FEBRUARY 2022

Eversource Cape Cod Osprey Management Plan

photo credit: Eric Davison

EVERSOURCE

Table of Contents

Appendices

1.0 Introduction and Osprey Management Policy Statement

Eversource Energy Services Company (herein Eversource) has implemented avian protection measures for years through the Company's Avian Protection Plan (APP) that documents the work practices Eversource implements to help improve reliability, reduce risk of harm to avian species, and help generate positive collaboration with regulators and customers.

The purpose of the Cape Cod Osprey Management Plan (CCOMP) is to build upon the APP (Appendix B), specifically as it applies to osprey with the over-arching goal to reduce:

- Osprey-related outages and service interruptions;
- Osprey nesting on Eversource infrastructure;
- Utility associated osprey injuries and fatalities; and
- Improved processes related to osprey nest management.

Further, the program aims to:

- Improve community, customer, and stakeholder group communication and collaboration; and
- Increase targeted stakeholder engagement.

Eversource developed the CCOMP through thoughtful collaboration with both internal business units as well as significant environmental stakeholders including Mass Audubon, Wild Care, Inc., New England Wildlife Centers, the Towns of Barnstable and Falmouth, and the Commonwealth of Massachusetts and is intended to act as both policy as well as a reference document to assist divisions and staff in managing osprey-related issues.

2.0 Commitment to Energy Reliability and Environmental Stewardship

Eversource is committed to environmental leadership by conducting business in a manner that fosters environmental sustainability and stewardship. Eversource is committed to evaluating and reducing potential impacts of operations on the environment, protected species, and cultural resources.

Eversource's environmental stewardship includes a commitment to our corporate operating requirements with natural resource preservation and conservation. At Eversource, we take great care to promote conservation and protection of wildlife, natural and cultural resources.

- We strive to foster the long-term vitality of the land we manage.
- Our rights-of-way (ROW) maintenance practices promote diverse, native habitats and help to sustain several rare, threatened, and endangered species.
- We develop best management practices (BMPs) for species protection and hold specialized training for our vendors to protect sensitive resources in our ROWs.
- We partner with state Historic Preservation and Tribal Historic Preservation offices to identify and protect cultural resources of significance during construction projects.

To further our environmental stewardship commitment, this program and policy focuses on the protection of osprey and minimization of negative impacts such as power outages, unsafe nesting, and avian fatalities on our infrastructure.

3.0 Governing Regulations and Regulatory Compliance

3.1 Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-712)

According to the National Audubon Society, the Migratory Bird Treaty Act (MBTA) of 1918 is the most important bird protection law in that it protects nearly all native bird species in the U.S. The MBTA makes it illegal, "at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or in part, of any such bird or any part, nest, or egg thereof." A list of species protected under the MBTA is provided in the Code of Federal Regulations, Title 50 Part 10.13, and includes osprey as well as a variety of waterfowl, raptors, and songbirds.

Eversource holds a Migratory Bird Special Purpose Utility Permit (SPUT) that authorizes the possession and transport of migratory bird carcasses (including osprey) collected from company property and rights-of-way in Connecticut, New Hampshire and Massachusetts. However, USFWS must be contacted **FIRST** before collecting bald eagle, golden eagle, or federally listed threatened and endangered species carcasses, which, as of December 2021 does not include osprey. The SPUT also authorizes relocation of active nests belonging to all species except eagles or threatened or endangered species, from utility structures in emergency situations which are defined as those situations where:

- The safety of the migratory bird or birds, their nest or eggs are at risk.
- The migratory birds, nest, or eggs pose a threat of serious bodily injury or a risk to human life, including a threat of fire hazard, mechanical failure, or power outage.

3.2 Bald and Golden Eagle Protection Act of 1940

Under the Bald and Golden Eagle Protection Act (BGEPA) (16U.S.C. 668-668d) bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are provided special protection. Under the BGEPA, a *Take* is to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb". Although osprey are not protected under the Bald and Golden Eagle Protection Act, eagles have on occasion been impacted through interactions with Eversource's infrastructure and as such, should one be encountered additional measures shall be taken in accordance with Eversource's Avian Protection Plan (Appendix A).

3.3 Endangered Species Act of 1973 (16 U.S.C. 1531-1544)

According to the U.S. Fish & Wildlife Service, the Endangered Species Act (ESA) of 1973 provided for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife and plants depend and:

- Authorizes the determination and listing of species as threatened or endangered;
- Prohibits the unauthorized taking, possession, sale and transport of endangered species;
- Provides authority to acquire land for the conservation of listed species;
- Authorizes establishment of cooperative agreements and grants-in-aid to States that establish and maintain active and adequate programs for endangered and threatened wildlife and plants;
- Authorizes the assessment of civil and criminal penalties for violating the Act or regulations; and

- Authorizes the payment of rewards to anyone furnishing information leading to the arrest and conviction for any violations of the Act or any regulation issued thereunder.

Although osprey are not, as of December 2021, protected under the Federal ESA, there are several species in Massachusetts that could be negatively impacted through interactions with Eversource's infrastructure.

4.0 Issues with Osprey & Utility Structures

Osprey utilize utility structures, predominantly distribution structures that are lower and smaller than transmission structures, for perching, roosting, and constructing their nests. On Cape Cod, osprey have been killed, injured, and had their nests destroyed when they or their nests have made contact with energized equipment. Osprey can be harmed in several ways, including when they, through their large wingspan (nearly 6 feet) make simultaneous contact with two phases (energized power lines) atop a distribution structure, when their nest makes contact with energized equipment and catches fire, or when pieces of their nest are too close to energized equipment that arcs and causes a fire. Given the density of both nesting osprey and overhead distribution infrastructure on Cape Cod, negative osprey power line interactions are not uncommon. Between January 2018 and August of 2021, osprey nests caused 139 outages that resulted in a loss of power to over 120,000 customers on the Cape. In 2005, the Avian Power Line Interaction Committee (APLIC) found that 7 out of 12 surveyed, member utility companies tracked bird-related outages, which ranged from 1% to 10% of all reported outages[1].

Part of addressing the issue to minimize these negative interactions is to first understand the biology of osprey, including how and why they utilize overhead electric infrastructure.

4.1 Osprey Biology

The osprey (*Pandion haliaetus*) is a medium to large sized, diurnal bird-of-prey and the only member of the genus *Pandion*. Adult ospreys have a predominately white underside with distinct dark patches at the wrist on the underside of the wings and a dark band, or mask, that extends from the base of the beak, through the eye and around to the back of the neck. In flight, osprey have long wings and a wide, banded tail. Osprey populations in the United States declined dramatically from the 1940s to 1970s due to the use of DD,T-induced eggshell thinning, which reduced the number of successful hatchings. Since the 1972 nationwide ban on the use of DD,T combined with hacking[2] efforts and provision of artificial nesting structures, the osprey population has rebounded. The osprey, which was once classified as an endangered species under the Federal ESA, is no longer a listed species in the U.S. and can be readily observed nesting along coasts and large inland waterbodies. On Cape Cod, the population increased from one or two pairs in the 1970s to hundreds of pairs in 2021 (Mass Audubon, personal communication, December 25, 2021).

[1] Avian Power Line Interaction Committee (APLIC). 2006. *Suggested Practices for Avian Protection On Power Lines: The State of the Art in 2006.* Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and Sacramento, CA.

[2] Hacking is a term which refers to the process of relocating young osprey from one nest to another location where they are placed in a structure (called a hack box) which protects them from predators and allows them to become familiar with their new habitat.

Diet

Osprey are a primarily piscivorous (fish-eating) species and according to Hagan (1986)[3] will nest within 1.8 to 2.5 miles from foraging areas. Osprey are uniquely adapted fish-eaters and will dive from up to 100 feet above the water's surface to catch a swimming fish. Once an osprey grabs its prey beneath the water, it uses its talons to secure the fish while pivoting it to face forward to reduce wind resistance as it brings the prey back to a perch or its nest for consumption.

Nest Construction and Breeding

Osprey are a migratory, monogamous species. In New England, nest construction typically begins in mid- to late-March when the osprey return from their wintering grounds in Central and South America. Each breeding pair works together to construct a nest made of sticks and lined with an assortment of materials including bark, sod, vegetation, flotsam and jetsam[4]. Initially an osprey nest is relatively small, i.e. less than 2.5 feet wide and 0.5 feet deep, but after years of returning to the nest and amending it with new material, the nest can grow to several feet deep, up to 6 feet in diameter and weigh several hundred pounds.

Although osprey will utilize natural structures such as snags, treetops and crotches between large branches and trunks upon which to erect their nest, more commonly in Cape Cod they construct their nests on man-made structures such as utility poles, and artificial nesting platforms.

In April, the female lays anywhere from one to four eggs that she incubates for roughly 30 days until they hatch in mid-May to early June.[5] The summer is spent with the male foraging for fish to bring back to the nest to feed the female and juveniles. When they are about two months old, juveniles will begin to test their flying abilities and will remain in the nest with their parents until they depart for their wintering grounds in late August to early September.

During the nesting period, female osprey are intensely protective of their nest and young and are known to dive-bomb and defecate upon any potential intruder.

4.2 Human Structures Used for Nesting

Originally, osprey utilized large, isolated trees found in open areas, standing water or on islands, for nesting. Over the last few centuries as human disturbance increased, they adapted to utilizing man-made structures for perching and nesting. Historically farmers would erect poles in their fields as they thought osprey may deter red-tailed hawks and other raptors from preying upon their chickens. However, in response to population declines in our region, conservation pioneers with Mass Audubon, other organizations, and freelancers, began establishing osprey nesting platforms to expedite a full recovery. As opportunistic nesters, they have readily adapted to nesting atop man-made structures such as chimneys and utility poles (particularly those along distribution lines). Of particular concern are the

[3] Hagan, J. M. 1986. *Temporal patterns in pre-fledgling survival and brood reduction in an Osprey colony*. Condor 88: 200-205

[4] The Cornell Laboratory of Ornithology. https://www.allaboutbirds.org/guide/Osprey/lifehistory. Accessed 17 Nov. 2021.

[5] United States Fish and Wildlife Service. https://www.fws.gov/uploadedFiles/Region_5/NWRS/Central_Zone/Montezuma/OspreyFacts.pdf. Accessed 17 Nov. 2021.

nests located atop the distribution structures since they can result in both a disruption of power to customers but also serious injury or fatality to the osprey.

Many of Eversource's power line structures are located in an otherwise open environment that provides a suitable vantage point from which they can perch to rest, eat, seek out prey or construct a nest. According to the APLIC (2006), osprey use utility structures for nesting more than any other raptor in North America.

4.3 Problems with Osprey and Utility Interactions

On Cape Cod, there are three main ways in which osprey typically interact problematically with utility infrastructure, including through:

- The direct and simultaneous contact with multiple pieces of energized equipment;
- Nesting material directly contacting energized equipment; and
- Nesting material being placed or shifting too close to energized equipment.

According to the APLIC (2006), the most significant threat to osprey posed by utilities is through nest construction. Each of the three above scenarios typically results in at least one of the following: electrocution of the osprey, the nest and possibly the structure catching on fire, a power outage.

The orientation of the crossarms, insulators and conductors typically dictate the suitability of the structure for nesting. Those structures with a double crossarm whose insulators are oriented in such a way as to provide for a relatively open platform upon which the osprey can construct their nest. Those structures outfitted with either a single crossarm or with insulators or equipment mounted atop the crossarms seem to be less preferred by osprey for nest site selection.

Electrocution

When an osprey contacts two uninsulated pieces of equipment or phases simultaneously, either through its outstretched wings or other body parts, it creates a circuit, which in turn electrocutes the bird and typically causes an outage along the circuit. Electrocutions occur mainly on distribution structures, which are more heavily utilized by osprey than transmission structures, because the energized equipment, particularly structures with three phases on the crossarm, is tightly spaced making it easy for an osprey with a relatively large wingspan to bridge the gap between phases. According to APLIC (2006, 2018)[6], conductors with voltages more than 138 KV, which are typically found on larger transmission structures, are spaced further apart than the lower voltages found on distribution structures, thus making electrocutions less common.

Factors that influence the potential for osprey electrocution include:

- The spacing of the conductors and energized equipment;
- The suitability of the structure for perching, roosting and nesting;
- The presence of a nest atop a structure; and
- Rain and snow, which conduct electricity and can weigh down nesting materials.

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

Whether or not an outage occurs depends mostly on the circuit and associated equipment, which may enable the fault to clear without interruption.

Fire

A fire atop a structure can be caused when a piece of nesting material either contacts the energized equipment generating enough heat to eventually ignite the nesting material or gets close enough to the energized equipment to create an arc and ignite the nesting material. Fires caused by arcing are more common during rain and snow events when the moisture acts as a conduit between the energized equipment and combustible nesting material.

Fires caused by osprey nests atop structures are problematic for a number of reasons, including their potential to result in:

- Fatality or significant injury to multiple Osprey, if a nest has eggs or fledglings;
- Spread of fire to the ground or nearby homes or property;
- Extended power outages;
- Significant damage to the structure and associated equipment; and
- Burden on local resources needed to safely extinguish the fire.

Power Outage

Although power outages can occur when an osprey is electrocuted and commonly occur when a nest catches fire, they can also occur when a piece of nesting material makes contact with energized equipment during nest construction. When nest construction begins, osprey will drop sticks from above onto the crossarms of the structure. The sticks will either stay in place atop the crossarms or fall below, where they can contact the energized equipment, thus resulting in an outage. In addition to sticks, osprey typically add bits of debris (plastic, discarded marine materials like foam or rope, as well as vegetation such as seaweed) to their nests. This material can dangle from the nest and eventually contact the energized equipment causing an outage.

Although specialized equipment such as reclosers can rectify an outage within milliseconds, leaving the customers with uninterrupted power and no reportable outage, many areas of Cape Cod are not outfitted with such equipment and power restoration requires in-person attention by trained staff to rectify the issue.

Public Interaction

When an osprey interacts negatively with power line infrastructure, it almost always results in reporting through the media, stakeholder groups and/or customers. The electrocution of an osprey(s) or destruction of a nest through fire creates:

- Power outages;
- An event that is visually disturbing to the public;
- A discussion between Eversource and the public regarding ownership and management of osprey nests; and
- A burden on local resources, including stakeholders and first responders.

5.0 Osprey Nest Management

5.1 Nest Evaluation

On Cape Cod, osprey have historically favored nesting atop Eversource's distribution line structures, particularly those with a double crossarm where the insulators and phases are located on the outer edges. The open, center portion of the double crossarm allows for a suitable location upon which a nest can be constructed. Minimizing the occurrence of osprey nests on distribution structures can be accomplished either by altering the configuration of the structure or by installing a nesting deterrent atop the structure. Balancing the priorities of operations staffing with the abundance of active nests on the Cape requires a basic evaluation to help determine when and where actions should be taken.

Osprey nest atop double crossarm distribution structure.

A system for evaluating and quantifying osprey nests is maintained by EL&P as a proactive way to help determine where resources should be allocated. The osprey nest evaluation system is not intended for use in reactionary situations such as a power outage, but rather as a planning tool to evaluate areas ahead of an outage. The evaluation includes factors such as:

- **Level of threat to reliability:** The number and type of customers (residential, industrial, governmental, commercial, public service) affected by a potential outage will help to evaluate the significance of an outage should it occur.

- **Visibility and access:** The location of the structure and ease of access will affect which resources, e.g. police detail for traffic control, troubleshooter versus operations crews, are needed to make necessary repairs.

- **Nest history:** If a nest at a particular location has a history of outages and power disruptions, prioritizing repairs and making the structure unsuitable for nesting is advantageous to prevent recurring outages and reduce the burden on resources.

- **Suitable nest locations nearby:** Since osprey have strong nest site fidelity, meaning that they will continue to return to the same area over and over, it is advantageous to identify a nearby location upon which the nest can be safely constructed. Although a nest may be removed at one structure and a successful deterrent installed, the osprey will often move to the next structure on the line and begin constructing a nest.

- **Deterrent options:** Although there are several deterrents available, each has its own level of efficacy and installation constraints that must be considered.

- **Resources needed:** Identifying the resources needed to make necessary repairs is important in determining what actions can be taken.

5.2 Nest Management where Eggs and/or Chicks are Present

Management of a nest with eggs and/or live osprey chicks requires additional actions be taken to ensure compliance with the MBTA. In the event of an outage caused by an osprey nest where power cannot be restored remotely, a troubleshooter or operations staff shall be dispatched to the location. Upon arrival, the responding crew will evaluate what resources are needed to restore power.

Example of one type of insulator which can be used to protect energized equipment near active nests.

However, if osprey chicks or eggs are present in the offending nest, efforts shall be made to keep the nest in place to the greatest extent practicable. To leave the nest in-place and undisturbed, nest material can be trimmed, and insulators installed on the underlying, energized equipment to minimize the threat of future contact and subsequent fire or outages. Once the chicks have fledged at the end of the nesting season, typically the middle to end of August, the nest may be removed, and actions taken to minimize the likelihood of nest reconstruction. It is important to note that insulated equipment is vulnerable to high-winds and degredation from ultra-violet rays and is not intended for permant installation but rather to act as a temporary measure for protecting both the electric system and osprey.

Insulated equipment beneath an active osprey nest.
Source: Runyan, Ed. *Power couple: FirstEnergy, big birds coexist. The Vindicator*. 26 Aug. 2019

Active nests cannot be moved when migratory birds, including osprey, are merely causing a nuisance or inconvenience. Relocating an active nest can result in nest, chick and egg abandonment and should be avoided to the greatest extent practicable. However, Eversource's Special Permit Utility Permit (SPUT) (Permit Number: MB766357-0) allows for the removal of an active nest if there exists an "imminent danger", meaning that it poses an obvious risk of fire, threat to public safety, property damage or electrocution to nest occupants. In instances of imminent danger, the following steps shall be taken:

1. **Dispatch:**
    a. Contact Eversource Environmental Licensing and Permitting (EL&P) Staff.
    b. Manage work accordingly to restore power and leave the area in a safe operating condition.
2. **Eversource EL&P** staff will help to evaluate the following:
    a. Is there a nearby location upon which the nest can be relocated?
    b. Can a platform be installed at the structure or on a nearby structure?
    c. If there are no alterative locations for the nest, Eversource EL&P will contact a local wildlife rehabilitator who can assist with rehoming the eggs/chicks.
    d. Contact the U.S. Fish & Wildlife Service (USFWS) to report actions taken to ensure compliance with the MBTA.

A process flow for problem osprey nests with viable eggs/chicks present is provided in Appendix C.

5.3 Nest Management Where No Eggs and/or are Chicks Present

It is Eversource's policy that osprey nests shall be removed when and where they present a threat to the continued reliability of the electric system. In the event of an outage caused by an empty osprey nest,

i.e. no eggs or chicks present, the nest shall be removed at the time of power restoration in order to inspect the pole and associated equipment for damage and to install a nesting deterrent if possible. Where a nest has been identified but not yet caused an outage, Eversource EL&P or operations staff can utilize the established nest evaluation system to quantify the threat to the system, available access and resources needed to address the osprey nest. When an empty nest, or nest under construction, is removed it is important to consider that osprey have strong nest site fidelity, i.e. they will continue to build at a certain location regardless of how many times the nest is removed, and that a means of deterring nest construction should be implemented as soon as possible upon nest removal. A Process Flow for problem osprey nests without viable eggs/chicks present is provided in Appendix D.

5.4 Methods to Discourage Osprey Nesting

Once a nest is removed or before nest construction begins, there are two primary methods that can deter osprey from constructing nests atop power line structures:

- Installation of a nesting deterrent; or
- Modification of pole construction.

Nesting Deterrent

Nesting deterrents are a mechanical implement that can be installed atop distribution structures to prevent nest construction. The following is a summary of those deterrents approved by Eversource Engineering for use and installation atop distribution structures. A comparison of available deterrents is presented in Table 1. Installation guidelines and specifications are included in Appendix E: Nesting Deterrent Specifications.

1. Raptor Guard™

The Raptor Guard is a patented "X" shape design which is mounted atop the crossarms between phases. The Raptor Guard™ comes in a variety of sizes and is typically constructed of ultra-violet resistant RPVC with stainless steel hardware. Given its relatively simple installation, this is the only type of deterrent that can be installed by the Troubleshooters. The X-type has limited efficacy in terms of preventing successful nesting by osprey due to the fact that persistent osprey will continue to drop sticks atop the structure and when one catches just right within the "X", the osprey continue until a nest is built atop the deterrent. The Raptor Guard™ should be viewed as a temporary deterrent until a more sustainable solution can be implemented.

Raptor Guard™ and mounting hardware (left) and two Raptor Guards™ installed on the crossarms atop a distribution structure in Yarmouth, Massachusetts.

2. T-Type

A very effective deterrent constructed from PVC pipe, is mounted to the structure and extends beyond the top of the crossarms by approximately 1 foot. The T-Type deterrent can be manufactured in-house using two, 10-foot sections of 2-inch PVC, a t-style connector and PVC adhesive. One of the 10' sections of PVC is cut in half and attached, using the T-connector, to the remaining 10' section as shown in the photo. Proper installation height is critical to ensure osprey do not have adequate space to access the crossarms beneath the T-type deterrent. Installation requires an operations crew and cannot be done by a single troubleshooter.

Assembled T-Type Deterrent awaiting installation.

3. Half Pipe

A very effective design, which allows nesting material to slide off the structure, uses corrugated, plastic pipe mounted atop the crossarms. Installation depends on insulator orientation and absence of equipment below the crossarms, upon which a stick can fall and cause a short/outage. Installation requires an operations crew.

Photos 4 and 5: Corrugated half-pipe deterrent installed atop a three-phase distribution structure (Source: Seattle City Light) and two, corrugated half-pipe deterrents atop distribution structures in Yarmouth, Massachusetts.

Deterrent	Minimum Installation Crew	Efficacy	Benefits	Limitations
Raptor Guard™	Troubleshooter	Limited	- Simple installation - Low-cost - Easily kept on trucks	- Sticks can become lodged in the "X" and allow for nest construction.
Half Pipe	Operations	High	- Highly effective - Low-cost	- Requires larger crew to install - Cannot be readily carried on trucks
T-Type	Operations	Moderate	- Highly effective - Low-cost - Easily kept on trucks	- Improper installation height renders the deterrent ineffective

Table 1. Comparison of Eversource-approved osprey nesting deterrents.

Modification of Pole Construction

Another way to prevent osprey from nesting atop structures is to modify the orientation of equipment atop the structure. Since osprey need a structure with a double crossarm, retrofitting with a single, composite crossarm makes the structure no longer a suitable location for nesting. According to Venkatesh (2017), composite crossarms provide a significant weight savings over wood, can withstand loads equal to or greater than that of wood and has a lifespan estimated at 2 to 4 times that of wood[7]. Modification to installed equipment and/or pole construction can often be a more effective and sustainable solution to discourage osprey nesting than the installation of a nesting deterrent. It is recommended that all new construction of distribution line structures and equipment should consider opportunities to make structures unsuitable for osprey nests.

Nesting Platforms

When a structure is made unsuitable for nesting, either through an installed deterrent or modification to the structure itself, the osprey will go to the nearest suitable location to construct their nest, which is typically the next utility pole down the line. Very quickly, installation of a single deterrent can lead to the need to install or modify multiple structures to prohibit nesting in the area. Although the goal of the Cape Cod Osprey Management Program is to deter osprey from nesting on infrastructure, it may, in certain circumstances, be advantageous to install a nesting platform upon which the osprey can safely construct a nest, which doesn't threaten system reliability. Further, if osprey nest on a constructed platform it will limit other osprey from nesting on structures nearby.

A system for evaluating the feasibility of installing an osprey nest platform shall be maintained by Eversource EL&P as a way to identify any constraints and opportunities for platform installation including but not limited to:

- Underlying property ownership
- Proximity of suitable nesting locations
- Options for platform construction off-easement
- Energized equipment beneath proposed platform
- Engineering constraints
- Available resources for construction
- Cost
- Stakeholder opinions
- Proximity to other osprey nests
- Downsides of osprey nests: debris falling beneath the nest, guano, noise, aesthetics, etc.

[7] Venkatesh. A. (2017) *A comparative study of wooden and composite crossarm of an electric utility pole*. Masters Thesis. The University of Texas at Arlington.

6.0 Osprey Fatalities and Injuries

To minimize osprey injuries and death resulting from interactions with Eversource infrastructure, it is imperative that all such incidents be reported to Eversource EL&P staff in a timely manner. Reporting and proper handling of injured and/or deceased osprey is critical to maintain compliance with the MBTA and to help track and make corrective actions to minimize future occurrences.

6.1 Osprey Fatalities

All incidents of osprey fatalities that resulted from an interaction with Eversource's energized equipment must be reported to Eversource EL&P staff even if the interaction did not result in an outage. Crew members who come upon a deceased osprey, shall follow the Process Flow for Deceased Osprey in Appendix F. Upon arrival at the scene of an osprey fatality, the responding crew shall report the following to dispatch:

- Date and time of discovery
- Location (address and/or pole number)
- Number of birds killed
- Probable cause of death
- Presence of any leg bands and if present, the ID numbers on the band
- Repairs made to the equipment
- Preventative measures taken (e.g. nesting deterrent installed)

Dispatch will then relay that information to the appropriate Eversource EL&P staff who is responsible for the following:

- Complete and submit an Injury and Mortality Record to the USFWS via the Environmental Conservation Online System (ECOS) reporting system online and retain a copy of the documentation.
- Contact USFWS representative by phone and/or email.
- Document the incident on the Osprey Injury and Fatality Tracking Log, which shall be maintained by Eversource EL&P staff.

Eversource EL&P staff shall be responsible for retaining copies of all injury and mortality incidents and documentation.

Eversource's SPUT allows for the on-site disposal of deceased birds. Osprey carcasses should be removed from any overhead infrastructure and placed in a secluded/vegetated area if possible. If the incident occurs in a developed area, such as a parking lot or commercial facility, the bird may be transported to a more rural and remote location and left on the ground. It is however important to note that Eversource's SPUT does not allow for the collection and/or retention of any parts, including feathers, of deceased osprey and doing so would be a violation of the Company's Federal permits and could result in significant fines and possible prosecution.

When handling deceased birds, it is imperative that responding crews wear appropriate personal protective equipment (PPE) including but not limited to nitrile gloves and safety glasses. It is recommended that carcasses be carried using a shovel or other implement to ensure their safety from possible diseases carried by the birds. If the carcass must be transported to a remote location, it should

be placed in a plastic bag for transport. The bag should be disposed of properly as municipal waste and not left at the location with the carcass.

6.2 Injured Osprey

Osprey are injured more often by flying into Eversource's infrastructure such as guy lines, rather than through contact with energized equipment. Regardless of the means of injury, all incidents where an osprey is injured through its interaction with Eversource's equipment must be reported to Eversource EL&P staff even if the interaction did not result in an outage. Responding field crews shall follow the Process Flow for Injured Osprey in Appendix G. Upon arrival at the scene of an injured osprey, responding crews are instructed not to handle the osprey and, if possible, to remain on-scene until direction via dispatch from Eversource EL&P. The responding crew shall report the same information as for an osprey fatality as provided in Section 6.1 above.

Dispatch will then relay that information to the appropriate Eversource EL&P staff who be responsible for the following:

- Identifying, contacting, and coordinating with a local wildlife rehabilitator to collect the injured bird.
- Complete and submit an Injury and Mortality Record to the USFWS via the Environmental Conservation Online System (ECOS) reporting system online.
- Contact USFWS representative by phone or email.
- Document the incident in the Osprey Injury and Fatality Tracking Log.

Eversource EL&P staff shall be responsible for retaining copies of all injury and mortality incidents and documentation.

7.0 Communication

Prompt and effective communication between internal Eversource business units, our regulators, the public and our stakeholders is critical to the implementation of a successful osprey management program. Having a clear and concise communications protocol, defined and up-to-date points of contact and an understanding of the roles and responsibilities will help to not only clarify processes but also provide a more effective means for community, customer, and stakeholder engagement.

7.1 How Osprey-Related Information is Received

Eversource receives Osprey-related information in a multitude of ways, including:

- Direct communication from customers, stakeholders or town representatives by phone or email to Eversource customer service, community liaisons, or known Eversource employees;
- Outreach from the media;
- Posts on social media such as Facebook, Twitter, and Instagram;
- Contact from dispatch, troubleshooters, survey, and inspection crews, or other Eversource field staff; and
- Current and former Eversource employees and contractors who report nests to former colleagues.

How communication is handled is a critical component to ensure that not only are appropriate and necessary actions taken, but that feedback, especially to stakeholders, customers and members of the

public is provided. A Communications Process Flow for osprey-related Issues is provided in Appendix H to help ensure communications are handled effectively. A Frequently Asked Questions document (Appendix I) shall be maintained by Eversource EL&P and provided to external stakeholders as well as internal staff.

7.2 How Osprey-Related Information is Disseminated

Once osprey-related information is received, it is important that it be communicated in a clear and efficient means so that action can be taken where needed as soon as possible. Through Eversource's stakeholder engagement, it became evident that there was a need for increased transparency, education on the Company's policies and procedures related to osprey and means to provide feedback on actions taken around osprey and their nests. To that end, a part of the Osprey Management Program is to adopt procedures to help facilitate communication and provide a response to concerned citizens, customers and stakeholders.

7.3 Primary Point-of-Contact

For all osprey-related matters, an internal Eversource EL&P staff member shall serve as the primary point-of-contact and will be responsible for the following:

- Communicate with local, state and federal regulators.
- Proactively engage with Communications staff for media (social, print and radio) outreach.
- Work with dispatch, troubleshooters and operations teams on nest documentation, outages, fatalities, etc.
- Maintain regular engagement with key stakeholders on the Cape, including but not limited to wildlife organizations, rehabilitators, and town conservation staff
- Assist community liaisons as needed with concerns communicated by the towns.
- Serve as the primary contact for customer service inquiries.

A list of designated staff and primary contacts for relevant departments shall be maintained by Eversource EL&P.

7.4 Stakeholder Committee

Beginning in 2020, Eversource established an external stakeholder committee made up of local wildlife rehabilitators, non-profit organizations, state and local regulators as well as internal staff from Eversource EL&P, community relations and operations to help guide Eversource through the development of the Osprey Management Program. This external stakeholder committee shall be a standing committee, which meets annually or more often as determined by the PPOC, to discuss ongoing or outstanding osprey-related concerns. The external stakeholder committee shall also act as a conduit to share information and help connect customers and members of the public with accurate information on Eversource's Osprey Management Program.

7.5 Public Access to Information

As part of this program, Eversource shall provide customers, stakeholders and members of the public with access to current information on osprey-related policies and programs either through the Company's website, social media, and/or printed material. Accuracy and relevance of the information contained therein shall be the responsibility of the Eversource EL&P.

8.0 Training

The PPOC or their designee shall be responsible for providing osprey management training to various business units including but not limited to:

- Operations
- SCADA/Dispatch
- Troubleshooters
- Community relations
- Corporate communications
- EL&P

The training can be done virtually or in-person and shall provide an overview of Eversource's Osprey Management Program, osprey biology and behavior, compliance obligations, processes and procedures, public responsibilities, and media exposure. Initial training will be mandatory for all employees in the above-listed business units working on Cape Cod and will be offered annually as a refresher.

Appendix A: Glossary of Terms[8]

Conductor

The material in the form of a wire, cable, or bus bar, suitable for carrying an electric current.

Crossarm

A horizontal supporting member used to support electrical conductors and equipment for the purpose of distributing electrical energy. Typically made of wood, fiberglass or a composite material.

Dispatch

Eversource business unit responsible for receiving and managing electric system outage and fault response to quickly restore power.

Distribution structure

A circuit of low-voltage wires energized at voltages at or below 69kV and used to distribute electricity to customers.

Emergency situation

A term which applies to SPUT and is a state of affairs where the safety of the migratory birds, nest or eggs are at risk or where the migratory birds, nest, or eggs pose a threat of serious bodily injury or a risk to human life, including a threat of fire hazard, mechanical failure, or power outage.

Eversource Environmental Licensing & Permitting (EL&P)

Eversource business unit responsible for managing permit and license applications to ensure compliance with local, state, and federal environmental regulations.

Eversource operations

Eversource business unit responsible for managing construction, operation, maintenance and emergency restoration of the electric distribution and transmission system. Operations crews typically include more than one qualified lineman operating out of a larger vehicle than a troubleshooter.

Imminent danger

An existing condition that poses an obvious risk of fire, threat to public safety, damage to property, or harm or injury to osprey.

Insulator

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

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[8] Glossary Sources:

1. Natural Resources & Hyrdro Licensing Division Seattle Light. *Avian Protection Plan Seattle City Light*. 2020. Seattle, WA.
2. Avian Power Line Interaction Committee (APLIC). 2006. *Suggested Practices for Avian Protection On Power Lines: The State of the Art in 2006.* Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and Sacramento, CA.

Juvenile

A young bird in its first year of life.

Phase

An energized electric conductor.

Phase-to-phase

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

Power line

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

Relay

Electrically operated switch that opens and closes the circuits by receiving electrical signals from outside sources. Relays can be operated manually in the field by troubleshooters or operations crews or remotely by dispatch.

Right-of-way

The area of land acquired by an agreement between two or more parties for the purpose of constructing and maintaining a utility easement. The land may be owned outright by the utility or have an easement allowing maintenance of the utility infrastructure.

Special Purpose Utility Permit (SPUT)

A federal permit from the U.S. Fish and Wildlife Service that authorizes utility companies to collect, transport, and temporarily possess migratory birds found dead on utility properties, rights-of-way, or structures, for mortality monitoring purposes.

Structure

The pole or lattice assembly that supports electrical equipment for the transmission or distribution of electricity. Distribution structures are smaller, typically constructed of wood and commonly located along roadsides. Transmission structures are larger and typically made of metal and commonly located off-road in rights-of-way.

Switch

An electrical device used to sectionalize electrical energy sources. Switches are typically operated by dispatch to control and manage power supply during abnormal times such as during an outage or system maintenance.

Transformer

A device used to increase or decrease voltage. Transformers can be mounted on the ground or atop a structure, typically beneath the crossarms.

Transmission structure

A circuit of high-voltage wires, energized at voltages over 69 kV and used to transmit electricity from the generating facilities, substations and/or junctions to the distribution network.

Troubleshooter

A single-person crew whose primary responsibility is to quickly restore power in the event of an outage. Troubleshooters also respond to non-outage conditions such as downed power lines, damaged equipment, or customer concerns associated with Osprey nests.

Appendix B: Avian Protection Plan

Eversource Energy Avian Protection Plan

February 2020

Table of Contents

1.0 Introduction

This Avian Protection Plan (APP) documents the work practices Eversource Energy will implement to improve reliability, reduce avian risk, and generate positive recognition from regulators and customers. The APP is based on input from Edison Electric Institute's Avian Power Line Interaction Committee (APLIC), including documents such as: S*uggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006* and *Reducing Avian Collisions with Power Lines: The State of the Art in 2012*.

COMMITMENT TO AVIAN PROTECTION

Bird interactions with power lines may result in bird injuries and mortalities, which in turn, may result in power outages, violation of avian protection laws, damage or fire to electric infrastructure, and negative public perception.

Eversource Energy is committed to the protection of migratory birds while safely and reliably delivering energy as New England's largest energy delivery company.

To fulfill this commitment, Eversource will:

- Implement and comply with this Avian Protection Plan (APP)
- Ensure company actions comply with all applicable laws, regulations, permits, and APP procedures
- Document bird mortalities and known locations with nest issues
- Ensure appropriate employees are trained to ensure awareness of APP responsibilities
- Retrofit or modify equipment where bird mortality has occurred in accordance with APP requirements

1.1 ROLES & RESPONSIBILITIES

1.1.1 Environmental Affairs Management

- Maintains strategic oversight and establishes policies to ensure that Eversource complies with applicable requirements related to avian protection.

1.1.2 Environmental Affairs – Avian Protection Specialist

- Oversees implementation of the APP. Solicits input from Transmission and Distribution organizations and performs an annual review of the APP.
- Applies for and maintains United States Fish and Wildlife Service (USFWS) permits.
- Contacts USFWS when dead birds are discovered or active nests must be disturbed.
- Maintains records of mortality events and nest disturbances, and reports as required to appropriate agencies.

- Provides advice on biological considerations for implementation of T&D construction standards for avian-safe line construction or retrofits.

1.1.3 T&D Personnel

- Contact Avian Protection Specialist when encountering dead birds or bird nests.
- Adhere to guidelines on retrofitting equipment following an avian mortality event.

1.1.4 Customer Service

- Forward Customer inquiries/concerns to the Avian Protection Specialist.

1.1.5 Community Relations

- Partner with Avian Protection Specialist to respond to customer inquiries, public requests for nest platforms, etc.

2.0 Regulatory Compliance

2.1 Federal Laws and Regulations

The U.S. Fish and Wildlife Service has enforcement authority for three major federal laws related to bird protection. All native migratory birds in North America are protected under the federal Migratory Bird Treaty Act (MBTA) of 1918, as amended. North American eagle species are also protected by the Bald and Golden Eagle Protection Act of 1940, as amended. The Endangered Species Act of 1973 provides further protection to birds considered "threatened" or "endangered". These laws provide civil and criminal penalties for the "take" of such species.

2.1.1 Migratory Bird Treaty Act (MBTA)

The Migratory Bird Treaty Act (16 U.S.C. 703-712; MBTA) is the cornerstone of migratory bird conservation and protection in the United States. The MBTA implements four treaties that provide for international protection of migratory birds. It is a strict liability statute wherein proof of intent is not an element of a taking violation. The Act clearly states that most actions that result in a "take" of a protected species can be a violation. The word "take" is defined as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect."

The MBTA states: "Unless and except as permitted by regulations … it shall be unlawful at any time, by any means, or in any manner to pursue, hunt, take, capture, kill … possess, offer for sale, sell … purchase … ship, export, import … transport or cause to be transported … any migratory bird, any part, nest, or eggs of any such bird … (The Act) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior."

A 1972 amendment to the MBTA resulted in inclusion of bald eagles and other birds of prey in the definition of a migratory bird. The MBTA provides criminal penalties for persons who, by

any means or in any manner, pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird (including bald eagles) as well as possessing birds, their parts, nests, or eggs without a permit.

The MBTA offers protection to 836 species of migratory birds, including waterfowl, shorebirds, seabirds, wading birds, raptors, and passerines. Generally speaking, the MBTA protects all birds occurring in the U.S. in the wild except for house (English) sparrows, European starlings, rock doves (pigeons), monk parakeets, any unprotected species specifically listed in the Federal Register and non-migratory upland game birds. For a complete list of species protected under the MBTA see http://www.migratorybirds.fws.gov/intrnltr/mbta/mbtintro.html.

Violation of the MBTA by an individual can result in a fine of up to $15,000 and/or imprisonment for 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 Bald and Golden Eagle Protection Act (BGEPA)

Under authority of the **Bald and Golden Eagle Protection Act** (16 U.S.C. 668-668d; BGEPA), bald and golden eagles are afforded additional legal protection. Penalties for the "take" of an eagle may result in a fine of up to $100,000 and/or imprisonment for up to one year. The BGEPA has additional provisions wherein the case of a second or subsequent conviction of the BGEPA, penalties may be imposed of up to $250,000 fine and/or two years imprisonment.

2.1.3 Endangered Species Act (ESA)

The **Endangered Species Act** defines "take" as "to harass, harm, pursue, hunt, shoot, would, kill, trap, capture, or collect, or to attempt to engage in any such conduct in regards to a listed species."

"Harass" is defined as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering."

"Harm" may include significant habitat modification or degradation which significantly impairs essential behavioral patterns, including breeding, feeding, or sheltering.

Inclusion of "harass" and "harm" in the definition of "take" under ESA broadens the restrictions on work that can be done in the vicinity of a listed species bird nest.

2.2 U.S. FISH & WILDLIFE SERVICE (USFWS)

These Acts are administered by the United States Fish and Wildlife Service (USFWS) which has local Law Enforcement Officers (Special Agents) within Connecticut, Massachusetts and New

Hampshire. The USFWS Office of Law Enforcement carries out its mission to protect migratory birds through investigations and enforcement, as well as by fostering relationships with individuals, companies, and industries who seek to minimize their impacts on migratory birds.

While the Service generally does not authorize incidental take under these Acts, USFWS realizes that some birds may be killed even if all reasonable measures to avoid the take are implemented.

Eversource maintains two USFWS-issued permits.

2.2.1 Special Purpose Utility Permit

Eversource holds a Migratory Bird Special Purpose Utility Permit (SPUT) that authorizes possession and transport of migratory bird carcasses collected from company property and rights-of-way in CT, NH and MA.

Note: USFWS must be contacted FIRST before collecting bald eagle, golden eagle, or federally listed Threatened/Endangered species carcasses.

The SPUT also authorizes relocation of active nests from utility structures (EXCEPT for Eagles and Threatened/Endangered species) in emergency situations. Emergency situations are defined as:

- The safety of the migratory birds, nest or eggs are at risk
- The migratory birds, nest, or eggs pose a threat of serious bodily injury or a risk to human life, including a threat of fire hazard, mechanical failure, or power outage.

Active nests cannot be moved when migratory birds are merely causing a nuisance or inconvenience. Nests must be relocated to a site and structure (natural or artificial) appropriate to the species' requirements. If extenuating circumstances warrant, destruction of an active nest may be authorized by contacting USFWS prior to destruction.

Permit Number: MB766357-0
Effective Date: 04/01/19
Expires: **03/31/2022**
Renewal must be submitted by: Not specified in permit, normally 30 day prior to expiration

An annual report due January 31 of each year. Instructions for electronic report completion and submittal are detailed in the permit.

Records to document compliance with the USFWS Special Purpose Utility Permit shall be maintained for five (5) years from the date of expiration of the permit pursuant to 50 CFR Section 13-46.

2.2.2 Depredation Permit

USFWS has issued Eversource a Migratory Bird Depredation Permit which authorizes the take of herring gulls in Boston and New Bedford, Massachusetts; and common ravens at Rimmon Substation and other substations in New Hampshire. USDA Animal and Plant Health Inspection Service (APHIS) is under contract to perform hazing and, if needed, depredation on our behalf.

Authorized Take:

- 175/180 McArthur Drive, New Bedford – Live capture/euthanize up to 10 Herring gulls (must completely destroy carcasses), 10 Herring gull nests, and three Great-black-backed gull nests.
- 1165 Massachusetts Ave, Boston – Live capture/euthanize up to 5 Herring gulls (must completely destroy carcasses), 10 Herring gull nests and three Great-black-backed gull nests.
- Goffstown, New Hampshire – Lethal take of 40 Common ravens via shotgun or pellet rifle (must completely destroy carcasses) and 100 Common raven nests.

Non-lethal take should be primary means of control (i.e., active hazing, harassment).

Annual report due with renewal (Available at: http://www.fws.gov/forms/3-202-9.pdf).

Permit Number: MB761430-0
Effective Date: 05/01/20
Expires: 04/30/21
Renewal must be submitted by: 03/30/21

2.3 STATE REGULATIONS – THREATENED & ENDANGERED SPECIES

Connecticut Endangered, Threatened and Special Concern Species:
https://www.ct.gov/deep/cwp/view.asp?a=2702&q=323486

Massachusetts MESA List: https://www.mass.gov/service-details/list-of-vertebrates

New Hampshire Endangered and Threatened Species List:
http://www.wildlife.state.nh.us/nongame/documents/endangered-threatened-wildlife-nh.pdf

New Hampshire Special Concerned Species List:
http://www.wildlife.state.nh.us/nongame/documents/species-special-concern.pdf

Note: Please contact the Avian Protection Specialist for information pertaining to threatened and endangered species nests.

3.0 Training

Instructor-led module (20 minutes) provided on request, typically to Response Specialists. Topics include:

- Regulatory background and protected bird species
- Factors that affect avian mortality
- Response to avian fatalities
- Response to active and inactive nests
- Response to emergencies
- Required reporting

4.0 Avian Mortality and Injury

4.1 AVIAN MORTALITY

If possible, the Eversource employee shall take a digital photograph of the bird and pole/other structure) to facilitate identification of species.

Electric Operations employee shall contact dispatch/system operations center and provide the following information:

- Name and contact phone #
- Date and time
- Weather
- Outage #
- Nearest address
- Type of bird
- Where was bird found (e.g., base of pole, on top of transformer, etc.)
- Suspected cause of fatality
- Whether the bird has a leg band or tag
- Any deterrents or animal guards in place
- Whether photos are available

Disposition of Carcasses:

Non-eagle, not a T&E Species:

1. Leave on site if possible, placing it in/under vegetation if in a wooded area.
2. If the incident occurred in a densely populated area, place the carcass in a plastic bag and dispose in a dumpster at an Eversource facility.

Eagle or T&E Species:

1. **Do not transport carcass**. Leave near base of pole under vegetation if possible.
2. Avian Protection Specialist will contact USFWS for permission to deliver bird to regulatory agency or provide location for regulatory agency pick up.

Note: Any bird with a leg band or tag should be delivered to the Eversource Avian Protection Specialist.

4.2 AVIAN INJURY

Eversource employees that encounter a bird that has been injured due to contact with electrical equipment shall contact the Avian Protection Specialist.

The Avian Protection Specialist will identify a licensed wildlife rehabilitator.

Dependent on location, either the Avian Protection Specialist or field personnel will transfer the injured bird to the wildlife rehabilitator.

The Avian Protection Specialist shall include disposition of the injured bird in the annual USFWS report in compliance with the Special Purpose Utility Permit.

4.3 RETROFITTING EQUIPMENT

Following an avian fatality event, the incident pole will be reviewed for retrofit/installation of deterrents to make avian safe. Operations personnel shall complete this review with the Avian Protection Specialist to ensure that the most appropriate cost-effective retrofit is identified.

In the event of an eagle fatality, at least two structures in each direction from the incident pole shall be evaluated for retrofit (and/or any additional poles in the area that pose a hazard due to location or configuration).

Retrofits will be scheduled and completed in a timely manner (typically within six months from the date of the mortality event). Exceptions to the timeline require approval by the Avian Protection Specialist.

5.0 Nest Management

Response/removal of avian nests on Eversource equipment is dependent on whether the nest is inactive or active:

Inactive: A nest without eggs or young birds present.

Active: Contains eggs or young birds that cannot yet fledge (fly from nest). Nests are active during the breeding season (species specific, typically March – September for Osprey).

5.1 NEST RESPONSE – IMMINENT DANGER

Imminent Danger: Presence of a bird nest has created significant danger of fire, electrocution of the birds, or immediate threat to human life or property, or power outage.

Inactive Nest Response:

***Non-Eagle, not a T&E species*:**

- The nest may be trimmed, removed, or relocated. Leave any removed nest materials on the ground.
- Report to Avian Protection Specialist.

Eagle or T&E species:

Eagles have special status under BGEPA, and because they may reuse their nest for several years, removal of inactive nests can only be done after consultation/permitting by USFWS.

- Avian Protection Specialist **MUST** be contacted before trimming, removing, or relocating an inactive eagle or T&E species nest.
- Removal of any eagle or T&E species nest **must be approved by USFWS and state wildlife agency**.

Active Nest Response:

Non-Eagle, not a T&E species:

- Field personnel shall immediately notify the Avian Protection Specialist.
- If the nest must be removed, the Avian Protection Specialist shall provide guidance to aid in **relocation of nest** (preferred) or retrieval of nest contents for transport to a wildlife rehabilitation facility (not preferred).
- If the nest does not require removal, the Avian Protection Specialist shall provide guidance to field crew regarding working near an active nest.

Eagle or T&E species:

- Avian Protection Specialist **MUST** be contacted before working near an active eagle or T&E species nest.
- Removal of an eagle or T&E species nest **must be approved by USFWS and state wildlife agency**.

5.2 NEST RESPONSE – NEST OBSTRUCTS WORK BUT IS NOT AN IMMINENT DANGER

Inactive Nest Response:

Non-Eagle, not a T&E species:

- The nest may be trimmed, removed, or relocated.
- Report to Avian Protection Specialist.

Active Nest Response:

Non-Eagle, not a T&E species:

- Do not disturb nest.
- Contact Avian Protection Specialist.
- Avian Protection Specialist shall estimate when the nest will become inactive to allow work to proceed, or, if appropriate, provide instruction on how to work near an active nest (if risk of nest failure is low).

Active or Inactive Nest of Eagle or T&E species:

IMPORTANT*: Eagles have special status under BGEPA, and because they may reuse their nest for several years, removal of inactive nests can only be done after consultation/permitting by USFWS.*

- Avian Protection Specialist **MUST** be contacted before trimming, removing, or relocating an inactive eagle or T&E species nest.
- Removal of any eagle or T&E species nest **must be approved by USFWS and state wildlife agency**.

6.0 Construction Design Standards

Eversource will apply avian-safe design principles where feasible and with appropriate consideration to effectiveness, cost, and biological resource significance.

Avian-safe construction standards are documented by the Eversource Standards Group manual and include:

- Conductor covers
- Animal guards
- Nest platforms
- Perch deterrents
- Animal guards
- Tree wire

In addition, the Avian Protection Specialist can recommend additional equipment, such as visual, mechanical, and olfactory deterrents, depending on site specific needs.

7.0 Common Species Encountered at Eversource

The following avian species are most typically encountered when dealing with mortality and nests in Eversource's service territory. The links provided include information on how to identify each species.

Bald Eagle: https://www.allaboutbirds.org/guide/Bald_Eagle/id

Osprey: https://www.allaboutbirds.org/guide/Osprey/id

Common Raven: https://www.allaboutbirds.org/guide/Common_Raven/id

Red-tailed Hawk: https://www.allaboutbirds.org/guide/Red-tailed_Hawk/id

Barred Owl: https://www.allaboutbirds.org/guide/Barred_Owl/id

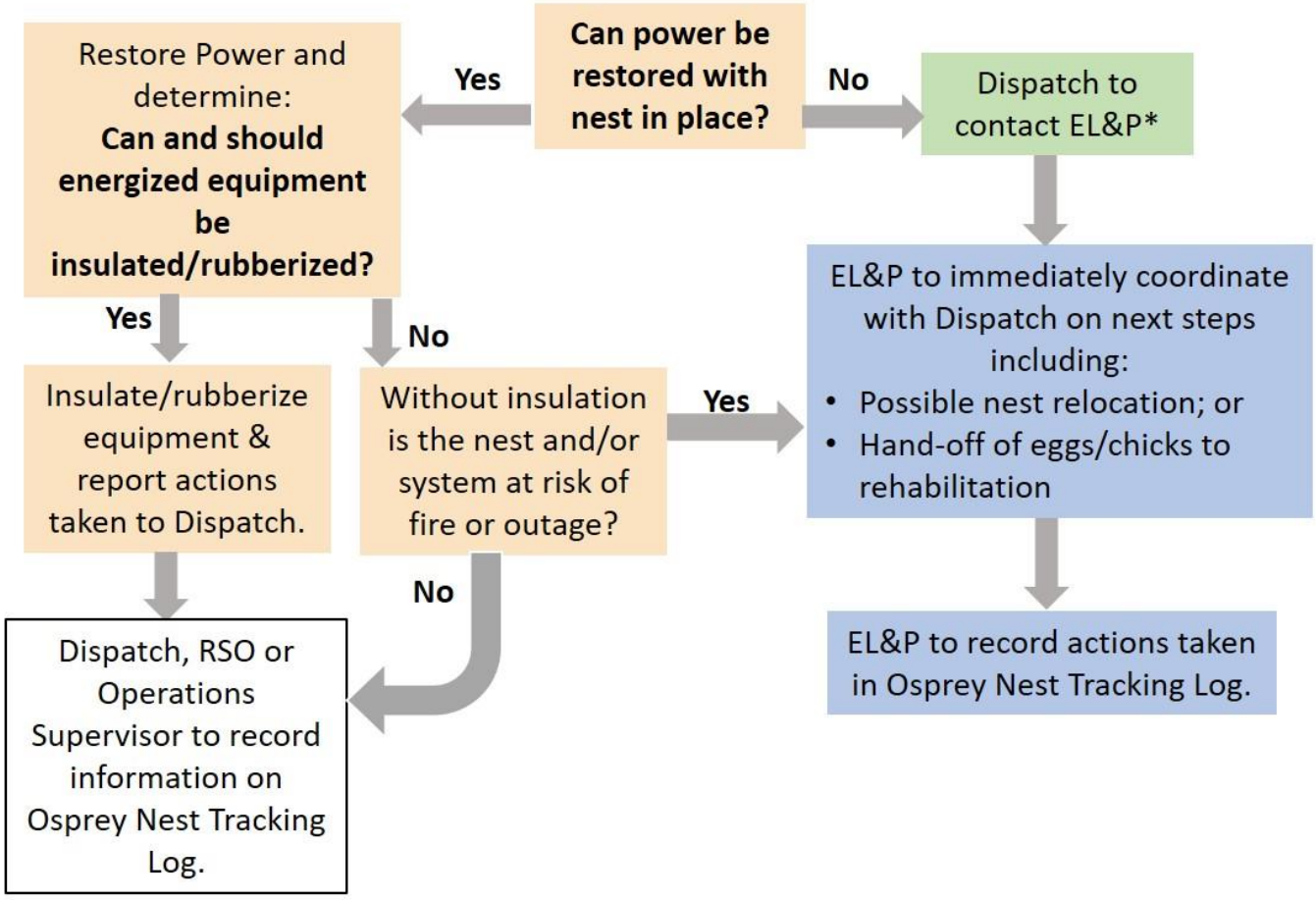
American Crow: https://www.allaboutbirds.org/guide/American_Crow/id

Great Blue Heron: https://www.allaboutbirds.org/guide/Great_Blue_Heron/id

Monk Parakeet: https://www.allaboutbirds.org/guide/Monk_Parakeet/id

Appendix C: Process Flow for Problem Osprey Nest <u>with</u> Viable Eggs/Chicks Present

(Typically Mar. 15 – Aug. 31)



Legend

- EL&P Responsibility
- Dispatch Responsibility
- Field Response

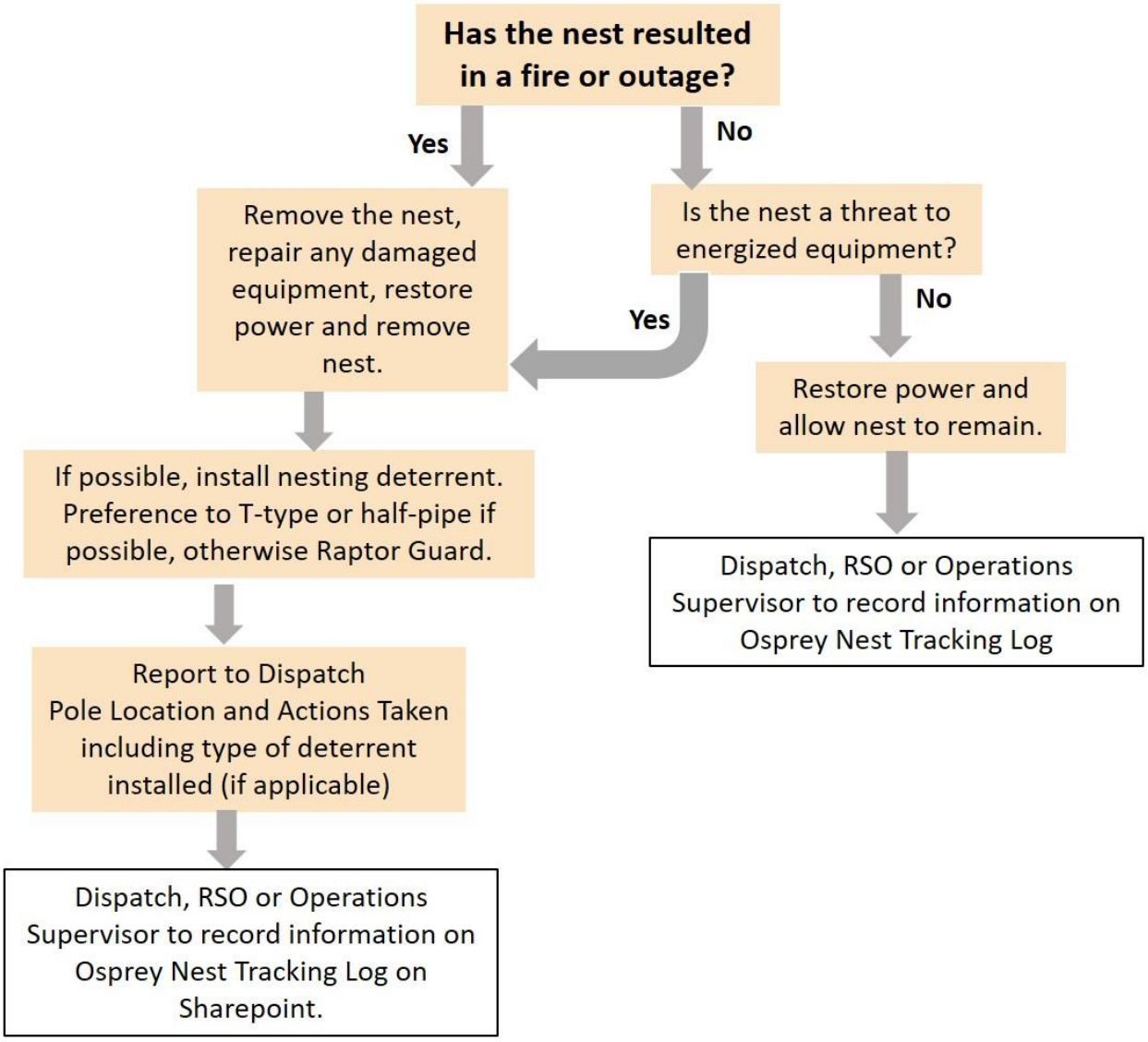
***Emergency Protocol**

If EL&P contacts are not available to coordinate, Dispatch shall take necessary steps to restore power and make the area safe. For egg/chick handling Dispatch shall contact:

1. Wild Care
   10 Smith Lane, Eastham, MA.
   812-323-1313
2. New England Wildlife Center,
   4011 Main St., Barnstable, MA.
   517-835-6845

Appendix D: Process Flow for Problem Osprey Nest <u>without</u> Viable Eggs/Chicks Present

(Typically Sept. 1 – Mar. 14)



Legend

- EL&P Responsibility
- Dispatch Responsibility
- Field Response

Appendix E: Nesting Deterrent Specifications

DESCRIPTION	MFG OR SUPPLIER	CATALOG NUMBER	STANDARD PACKAGE UNIT	ITEM NUMBER	ILLUSTRATION
GUARD, ANIMAL, RAPTOR, 24–inch crossarm extension cover, gray. To extend cover over primary conductors beyond insulators. Applicable to conductors size range #6 – 795 kcmil,	TE	BCIC–G–ARM–24–01 (B12)	12EA	589372	D 
GUARD, ANIMAL, RAPTOR, cover, gray. To be placed over primary conductors #6–795 kcmil at deadends. Cover length 27 inches.	TE	BCIC–G–DE/CL–01 (B6)	6EA	601214	D 
GUARD, ANIMAL, RAPTOR, cover, gray. To be placed over top of cutouts 25 kV and below.	TE	BCAC–G–CUTOUT–FT–P(B3)	3EA	601210	D 
GUARD, ANIMAL, RAPTOR, double insulator cover, gray. For use on pin or post type insulators 35 kV and below. Applicable to conductors size range #6 – 795 kcmil. Cover length 41 inches	TE	BCIC–G–DPIN–795–01 (B6)	6EA	601215	D 
GUARD, ANIMAL, RAPTOR, plastic, gray, for tie–top pin insulators,15 kV C–Neck to 35 kV J–Neck, #6 thru 795 MCM, includes main body, 2 extension arms, and 6 pins, 67 inches assembled.	Hendrix	HR–67	1EA	505459	D 
GUARD, ANIMAL, RAPTOR, plastic, gray, for vise–top pin insulators,15 kV – 35 kV #6 thru 795 MCM, includes main body, 2 extension arms, and 4 pins, 67 inches assembled.	Hendrix	HRS–67VT/SC	1EA	505458	D 

Date Approved 09/2020
Approved by

Eversource Energy Material Standard

September 2020 Edition

MAT G–10

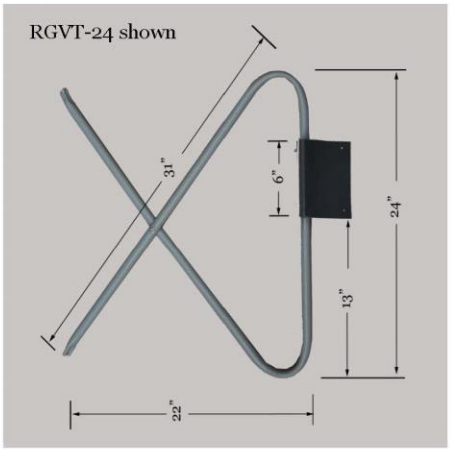
POWER LINE SENTRY

Raptor Guard™ Wildlife Perching Deterrents For Vertical Construction

The Patented "X" shape design of our Raptor Guard™ perching deterrents provide a superior barrier over the first generation triangle shape design of perching deterrents. Designed to eliminate electrocution risk on vertical construction poles.

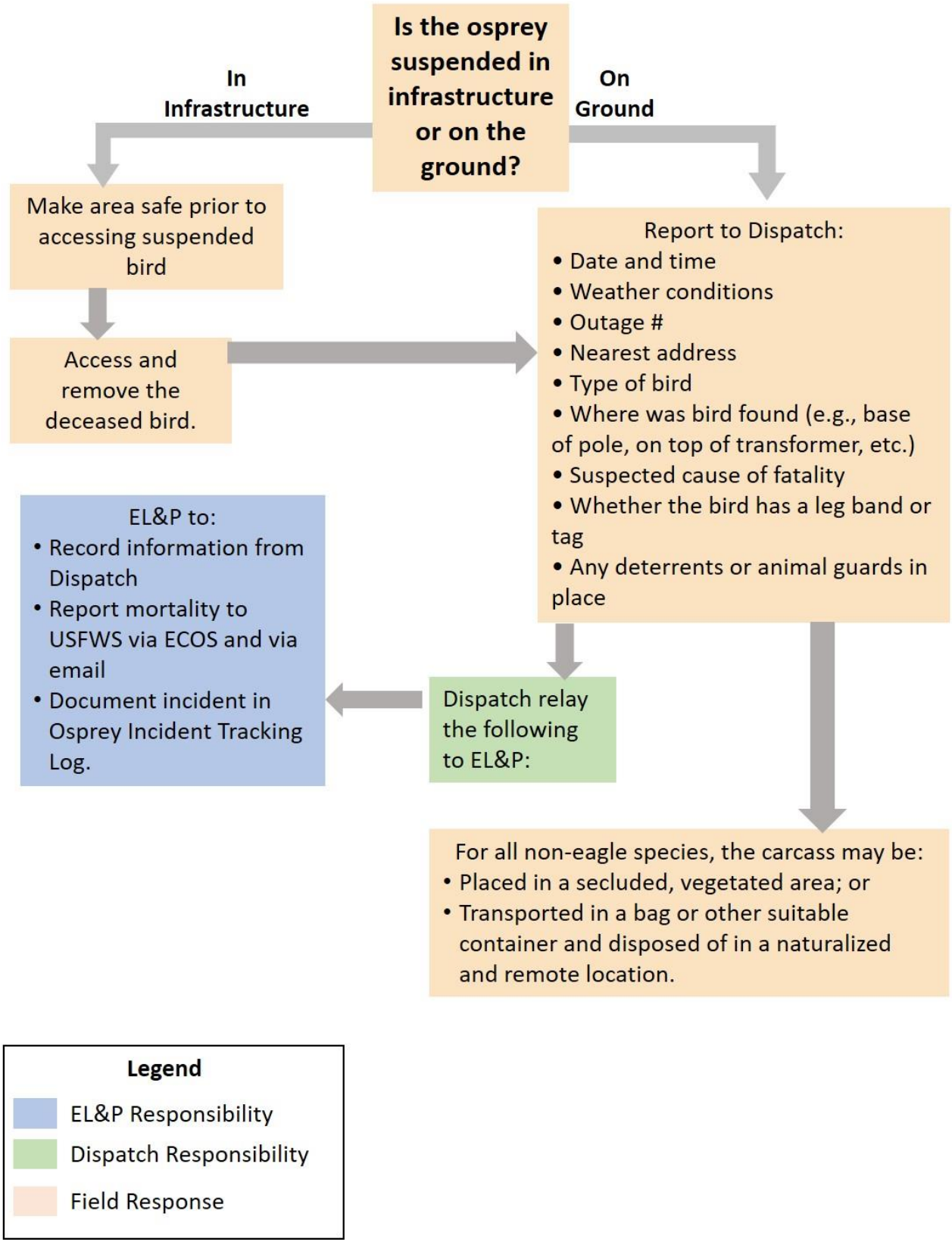
Specifications

- UV resistant PVC uprights and RPVC saddles
- Stainless Steel and Galvanized Steel Hardware
- Withstands > 85 mph winds for sustained periods
- Over 200,000 Raptor Guards™ in the field and > 10 years in service
- All hardware for installation included
- Designed to prevent phase to ground electrocutions by blocking simultaneous contact with conductor and ground wire, bonded bracket, or steel pole..

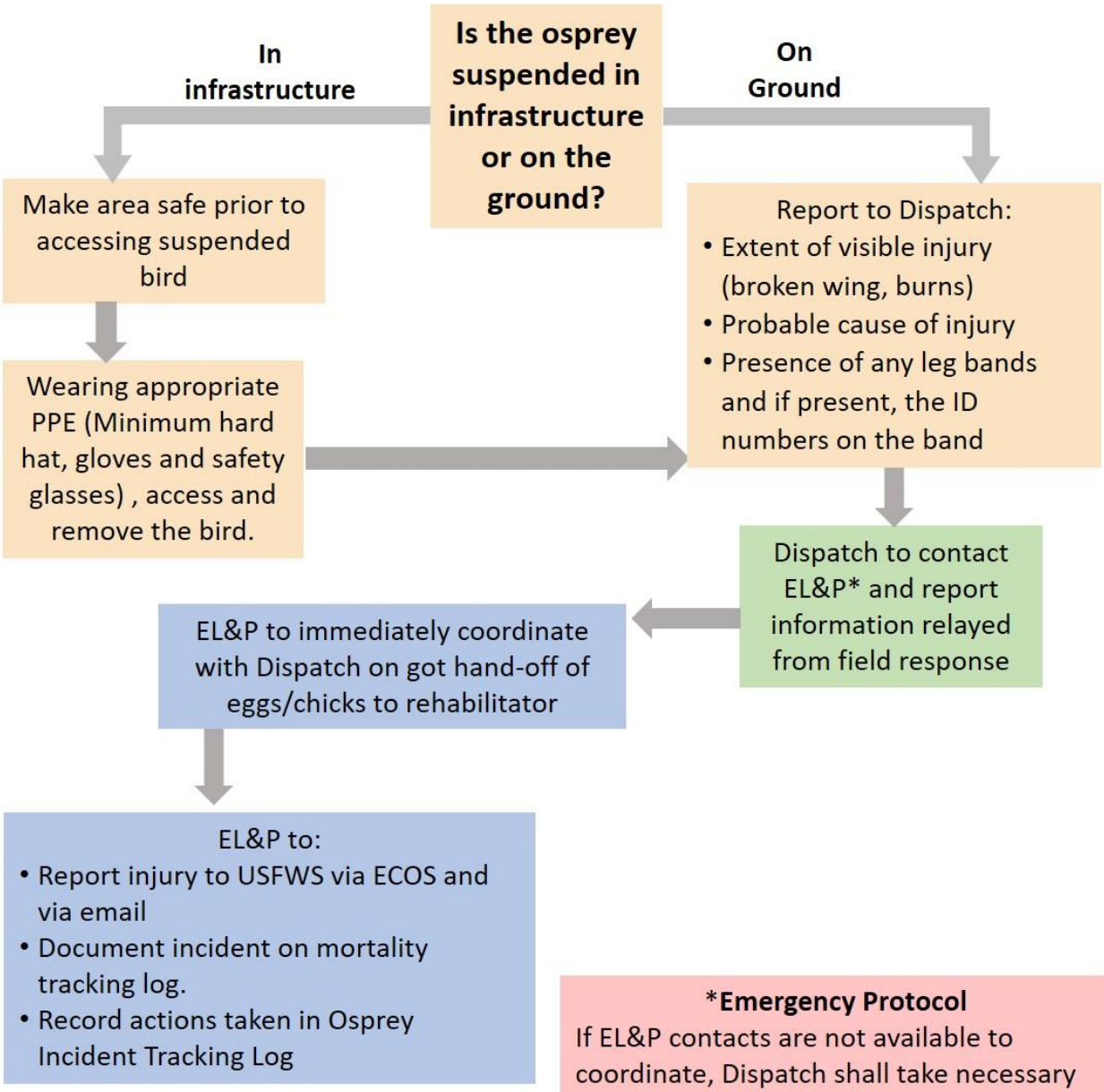


Product Number	Description	Mount	Installation Type	Box Qty
RGVT-16	Single pole mount saddle perching deterrent with 16" of coverage.	Pole Mount	Gloved	25
RGVT2-16	Double pole mount saddle perching deterrent with 16" of coverage. Extreme high wind (> 100 mph ave.)	Pole Mount	Gloved	25
RGVT-24	Single pole mount saddle perching deterrent with 24" of coverage.	Pole Mount	Gloved	20
RGVT2-24	Double pole mount saddle perching deterrent with 24" of coverage. Extreme high wind (>100 mph ave.)	Pole Mount	Gloved	20

Appendix F: Process Flow for Deceased Osprey



Appendix G: Process Flow for Injured Osprey



Legend

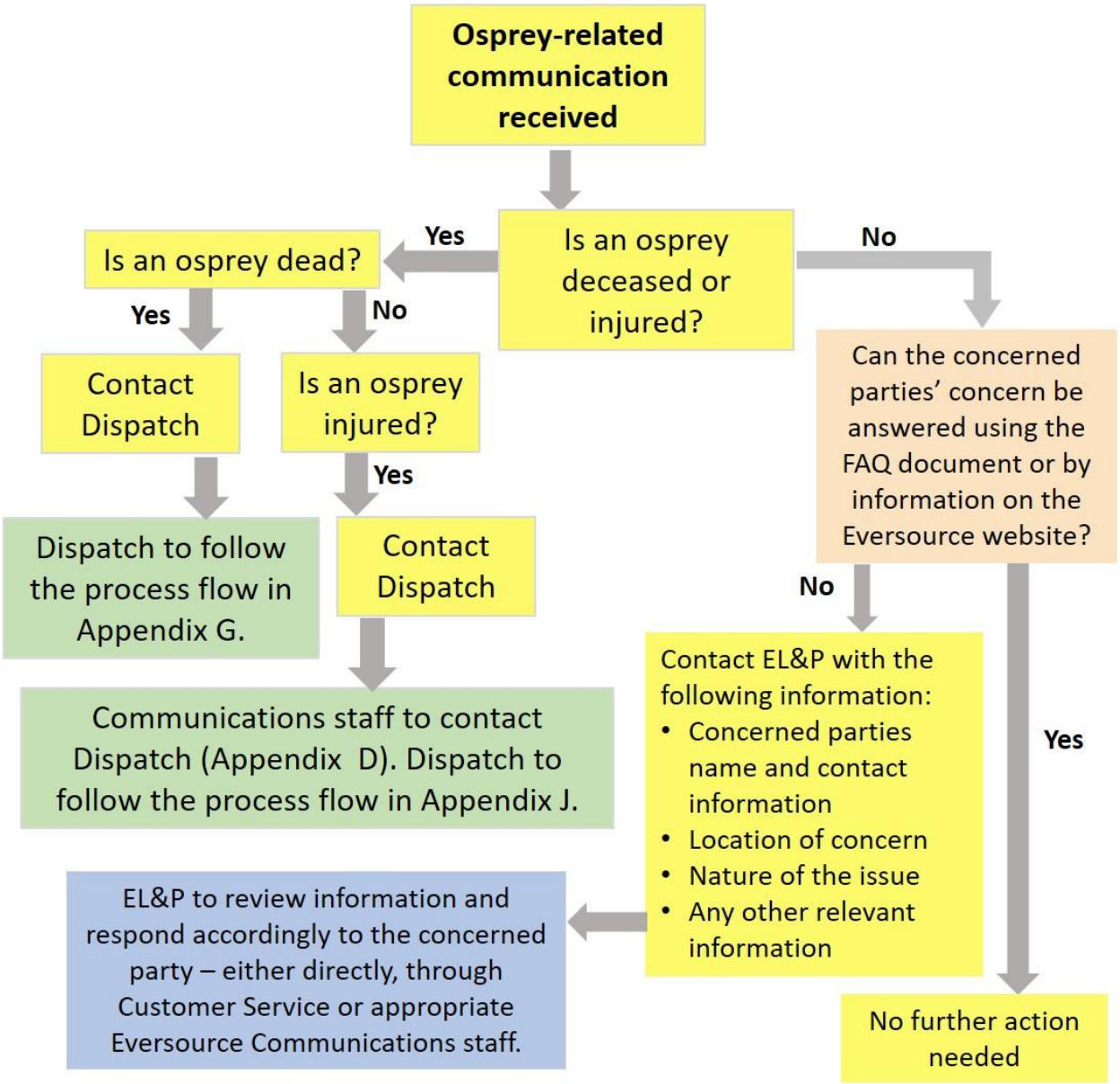
- EL&P Responsibility
- Dispatch Responsibility
- Field Response

***Emergency Protocol**

If EL&P contacts are not available to coordinate, Dispatch shall take necessary steps to restore power and make the area safe. For egg/chick handling Dispatch shall contact:

1. Wild Care
   10 Smith Lane, Eastham, MA.
   812-323-1313
2. New England Wildlife Center,
   4011 Main St., Barnstable, MA.
   517-835-6845

Appendix H: Communication Process Flow for Osprey-related Issues



Appendix I: Frequently Asked Questions

Why does Eversource remove osprey nests from poles?

Eversource removes most osprey nests from our distribution line poles in order to protect both the osprey and the electric delivery system. The poles provide a suitable vantage point from which the osprey can perch to rest, eat, seek out prey or construct a nest. According to the Avian Power Line Interaction Committee (2006), osprey use utility structures for nesting more than any other raptor in North America. Unfortunately, when a nest is constructed atop an energized distribution pole, there exists the potential for the nest and pole catching fire, the osprey being electrocuted, and/or a power outage.

When an unoccupied nest, i.e., those where no eggs or chicks are present, causes an outage, fire or electrocution, the nest must be removed in order to inspect the underlying crossarms and equipment to ensure there is no further damage and to repair any damage that may have resulted. At that time, if possible, a nesting deterrent is installed to try to restrict the osprey from rebuilding a nest at that location.

When an occupied nest, i.e., those where there are eggs or chicks present, causes an outage, fire or electrocution, Eversource will leave the nest in place so long as power can be restored, and any damaged equipment repaired. Any low-hanging nest material will be trimmed, and insulators will be placed on the energized equipment below to minimize the risk of future outages or harm to the nest, eggs and/or chicks. If equipment cannot be insulated and nest material trimmed and a hazard to the nest and energized equipment persists, Eversource crews shall work with local wildlife rehabilitators, state and federal agencies to develop a plan protect the birds and maintain the integrity of the electric system.

Eversource follows strict guidelines set forth by the United States Fish & Wildlife Service (USFWS) and Massachusetts Division of Fisheries and Wildlife when it comes to maintaining our electric system around their nests. These rules include not disturbing active nests that contain an egg or a flightless chick.

Why can't Eversource install more platforms where osprey can safely nest on the poles?

Although it may sound like an easy fix, it's important to realize that there are many factors involved when evaluating a platform installation, including:

- *Who owns the property upon which the pole is located?*
  Typically, Eversource only has an easement for the utility line and installation of a platform, which will encourage osprey nesting, may not be favored by the underlying property owner. This is most common on residential properties or certain roadsides where osprey will drop discarded prey, sticks and other debris from the nest.

- *Is the orientation of equipment on the pole suitable to facilitate a platform?*
  In many instances a distribution pole carries more than the powerlines. Equipment such as fuses, insulators, transformers, relays and switches are all equipment commonly mounted to the pole and/or crossarms and depending on the orientation and amount of equipment, there may not be space or the capability of the pole to handle the additional weight of a platform.

- *Can the pole handle the weight of the platform?*
  Distributions poles are engineered to hold electric infrastructure and not to accommodate the weight, which can exceed several hundred pounds, of a nesting platform and therefore, the structure must be evaluated to see if and what type of platform can be installed.

- *Will there be any objection to the installation of a platform?*
  Although many people are inspired by osprey, it's important to remember that this feeling is not shared by all. Osprey and their nests are smelly (from the prey they consume to their excrement) and noisy (as they call to mates and protect their territory) and before a platform can be installed, Eversource must evaluate the surrounding area to ensure we're not creating a nuisance for local residents or stakeholders.

Why can't Eversource install more platforms located off utility poles?

Unfortunately, Eversource isn't in the practice of installing nesting platforms outside of the company's easement for a number of reasons, including access restrictions, property rights, liability concerns, maintenance of the platform, construction staff and resources to name a few. As such, we try to focus our efforts on what can be done within our rights on the utility poles themselves.

I'm concerned about an osprey nest on a utility pole, what can I do?

We encourage all concerned customers and members of the public to submit their concerns via email to Osprey@Eversource.com. In your email, please provide the following information:

- Pole number (located about 4 to 5 feet off the ground on the pole itself) if visible
- Nearest street address
- A brief description as to the nature of your concern

An Eversource staff member will investigate any submitted concerns and take appropriate action. Please note, any nests reported that represent a threat to the system reliability may, if the nest does not contain any eggs or chicks, be removed and a deterrent installed. If there are eggs or chicks present, the nest will likely be allowed to remain, the equipment insulated to protect against a fire or outage and, once the osprey fledge in the early fall, the nest will be removed, and a deterrent installed.

Can Eversource remove a nest with osprey chicks or eggs?

An osprey nest with eggs and/or chicks present can only be removed if the life or viability of an osprey chick or eggs is immediately threatened by the nest's continued presence on the utility structure. Should a nest with eggs and/or chicks need to be removed, Eversource, as permitted under SPUT coordinates directly with the U.S. Fish and Wildlife Service to ensure regulatory compliance and with local wildlife rehabilitators to either relocate the nest to a suitable location or to rehome the eggs and/or chicks with a rehabber where they can be reared and released back into the wild. If the nest is not in immediate danger, the energized equipment on the pole will be insulated to protect from possible fire and power outage. Once the chicks have fledged and the osprey migrated to their wintering ground, the nest will be removed, and a deterrent installed.

Where did all the osprey go?

Osprey are a migratory species, meaning that each fall, typically sometime in September, they leave New England and travel to their over-wintering grounds in Central and South America, though some will overwinter in the parts of Florida and southern California. Once spring comes around the following year, the osprey will return north and begin building their nests. However, during the fall and winter, when osprey are in their overwintering grounds, Eversource focuses on removing the empty nests to inspect the poles and equipment and install deterrents. When the osprey return, they find a new and safer location where they can establish their nest.

An osprey nest is on fire, what should I do?

If you observe an osprey nest on fire, call 9-1-1 immediately so that first responders can tend to the fire. The 9-1-1 dispatcher will contact Eversource directly who will ensure the fire can be extinguished safely. If the Eversource responders find any injured osprey, they will contact local wildlife rehabilitators to provide care for the osprey. If any eggs, chicks or mature osprey were killed during the fire, the incident will be reported to the U.S. Fish & Wildlife Service through Eversource Licensing and Permitting for further coordination and documentation. Once the equipment is repaired, an appropriate nesting deterrent will also be installed to prevent such an incident from occurring in the future.

What should I do if I see an injured or deceased osprey on a powerline or utility pole?

If you observe an injured or deceased osprey, we ask that you please contact Eversource's partner wildlife rehabilitators by phone (below):

Wild Care	New England Wildlife Center
10 Smith Lane	4011 Main S.
Eastham, MA 02642	Barnstable, MA 02630
Phone: 508-240-2255	Phone: 508-362-0111

If the incident is after hours and the wildlife rehabilitators cannot be reached, please contact Eversource customer service at 1-800-592-2000.

Once the message is received our partner wildlife rehabilitators will work directly with Eversource staff to determine the proper steps forward.

Why are the young not leaving the nest?

Sometimes, just like young humans, young osprey have trouble leaving the safety, comfort and security of their home (nest) where they've been cared for and fed by their parents. But in time, they'll realize that they need to begin fending for themselves and will eventually leave the nest and make their way to their overwintering grounds. Seeing young chicks in the nest alone is not necessarily cause for alarm, particularly in late summer August and early September when the birds are preparing to migrate.