductors and other energized equipment on many of City Light's distribution poles is less than the APLIC-recommended avian protection standard of 60 inches horizontal and 40 inches vertical. However, City Light typically uses 10-foot long cross arms on its distribution poles and this standard undoubtedly reduces electrocution risk for many species native to the Seattle area, most of which have a wing span considerably less than 60 inches and are smaller than 40 inches high when perched. Nonetheless, City Light is committed to constructing new facilities and rebuilding existing structures using standards that will prevent electrocution or collision. Effectively implementing preventative measures includes two steps: (1) a risk assessment to identify specific areas with a potentially high level of avian use, particularly by raptors, waterfowl, waterbirds, or large wading birds; and (2) clear standards for avian safe design and materials.

8.2.1 Risk Assessment – Avian Sensitive Areas

A risk assessment of City Light's Skagit transmission lines for avian collision hazards was conducted in the late 1990's. This assessment resulted in the installation of line markers in several locations over the Skagit River (see Section 2.3.2); line crossings over the Stillaguamish and Sauk rivers were determined not to represent significant collision risks. The 1-mile long Boundary transmission line does not cross the nearby Pend Oreille River and observations during relicensing determined that this line did not pose a collision hazard.

In 2009 the APP biologists conducted a risk assessment of City Light's 131-sq mile Distribution Service Territory to identify areas with potentially high levels of use by raptors, waterfowl, waterbirds, or large wading birds. As a first step, the assessment used existing data to map areas within 0.25 mile of sites designated by the WDFW as Priority Habitats or used by a Priority Species, such as bald eagle foraging or nesting/roosting areas. Areas within 200 ft of marine and lake shorelines, wetlands, rivers, streams, parks, and designated open space were also mapped. Much of this is area is, however, also highly industrial and offers little or no habitat for most native bird species. APP biologists therefore refined the risk assessment to designate highest priority Avian Sensitive Areas using the following criteria:

- Areas in or near major greenbelts or parks;
- Known osprey or bald eagle nest and foraging sites

The Avian Sensitive Area Map was created in ArcGIS using WDFW PHS data and City and King County layers for wetlands, streams, parks, and critical areas (Figure 8.1). The map will be periodically updated and is maintained in City Light's APP website.

The map of Avian Sensitive Areas can be overlain with the results of a pole inventory, also conducted in 2009, which recorded equipment with bushing covers and/or perch guards, as well as the presence of whitewash and woodpecker holes. Using these two databases in combination allows City Light engineers, crews, and APP biologists to identify Avian Sensitive Areas that have few or no avian protective devices.

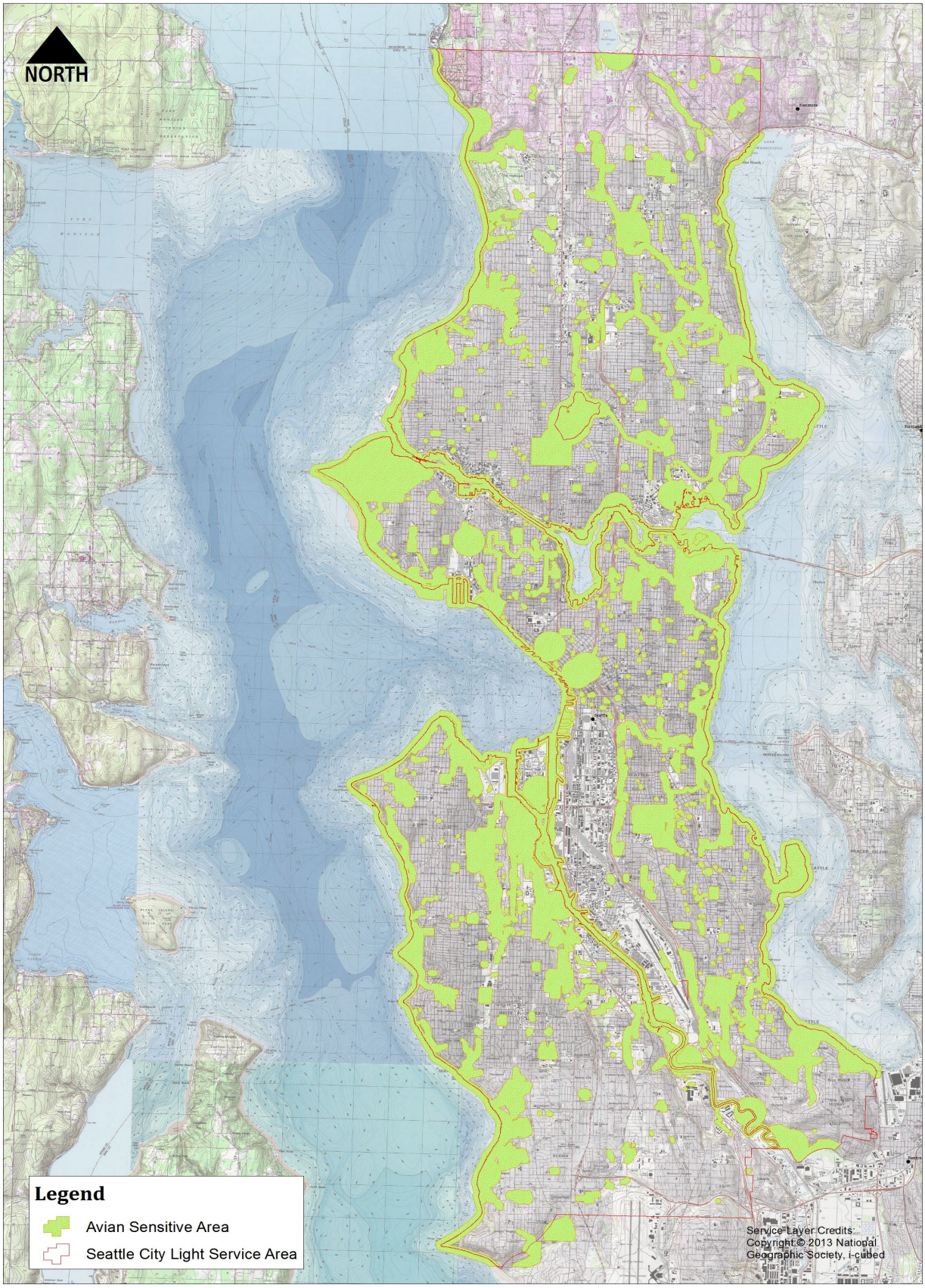


Figure 8.1 Avian Sensitive Areas Map

8.2.2 Avian Safe Standards

As standard practice, all newly installed transformers throughout City Light's service territory include bushing covers to prevent electrocution hazards. It is also standard practice that all new or rebuilt terminal poles (poles where electrical circuits transition between above- and below-ground configurations) include the avian protection measures identified in the Standards Document.

Implementing other preventative measures will be emphasized on new projects or re-builds of existing equipment within "Avian Sensitive Areas". This approach will help ensure that areas presenting the greatest risk to birds receive priority for implementing avian protection measures, while efficiently using limited resources. Engineers and other personnel involved with new construction or re-build projects should always review the maps to determine if their project requires avian protection devices. Distribution engineers need to consult with one of the APP biologists early in a project so that specific hazards to birds and unique site conditions can be evaluated (electrocution, collision, or both). If necessary, the APP biologist will work with the engineer to develop Site-Specific Plans (Appendix C) to avoid or minimize risks.

8.3 Quality Control

City Light's APP will improve system reliability and reduce avian mortality only if corrective and preventative measures are implemented and if the Plan is periodically updated to include new data specific to City Light. To ensure that the APP is effective, APP biologist will:

- Randomly select 10% of the outages from the previous year and field check each site to confirm that the corrective measures indicated in the Bird Incident Tracking Database were actually completed (annually beginning in 2013).
- Check the Bird Incident Tracking Database for any records of multiple mortalities at the same site over the last 5-year period (annually beginning in 2013). Any identified sites will be field evaluated to determine if corrective measures were implemented as reported or if additional protective devices are needed.
- Analyze data from the Bird Incident Tracking Database to identify any trends in the number or distribution of avian mortalities (every 5 years beginning in 2019).
- Review this Plan every 5 years and update as needed (this is Version 2, 2020).
- Work with the Standards Group to periodically update the Materials Standard for Avian Protection (Standard No. 6910.10) and the Avian Protection Construction Standard (Standard No. 0072.01) as new information becomes available and product efficacy is monitored on City Light equipment.

9 Other Actions to Benefit Avian Species

In addition to the APP, there are several other City Light actions or programs that help maintain wildlife habitat or compensate for removal of bird nests or habitat. These include the following:

- Using Best Management Practices (BMPs) for vegetation management in the transmission line rights-of-way and near facilities. This includes maintaining vegetation in riparian zones to extent possible, limiting tree removal along the edges of rights-of-way to hazard trees (those that may damage towers or lines if they fell), retaining native plant species, managing invasive species (weeds) and using native plant species for restoration.
- Following the City of Seattle's Integrated Pest Management Program for the selection and application of herbicides on City Light property for weed management and rodenticides in buildings.
- Maintaining seasonal restrictions within 0.5 mile of the peregrine falcon nest sites near Skagit River Hydroelectric Project facilities and assisting the National Park Service with annual monitoring of nesting activity.
- Managing more than 14,000 acres of wildlife habitat along the Skagit, Sauk, Suiattle, South Fork Tolt, South Fork Nooksack, and Pend Oreille rivers. These lands were acquired under the Skagit Wildlife Habitat Mitigation Program, the City of Seattle's Endangered Species Early Action Program, and the Boundary Project Wildlife Mitigation Program and provide a wide diversity of habitats for birds and other wildlife.
- Funding research on birds and other wildlife as part of the Skagit Wildlife Research Program (through 2025).
- Monitoring winter bald eagle populations and nesting peregrine falcons along the upper Skagit River in cooperation with other agencies.

10 Public & City Light Employee Awareness

City Light will maintain pages on its website that describe the APP. The website includes an e-mail address and phone number for reporting raptors that may have been killed or injured by equipment in City Light's Service Territory. The website also includes a copy of this Plan that can be downloaded as a PDF. The website also has links to maps and other resources for avian protection.

APP biologists will also work with City Light's Communications Division on media coverage of osprey, bald eagle, and peregrine falcon nests on or near City Light facilities. APP biologists will be present when crews need to remove nests and will provide information to the public on the need for the action and City Light's APP.

Website address https://www.seattle.gov/light/enviro/avian/
E-mail address: SCL_Wildlife_Report@seattle.gov
Phone number: (206) 386–4506

11 References

Avian Power Line Interaction Committee (APLIC). 2018. Eagle Risk Framework: A Practical Approach for Power Lines. Edison Electric Institute and APLIC. Washington, DC.

Avian Power Line Interaction Committee (APLIC). 2006. Suggested practices for avian protection on power lines: the state of the art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission, D.C. and Sacramento, CA.

Avian Power Line Interaction Committee (APLIC). 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute. Washington, D.C.

Avian Power Line Interaction Committee (APLIC) and U.S. Fish and Wildlife Service (USFWS). 2005. Avian Protection Plan (APP) Guidelines: *A Joint Document Prepared By* The Edison Electric Institute's Avian Power Line Interaction Committee (APLIC) and U.S. Fish and Wildlife Service (USFWS) April 2005.

Loss, S.R., S. Lao, J.W. Eckles ,A.W. Anderson ,R.B. Blair ,and R.J. Turner. 2019. Factors influencing bird-building collisions in the downtown area of a major North American city. November 6, 2019. https://doi.org/10.1371/journal.pone.0224164.

Manville, A.M. 2005. Bird strikes and electrocution at power lines, communication towers, and wind turbines: State of the art and state of science – Next steps towards mitigation. USDA Forest Service General Technical Report. PWS-GTR 191.2005. pp 1051-1064.

Appendix A. Standard Operating Procedure I-1000 – Avian Protection & System Reliability

To be added when signed

Appendix B. City Light Avian Protection – Program Training Materials (2020)

Seattle City Light

AVIAN PROTECTION PROGRAM

Training

Ron Tressler – Environment, Land, and Licensing

THE NATION'S GREENEST UTILITY
SINCE 1905
SEATTLE CITY LIGHT

OVERVIEW

I. Background on Avian Protection Program

II. Review Recent Issues

III. What We Need From You

IV. Questions

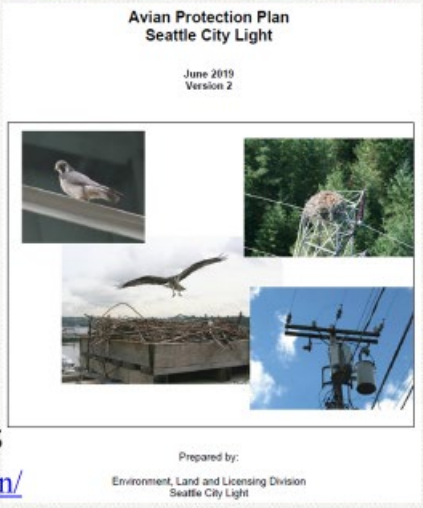
Seattle City Light

THE NATION'S GREENEST UTILITY | 2

WHY DOES SCL HAVE AN AVIAN PROTECTION PROGRAM

1. Laws!
   - Migratory Bird Treaty Act
   - Bald and Golden Eagle Protection Act
   - Endangered Species Act
   - Washington State laws
2. Improves service reliability for customers
3. Avoids bad Public Relations

http://www.seattle.gov/light/enviro/avian/



MIGRATORY BIRD TREATY ACT

- Prohibits "**kill**" or "**take**" of a bird, any bird part, nest, or egg
- Protects **620** migratory native bird species in the continental U.S. – **only starling, house sparrow and pigeon excluded**
- **Strict liability** for misdemeanor charge - no need to prove intent, negligence or fault
- **Stiff Penalties** - large fines, imprisonment, expensive mitigation

MBTA ENFORCEMENT EXAMPLES

- **1999 – Moon Lake Electric Association**
  - 17 eagle electrocutions in 3 years; 13 misdemeanor violations
  - Fined $100,000
  - Required surveys of **all** facilities to determine electrocution risk
  - Retrofitted 3,000 poles at cost of $714K
- **2002 – PG&E**
  - Required to retrofit >13,000 poles & towers
- **2009 – PacifiCorp**
  - Repeated eagle electrocutions
  - $10+ million penalty and retrofitting costs

BACKGROUND: BIRDS & ELECTRICAL SYSTEMS

- Annual Bird Fatalities in United States:
  - Electrocutions: up to 14 million
  - Collision with power lines: 8-57 million (USFWS)
- Results in:
  - Power outages for customers
  - Poor public relations
  - Legal problems
- Edison Electric Institute Avian-Powerline Interaction Committee Standards –1980s

ELECTROCUTION

- Typically a **distribution** issue…but not always
- Usually involves species:
  - With **large wingspans** - eagles, hawks, owls, osprey, vultures or
  - That **can maneuver into tight spaces** – crows, gulls

Seattle City Light THE NATION'S GREENEST UTILITY | 7

FACTORS INFLUENCING ELECTROCUTION RISK

- **Habitat** – Power poles & transformers provide perch sites
- **Weather** – Wet feathers are conductive, dry feathers act as insulation
- **Presence of nests** – Risk depends on location, nest size, construction

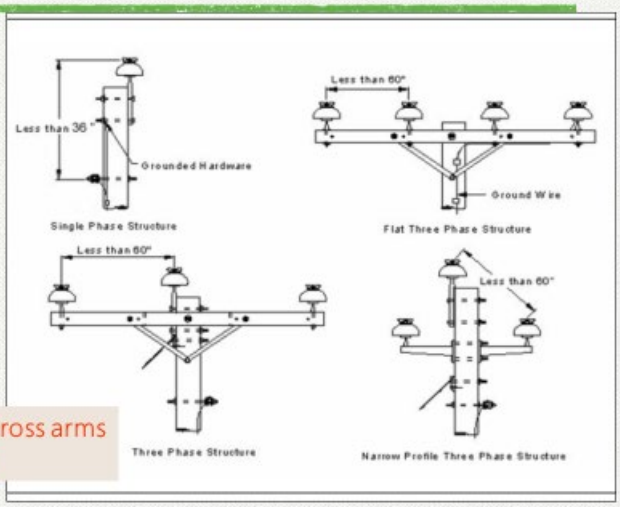
Seattle City Light THE NATION'S GREENEST UTILITY | 1

EQUIPMENT THAT POSES ELECTROCUTION RISKS

Greatest Risk When:

- <60 inches between phases
- <40 inches between phases & grounded hardware

SCL's 10-ft long cross arms help reduce risk

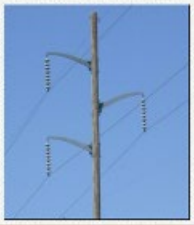


COLLISION

- Can occur with both transmission and distribution lines
- Usually involves species:
  - That fly at **low altitudes** – ducks, geese
  - With **limited flight maneuverability** -herons, cranes, swans

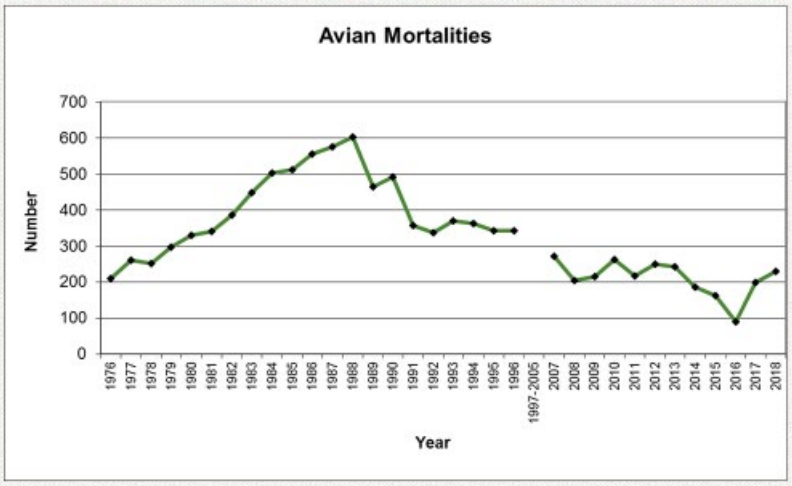
FACTORS INCREASING COLLISION RISK

- **Weather & time of day** – fog, rain, low light
- **Habitat** – near water, wetlands, between 2 high use areas
- **Line Configuration** – overhead static wires, under-builds



Seattle City Light

SCL LONG-TERM DATA



Seattle City Light

MORE DATA

- **Annually 162-280 known** bird-related outages 2007 – 2018 (≈ *10% of electrocutions/collisions actually cause outages*)
- About 90% are crows but also bald eagles, hawks, osprey, gulls and geese (collisions)
- **7 bald eagle** electrocutions during 2015 – 2019
- **Increasing number of osprey nests** on power poles and cell equipment

Seattle City Light THE NATION'S GREENEST UTILITY | 13

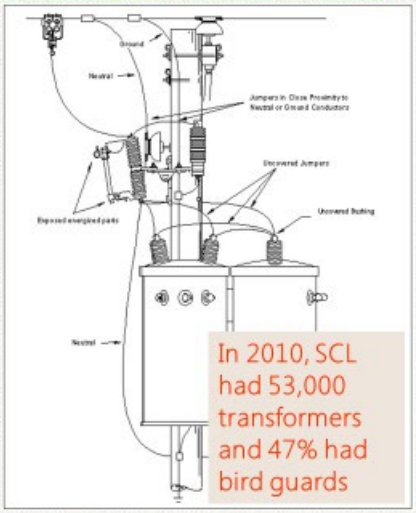
EQUIPMENT THAT POSES ELECTROCUTION RISK

2018 Bird-Caused Outages

- Transformers – 75%
- Terminal Poles – 25%

Transformers with:

- Uncovered bushings or jumpers
- Exposed energized parts
- Jumpers close to neutral or ground conductors



Seattle City Light THE NATION'S GREENEST UTILITY | 14

SCL'S AVIAN PROTECTION PROGRAM

- Permits
- Tracking & Reporting
- Training
- Reactive Measures
- Proactive Measures – Materials & Construction Standards – updated in 2019

PERMITS

- **Special Purpose Utility Permit from USFWS** – allows us to move/salvage dead birds & move active nests, eggs, young
- **Nest Take Authority from WDFW** – allows us to move remove or relocate nests

WASHINGTON STATE PERMIT ALLOWS LIMITED "TAKE"

State of Washington
DEPARTMENT OF FISH AND WILDLIFE
Wildlife Program
Mailing Address: P.O. Box 43141, Olympia, WA 98504-3141 • (360) 902-2200 • TDD (360) 902-2207
Main Office Location: Natural Resources Building, 1111 Washington Street SE, Olympia, WA

May 22, 2019

Colleen McShane
Manager, Natural Resources and Environmental Planning
Seattle City Light
700 Fifth Avenue
Post Office Box 34023
Seattle, Washington 98124-4023

RE: State Take Authorization Seattle City Light Maintenance and Operations; 2019

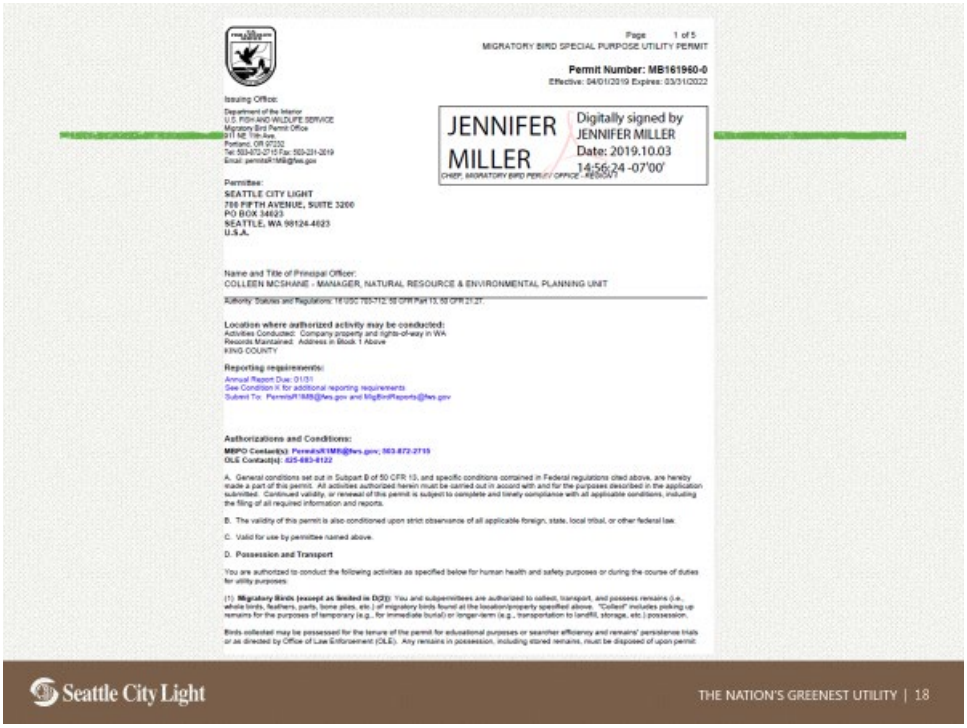
Dear Ms. McShane:

Please use this letter as authorization for an amendment to the required 2019 Washington Department of Fish and Wildlife (WDFW) Take Authorization Permit as requested per the Seattle City Light Avian Nest Management Authorization 2018 Annual Report Letter to WDFW; April 17, 2019 (enclosed).

Under statute authority of RCW 77.12.240—Authority to Take Wildlife, Seattle City Light (SCL), within the prescribed conditions listed below, are authorized to harass or take wildlife as requested in the course of conducting maintenance and providing for safe operation of electric utility facilities.

Need to minimize by timing work outside nesting season to extent possible.

However, nest removal is permitted if operation/safety emergency. Need to coordinate with WDFW biologist on raptor nests



Page 1 of 5
MIGRATORY BIRD SPECIAL PURPOSE UTILITY PERMIT

Permit Number: MB161960-0
Effective: 04/01/2019 Expires: 03/31/2022

Issuing Office:
Department of the Interior
U.S. FISH AND WILDLIFE SERVICE
Migratory Bird Permit Office
911 NE 11th Ave.
Portland, OR 97232
Tel: 503-872-2715 Fax: 503-231-2019
Email: permitsR1MB@fws.gov

JENNIFER MILLER
Digitally signed by JENNIFER MILLER
Date: 2019.10.03 14:56:24 -07'00'
CHIEF, MIGRATORY BIRD PERMIT OFFICE - REGION 1

Permittee:
SEATTLE CITY LIGHT
700 FIFTH AVENUE, SUITE 3200
PO BOX 34023
SEATTLE, WA 98124-4023
U.S.A.

Name and Title of Principal Officer:
COLLEEN MCSHANE - MANAGER, NATURAL RESOURCE & ENVIRONMENTAL PLANNING UNIT

Authority: Statutes and Regulations: 16 USC 703-712; 50 CFR Part 13; 50 CFR 21.27.

Location where authorized activity may be conducted:
Activities Conducted: Company property and rights-of-way in WA
Records Maintained: Address in Block 1 Above
KING COUNTY

Reporting requirements:
Annual Report Due: 01/31
See Condition K for additional reporting requirements
Submit To: PermitsR1MB@fws.gov and MigBirdReports@fws.gov

Authorizations and Conditions:
MBPO Contact(s): PermitsR1MB@fws.gov; 503-872-2715
OLE Contact(s): 425-883-8122

A. General conditions set out in Subpart D of 50 CFR 13, and specific conditions contained in Federal regulations cited above, are hereby made a part of this permit. All activities authorized herein must be carried out in accord with and for the purposes described in the application submitted. Continued validity, or renewal of this permit is subject to complete and timely compliance with all applicable conditions, including the filing of all required information and reports.

B. The validity of this permit is also conditioned upon strict observance of all applicable foreign, state, local tribal, or other federal law.

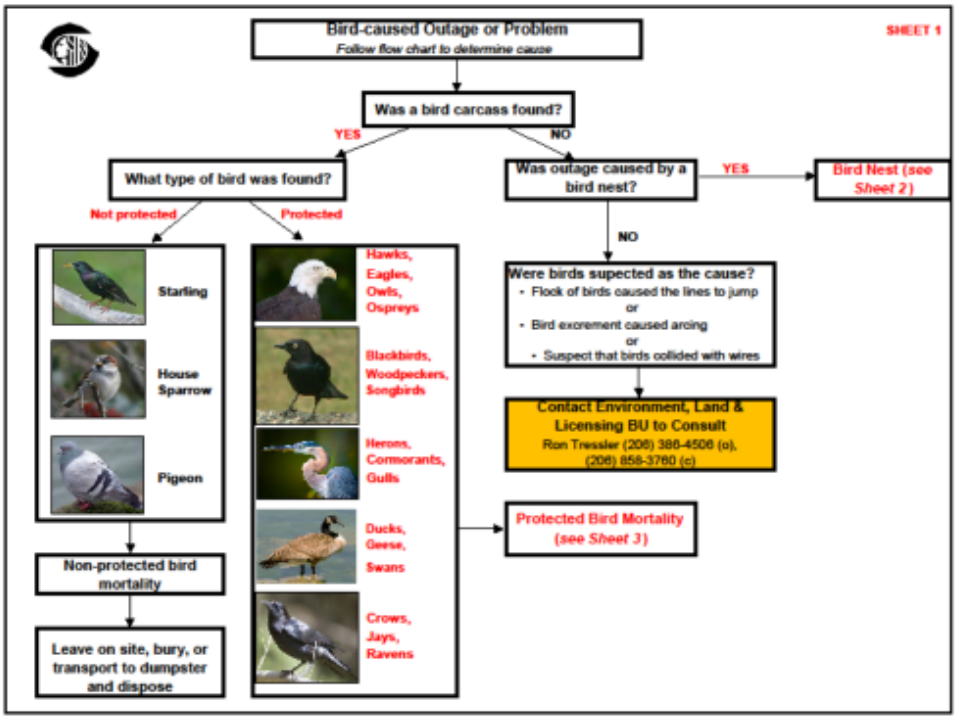
C. Valid for use by permittee named above.

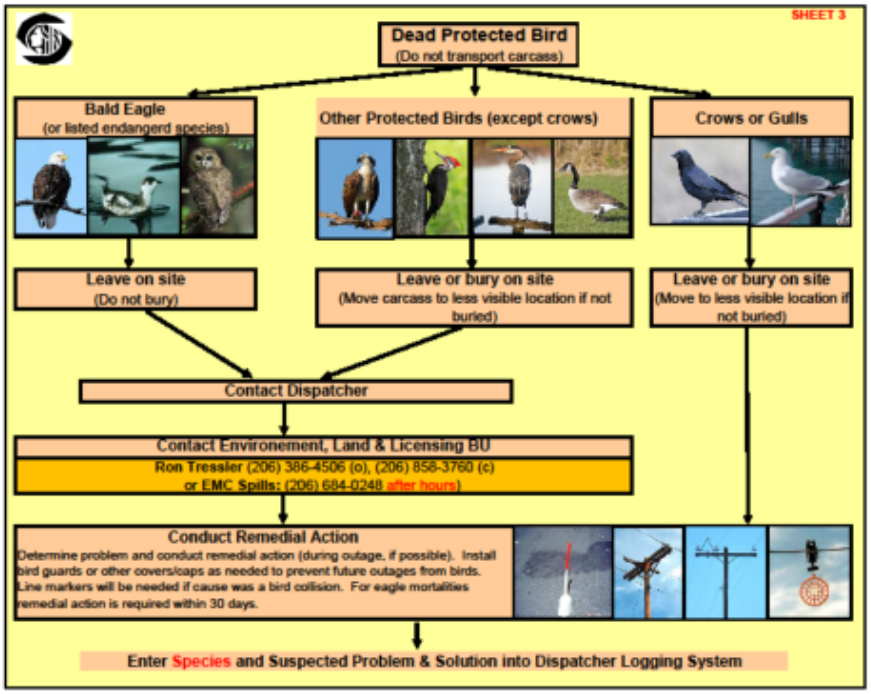
D. **Possession and Transport**

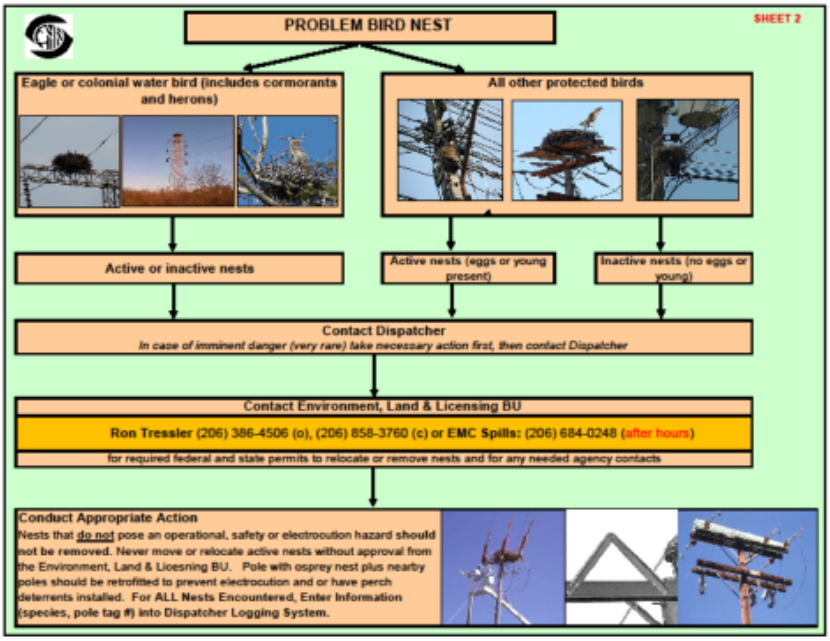
You are authorized to conduct the following activities as specified below for human health and safety purposes or during the course of duties for utility purposes:

(1) **Migratory Birds (except as limited in D(2))**: You and subpermittees are authorized to collect, transport, and possess remains (i.e., whole birds, feathers, parts, bone piles, etc.) of migratory birds found at the location/property specified above. "Collect" includes picking up remains for the purposes of temporary (e.g., for immediate burial) or longer-term (e.g., transportation to landfill, storage, etc.) possession.

Birds collected may be possessed for the tenure of the permit for educational purposes or searcher efficiency and remains' persistence trials or as directed by Office of Law Enforcement (OLE). Any remains in possession, including stored remains, must be disposed of upon permit


Bird-caused Outage or Problem
Follow flow chart to determine cause
SHEET 1
Was a bird carcass found?
YES
NO
What type of bird was found?
Not protected
Protected
Was outage caused by a bird nest?
YES
Bird Nest (see Sheet 2)
NO
Were birds supected as the cause?
• Flock of birds caused the lines to jump
or
• Bird excrement caused arcing
or
• Suspect that birds collided with wires
Contact Environment, Land & Licensing BU to Consult
Ron Tressler (206) 386-4506 (o), (206) 858-3760 (c)
Protected Bird Mortality (see Sheet 3)
Starling
House Sparrow
Pigeon
Non-protected bird mortality
Leave on site, bury, or transport to dumpster and dispose
Hawks, Eagles, Owls, Ospreys
Blackbirds, Woodpeckers, Songbirds
Herons, Cormorants, Gulls
Ducks, Geese, Swans
Crows, Jays, Ravens


SHEET 3
Dead Protected Bird
(Do not transport carcass)
Bald Eagle
(or listed endangerd species)
Other Protected Birds (except crows)
Crows or Gulls
Leave on site
(Do not bury)
Leave or bury on site
(Move carcass to less visible location if not buried)
Leave or bury on site
(Move to less visible location if not buried)
Contact Dispatcher
Contact Environement, Land & Licensing BU
Ron Tressler (206) 386-4506 (o), (206) 858-3760 (c)
or EMC Spills: (206) 684-0248 after hours)
Conduct Remedial Action
Determine problem and conduct remedial action (during outage, if possible). Install bird guards or other covers/caps as needed to prevent future outages from birds. Line markers will be needed if cause was a bird collision. For eagle mortalities remedial action is required within 30 days.
Enter Species and Suspected Problem & Solution into Dispatcher Logging System

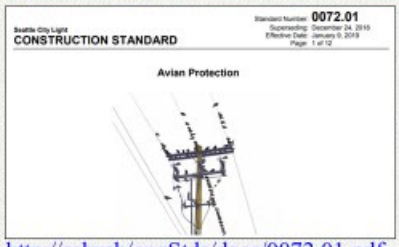

SHEET 2
PROBLEM BIRD NEST
Eagle or colonial water bird (includes cormorants and herons)
All other protected birds
Active or inactive nests
Active nests (eggs or young present)
Inactive nests (no eggs or young)
Contact Dispatcher
In case of imminent danger (very rare) take necessary action first, then contact Dispatcher
Contact Environment, Land & Licensing BU
Ron Tressler (206) 386-4506 (o), (206) 858-3760 (c) or EMC Spills: (206) 684-0248 (after hours)
for required federal and state permits to relocate or remove nests and for any needed agency contacts
Conduct Appropriate Action
Nests that do not pose an operational, safety or electroution hazard should not be removed. Never move or relocate active nests without approval from the Environment, Land & Licesning BU. Pole with osprey nest plus nearby poles should be retrofitted to prevent electrocution and or have perch deterrents installed. For ALL Nests Encountered, Enter Information (species, pole tag #) into Dispatcher Logging System.

TRACKING & REPORTING

- Required to report all native bird mortalities and nest management actions to USFWS & WDFW
- Critical that we get good information from crews via:
  - Dispatcher's Logging System
  - Outage Management System
  - Email or Phone call

Need good location (pole #), species (if known), likely cause, retrofits implemented

UPDATED CONSTRUCTION & MATERIAL STANDARDS



http://sclweb/engStds/docs/0072.01.pdf

http://sclweb/engStds/docs/6910.10.pdf

When to Install Avian Protection Equipment

- Within Avian Sensitive Area
- New construction
- Locations where bird-caused outages occur
- As specifically instructed by ELLBU
- **Environmental Explorer**

http://ln223rp.light.cos.local/flexviewers/ENV_EnvironmentalExplorer/

RETROFITS – ELECTROCUTIONS & COLLISIONS

- Depends on what happened
- Possible solutions
  - Bushing covers ("bird guards")
  - Conductor covers
  - Cutout covers
  - Arrestor covers
  - Insulated wires
  - Perch deterrents
  - Bird flight diverters
- See Standards for CUs

DEAD BIRDS

- More than 60 diseases –
  - E. coli
  - Histoplasmosis
  - Bird Flu [H5N1]
- Use PPEs – latex gloves, disposal dust respirator
- Equipment and clothing to be re-used should be washed with 10% bleach solution

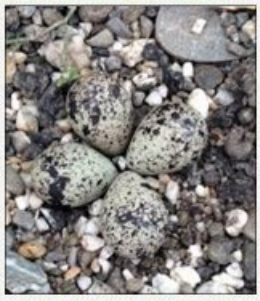
INJURED BIRDS?

- Same PPEs and decontamination procedures
- Contact ELLBU
- Keep contained if possible – be careful!
- PAWS Wildlife Center (425) 412-4040
- Seattle Animal Hospital
- USFWS and WDFW sometimes assist with eagles

DEALING WITH NESTS

Nests can be anywhere!

- On poles
- In poles
- On buildings
- On dams
- On the ground



DEALING WITH NESTS

- Is it a safety or operational problem?
  - No? Leave in place
  - Yes?
    - Timing is critical!
    - Contact ELBU
- General guidance:
  - **Pigeon, starling, house sparrow** – remove anytime
  - **Crow** – remove prior to egg laying
  - **Osprey** – Work with ELLBU to remove nest & install nest exclusion device.



CAMBRIDGE CROSSING OSPREY NEST

WOODPECKERS AND CAVITY NESTING BIRDS

- General Guidance
- Like other nests, they are protected
- August 1 - February 28: Pole with holes may be removed
- March 1 - July 31: Tap hard on pole and look/listen for birds in cavity and remove pole **ONLY if** no birds present or if bird is positively identified as a non-native European Starling or English House Sparrow
- Record observations and actions taken

WHAT ABOUT BIRD SPIKES?

Only use if ELLBU approves!

Spikes often create nest foundation

WHAT THIS MEANS FOR YOU

- **Report information in log**
- **Safe and Proper Handling of sick or dead birds**
- **Commit** to bird-safe retrofits - fix the problem!
- **Follow** standards for new construction and rebuilds in avian sensitive areas or where bird-caused outages are documented **(consult with ELLBU)**
- **Avoid disturbing nesting birds** – no matter where they might be!

WHAT THIS MEANS FOR YOU

Reporting to Dispatch:

- Species - if known
- Where – **Pole #** & address
- What happened?
- Was there avian protection present?
- What retrofits were installed?

Coordination with Environmental

Report nest issues early!

Tell us what is or is not working

Birds Issues during Spill Response hours

The caller could be a dispatcher, crew chief, or a supervisor/manager

Always use PPEs (gloves eye protection) and hand tools to handle birds

Avian Protection Lead (APL): Ron Tressler at (206) 858-3760 (cell) or (425) 890-9001 (pers. Cell)

Backup: Andrew Bearlin 206-858-0891 (cell) or Chris Townsend 206-304-1210 (cell)

Date: Time: Spill Responder Name:

Ask the caller the following questions:

The caller's name: Phone number(s):

Where was the bird found?

Address: Pole Number:

For all Birds: Species? common birds (crows, gulls, starlings, pigeons). "Little brown birds" are typically English house sparrows. Uncommon species include Hawks (usually red-tailed), Bald eagle, Osprey, Falcons, Owls, Canada geese, Ducks.

Description of the bird (alive vs. injured), area, and any notes. Instruct crew to take photo of the bird and email to ron.tressler@seattle.gov.

For all birds: Is there evidence of electrocution (singed feathers, distinct burnt smell, exit wound)? Yes:___ No:___

Can they tell what specific equipment was involved?

For all birds: Is there evidence that the bird collided with something (broken neck, broken wing)? Yes:___ No:___

For **INJURED** Bird: Call APL; Instruct crew to contact PAWS (425-412-4040). For injured eagle they should also call U.S. Fish and Wildlife Service (425-883-8122) and/or WDFW (425 892-0267) IF APL cannot be contacted. Keep animal contained (wrapped in blanket or in box), if possible, and deliver to rehab center.

For **DEAD** common species: Do one of the following:

(1) Leave the carcass in place. This should happen only if the dead bird is not in an area that receives a lot of traffic or public use. They can also move the carcass to a nearby less-obvious place, like under a shrub hedge.

(2) Dispose of the carcass. They should use gloves or a shovel to put the carcass in a plastic bag and into a garbage receptacle.

For **DEAD** uncommon species *except bald eagles*, tell the dispatcher/crew chief to leave the bird on site. If possible, move carcass to a less obvious spot (e.g. under a shrub or hedge) or covered. Call APL.

How was the carcass temporarily secured onsite:

For **DEAD** bald eagles, have someone remain with the carcass on site until further direction. DO NOT KEEP ANY FEATHERS OR PARTS. Call APL. If unreachable, direct crew to place the carcass in a durable plastic bag and wrap/tape shut, tag with SCL identification and take carcass to work station and store in a cool location, preferably a refrigerator or freezer or hide onsite. During work hours call APL will contact U.S. Fish and Wildlife Service Enforcement at (425) 883-8122, ext. 224 to report and arrange for pick up.

Where was carcass stored/disposed?

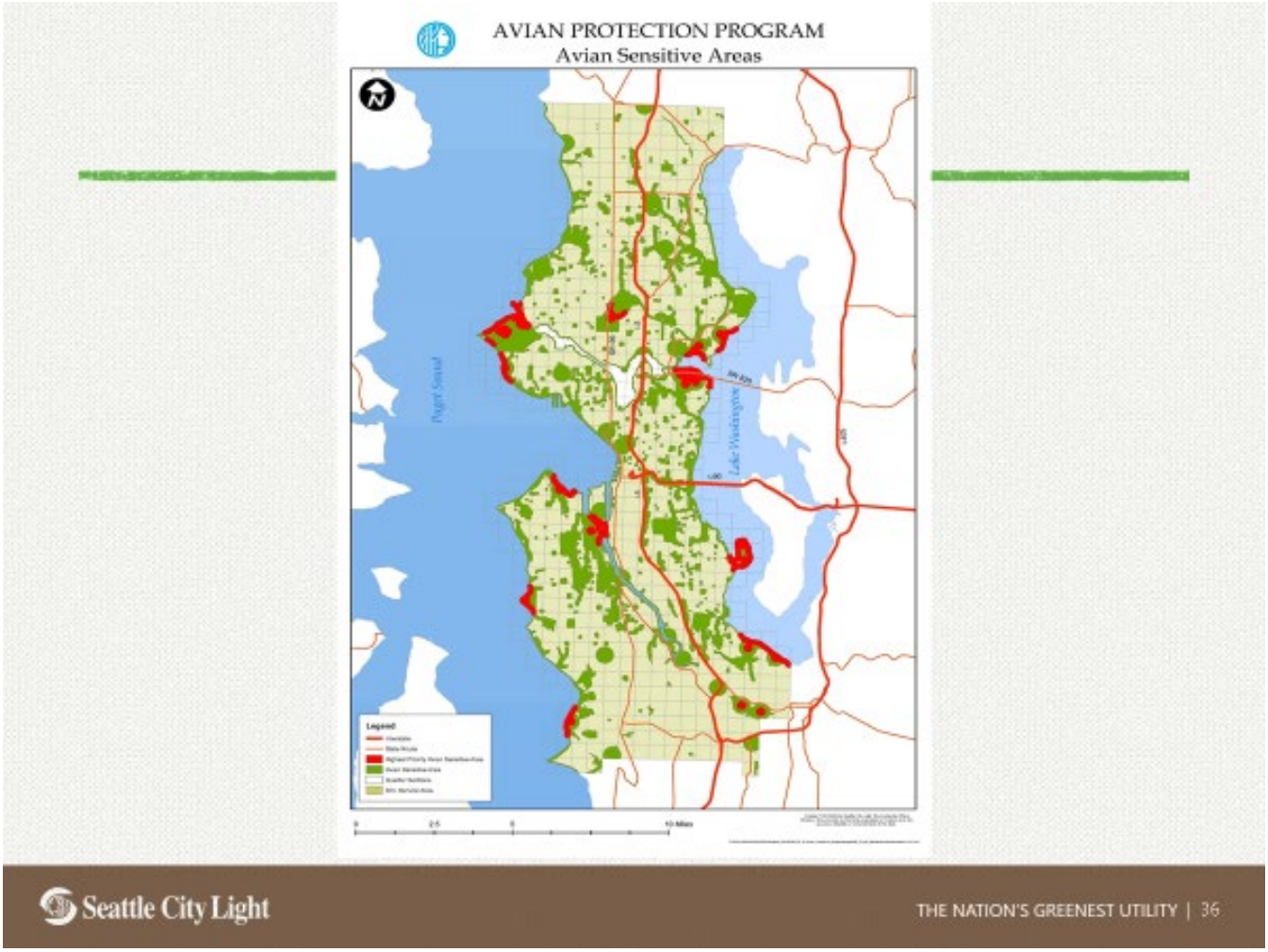
Seattle City Light THE NATION'S GREENEST UTILITY | 34

QUESTIONS?

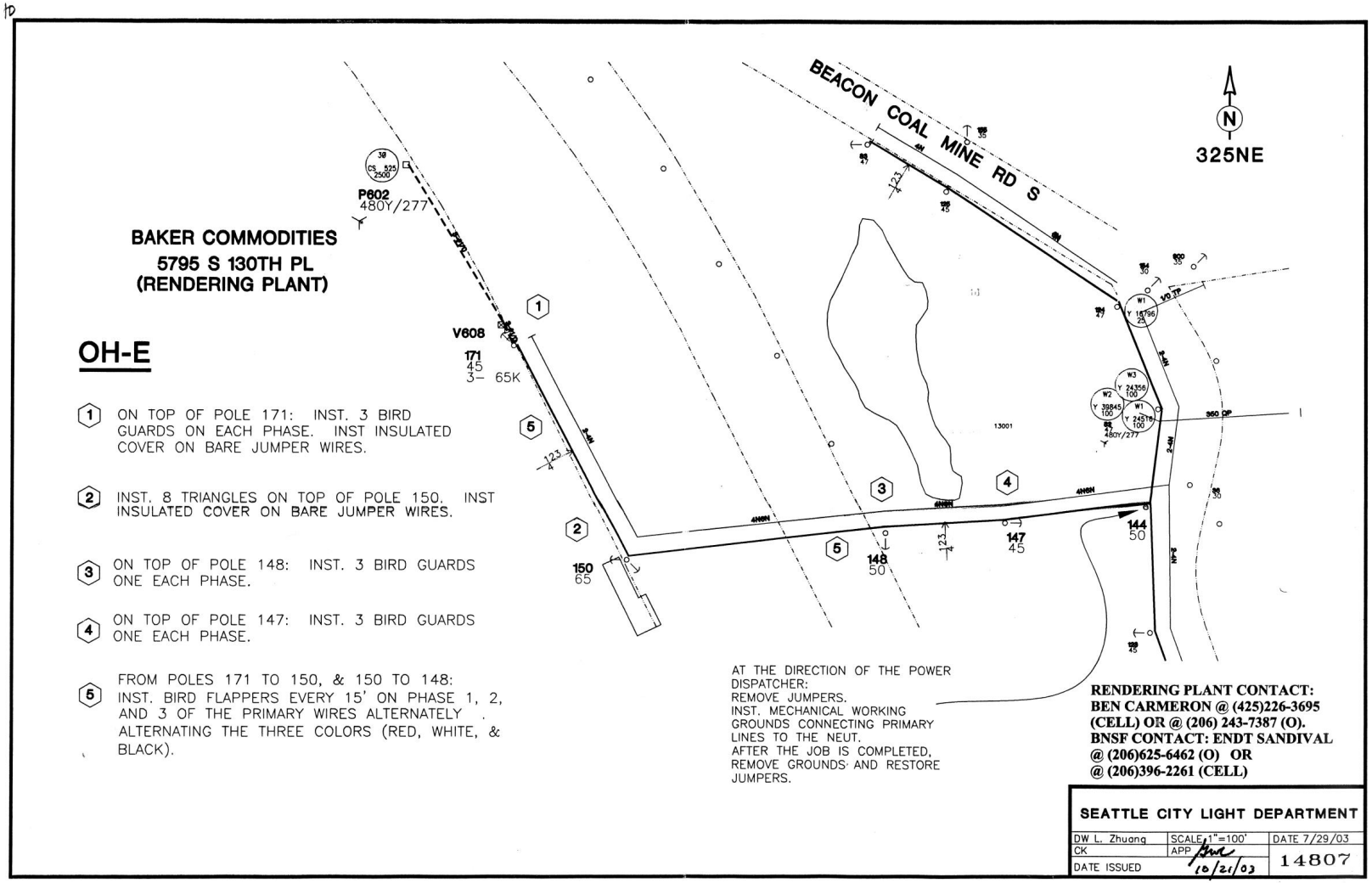
Ron Tressler
206-386-4506
206-858-3760 (cell)
Ron.Tressler@seattle.gov

http://www.seattle.gov/light/enviro/avian/

Seattle City Light THE NATION'S GREENEST UTILITY | 35


AVIAN PROTECTION PROGRAM
Avian Sensitive Areas
Puget Sound
Lake Washington
Legend
0
2.5
5
10 Miles
Seattle City Light
THE NATION'S GREENEST UTILITY | 36

Appendix C. Example of a Site – Specific Plan


BEACON COAL MINE RD S
N
325NE
BAKER COMMODITIES
5795 S 130TH PL
(RENDERING PLANT)
OH-E
P602
480Y/277
V608
171
45
3– 65K
150
65
148
50
147
45
144
50
13001
1 ON TOP OF POLE 171: INST. 3 BIRD GUARDS ON EACH PHASE. INST INSULATED COVER ON BARE JUMPER WIRES.
2 INST. 8 TRIANGLES ON TOP OF POLE 150. INST INSULATED COVER ON BARE JUMPER WIRES.
3 ON TOP OF POLE 148: INST. 3 BIRD GUARDS ONE EACH PHASE.
4 ON TOP OF POLE 147: INST. 3 BIRD GUARDS ONE EACH PHASE.
5 FROM POLES 171 TO 150, & 150 TO 148: INST. BIRD FLAPPERS EVERY 15' ON PHASE 1, 2, AND 3 OF THE PRIMARY WIRES ALTERNATELY ALTERNATING THE THREE COLORS (RED, WHITE, & BLACK).
AT THE DIRECTION OF THE POWER DISPATCHER:
REMOVE JUMPERS.
INST. MECHANICAL WORKING GROUNDS CONNECTING PRIMARY LINES TO THE NEUT.
AFTER THE JOB IS COMPLETED, REMOVE GROUNDS AND RESTORE JUMPERS.
RENDERING PLANT CONTACT:
BEN CARMERON @ (425)226-3695
(CELL) OR @ (206) 243-7387 (O).
BNSF CONTACT: ENDT SANDIVAL
@ (206)625-6462 (O) OR
@ (206)396-2261 (CELL)
SEATTLE CITY LIGHT DEPARTMENT
DW L. Zhuang
SCALE 1"=100'
DATE 7/29/03
CK
APP
DATE ISSUED 10/21/03
14807