APPENDIX Q: CONSTRUCTION AVIAN PROTECTION PLAN
LOS ANGELES DEPARTMENT OF WATER AND POWER

Barren Ridge Renewable Transmission Project
Avian Protection Plan

PROJECT NUMBER: 121085

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Barren Ridge Renewable Transmission Project
Avian Protection Plan

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1.0 INTRODUCTION

The following Avian Protection Plan (APP) has been designed to protect resident and migrating avian species that may be placed at risk from construction of the Los Angeles Department of Water and Power’s (LADWP) Barren Ridge Renewable Transmission Project (BRRTP, Project). This APP has been developed consistent with the Avian Power Line Interaction Committee’s (APLIC) principles of avian protection (APLIC 2005) to support LADWP’s commitment to avian safety and compliance with the Migratory Bird Treaty Act of 1918 (MBTA, 16 U.S.C. 703 – 712), the Bald and Golden Eagle Protection Act of 1940 (BGEPA, 16 U.S.C. 668 – 668d), and the Endangered Species Act of 1973, as amended (ESA, 16 U.S.C. 1531 – 1544). It will outline plans, methods, and requirements to ensure that birds are protected during the construction of BRRTP.

Transmission structures present significant dangers to avian species (APLIC 2006). Birds nesting on structures may face increased risk of electrocution and collision if adjacent structures are not avian-safe, or if the area has a high density of existing transmission wires. Nests may also be more susceptible to damage from the elements, especially wind, if they are constructed on open poles, such as those used for distribution lines, or structures without either dense latticework or nesting platforms. Such risks also become costly to the utility company because of the risk of outages due to electrocutions, contact of nesting material with wires, prey falling on live equipment, contamination due to streamers (feces), and collisions with conductors. It is estimated that up to one billion human-related bird fatalities occur each year in the United States (Erickson et al. 2005). Of these, up to 174 million deaths nationwide are estimated to be from electrocutions and collisions with transmission structures (Erickson et al. 2001), hundreds of thousands attributable to the state of California alone (Hunting 2002).

This construction APP has been written with consideration to and guidance from the data and suggestions presented in APLIC’s Mitigating Bird Collisions with Power Lines: The State of the Art in 1994 (APLIC 1994), Avian Protection Plan Guidelines (APLIC 2005) and Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 (APLIC 2006). In addition, existing information on bird use in the Project area has been combined with new Project-specific survey information to effectively address avian safety specific to the construction of BRRTP. The protective measures and methods described in this document are consistent with Project mitigation measures developed for the Project’s Environmental Impact Statement/Environmental Impact Report to reduce impacts to migratory birds, bald and golden eagles, and listed avian species.

The following APP does not address the operation and maintenance phase of the Project. An operation and maintenance APP will be developed once the Project has finalized the design on all the project components. The APP will address the protection of resident and migrating avian species that may be placed at risk from the operation and maintenance of the Project and include methods and requirements to ensure that birds are protected during this phase of the Project.

1.1 PROJECT DESCRIPTION

The BRRTP would be located in Kern and Los Angeles counties. As proposed by LADWP, it would be approximately 76 miles in length extending from the Barren Ridge Switching Station to Rinaldi Substation, and extending approximately 12 miles from the Castaic Power Plant to the proposed Haskell Canyon Switching Station (Figure 1). The proposed BRRTP would include the following:

(1) Construction of 61 miles of a new double-circuit 230 kilovolt (kV) transmission line from the Barren Ridge Switching Station to a new switching station located within Haskell Canyon. Approximately 13 miles of National Forest System (NFS) lands, four miles of BLM-managed public lands, and 45 miles of private property would be traversed.

(2) Addition of approximately 12 miles of a new 230 kV circuit on the existing double-circuit structures from Haskell Canyon to the Castaic Power Plant. Approximately four miles would traverse NFS lands, and 300 feet would traverse BLM-managed lands.
(3) Reconductoring of 76 miles of the existing Barren Ridge-Rinaldi (BR-RIN) 230 kV transmission line with larger capacity conductors between the Barren Ridge Switching Station and Rinaldi Substation. Approximately 13 miles of NFS lands, four miles of BLM-managed public lands, and 60 miles of private property would be traversed.

(4) Construction of a new switching station in Haskell Canyon.

(5) Expansion of the existing Barren Ridge Switching Station.
FIGURE 1. PROPOSED ACTION MAP

Proposed Action Components

- New 230kV Transmission Line
- New 230 kV Circuit
- Reconductoring of Existing 230 kV Transmission Line (Barren Ridge - Rinaldi)
- Expansion of Existing Switching Station
- New Switching Station

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT
2.0 APPlicable LAws and Regulations

2.1 Federal

2.1.1. Migratory Bird Treaty Act

In the United States, 836 migratory birds native to the United States or its territories are protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 United States Code 703-712). The MBTA includes provisions outlined in four separate treaties between the United States and Canada (represented at the time by Great Britain), Mexico, Japan, and Russia that provide for the protection of migratory birds. It prohibits the act of “taking” birds, wherein the word “take” is defined as “to pursue, hunt, shoot, wound, kill, trap, capture, or collect,” or to attempt any of these actions, without specific authorization from the Secretary of the Interior. Because the MBTA is a strict liability statute, proof of intent is not required when categorizing a “take” violation. The MBTA also applies to the import, export, shipment, transport, or carrying of any migratory bird or their parts, nests, or eggs.

While the MBTA has no provision for allowing unauthorized take, it must be recognized that some birds may be killed at structures such as transmission lines even if all reasonable avoidance measures have been implemented. The U.S. Fish and Wildlife Service (USFWS) Office of Law Enforcement carries out its mission to protect migratory birds not only through investigations and enforcement, but also through fostering relationships with individuals and industries that proactively seek to eliminate their impacts on migratory birds. While it is not possible under the MBTA to absolve individuals, companies, or agencies from liability if they follow these recommended guidelines, the Office of Law Enforcement and Department of Justice have used enforcement and prosecutorial discretion in the past regarding individuals, companies, or agencies who have made good faith efforts to avoid the take of migratory birds. A violation of the MBTA by an individual can result in a fine of up to $15,000 and/or imprisonment of up to six months for a misdemeanor, and up to $250,000 and/or imprisonment for up to two years for a felony. Fines are doubled for organizations.

2.1.2. Endangered Species Act

In addition to the MBTA, some birds in the United States are protected by the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531-1544, as amended). The ESA protects federally listed threatened or endangered species and their habitats from unlawful take, where “take” is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” It also prohibits the illegal import, export, carrying, transport, or shipment of any listed species without authorization from the Secretary of the Interior. With a submitted conservation plan, the Secretary may permit exceptions for scientific purposes, the propagation or survival of the affected species, or for instances where “taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.” Violations of the ESA can result in civil penalties of up to $25,000 for each violation or, for criminal violations, a penalty of up to $50,000 or imprisonment for up to one year, or both.

2.1.3. Bald and Golden Eagle Protection Act

Bald and golden eagles are further protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668C). This prohibits the unlawful take of any bald or golden eagle, where the word “take” is defined as to “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.” Taking, participating in the exchange of, or in any way transporting any bald eagle, alive or dead, or any part, nest, or egg of these eagles is punishable by a penalty up to $5,000 or imprisonment up to one year, or both, for the first offense. The second and subsequent offenses are punishable by a penalty up to $10,000 or imprisonment up to two years, or both. First-time violators of the “take” provision above may be fined up to $100,000 and/or imprisoned up to one year, and subsequent violations may result in a fine of up to $250,000 and/or two years imprisonment.
2.2 STATE

2.2.1. California Statutes

In the state of California, birds may be further protected by the California Endangered Species Act (CESA) (California Department of Fish and Game [CDFG] Code Sections 2050-2097); special provisions for take or destruction of bird nests or eggs and, in particular, raptor nests or eggs (CDFG Code Sections 3503-3503.5); state extension of the MBTA and fully protected species clauses (CDFG Code Section 3511-3513); and, to a lesser degree, the California Environmental Quality Act (CEQA) (Public Resources Code 21000-21177). Penalties for violation of these laws vary, but can result in fines of up to $10,000.

CESA provides for the protection of State-listed threatened and endangered species against unlawful take, where “take” means to “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” It also prohibits the import, export, possession, or sale of any State-listed species. Exceptions may be granted through authorization by CDFG, or when the United States Secretary of the Interior or Commerce permits take, upon notification of the CDFG director. No exceptions may be granted for the take or possession of fully protected birds except for necessary scientific research or species recovery.

3.0 AVIAN INTERACTION ISSUES

3.1 AVIAN ELECTROCUTIONS

Each year, power line electrocutions cause the death of many large-bodied, vulnerable, and endangered avian species (Sergio et al. 2005). California condors fall into all three of these categories and are the largest bird in the Project area. There are 12 documented cases of California condors being killed by power lines. Ten of these cases were the result of interactions with distribution lines. Only two were from transmission lines (USFWS 2010).

Electrocution may occur because of a combination of biological and electrical design factors (Janss and Ferrer 2001). Biological factors are those that influence avian use of poles, such as habitat, prey, and species. Raptors in particular may be more likely to use poles because they are able to use them for perch-hunting, an energy-saving foraging behavior utilized by many species (APLIC 2006). Raptors and other types of birds will use poles and towers for nesting, especially in open areas or areas with low vegetation where there may not be many natural nesting locations (Bevanger 1994, APLIC 2006). Likewise, there is evidence to suggest that the design of transmission lines and pylons is important in determining the risk of death from electrocution (Janss 2000).

The electrical design factor most crucial to avian electrocutions is the physical separation between energized and/or grounded structures, conductors, hardware, or equipment that can be bridged by birds to complete a circuit (APLIC 2006). Energized components would typically consist of phase conductors, while grounded components could include overhead static wires, neutral conductors, grounding conductors, grounded metal braces, or other pole or tower components. It appears that electrocutions are less common on transmission line towers, because line spacing is at a sufficient distance to lessen the chance of birds completing the electrical circuit (Dorin and Spiegel 2005). High mortality rates are associated with structures that have conductors situated over the crossarms (Janss and Ferrer 2001, Ferrer et al. 1991); Ferrer et al. (1991) found that the least dangerous structures possess insulators below the crossarms. Electrical transmission lines tend to electrocute avian species when the animal touches two conductors, or a positive conductor and a ground, at once, especially if the feather area is wet (Bevanger 1998). Hence, body size and behavior, such as perching and roosting on poles or wires, are the keys to understanding why and how birds become electrocuted. Species frequently affected by electrocution seem to include birds of prey, ravens, and thermal soarers (Bevanger 1998). The majority of raptor electrocutions are caused by power lines that are energized at voltage levels of 69 kV and below, whereas “the likelihood of electrocutions occurring at voltages greater than 69 kV is extremely low” (APLIC 2006).
Electrocutions are largely due to the bird perching on conductors and/or insulators and coming in contact with the energized conductor and grounded insulator base or bonding conductor. While wet feathers may raise the risk of electrocution for a bird by increasing conductivity, dry feathers provide insulation, meaning that in most cases birds are electrocuted when they bridge two energized pieces, or an energized and grounded piece, of equipment with conductive fleshy parts such as the feet, mouth, bill, or wrists (APLIC 2006). Research has demonstrated that skin-to-skin contact is approximately ten times more dangerous to birds than the amperages conducted by contact between conductors and wet feathers, and approximately 100 times more dangerous than the conductivity between conductors and dry feathers (APLIC 2006). Wet feathers can conduct dangerous amperages beginning at around 5 kV, whereas dry feathers require currents greater than 70 kV before they will begin conducting current. High winds increase the problem by reducing the amount of control that birds have over their flight and landing patterns and increasing the risk that they will collide with transmission lines or accidentally bridge two components on a transmission structure and become electrocuted.

3.2 BIRD COLLISIONS

Similar to electrocutions, transmission line collisions are also a major factor in avian mortality along utility corridors. Factors that influence collision risk can be divided into three categories: those related to biology, those related to the environment, and those related to the configuration and location of transmission lines (APLIC 2006, Savereno et al. 1996).

3.2.1. Biological Factors Related to Bird Collisions

Biological factors include habitat use, body size, flight behavior, age, sex, and flocking behavior. In general, construction of transmission lines and structures in ecologically sensitive areas, such as wetlands, should be avoided. Wetlands tend to have a high concentration of birds nesting, feeding, roosting, and migrating back and forth, and add to the collision risk if transmission lines are nearby (Bevanger 1994). Construction in areas within the range of special-status species with a high documented collision risk, such as the California condor, should also be avoided. A total of seven deaths from 1993 to 2001 have been reported by USFWS (2009) as a result of collision with transmission lines. These mortalities were determined to be caused by collision with transmission lines by injury characterization (as determined by necropsy) and proximity to transmission lines. One of these deaths occurred at an existing line that would be adjacent and parallel to the new 230 kV circuit (Gibson 1993).

Many birds, especially raptors, will use transmission poles and towers as perches. This can conserve energy by lowering the amount of time dedicated to flying as the birds search for prey below (APLIC 2006). Bird species that spend an abundance of time in the air may face a greater risk than those that are predominantly ground-based (Bevanger 1994). For example, predators that fly at high speeds when tracking prey, such as peregrine falcons or goshawks (Accipiter gentilis), may be more likely to collide with a power line. A bird’s flight performance has been shown to be one of the most important factors determining the chances of collision with a transmission line, perhaps more important than the sheer frequency of birds flying near the lines (Janss 2000). Juvenile birds, which are not as familiar with the surrounding area and are less experienced in both flight and, in the case of raptors, hunting methods, can be expected to have greater likelihoods of colliding with transmission lines (Bevanger 1994, Bevanger 1998, Dorin and Spiegel 2005). However, larger birds, such as the California condor, also tend to be more likely to collide with power lines.

3.2.2. Environmental Factors Related to Bird Collisions

Environmental factors influencing collision risk include the effects of weather and time of day for transmission line visibility, surrounding land use practices that may attract birds, and human activities that may flush birds into transmission lines. Overcast weather or thick fog tend to cause birds to lower
their flying altitudes. Likewise, headwinds generally cause birds to fly lower, whereas tailwinds may cause birds to fly higher (Bevanger 1994, Perdeck and Speek 1984). High winds may cause some species, especially waterfowl, to fly at lower elevations, increasing collision risk (Hunting 2002). If winds are blowing perpendicular to the wires, this can increase collision possibility even further (Hunting 2002). A previous study of avian migrants found that the lowest daily number of migrants was recorded on a day where the average wind speed was 15.5 miles per hour (mph) (Pope et al. 2006). If wind speeds become too strong, thermal formation may be disrupted, reducing the amount of migration through an area. Additionally, excessive cloud cover may also limit ground heating, reducing thermal wind formation and potentially causing a decline in migration of species that predominantly rely on thermals for movement, such as raptors (Pope et al. 2006). Depending on the visibility due to the aforementioned weather conditions or other factors such as rain, fog, or snow, transmission lines may be more difficult to see, increasing the likelihood of a collision (Mathiasson 1992). Visibility can also be affected by the time of day. Lines become increasingly difficult to see at times with poor lighting, such as at night, dawn, or dusk, which may pose a greater risk to migratory species because they are not necessarily familiar with a particular region as resident species. One study found that, during observations of waterfowl flights across a transmission line, out of 433 strikes, 432 occurred at night or during poor weather (Hunting 2002). A similar study at the Lake Sangchris-Kincaid Power Plant in Illinois found that only one in 250,000 waterfowl collided with the power lines during the day (Anderson 1978). Further studies by Stout and Cornwell (1976) also emphasize the risk that poor visibility poses to waterfowl in the midst of power lines.

Wetlands, lakes, and streams are all potential “hot spots” for avian risk due to power lines. Because water is often used by birds to forage or congregate, adjacent power lines can pose collision risks to birds that are not aware of their presence or cannot see them. Stout and Cornwell (1976) found that in a review of reported non-hunting mortality of wild waterfowl from 1930 to 1964, 65% of collision mortalities were due to telephone and power lines. A study of migrating mute swans on the coast of Sweden found that, out of 54 swan flocks recorded during the observation period, six flocks had difficulty—but no collisions—crossing power lines, and four mortalities were observed by locals during the same period (Mathiasson 1992). Anderson (1978) postulated that the five factors that most influence waterfowl collision frequency with power lines are: 1) the number of birds present; 2) visibility; 3) species composition and behavior; 4) disturbance; and 5) familiarity with the area. Mathiasson (1992) determined that in his study, the rate of collisions was “mainly a factor of swan frequency and behaviour, and positioning of the wires in the landscape [sic].” Larger water bodies would theoretically attract more birds, and the more birds that are present, the higher the potential to have a collision with power lines. If birds are startled into leaving a water body adjacent to power lines, or are attempting to fly through the area at night when visibility is very poor, especially if they are unfamiliar with the area’s vertical spatial layout, the likelihood of a bird flying into one of the lines increases. Therefore, aquatic areas are a determining factor in the risk to avian species.

Anthropogenic land use may attract or push birds into areas that contain transmission lines. A simple stretch of highway, for instance, may be an attractive area to vultures or similar species because of the sheer amount of roadkill that is created. Agriculture may attract birds foraging in the vegetation or raptors foraging for crop pests. Relatively dense building clusters may push birds into areas with transmission lines because of the flight obstacles.

3.2.3. **Line-related Factors Related to Bird Collisions**

Line-related factors include the configuration and location of the transmission line and transmission line placement with respect to other structures or topographic features. While it is believed that flat-line configurations are less of an avian risk than vertical configurations (Bevanger 1994), power line structure design has not been sufficiently demonstrated to suggest a specific correlation with bird collisions (Janss 2000). However, there seems to be a positive relationship between the presence of a static wire and the number of bird collisions (Bevanger 1994, Savereno et al. 1996). It is thought that, in many cases, the bird
sees the conductor wires, changes its altitude to avoid them, and subsequently collides with the thinner, less-visible static wire instead. Consequently, studies have demonstrated an average mortality decline of 50 to 60% when markers are placed on static wires in relation to when wires are left unmarked (Savereno et al. 1996).

Transmission line location can also play an important role in the risks imparted to birds. Generally, there is more of a risk in placing a transmission line corridor in an open area than against an existing backdrop (Bevanger 1994). The risks to birds flying across a single corridor in an open space become dependent not only on the line’s visibility, but on the altitude of the bird and its ability to first see the intruding wires, and then change its flight pattern to avoid them. On the other hand, lines that are placed against existing lines or against a landscape reference are theoretically easier to avoid. Multiple lines going through one corridor prevent birds from having to continually change their flight patterns, allowing them to instead avoid several sets of lines all at once. Similarly, lines placed along the base of a cliff, a row of trees, a building, a bridge, or a similar barrier will theoretically help avoid collisions because birds are forced to change their altitude to avoid the impediment (Bevanger 1994). The simple parallel or perpendicular placement of transmission line corridors relative to avian flyways is also an influence on the risk that the lines pose. There tends to be a greater risk in putting lines in between areas necessary for life history, such as foraging and roosting, especially if the two areas are separated by a short distance (Bevanger 1994). If a line is placed near a ridgeline, the risk to avian species can increase. When horizontal winds get deflected upward by ridgelines, the resulting updrafts get used by raptors to gain elevation for gliding purposes. Raptors will also use thermals, which can rise to hundreds or thousands of meters, for gliding purposes (Pope et al. 2006). Lines that are placed near ridgelines can pose collision risks to birds that may be using updrafts or thermals in their migratory paths and may not see the transmission lines in time to maneuver out of the way. Alternatively, canyons or valleys may act as funnels for migrating birds, and can pose collision risks if lines cross perpendicular to the natural direction of flight. Research suggests that wind turbines placed near gullies may pose higher risks to birds passing through (Thelander and Rugge 2000). It may be reasonably assumed that transmission towers, poles, or lines pose a similar risk. If water is present, the issue may become further complicated because more birds have the potential to be attracted to the area as they are migrating through.

Bird collisions also tend to occur with transmission lines when migrant species travel at reduced altitudes near tall structures, such as transmission lines and towers. It is difficult to predict the magnitude of collision-caused bird mortality without extensive information on bird species and movements in the Project vicinity. This data is not available for the proposed transmission line study area; however, it is generally expected that collision mortality would be greatest where the movements of susceptible species are the greatest (e.g., near open bodies of water, wetlands, ridgelines), such as Castaic Reservoir. A portion of this area already supports existing transmission lines. It is possible that birds would strike the new transmission lines, but it is not expected to result in a substantial increase from current conditions due to the existing transmission lines. Because the new 230 kV circuit would be placed on existing towers, construction of this portion of the Project would not result in changes to tower heights or increased vertical obstacles.

3.3 SPECIAL-STATUS AVIAN SPECIES POTENTIALLY OCCURRING WITHIN THE PROJECT AREA

Because nearly all avian species in the United States have protection under the Migratory Bird Treaty Act, avian species that have other state or federal levels of protection besides the MBTA are referred to as “special-status” to denote their extra levels of protection. Table 1 summarizes the special-status avian species that may occur within the Project area, including their regulatory statuses, habitat requirements, and potentials to occur within the individual components of the Project. Species occurrence potentials were determined according to the following criteria:
- **Absent (A)**: Species or sign not observed on the site, outside of the known range, and conditions unsuitable for occurrence.
- **Unlikely (U)**: Species or sign not observed on the site, but conditions marginal for occurrence.
- **Possible (Po)**: Species or sign not observed on the site, but conditions suitable for occurrence and/or an historical record exists in the vicinity.
- **Likely (L)**: Species or sign not observed on the site, but reasonably certain to occur on the site based on conditions, species ranges, and recent records.
- **Present (Pr)**: Species or sign of their presence recently observed on the site.

### Table 1. Special-status Avian Species with Potential to Occur within the Proposed Action Area

<table>
<thead>
<tr>
<th>Species</th>
<th>Scientific Name</th>
<th>Regulatory Status</th>
<th>Regulatory Status (Federal, State, Other)</th>
<th>Habitats Requirements</th>
<th>Potential to Occur – Proposed Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern Goshawk</td>
<td>Accipiter gentilis</td>
<td>FSS</td>
<td>CDFG SC</td>
<td>In or near coniferous forests. Nests constructed on north slopes near water in red firs, lodgepole pines, Jeffrey pines, and aspens.</td>
<td>A</td>
</tr>
<tr>
<td>Golden Eagle</td>
<td>Aquila chrysaetos</td>
<td>CDFG FP, CDFG WL, USFWS BCC</td>
<td>Nests in cliffs or large trees, typically in mountainous regions and in the vicinity of open grassland or oak savanna habitat. Forages in areas of open habitat.</td>
<td>Pr A Pr</td>
<td></td>
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<tr>
<td>Burrowing Owl</td>
<td>Athene cunicularia</td>
<td>CDFG SC, USFWS BCC</td>
<td>Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas. Uses rodent burrows in sparse grassland, desert, and agricultural habitats.</td>
<td>L A L</td>
<td></td>
</tr>
<tr>
<td>Swainson's Hawk</td>
<td>Buteo swainsonii</td>
<td>ST</td>
<td>USFWS BCC</td>
<td>Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannas, agricultural areas, and ranches. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.</td>
<td>Po A Po</td>
</tr>
<tr>
<td>Western Yellow-Billed Cuckoo</td>
<td>Coccyzus americanus occidentalis</td>
<td>FC</td>
<td>USFWS BCC</td>
<td>Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in willow and cottonwood forest, with understory of blackberry, nettles, or wild grape.</td>
<td>Po A Po</td>
</tr>
<tr>
<td>Southwestern Willow Flycatcher</td>
<td>Empidonax tralli extimus</td>
<td>FE</td>
<td>SE</td>
<td>Riparian woodlands in Southern California.</td>
<td>Po A Po</td>
</tr>
<tr>
<td>Peregrine falcon</td>
<td>Falco peregrinus</td>
<td>Delisted SE</td>
<td>CDFG FP, USFWS BCC</td>
<td>Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds, and man-made structures. Nest consists of a scrape on a depression or a ledge in an open site.</td>
<td>Po Po Po</td>
</tr>
<tr>
<td>California Condor</td>
<td>Gymnogyps californianus</td>
<td>FE</td>
<td>SE</td>
<td>Requires vast expanses of open savannah, grass savannah, grasslands, and foothill chaparral in mountain ranges of moderate altitude. Microhabitat consists of deep canyons with rocky walls for nesting sites. Forages up to 150 miles from roost/nest.</td>
<td>Po Pr Pr</td>
</tr>
<tr>
<td>Species</td>
<td>Scientific Name</td>
<td>Regulatory Status</td>
<td>Habitat Requirements</td>
<td>Potential to Occur – Proposed Action</td>
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<tr>
<td>Bald Eagle</td>
<td>Haliaeetus leucocephalus</td>
<td>Delisted SE CDFG FP</td>
<td>Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests are within one mile of water. Nests in large, old-growth or dominant live trees with open branches, especially Ponderosa pine. Roosts communally in winter.</td>
<td>A Po A</td>
<td></td>
</tr>
<tr>
<td>Loggerhead Shrike</td>
<td>Lanius ludovicianus</td>
<td>CDFG SC USFWS BCC</td>
<td>Open space with patchy shrubs and trees, including desert scrub, agricultural areas, pastoral habitat, and suburban areas.</td>
<td>Pr Po Pr</td>
<td></td>
</tr>
<tr>
<td>Coastal California Gnatcatcher</td>
<td>Polioptila californica californica</td>
<td>FT CDFG SC</td>
<td>Obligate, permanent resident of coastal sage scrub below 2,500 feet in Southern California. Low, coastal sage scrub in arid washes, on mesas and slopes. Not all areas classified as coastal sage scrub are occupied.</td>
<td>A Pr Pr</td>
<td></td>
</tr>
<tr>
<td>California Spotted Owl</td>
<td>Strix occidentalis occidentalis</td>
<td>FSS CDFG SC USFWS BCC</td>
<td>Mixed conifer forest, often with an understory of black oaks and other deciduous hardwoods. Canopy closure greater than 40%. Most often found in deep-shaded canyons, on north-facing slopes, and within 300 meters of water.</td>
<td>Po Po Po</td>
<td></td>
</tr>
<tr>
<td>Least Bell’s Vireo</td>
<td>Vireo bellii pusillus</td>
<td>FE SE USFWS BCC</td>
<td>Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms, below 2,000 feet. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.</td>
<td>Po Pr Po</td>
<td></td>
</tr>
</tbody>
</table>

Listing Status:
U.S. Fish and Wildlife Service (USFWS)
- FE = listed as Endangered under ESA
- FT = listed as Threatened under ESA
- FC = Candidate for listing under ESA
- BCC = Bird of Conservation Concern
- Delisted = Formerly listed under ESA

US Forest Service (USFS)
- FSS = Forest Service Sensitive

California Department of Fish and Game (CDFG)
- SE = listed as Endangered under CESA
- ST = listed as Threatened under CESA
- SC = listed as Species of Concern
- FP = listed as Fully Protected under CDFG Code

### 4.0 AVIAN PROTECTION PLAN COMPONENTS

The following section describes APP components and how they pertain to the construction of the BRRTP. There are twelve components to an APP, as determined by APLIC (2005):

- Corporate policy
- Training
- Permit compliance
- Construction design standards
- Nest management
- Avian reporting system
- Risk assessment methodology
• Mortality reduction measures
• Avian enhancement options
• Quality control
• Public awareness
• Key resources

Not all APPs will contain information about all twelve components, as each document will be specific to the utility and its needs. The components outlined below provide background information where appropriate on how each component is relevant to the BRRTP and how it will be implemented. At the end of each component, where applicable, a summary is provided to give a clear statement of what actions LADWP will take to ensure avian safety during the BRRTP’s construction.

4.1 LADWP AVIAN PROTECTION POLICY

The Los Angeles Department of Water and Power recognizes that not only can avian interactions and collisions with its facilities cause bird injuries or deaths, but that they can cause utility outages, raise utility rates, result in fires in adjacent areas, or lead to strained relationships between LADWP and overseeing resource agencies or the general public. As such, LADWP is committed to protecting avian species that occur within the vicinity of its projects, structures, and complexes. The responsibility of effectively protecting avian species and minimizing avian risk at its facilities lies both with LADWP management and with its employees.

To this end, LADWP will:

• Implement and comply with this Avian Protection Plan (APP);
• Ensure that its actions comply with the most recent applicable laws, regulations, permits, APP procedures, and any applicable APLIC guidelines that may be updated in the future;
• Document bird mortalities; problem poles, towers, or lines; and problem nests;
• Provide information, resources, and training to improve its employees’ knowledge and awareness of the APP;
• Retrofit any poles or towers that appear to be problem spots for avian safety, or where a protected bird species has been killed; and
• Participate in or sponsor research or development furthering avian power line interaction safety, and incorporate any new advancements that develop as a result of this research, as applicable to LADWP power lines or transmission structures.

4.2 TRAINING

LADWP project management, supervisors, construction crews, and contractors will undergo avian protection awareness training prior to construction on BRRTP. Ensuring that Project personnel are knowledgeable and aware of the protocols and methods outlined in this APP will decrease the likelihood of dangerous avian interactions and increase the likelihood of quick and efficient responses to incidents. All BRRTP on-site Project personnel will undergo a Worker Environmental Awareness Program (WEAP) that places emphasis on LADWP’s avian protection policy (described above in Section 4.1, LADWP Avian Protection Policy), any Project permits that may be issued for avian protection, special-status avian species that could occur during construction and where they would be most likely to occur, how to identify these species, their natural histories where relevant to local construction activity, what construction measures and best management practices to employ to ensure their safety, and what steps to take should an avian injury or mortality occur—including carcass disposal protocol—or should a bird nest be discovered within 500 feet of the general construction area. Training will also include a discussion of the law and the consequences for non-compliance with this APP and/or with applicable permits or regulations. All new construction personnel will be required to undergo WEAP training prior to starting
work on BRRTP. For a more explicit discussion of how newly discovered nests or avian incidents will be reported, see Section 4.5, Nest Management, and Section 4.6, Avian Reporting System, respectively.

Summary

- All LADWP Project-related management, supervisors, crew members, and contractors will undergo an avian protection awareness training prior to the start of construction.
- All LADWP on-site personnel will undergo WEAP training with emphasis on avian protection prior to the start of construction.
- All new construction personnel will undergo WEAP training before they begin work.

4.3 PERMIT COMPLIANCE

LADWP and its Project personnel, including contractors, will at all times attempt to remain in compliance with applicable avian permits that may be issued for the construction of BRRTP. Should construction be found to be out of compliance with a Project permit, LADWP Environmental Services staff will be notified so that the non-compliance can be documented with the appropriate resource agency and appropriate remedial actions can be taken.

The following permits may be applicable to the construction of the BRRTP. However, it is unknown which or how many of these would be required or issued for this Project. Currently, LADWP does not possess federal or State permits pertaining to migratory birds, eagles or federally listed avian species. It is not authorized to capture injured birds, remove inactive eagle or colonial bird nests, disturb active nests of any bird species, or remove or store carcasses. Any such activity will be conducted by the USFWS or under their direct supervision. This APP will be modified if LADWP obtains a permit in the future.

- **Incidental Take Permits** – Incidental take permits are issued to allow the take of specified individuals per the conditions within each permit.
  - **Section 7 Incidental Take Statement** – The only federally listed avian species known to be in the Project area that are at risk for collision or mortality are the California condor, coastal California gnatcatcher, and least Bell’s vireo. Because of the voltage of the BRRTP transmission lines and the large separation distance that will be required, electrocution is highly unlikely. Based on 2008 and 2009 California condor tracking information provided by USFWS, this species is expected to be present or in the vicinity of the new 230 kV circuit and the lowermost portions of the reconductoring corridor, in the San Gabriel Mountains (USFWS 2008, USFWS 2009). Coastal California gnatcatchers were observed in the Project area near Castaic Lake during BRRTP bird use count surveys conducted by POWER Engineers, Inc. (POWER) in 2010 and 2011 and by POWER biologists on the southern end of the reconductoring component in the winter of 2009/2010. A population of least Bell’s vireo was observed numerous times between Castaic Lake and Castaic Lagoon between April and July 2005. Because construction in these two areas will be on existing towers and not on new towers, LADWP will confirm that towers that are in the vicinity of documented condor activity sufficiently meet construction design standards applicable to this species as described in Section 4.4, Construction Design Standards. To reduce the risk of collision, LADWP will also implement markers to assist birds in detecting power lines, also described in Section 4.4. If it is determined that there is still an electrocution or collision risk to California condors—or to any other species that may become federally listed prior to construction—as a result of BRRTP’s construction, LADWP may need to seek a Section 7 Incidental Take Statement which, if issued, would describe the amount of take of each applicable species that would be allowed.
  - **Bald and Golden Eagle Act Permit** – Based on known occurrences and activities in the vicinity of the Project area, it is not expected that a permit for take of bald or golden eagles will be necessary during BRRTP’s construction. Should any eagle electrocution or collision...
incidents occur during construction or should an eagle nest be discovered that will be impacted by construction, LADWP construction crews will carry out measures described in Section 4.5, Nest Management, and Section 4.6, Avian Reporting System, and immediately notify LADWP Environmental Services staff, who will in turn report the information to USFWS.

- **Section 2081 Permit** – These are incidental take permits for State-listed species, authorized by CDFG under Sections 2081(b) and (c) of the California Endangered Species Act. They are issued in circumstances where the take is incidental to an otherwise lawful activity; where impacts of the take are minimized and fully mitigated; where the mitigation measures are roughly proportional in extent to the impact, maintain the applicant’s objectives to the greatest extent possible, and are capable of successful implementation; where adequate funding is available for implementation and monitoring of the mitigation measures; and where the permit will not jeopardize the species’ continued existence. State-listed species that may be at risk of electrocution or collision during BRRTP’s construction based on potential or known occurrence information include Swainson’s hawk, peregrine falcon, California condor, and bald eagle. Where these species are at greater risk, LADWP will implement avian safety measures recommended in Section 4.4, Construction Design Standards, and will document incidents as described in Section 4.5, Nest Management, and Section 4.6, Avian Reporting System. These measures will be implemented on new and existing transmission lines as applicable based on known or possible occurrence information.

- **Collection/Salvage Permits** – These permits are required to collect, salvage, or handle birds.
  - **State Scientific Collecting Permit** – These permits are issued by CDFG and allow the collection, salvage, or capture and release of special-status species as allowed by the individual permit conditions. LADWP will seek this permit from CDFG if any of these actions is required during BRRTP’s construction due to electrocution, collision, or other construction-related incidents.
  - **Federal Migratory Bird Permit** – These permits are issued by USFWS under the MBTA and may be required if it is necessary to salvage and/or rehabilitate birds protected by the MBTA during construction. The USFWS Pacific Southwest Region’s Migratory Bird Office is located at the Pacific Southwest Regional Office in Sacramento, CA. CDFG Code 3513 also prohibits the take or possession of any migratory nongame bird protected by the MBTA, except where allowed by the Secretary of the Interior.

- **Nest Removal and Relocation Permits** – Bird nests are protected by the MBTA and by CDFG Code. Under the MBTA, it is illegal to possess, sell, purchase, barter, transport, import, export, or take—defined as collecting, for nests—or attempt any of those actions on a migratory bird nest (USFWS 2003). Under CDFG Code 3503 and 3503.5, it is illegal to take, possess, or needlessly destroy the nest or eggs of any bird, including any in the orders *Falconiformes* or *Strigiformes*, except as otherwise provided by CDFG Code or pursuant regulations. However, it is lawful to remove inactive nests or nests during the non-breeding season for most birds, excepting those of eagles and listed species. When it is necessary to remove a protected nest as dictated by the MBTA and CDFG Code, LADWP will seek permits from USFWS and CDFG prior to taking any further actions other than those described under Section 4.5, Nest Management.

### 4.4 CONSTRUCTION DESIGN STANDARDS

Constructing avian-safe transmission towers and poles is an integral part of safeguarding against avian electrocutions. The electrical design factor most crucial to avian electrocutions is the physical separation between energized and/or grounded structures, conductors, hardware, or equipment that can be bridged by birds to complete a circuit (APLIC 2006). APLIC recommends certain distances between energized and/or grounded parts of transmission towers and poles to minimize or avoid avian electrocutions. The recommended horizontal and vertical distances vary depending on what avian species may occur in a particular area. The standard horizontal distance recommended is 60 inches, which is expected to allow
adequate clearance for most birds to safely sit between phases or between a phase and a grounded piece of hardware (such as a wire or metal brace) under normal dry conditions. This distance is based on the calculated wrist-to-wrist distance of a large golden eagle (Aquila chrysaetos), which is projected to be approximately 54 inches for an eagle with a wingspan of 90 inches (subtracting an estimated 18 inches on each side for the outer primary feathers) (APLIC 2006). However, according to APLIC (2006), there is insufficient data to have a reliable average wrist-to-wrist distance for condors. Because condor wingspans can be between 98 and 118 inches (APLIC 2006), a horizontal separation of 72 inches is likely adequate to accommodate the wrist-to-wrist distance. On three-phase structures such as those being used for BRRTP, a minimum vertical separation of 43 inches between energized and grounded components is required. However, in areas where long-legged wading birds, such as great blue herons (Ardea herodias), may occur, APLIC recommends a minimum vertical separation distance of 48 inches (APLIC 2006).

In addition to adjusting the physical separation between energized conductors/hardware and grounded conductors/hardware, there are other methods of minimizing danger to avian species from transmission structures or reducing the likelihood of accidental outages or flashovers. Some insulation methods that can help minimize bird mortalities include phase covers, bushing covers, arrestor covers, cutout covers, jumper wire hoses, and covered conductors, as applicable. Apart from insulation, bird flight diverters such as spiral coils, marker balls, or swinging plates/flappers can be used to alert birds to the presence of obstacles in the air and hopefully minimize injuries or mortalities that may occur as a result of collisions. Yellow marker balls on a South Carolina transmission line contributed to a 53% reduction in bird strikes, while plastic dampers and yellow fiberglass square plates reduced mortalities by 61% and 63%, respectively, in southwestern Colorado (Manville II, 2005). Additional studies of the effectiveness of marked and unmarked power lines in reducing avian mortalities are cited in Erickson et al. (1999). It is recommended that LADWP consider the use of bird flight diverters on its new transmission lines in areas that are determined by BRRTP’s avian risk assessment (described in Section 4.7, Risk Assessment Methodology) and by bird use count surveys conducted in 2010 and 2011 to be of elevated risk to native and migratory birds.

Additionally, some causes of electrical outages include conductor contact with nesting material (particularly in wet conditions), conductor-to-conductor contact caused by swaying lines after a large group of birds flushes from an area, prey falling onto energized conductors or hardware, contamination from bird feces, and bird collisions (APLIC 2006). While triangle, spike, cone, or wire perch discouragers can be used to try to deter birds from nesting in a certain area, studies have shown that these are not always successful and that birds may nest directly on top of perch discouragers due to their abilities to better hold nesting material (APLIC 2006). However, the successful use of perch discouragers also depends on the types of structures they are being used on and on their general configuration. Leaving a minimal amount of open space between conductors or between grounded and energized components will discourage birds from perching. Nesting platforms will be discussed in further detail in Section 4.9, Avian Enhancement Options.

4.4.1. New Structures

New towers for this Project are proposed over approximately 60 miles, spanning from the Angeles National Forest (ANF) at the proposed Haskell Canyon Switching Station and north into the Antelope Valley and Mojave Desert to the Barren Ridge Switching Station. The new transmission line will involve the construction of double- and triple-circuit towers and temporary tubular wood or steel poles, to be installed through the Green Valley portion of the Project while the existing transmission lines are shut down during construction. LADWP will verify that all new transmission towers and poles that are constructed for the BRRTP will have sufficient separation distances between all energized components and between energized and grounded tower components to be safe for birds as large as California condors. Because no precise wrist-to-wrist distance is available for California condors, it is determined that, based on their wingspan, a horizontal component separation distance of 72 inches throughout the Project area would likely be adequate. The vertical separation distance would be 48 inches to
accommodate for any long-legged wading birds. Due to the high voltage (230 kV) of the new towers and the separation requirements dictated by the National Electric Safety Code (NESC), the new structures should exceed these minimum separation distances. In the event that adequate component separation cannot be obtained on a particular tower configuration, LADWP will reconfigure the tower(s) or install avian-safe equipment, such as conductor covers. On the northern end of the Project, the Barren Ridge Switching Station will be expanded, and at the southern end of the ANF a new switching station will be constructed in Haskell Canyon. Because it is possible that birds may nest or perch on electrical equipment within these switching stations, LADWP will cover any electrical equipment within the new switching stations that may pose electrocution risks using phase covers, bushing covers, arrester covers, cutout covers, jumper wire hoses, covered conductors, or other insulation methods, as applicable. This would apply particularly in any areas within the switching stations where energized components on equipment may be particularly close to each other or to any grounded components.

It is unlikely that construction of the new transmission line will appreciably increase collision risk for avian species due to the fact that there are multiple transmission lines running parallel to the proposed ROW. Because the new 230 kV transmission line runs primarily parallel to the existing transmission line that will be reconducted, if there is any information regarding bird collisions, injuries, or mortalities along the existing transmission lines, towers that are constructed in any problem areas (e.g., areas of repeat collisions, areas where eagles or listed species may be known to have been previously injured or killed) will be outfitted with collision reduction measures. Methods that can be utilized for this include relocating the new line, reconfiguring its design, removing any overhead ground wires (which tend to be less visible to birds and easier to collide with), and marking the lines to increase their visibility (APLIC 1994, APLIC 2006). Lines can be marked with marker balls, swinging plates, spiral vibration dampers, bird flight diverters, avifauna spirals, or other technology as it becomes available.

Following the completion of construction, LADWP will provide USFWS with a summary of the remedial measures that have been implemented to reduce or prevent avian injuries or mortalities on the new transmission lines where deemed necessary. This summary will include all costs of the remedial measures as documentation of LADWP’s efforts to protect avian species. Photos may assist in displaying the efforts.

4.4.2. Existing Structures

In addition to the new structures being constructed for BRRTP, reconductoring or placement of a new circuit will occur on existing structures within the Project area. Existing towers in these areas include three-circuit towers, four-circuit towers, and DC towers. LADWP will verify that all existing Project-related transmission towers meet the 72-inch horizontal separation for California condors (described above) between all energized components and between all energized and all grounded tower components. Due to the high voltage (230 kV) of the existing towers and the separation requirements dictated by the NESC, it is expected that the existing structures will already meet this minimum separation distance. If they do not meet this distance, appropriate avian-safe equipment, such as conductor covers, will be installed as a remedial measure.

Although the existing towers that will be reconducted or will have new a new circuit installed on them likely already meet the minimum separation distances recommended by APLIC (2006) to reduce avian electrocutions, it is still possible that collisions could occur on them if they are already problem areas. It is unlikely that reconductoring the existing lines or adding a new circuit to the existing towers would significantly increase the risk of collision. During BRRTP’s construction, LADWP will retrofit or otherwise make avian-safe any transmission towers that are in known problem areas or have been identified as potentially high risk areas for avian species by the methods outlined in Section 4.7, Risk Assessment Methodology. If information on bird collisions is available from the existing lines that will be worked on, this information will be used to determine areas that warrant further investigation of avian safety and may require retrofitting. It is expected that adding marker balls, swinging plates, spiral
vibration dampers, bird flight diverters, or other suitable types of equipment for making transmission lines more visible will alleviate any avian risk problems. Relocating or reconfiguring existing lines would likely be very expensive relative to increasing wire visibility and will be conducted only where other methods have failed.

Following the completion of construction, LADWP will provide USFWS with a summary of the remedial measures that have been implemented to reduce or prevent avian injuries or mortalities on the existing transmission lines if deemed necessary. This summary will include all costs of the remedial measures as documentation of LADWP’s efforts to protect avian species. Photos may assist in displaying the efforts.

Summary

- LADWP will ensure that all new transmission towers will meet the recommended minimum 72-inch horizontal and 48-inch vertical separation distance between all energized and between all energized and all grounded tower components. LADWP will appropriately cover the energized and/or grounded components of any equipment in its switching stations or on its towers where perching or nesting birds may be at risk of electrocution.
- LADWP will ensure that all existing Project-related transmission towers meet the recommended minimum 72-inch horizontal and 48-inch vertical separation distance between all energized components and between all energized and all grounded tower components. Any towers that do not meet these distances will be retrofitted with conductor covers or other appropriate avian-safe equipment.
- LADWP will use any existing avian injury or mortality data to identify “problem areas” for electrocutions or collisions. Problem areas or other areas determined to be high risk will be retrofitted by covering any energized and/or grounded electrical components that may pose an electrocution risk, where applicable, installing marker balls or other bird flight diverters, and/or relocating or reconfiguring the existing lines if necessary.
- To document its costs and efforts to protect avian species, LADWP will provide USFWS with a summary of its implemented avian safety measures on its new and existing Project-related lines, including the costs of implementation (labor, materials, and management).

4.5 NEST MANAGEMENT

BRRTP construction will be scheduled to best avoid bird breeding season, which is generally from mid-February through August. If construction or vegetation removal is to occur during the breeding season, a qualified biologist will conduct preconstruction nesting bird surveys to determine if active nests of any bird species are present within the vicinity of construction. This is particularly important for any construction near riparian areas. All bird nests that are encountered during construction are to be documented using the nest reporting form below. All construction within 500 feet of an active nest is to be halted immediately until the condition of the nest can be ascertained as unobtrusively as possible. Under the MBTA, it is illegal to possess, sell, purchase, barter, transport, import, export, or take—defined as collecting, for nests—or attempt any of those actions on a migratory bird nest (USFWS 2003). While inactive bird nests—those without birds or eggs—are not protected from destruction by the MBTA, some inactive nests are protected by other regulations, including those of listed species or of bald and golden eagles. Nests of eagles or listed species cannot be altered, moved, or destroyed without specific authorization from the applicable agency (APLIC 2006). Recent legislation changes in 2009 allow take of eagle nests when there is a safety concern to people or eagles, when it is a public health and safety concern, when the nest prevents use of a human-engineered structure, or when the activity or its mitigation will have a net benefit to eagles; only inactive nests can be taken except in safety emergencies (50 CFR 22.27). However, permits are still required for nest removal and ground crews must notify Environmental Services if a problem nest is discovered. Therefore, determining the active or inactive status of a nest in the vicinity of construction is paramount to protecting the birds that may be occupying it and protecting BRRTP by ensuring smooth and avian-safe construction.
If there is question as to whether an observed nest is active or inactive, Environmental Services and the appropriate land management agency are to be consulted for assistance. Under no circumstances is an active nest to be disturbed until Environmental Services has been notified and applicable permits and/or resource agencies have been consulted for further action. The nest reporting form must be completed regardless of the active or inactive state of any nests. Construction may only proceed within the 500-foot nest buffer after the nest has been determined to be inactive or after approval has been given by Environmental Services or the applicable regulatory agency.

Should a nesting bald eagle be encountered during BRRTP’s construction, USFWS has issued recommendations for avoiding or minimizing disturbance to the nest and its inhabitants (USFWS 2007). If the power line construction will be visible from the nest, USFWS recommends a buffer of 660 feet if there is no similar activity occurring within one mile of the nest; if a similar activity is occurring within one mile of the nest, USFWS recommends a construction buffer of 660 feet or as close as the other activity is allowed. Landscape buffers are recommended as available. Other activities that USFWS lists as having similar impacts to the construction of a power line include construction of one- or two-story buildings with footprints of a half-acre or less; construction of roads, trails, canals, or other linear utilities besides power lines; new or expanded agriculture and aquaculture operations; alteration of shorelines or wetlands; installation of docks or moorings; and water impoundment. If construction is not visible from the nest, USFWS recommends a buffer of 330 feet from the nest if there is no similar activity within one mile of the nest; if a similar activity is occurring within mile of the nest, USFWS recommends a construction buffer of 330 feet or as close as the other activity is allowed. All clearing, external construction, and landscaping between 330 and 660 feet of the nest should be conducted outside of the breeding season. USFWS recommends that the temporary use of loud machinery—such as is required for power line construction—be restricted to outside of the breeding season. While the breeding season for bald eagles can range from January through August, the most critical time periods when bald eagles are most sensitive to disturbance—courtship, nest building, egg-laying, and incubation—are generally from January through May (USFWS 2007).

Summary
- BRRTP construction will occur outside of the bird breeding season. If this is not possible, a qualified biologist will conduct preconstruction nesting bird surveys. Surveys shall be conducted in areas within 500 feet of tower sites, laydown/staging areas, substation sites, access/spur road locations, or any other area subject to ground disturbance. Surveys for birds shall be conducted for all areas from February 1 to August 15.
- If any nests are found in the vicinity of the Project area, all construction within 500 feet will be halted until further instruction is given by the biologist, Environmental Services, or the applicable agency. Eagle nests will be given a 660-foot buffer if construction is visible from the nest or a 330-foot buffer if not.
- All nests, regardless of activity level, will be documented with the attached Avian Nest Reporting Form.
- Active nests of common species, active or inactive eagle nests, or active or inactive nests of listed species are not to be moved without approval from Environmental Services and the appropriate land management agency or the USFWS, as applicable.
- Inactive nests of common species can be removed where they are in the path of construction, with the approval of the appropriate land management agency. Construction may proceed within 500 feet of an inactive nest of a common species, with the approval of the appropriate land management agency.
4.6 AVIAN REPORTING SYSTEM

All avian injuries or mortalities that occur during BRRTP’s construction, including those that are observed after-the-fact and are a result of collision or electrocution with the existing transmission lines, are to be immediately reported to the foreman, who will then report the incident to LADWP Environmental Services for reporting to resource agencies as applicable. Following initial notification, the crew member or foreman is to fill out the avian reporting sheet below. The information entered into this form will be necessary for proper documentation of all incidents and reporting to resource agencies if necessary. If it is discovered during construction that a particular area or particular stretch of transmission line is a “hot spot” for avian safety issues, LADWP will investigate remedial measures to alleviate the issue. Following the completion of construction, LADWP will provide the USFWS with a list of avian mortalities, including dates, locations, and the species involved. If required to do so by the USFWS, LADWP will also create an account and submit information pertaining to all Project-related avian mortalities to the USFWS Bird Fatality/Injury Reporting Program, located online at https://birdreport.fws.gov/BirdReportHomePage.cfm.

Summary

- Observed bird injuries or mortalities as a result of the new transmission line or the Project-related existing transmission lines will be reported to Environmental Services and the appropriate land management agency and documented with the attached Avian Incident Reporting Form.
- If repeated incidents occur in a single area or if an incident occurs with a listed species or an eagle, LADWP will investigate the safety of the area and implement remedial measures as necessary, which is most likely to involve installing marker balls or other bird flight diverters, or relocating or reconfiguring the tower(s). Depending on the details of the incidents and the location of the problem area, the USFS may have particular recommendations or requirements for addressing the problem.
- Following the completion of construction, LADWP will provide the USFWS with a list of avian mortalities, including dates, locations, and the species involved.
- If required by the USFWS, LADWP will also create an account and submit information pertaining to all Project-related avian mortalities to the USFWS Bird Fatality/Injury Reporting Program.
## LADWP Barren Ridge Renewable Transmission Project
### Avian Nest Reporting Form

<table>
<thead>
<tr>
<th>Discoverer’s Name</th>
<th>Discoverer’s Phone Number</th>
<th>Date of Nest Discovery</th>
<th>Nest Location (circle one)</th>
<th>Line Name, Voltage, and Closest Tower/Pole ID</th>
<th>Other Specific Location Information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tower/Pole</td>
<td>Tree</td>
<td>Shrub</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Surrounding Habitat (circle all that apply)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
</tr>
<tr>
<td>Disturbed/Developed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nest Condition (circle one)</th>
<th>Nest Condition (circle one)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>Inactive, Intact</td>
</tr>
<tr>
<td>Inactive, Partial Deterioration</td>
<td>Inactive, Heavy Deterioration</td>
</tr>
</tbody>
</table>

### Describe any Bird Signs Around the Nest (feathers, scat, prey remains) ______

### Are Birds Present? (circle one) 
- Yes 
- No

### Number of Birds Visible ______

### Age of Bird(s) (circle all that apply) 
- Adult
- Juvenile
- Nestling
- Eggs
- Unknown

### Bird Species (if known) ____________________________________________

### Type of Bird (circle one if species unknown) 
- Raptor (hawk, falcon, eagle) 
- Owl
- Crow/Raven
- Passerine (small bird) 
- Unknown

### Risk to Birds/Construction (circle one) 
- No Risk
- Potential Risk – Imminent
- Potential Risk – Not Imminent

### Additional Comments ____________________________________________
LADWP Barren Ridge Renewable Transmission Project  
Avian Incident Reporting Form

<table>
<thead>
<tr>
<th>Discoverer’s Name</th>
<th>Discoverer’s Phone Number</th>
<th>Date of Nest Discovery</th>
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<table>
<thead>
<tr>
<th>Date of Incident/Discovery</th>
<th>Time of Incident/Discovery</th>
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<table>
<thead>
<tr>
<th>Line Name, Voltage, and Tower/Pole ID</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>GPS Coordinates of Incident (if available)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species (if known)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Bird (circle one if species unknown)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raptor (hawk, falcon, eagle)</td>
</tr>
<tr>
<td>Owl</td>
</tr>
<tr>
<td>Crow/Raven</td>
</tr>
<tr>
<td>Passerine (small bird)</td>
</tr>
<tr>
<td>Waterfowl</td>
</tr>
<tr>
<td>Unknown</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of Birds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age of Bird(s) (circle all that apply)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
</tr>
<tr>
<td>Juvenile</td>
</tr>
<tr>
<td>Nestling</td>
</tr>
<tr>
<td>Eggs</td>
</tr>
<tr>
<td>Unknown</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Surrounding Habitat (circle all that apply)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
</tr>
<tr>
<td>Chaparral/Shrubs</td>
</tr>
<tr>
<td>Desert Scrub</td>
</tr>
<tr>
<td>Disturbed/Developed</td>
</tr>
<tr>
<td>Grassland</td>
</tr>
<tr>
<td>Riparian</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Incident (circle one)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injury</td>
</tr>
<tr>
<td>Mortality</td>
</tr>
</tbody>
</table>

**Description of Incident.** Include condition of bird, circumstances of incident and cause of injury or mortality, and any damage or impacts to construction.

__________________________________________
__________________________________________
__________________________________________
__________________________________________
__________________________________________
__________________________________________

Please attach a picture of the bird, if possible.
4.7 RISK ASSESSMENT METHODOLOGY

To better understand the potential risks that the original proposed Project presented to birds, POWER Engineers, Inc. (POWER) conducted a preliminary preconstruction avian risk assessment across the entire Project area. This avian risk assessment used wind pattern, topographical, and vegetation data from geographic information system (GIS); data from existing studies, surveys, or databases; and data acquired during reconnaissance-level field assessments of the Project area.

Spring and fall field surveys focusing on existing and additive collision risks were conducted June 9 to 13 and September 22 to 26, 2008, respectively. The purpose of spring surveys was to characterize habitat and build data on avian activity, including species occurrence and nest sites, while the fall surveys were conducted to identify high-risk areas and record species observations. Each mile of the Project was evaluated for a series of pre-determined avian risk factors described in Table 2. These avian risk factors were grouped into two categories: collision factor or “promoters,” and ecological resource enhancements. Collision factors are physical factors that influence the likelihood of collision and include topography, prevailing wind direction and velocity, and transmission line placement, among other considerations. Ecological resource enhancements are features, such as reservoirs or open aqueducts, that typically act to concentrate avian presence by providing additional resources. Analysis was predicated on the assumption that increasing numbers of factors over a given unit of analysis—in this case, over each mile of the Project—would vary directly with mortality risk to avian species (i.e., more factors = more risk).

<table>
<thead>
<tr>
<th>Risk Analysis Factor</th>
<th>Category</th>
<th>Risk Analysis Question</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>New corridor (not in conjunction with existing lines)</td>
<td>Collision/mortality affector</td>
<td>Does the new line parallel any existing lines?</td>
<td>New corridors pose a risk because birds are not expecting to have to adjust their flights to avoid the new impediment(s). If lines are constructed adjacent to one another, birds only have to adjust flight once, which reduces the chance of a collision.</td>
</tr>
<tr>
<td>Wetland crossing</td>
<td>Collision/mortality affector</td>
<td>Does the new line cross a polygon or line from the National Wetland Inventory (NWI)?</td>
<td>Wetlands are important ecological resources to birds, and if a transmission line is cutting through a wetland, it increases the risk to birds taking off or landing, especially at night when there is less visibility.</td>
</tr>
<tr>
<td>Adjacent wetland or marsh</td>
<td>Ecological resource enhancement</td>
<td>Is the new line within 0.5 mile of NWI data?</td>
<td>Wetlands are important ecological resources to birds, and if a transmission line is too close, it increases the risk to birds taking off or landing at angles incompatible with the line’s distance and height. This study uses a distance of 0.5 mile in order to have the most agreement among the various factors within the analysis.</td>
</tr>
<tr>
<td>Ridge crossing</td>
<td>Collision/mortality affector</td>
<td>Does the new line cross a ridge at a perpendicular angle?</td>
<td>Raptors use thermal updrafts near ridgelines in order to achieve an appropriate soaring height. Transmission lines running perpendicular to ridgelines may pose risks to birds using winds for their migratory paths, or birds flying at an angle perpendicular to the lines.</td>
</tr>
<tr>
<td>Open water crossing</td>
<td>Collision/mortality affector</td>
<td>Does the new line cross a lake or reservoir?</td>
<td>Open water is an important ecological resource to birds, and if a transmission line crosses a lake or reservoir, it increases the risk to birds taking off or landing, especially at night when there is less visibility.</td>
</tr>
</tbody>
</table>

TABLE 2. AVIAN RISK FACTORS USED IN THE BRRTP PRELIMINARY AVIAN RISK ASSESSMENT
<table>
<thead>
<tr>
<th>Risk Analysis Factor</th>
<th>Category</th>
<th>Risk Analysis Question</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjacent water body</td>
<td>Ecological resource enhancement</td>
<td>Is the new line within 0.5 mile of a water body?</td>
<td>Water is an important ecological resource to birds, and if a transmission line is too close, it increases the risk to birds taking off or landing at angles incompatible with the line's distance and height. This study uses a distance of 0.5 mile in order to have the most agreement among the various factors within the analysis.</td>
</tr>
<tr>
<td>Stable water body</td>
<td>Ecological resource enhancement</td>
<td>Is the new line within 0.5 mile of a water body with a stable water level and established shoreline or emergent vegetation?</td>
<td>Water bodies with an established shoreline containing emergent vegetation are especially important ecological resources for birds. The risk of avian collision with transmission lines is inversely related to the distance of a water body and the transmission lines in question. This study uses a distance of 0.5 mile in order to have the most agreement among the various factors within the analysis.</td>
</tr>
<tr>
<td>Valley or canyon crossing</td>
<td>Collision/mortality affector</td>
<td>Does the new line cross perpendicular to a wide valley or canyon floor?</td>
<td>Valleys and canyons are often used by migrating birds, and if a transmission line crosses perpendicular to the direction of movement, it poses a collision risk to any birds that are passing through, especially at night when there is less visibility.</td>
</tr>
<tr>
<td>Wind direction</td>
<td>Collision/mortality affector</td>
<td>Is the new line perpendicular to prevailing winds?</td>
<td>Strong winds may push birds out of their flight paths, and if a transmission line is perpendicular to prevailing winds, it increases the risk that a bird will be pushed into the wires.</td>
</tr>
<tr>
<td>Wind speed</td>
<td>Ecological resource enhancement</td>
<td>Are wind speeds greater than 16.8 miles per hour at 50 meters above the ground?</td>
<td>Pope et al. (2006) found that at wind speeds of 15.5 mph, the lowest number of daily migrants was observed. Data for this study was binned, and 16.8 mph was seen as reasonably close to that number. Wind data obtained for GIS analysis was provided at 50 meters above the ground and was obtained from California Energy Commission (CEC) on-line sources and Fisk (2007) wind report.</td>
</tr>
<tr>
<td>Habitat separation</td>
<td>Collision/mortality affector</td>
<td>Is the new line within 0.5 mile of water/NWI data or agriculture, and are these separated by the line? Does the new line separate any other foraging, roosting, loafing, or breeding habitat?</td>
<td>Water bodies and agricultural lands are both habitats necessary for life stages. If a transmission line is constructed between different habitats such as these, it poses a risk to birds that may be flying between the two, especially if there is only a short distance. This study uses a distance of 0.5 mile in order to have the most agreement among the various factors within the analysis.</td>
</tr>
<tr>
<td>Converging or diverging lines</td>
<td>Collision/mortality affector</td>
<td>Is the new line within 0.5 mile of converging or diverging existing lines?</td>
<td>Converging or diverging transmission lines may cause birds to perform multiple evasive maneuvers, increasing the chance of a collision. This study uses a distance of 0.5 mile in order to have the most agreement among the various factors within the analysis.</td>
</tr>
</tbody>
</table>
Risk Analysis Factor | Category                  | Risk Analysis Question                                                                 | Significance                                                                                                                                                                                                                                                                                                                                 |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjacent to ridgeline</td>
<td>Ecological resource enhancement</td>
<td>Is the new line in proximity to a ridgeline?</td>
<td>Raptors use thermal updrafts near ridgelines in order to achieve an appropriate soaring height. Transmission lines running near or on ridgelines may pose risks to birds using winds for their migratory paths.</td>
</tr>
<tr>
<td>Adjacent to river corridor or valley</td>
<td>Ecological resource enhancement</td>
<td>Is the new line in proximity to a valley or canyon floor?</td>
<td>Valleys and canyons are often used by migrating birds, and if a transmission line is near or on a valley or canyon floor, it may pose a risk to birds flying through.</td>
</tr>
<tr>
<td>Adjacent to cliffs</td>
<td>Ecological resource enhancement</td>
<td>Is the new line within 0.5 mile of terrain with a slope greater than 40%?</td>
<td>Certain birds, such as California condors and peregrine falcons, may use sloped areas or cliff faces for nesting. If a transmission line is too close, it may pose a risk to adults or young coming to or going from the nest. This study uses a distance of 0.5 mile in order to have the most agreement among the various factors within the analysis.</td>
</tr>
</tbody>
</table>

The risk analysis was based on a binary, “yes or no” approach to the above factors. If a risk analysis factor was present within a mile-long segment, then a “risk point” was awarded, else the mile received nothing. A maximum score of 15 was possible, although no analysis unit received a score greater than nine. Total scores were binned into Low Risk (Score 0 to 3), Medium Risk (Score 4 to 6), and High Risk (Score 7 to 9) categories. Based on the results acquired from this risk analysis, areas of elevated risk were determined throughout the Project area (Appendix M of the Biological Resources Technical Report). Areas that indicated higher avian risk within the Proposed Action included almost the entire new 230 kV circuit component, several areas within San Francisquito Canyon, and areas immediately north of ANF boundaries (Appendix A). Very few areas north of the ANF were determined by this risk model to be of elevated avian risk.

Following the selection of a federal agency-preferred route (Alternative 2, analyzed in this APP) for BRRTP in August 2010, bird use count (BUC) surveys were conducted by POWER biologists within the proposed Project area in October 2010 and March and April 2011. The purpose of these surveys was to record diurnal bird use data within areas that were initially determined, during the preliminary avian risk assessment, to be of elevated risk to birds according to the risk model described above. Areas that were determined to be of low risk to birds were not resurveyed during the BUC surveys, with the exception of one area. The Antelope Valley is designated by the National Audubon Society to be an Important Bird Area (IBA) which, at differing points throughout the year, supports various birds including Le Conte’s thrasher (Toxostoma lecontei), vesper sparrow (Poecetes gramineus), horned lark (Eremophila alpestris), mountain bluebird (Sialia currucoides), mountain plover (Charadrius montanus), northern harrier (Circus cyaneus), Swainson’s hawk, white-faced ibis (Plegadis chihi), and long-billed curlew (Numenius arquata), along with vireos, thrushes, warblers, and other birds (National Audubon Society 2010). This IBA encompasses approximately 18.5 linear miles of the Project right-of-way and, although the avian risk assessment model found it to be a low risk area for birds, it was also surveyed during the BUC surveys due to its recognized importance to avian species. Surveys recorded data for diurnal bird use counts, small bird counts, and migration counts. While raptor nest searches were not the purpose of the surveys and were not specifically conducted, the surveys allowed for raptor nesting searches around particular sites or along access roads as surveys observed avian activity.

Use of this information facilitated the identification of areas within the Project that may be high risk areas that would be more likely to be prone to electrocution or collision. These high risk areas and other areas that may be known to be problem areas for avian safety should be considered priority for any retrofitting of existing lines. All new transmission towers will be engineered to the standards discussed above in
Section 4.4, Construction Design Standards, and will be expected to already meet avian safety standards upon energization.

Summary

- LADWP will use the BRRTP Avian Risk Assessment, BRRTP bird use count survey information, and any existing information on bird occurrences, injuries, or mortalities in the Project area to establish priorities for retrofitting existing lines. All new transmission towers will be engineered to the standards discussed above in Section 4.4, Construction Design Standards, and will be expected to be avian safe upon energization.

4.8 MORTALITY REDUCTION MEASURES

LADWP is committed to ensuring the safety of avian species that may be present in the vicinity of BRRTP. Avian safety during the construction phase of BRRTP can be acquired through the implementation of various mortality reduction measures. These can be categorized into preventative, reactive, and proactive measures.

4.8.1. Preventative Mortality Reduction Measures

Preventing future avian safety issues is the biggest step toward ensuring avian safety during the construction of BRRTP. New transmission towers and tubular steel or wood poles, as applicable, would be designed and sited to prevent raptor perching, raptor nesting, and general avian collisions and electrocutions. A more detailed discussion of Project element designs is in Section 4.4, Construction Design Standards.

Additionally, any avian safety measures that are required by Project permits or applicable laws or regulations will be strictly enforced during construction. Construction avoidance and minimization measures that are pertinent to avian safety will be implemented by construction personnel. These may include, but are not limited to, reducing habitat loss or degradation to avoid direct or indirect injuries or mortalities to birds; restoring non-essential construction areas to their preconstruction conditions; scheduling construction and vegetation removal outside of the known breeding season; having a qualified biologist conduct preconstruction nesting bird surveys if construction is during the breeding season; utilizing required nest safety buffers as necessary if construction is during the breeding season; minimizing disturbance to known breeding sites during or outside of the breeding season; implementing fire safety measures on construction sites; avoiding leaving trash on-site, which may attract predators or be mistaken for food by adult nesting birds; minimizing or avoiding pollution due to Project activities to the extent possible; and controlling the spread of non-native and invasive plant seeds during construction.

4.8.2. Reactive Mortality Reduction Measures

By reacting to avian safety issues during construction, LADWP can help prevent additional incidents. One method of doing this is by documenting nests and avian mortalities. More detailed discussions on how LADWP will document and manage nests and avian mortalities can be found in Sections 4.5, Nest Management, and 4.6, Avian Reporting System, respectively. LADWP will assess each case of reported nesting or avian mortality and apply corrective measures where problem areas are found. Agencies will be notified of any incidents as applicable per Project permits.

4.8.3. Proactive Mortality Reduction Measures

Being prepared for the possibility of future avian safety issues can help LADWP prevent or minimize those issues. Adequately training its construction crews, management, and contractors to be knowledgeable and aware of avian safety during BRRTP’s construction is one way of ensuring that avian safety measures are implemented correctly. A more detailed discussion of LADWP’s proposed avian safety training program can be found in Section 4.2, Training. Evaluating the risk potential of its existing
transmission lines and retrofitting them during construction to be avian safe where necessary is also a method that LADWP can use to proactively reduce avian injuries and mortalities. Working with avian power line interaction groups or researchers can also be a way to help reduce the potential for avian mortality on BRRTP, or even further the state of current knowledge on the subject.

4.8.4. Collaborative Mortality Reduction Measures

LADWP will collaborate with the USFWS and other applicable agencies when special-status species are identified in avian safety incidents. Because the towers are already in place, it is expected that during the construction phase it will be easier to detect incidents on the towers that are being reconductored or having new circuits placed on them. Problem areas will be remediated as necessary to remove the threat of future incidents.

Summary

- LADWP will design its new towers and temporary poles to prevent perching, nesting, collisions, or electrocutions.
- LADWP construction personnel will implement avian-related mitigation measures to further protect avian species.
- LADWP will document avian incidents and nests, remedy any identified problem areas, and notify applicable agency(s) as required.
- LADWP will ensure that all Project-related personnel are trained in avian safety before they start construction.
- LADWP will retrofit any known or identified problem areas within its existing Project-related transmission lines.
- LADWP will participate with avian power line interaction groups or researchers to help further the knowledge of effective avian safety on power lines and will implement any new advancements.
- LADWP will collaborate with applicable agencies when special-status avian species are involved in incidents and will apply remedial measures as required.

4.9 AVIAN ENHANCEMENT OPTIONS

One method of enhancing avian environments around transmission lines is to construct artificial nesting facilities. Transmission towers generally have enough separation between conductors that birds are able to nest in them without affecting the line’s operation, although this is not always the case and hardware can be detrimentally affected if a nest is too close to energized areas (APLIC 2006). Temporary transmission poles may be constructed within a particular section of BRRTP around the unincorporated community of Green Valley. Poles are generally at much greater risk of equipment contamination or failure as a result of nesting activities because there is only one central structure that all hardware is connected to. If a utility seeks to avoid potential risk to its electrical equipment and reduce the risk of avian electrocutions, it is desirable, but not necessary, to construct nesting platforms on poles.

If construction occurs during the nesting season and it is likely that there are risks of birds nesting on the temporary poles, LADWP will install nesting platforms in suitable areas. Because the poles will be temporary, it is preferred to avoid any nesting on these poles in the event that one or more nests are built before the poles can be removed, should any construction occur during the nesting season. LADWP will investigate the feasibility and utility of constructing nesting platforms on separate, nearby, non-energized poles that are constructed specifically as nesting alternatives. This will reduce the likelihood of delaying construction due to a bird nest(s) on the temporary energized poles. For maximum appeal to any birds, the non-energized poles will be placed close to the energized poles and will be at least as tall as the energized poles to increase visibility of the surrounding area. Placing sticks and other nesting materials on the platforms will help to attract birds to the sites to begin their own nests; placing an optional perch on the
platform may also help attract birds. However, nesting platforms must not be placed in areas where there may be sensitive wildlife species that could be preyed upon by nesting raptors. Nesting tubes made of UV-resistant PVC can be attached to the sides of structures to avoid having exposed nests near conductors. Besides a standard entrance hole, the tubes should have a hole in the bottom to drain and vents on the sides, and can be positioned either horizontally or vertically on structures. Nesting platforms (for birds such as raptors and owls), nest boxes (for birds such as bluebirds and wrens), and nesting tubes (for birds such as kestrels) can be made by LADWP, bought from specialty stores or nature centers, or be made with assistance from volunteers.

Because habitat suitable for avian species will be degraded or removed during the construction of the BRRTP, LADWP will restore or apply mitigation in these areas and implement noxious weed control measures to reduce the amount of degradation to avian-suitable habitat both within and adjacent to the Project area. These will be implemented to be consistent with the Project mitigation measures.

Another method of enhancing avian habitat is to enhance riparian areas. There are numerous areas, particularly in San Francisquito Canyon, where non-native vegetation—particularly giant reed (*Arundo donax*)—is a serious threat to riparian habitat. Restoring these areas or sponsoring their restoration is one way in which LADWP can enhance habitat for avian species during construction of BRRTP. Applicable agencies such as the U.S. Department of Agriculture, Forest Service, CDFG, or USFWS may be consulted for guidance in this matter.

Summary

- If construction occurs during the nesting season, LADWP will construct nesting platforms or other nesting aids on separate, non-energized poles to avoid construction delays from nests in the temporary energized poles.
- LADWP will restore or apply mitigation in all areas that are disturbed during construction.
- LADWP will restore or sponsor the restoration of riparian areas to enhance habitat for riparian birds.

4.10 QUALITY CONTROL

LADWP will implement quality control measures to ensure that this APP is accurate, up-to-date, and used effectively during construction. These measures will include the following:

- LADWP line crews, field engineers, operators, foremen, and design personnel, as well as all construction contractors associated with the BRRTP, are tasked with understanding and complying with this plan.
- Quality control will be overseen by a senior staff member(s) of LADWP’s Environmental Services group who will provide quarterly reports to LADWP’s General Management.
- The designated staff member(s) will review submitted nest reporting forms and avian incident reporting forms and ensure that they are properly and adequately completed. Any missing information will be obtained from the worker who completed the form. The staff member(s) will ensure that a local (LADWP) incident database is kept up-to-date and, if requested by USFWS, that incidents are consistently reported to the USFWS Bird Fatality/Injury Reporting Program. Any problems with the reporting system will be reported to management for review and remedial action will be taken.
- Any transmission towers or sections of conductor that are fitted with avian safety measures during construction will be monitored for effectiveness—by checking for injured birds, carcasses, or signs of potentially risky nest-building—daily while construction is in the vicinity of the problem area. This task will be delegated by the construction foreman; results will be reported to the foreman, who will in turn report to Environmental Services. Any observed incidents of
nesting, injury, or mortality will be investigated for further remedial actions, which will then be
determined and implemented.

- LADWP will review the implementation and success of the APP with USFWS and CDFG every
  six months during construction of the BRRTP and adjust the parameters and methods
  accordingly.

4.11 PUBLIC AWARENESS

Public relations are an integral part of everyday business with utility companies, and in times of
increasing environmental awareness, public support for a company’s environmental program is a great
way to boost a company’s image. Public awareness of a successfully implemented Avian Protection Plan
for the construction of the Barren Ridge Renewable Transmission Project can help create positive
publicity and relationships between LADWP and resource agencies, non-profit organizations, researchers
and scientists, or Native American Tribes. This can, in turn, further boost public approval of LADWP, its
environmental program, and possibly of its future projects should they implement the same level of
environmental protection as BRRTP and that demonstrated by this APP.

There are numerous ways that LADWP can reach out to the general public to raise awareness of its avian
safety measures during the construction of BRRTP. One of the easiest methods of raising public
awareness is to maintain a section on the BRRTP website (http://www.ladwp.com/barrenridge) devoted to
documenting visual (photographic) progress of the Project’s construction, and which contains both a copy
of this APP and information on its effective implementation. Photographs or videos showing avian-safe
transmission structures would be a key element of the website. Periodic newsletter updates through email
or printed material would update interested parties on the progress and successful implementation of this
APP during BRRTP’s construction, as well as with information regarding imminent construction in an
area of elevated avian risk and what measures will be taken to protect birds while work is being
conducted. Involving the public in volunteer efforts to help implement this APP, such as during avian
enhancement implementation, is also a very effective way for LADWP to increase public awareness of its
avian protection policy as stated in Section 4.1, LADWP Avian Protection Policy.

Summary

- LADWP will work to raise public awareness of its avian safety efforts to increase public support
  by having a dedicated website for BRRTP construction-related avian safety efforts, newsletters,
  public involvement activities, or other methods.

4.12 KEY RESOURCES

The following entities may be contacted for further information or expertise regarding the information
within this APP or the methods and strategies suggested by it:

Federal Agencies
U.S. Fish and Wildlife Service Migratory Bird Permit Office
911 N.E. 11th Avenue
Portland, OR 97232-4181
Tel. (503) 872-2715 Fax (503) 231-2019
Email: permitsR1MB@fws.gov

U.S. Fish and Wildlife Service Pacific Southwest Region Office
2800 Cottage Way, Suite w-2606
Sacramento, CA 95825
Tel. (916) 414-6600
BLM Ridgecrest Field Office
300 South Richmond
Ridgecrest, CA 93555
Tel. (760) 384-5400  Fax (760) 384-5499

USDA Forest Service Angeles National Forest Supervisor’s Office
701 N. Santa Anita Ave.
Arcadia, CA 91006
Tel. (626) 574-1613  Fax (626) 574-5207

State Agencies
California Department of Fish and Game South Coast Region Main Office
4949 Viewridge Avenue
San Diego, CA 92123
Tel. (858) 467-4201  Fax (858) 467-4299

California Department of Fish and Game Central Region Main Office
1234 E. Shaw Avenue
Fresno, CA 93710
Tel. (559) 243-4005 ext. 151  Fax (559) 243-4022

Wildlife Rehabilitation Centers
Wildlife Waystation
14831 Little Tujunga Canyon Road
Angeles National Forest, CA 91342
Tel. (818) 899-5201
5.0 LITERATURE CITED


APPENDIX A – AVIAN RISK ASSESSMENT MAPS FOR THE PROPOSED ACTION