

Kentucky Power Company
KPSC Case No. 2020-00062
Commission Staff's First Set of Data Requests
Dated October 12, 2020

DATA REQUEST

- KPSC 1-01** Refer to Kentucky Power's application, pages 4-5.
- a. Explain whether the Kentucky Enterprise Industrial Park has any economic development related certifications, all necessary utility infrastructure, and all necessary environmental permits for a large industrial or commercial customer to begin construction or operation immediately. If not, explain what else would be required.
 - b. Explain whether Kentucky Power is aware of any industrial or commercial customer that would require a 138 kV line and substation whose locating at the Kentucky Enterprise Industrial Park is imminent or highly probable.

RESPONSE

a. The industrial park was reviewed in 2017 by Burgess & Niple for AEP's Quality Site program. See attachment KPCO_R_KPSC_1_1_Attachment1 for the 2017 Site Review document. While the Burgess & Niple Site Review included a Phase I Environmental Site Assessment to evaluate potential environmental liability, the Company cannot confirm whether additional environmental permits would be necessary because these requirements would likely be customer specific.

There have been additional developments at the Park since the Site Review was completed and the Company's Application in Case No. 2018-00209 was filed. SilverLiner is now operating in a building that was funded by the Kentucky Division of Abandoned Mine Lands (AML) and approved through the state. A second building was approved and funded in the same manner and is now under construction. The park now has two roads that enter the park from different directions and provide access to U.S. Route 23. Optical fiber has been supplied to the park and a full Geotechnical study has been conducted.

b. The Company has not been notified by any industrial or commercial customers that would require 138 kV service in the immediate future of their intent to locate in the industrial park. The availability of a 138 kV source would make the site more attractive to industry. This would enable potential customers to take transmission service under the Kentucky Power Large General Service or Industrial General Service tariffs.

Witness: Brian K. West

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DATA REQUEST

- KPSC 1-02** Refer to Kentucky Power's application, page 10, footnote 12, and page 13.
- a. Explain and provide a breakout of the total detailed estimate of the project cost as if Kentucky Power was completing the project in its entirety. Include in the response breakout a distinction of which costs are allocated to Kentucky Power and which are allocated to AEP Kentucky Transmission Company, Inc. (Kentucky Transco). Also, include the estimated ongoing O&M costs for the various components for both companies.
 - b. Explain the rationale for the division in project elements between Kentucky Power and Kentucky Transco.
 - c. Explain how Kentucky Transco will recover the cost of the components of the proposed Kewanee Substation project that it will own.
 - d. Identify all transmission projects that have been constructed and implemented by Kentucky Transco, include in this identification the name of the transmission projects, the detailed components of each of those transmission projects, the date on which those transmission projects went into service, the purpose(s) of each of those transmission projects, and the total cost of each of those transmission projects.

RESPONSE

- a. Kentucky Transco's portion of the project, which includes the installation of five 138 kV circuit breakers and a 28.8 MVAR capacitor bank, would total \$3.8 million. This cost brings the total project cost to \$39.0 million. Total annual O&M expense for the project is estimated to be \$20,000, of which Kentucky Transco's portion would be approximately \$900.
- b. The decisions associated with the scope of work to be performed by Kentucky Power in connection with addressing transmission needs in Kentucky Power's service territory, including the work that is the subject of Case No. 2020-00062, are fact-specific and may vary on a project by project and need by need basis. The Company plans its transmission development in coordination with the AEP Transmission, within the framework of local, siting, operational, and service requirements, NERC rules, and other applicable parameters, as well as PJM's Regional Transmission Expansion Process ("RTEP") planning process. AEPSC and AEP Transmission also have developed project selection guidelines, which are attached as KPCO_R_KPSC_1_2_Attachment1, for use in determining which facilities will be developed by Kentucky Power and which will be developed by AEP Kentucky Transmission Company, Inc.

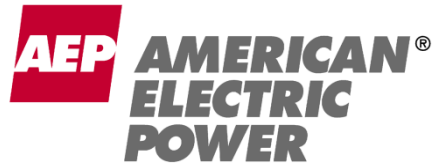
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Following a review of the project selection guidelines, Kentucky Power and AEP Transmission determined what components were eligible for Transco ownership as part of the Kewanee-Enterprise Park project. The business decision that Kentucky Transco would construct the circuit breakers and capacitor bank was based on capital budget considerations.

c. Kentucky Transco recovers its annual transmission revenue requirement from PJM which collects that revenue requirement from the LSEs in the transmission zones to which Kentucky Transco's transmission revenue requirements are allocated. The capital expenditures and operating costs of projects that are forecasted to be in service during the year are included in the annual transmission revenue requirement.

d. Kentucky Power had not prepared the requested analysis prior to this request, but the Company is in the process of doing so now. The Company has not yet completed the analysis, but it will supplement this response with the requested information as soon as practicable.

Witness: Nicolas C. Koehler



AEP Guidelines for Transmission Owner Identified Needs

November 2018

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Document Control

Document Review and Approval

Action	Name(s)	Title
Prepared by:	Kevin Killingsworth	Principal Engineer, Asset Performance and Renewal
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Approved by:	Kamran Ali	Director, East Transmission Planning
Approved by:	Wayman L. Smith	Director, West Transmission Planning

Review Cycle

Quarterly	Semi-annual	Annual X	As Needed X
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Revision History

Version	Revision Date	Changes	Comments
1.0	01/04/2017	N/A	1 st Release
2.0	1/18/2018	Format Update	2 nd Release
3.0	11/09/2018	Content Additions	3 rd Release



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1.0 Introduction

The American Electric Power (AEP) transmission system consists today of approximately 40,000 miles of transmission lines, 3,600 stations, 5,000 power transformers, 8,000 circuit breakers, and operating voltages between 23 kV and 765 kV in three different RTOs – the Electric Reliability Council of Texas (ERCOT), the PJM Interconnection (PJM), and the Southwest Power Pool (SPP), connecting over 30 different electric utilities while providing service to over 5.4 million customers in 11 different states.

AEP's interconnected transmission system was established in 1911 and is comprised of a very large and diverse combination of line, station, and telecommunication assets, each with its own unique installation date, design specifications, and operating history. As the transmission owner, it is AEP's obligation and responsibility to manage and maintain this diverse set of assets to provide for a safe, adequate, reliable, flexible, efficient, cost-effective and resilient transmission system that meets the needs of all customers while complying with Federal, State, RTO and industry standards. This requires, among other considerations, that AEP determine when the useful life of these transmission assets is coming to an end and when the capability of those assets no longer meets current needs, so that appropriate improvements can be deployed. AEP refers to this list of issues as transmission owner identified needs.

AEP's transmission owner identified needs must be addressed to achieve AEP's obligations and responsibilities. Meeting this obligation requires that AEP ensures the transmission system can deliver electricity to all points of consumption in the quantity and quality expected by customers, while reducing the magnitude and duration of disruptive events. Given these considerations, guidelines are necessary to identify and quantify needs associated with transmission facilities comprising AEP's system. AEP identifies the needs and the solutions necessary to address those needs on a continuous basis using an in-depth understanding of the condition of its assets, and their associated operational performance and risk, while exercising engineering judgment coupled with Good Utility Practices [1].

This document outlines AEP's guidelines for transmission owner identified needs that address equipment material conditions, performance, and risk while considering infrastructure resilience, operational flexibility and efficiency. It outlines how AEP identifies assets with needs, and it



outlines how solutions are developed and scheduled. Customer service driven projects and transmission owner planning criteria driven projects are addressed in AEP's Requirements for Connection of New Facilities or Changes to Existing Facilities Connected to the AEP Transmission System document [2] and AEP's FERC Form 715 (Part 4) Transmission Planning Reliability Criteria document [2], respectively.

Addressing these owner identified transmission system needs will result in the following benefits:

- Safe operation of the electric grid.
- Reduction in frequency of outage interruptions.
- Reduction in duration of outage interruptions.
- Improvement in service reliability and adequacy to customers.
- Reduction of risk of service disruptions (improved resiliency) associated with man-made and environmental threats.
- Proactive correction of reliability constraints that stem from asset failures.
- Increased system flexibility associated with day-to-day operations.
- Effective utilization of resources to provide efficient and cost-effective service to customers.

2.0 Process Overview

AEP's transmission owner needs identification guidelines are used for projects that address equipment material conditions, performance, and risk while considering infrastructure resilience, operational flexibility and efficiency. AEP uses the three-step process shown in Figure 1 and discussed in detail in this document to determine the best solutions to address the transmission owner identified needs and meet AEP's obligations and responsibilities. This process is completed on an annual basis. In developing the most efficient and cost-effective solutions, AEP's long-term strategy is to pursue holistic transmission solutions in order to reduce the overall AEP transmission system needs.

Figure 1 – AEP Process for Addressing Transmission Owner Identified Needs



3.0 Step 1: Needs Identification

Needs Identification is the first step in the process of determining system and asset improvements that help meet AEP's obligations and responsibilities. AEP gathers information from many internal and external sources to identify assets with needs. A sampling of the inputs and data sources is listed below in Table 1.

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Table 1 – Inputs Considered by AEP to Identify Transmission System Needs

Internal, External, or Both	Inputs	Examples
Internal	Reports on asset conditions	Transmission line and station equipment deterioration identified during routine inspections (pole rot, steel rusting or cracking)
	Capabilities and abnormal conditions	Relay misoperations; Voltage unbalance
	Legacy system configurations	Ground switch protection schemes for transformers;; Transmission Line Taps without switches (hard taps); Equipment without vendor support
	Outage duration and frequency	Outages resulting from equipment failures, misoperations, or inadequate lightning protection
	Operations and maintenance costs	Costs to operate and maintain equipment
External	Regional Transmission Operator (RTO) or Independent System Operator (ISO) issued notices	Post Contingency Local Load Relief Warnings (PCLLRWs) issued by the RTO that can lead to customer load impacts
	Stakeholder input	Input received through stakeholder meetings, such as PJM's Sub Regional RTEP Committee (SRRTEP) meetings or through the AEP hosted Annual Stakeholder Summits
	Customer feedback	Voltage sag issues to customer delivery points due to poor sectionalizing; frequent outages to facilities directly affecting customers
	State and Federal policies, standards, or guidelines	NERC standards for dynamic disturbance recording
Both	Environmental and community impacts	Equipment oil/gas leaks; facilities currently installed at or near national parks, national forests, or metropolitan areas
	Standards and Guidelines	Minimum Design Standards, Radial Lines, Three Terminal Lines, Overlapping Zones of Protection
	Safety risks and concerns	Station and Line equipment that does not meet ground clearances; Facilities identified as being in flood zones; New Occupational Safety and Hazards Administration (OSHA) regulations

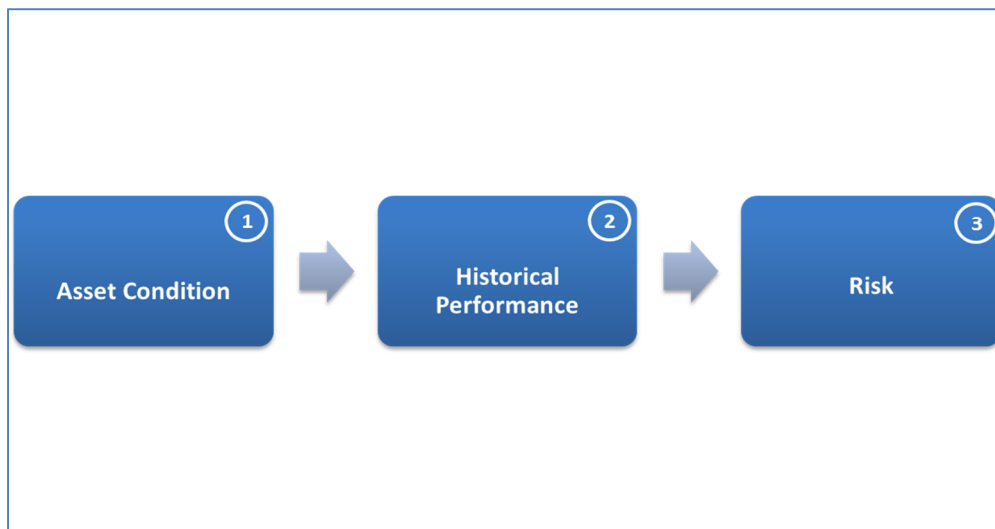


This information is reviewed and analyzed to identify the transmission assets that are not performing properly or are preventing the proper operation of the transmission system.

3.1 Methodology and Process Overview

The AEP transmission system is composed of a very large number of assets that provide specific functionality and must work in conjunction with each other in the operation of the grid. These assets have been deployed over a long period of time using engineering principles, design standards, safety codes, and Good Utility Practices that were applicable at the time of installation and have been exposed to varying operating conditions over their life. The Needs Identification methodology is shown below in Figure 2. AEP addresses the identified needs considering factors including severity of the asset condition and overall system impacts. These are subsequently evaluated versus constraints such as outage availability, siting requirements, availability of labor and material, constructability, and available capital funding in determining the timing and scope of mitigation.

Figure 2 – Needs Identification Methodology



It is AEP’s strategy to develop and provide the most efficient, cost-effective, and holistic long-term solutions for the identified needs.

3.2 Asset Condition (Factor 1)

The Asset Condition assessment gathers a standard set of physical characteristics associated with an asset or a group of assets. The set of data points recorded is determined based on the asset type and class. Information assembled during the Asset Condition assessment is used to show the historical deterioration, current condition, and future expectation of the asset or group of assets on the AEP system.

AEP annually assembles a list of reported condition issues for all of its assets in its system. A detailed follow-up review is conducted to determine if a transmission asset is in need of upgrade and/or replacement. Additionally, this Asset Condition review is used to determine an adequate scope of work required to mitigate the risk associated with a facility's performance and its identified issues. This level of risk is determined through the Future Risk assessment (Factor 3).

Beyond physical condition, AEP's ability to restore the asset in case of a failure is also considered. This is referred to as the future probability of failure adder. Typically, assets that are no longer supported by manufacturers or lack available spare parts are assigned a higher probability of failure adder.

To perform condition assessments, AEP classifies its Transmission assets in two main categories: Transmission Lines and Substations.

3.2.1 Transmission Line Considerations

Design Portion

- A. Age (Original Installation Date)
- B. Structure Type (Wood, Steel, Lattice)
- C. Conductor Type (Size, Material & Stranding)
- D. Static Wire Type (Size & Material)
- E. Foundation Type (Grillage, Direct Embed, Caisson, Guyed V, Drilled Pier etc.)
- F. Insulator Type (Material)
- G. Shielding and Grounding Design Criteria (Ground Rod, Counterpoise, "Butt Wrap" etc.)
- H. Electrical Configuration

- a. Three Terminal Lines
- b. Radial Facilities
- I. NESC Standards Compliance
 - a. Structural Strength (NESC 250B, 250C & 250D Compliance)
 - b. Clearances (TLES-047 Compliance)
- J. Easement Adequacy (Width, Encroachments, Type; etc.)

Physical Condition

- A. Open Conditions (existing and unaddressed physical conditions associated with a Transmission Line component)
- B. Closed Conditions (previously addressed physical conditions associated with a Transmission Line component)
- C. Emergency Fixes (History of emergency fixes)
- D. Accessibility (Identified areas of difficult access)

3.2.2 Substation Considerations

- A. Transformers
 - a. Manufacturer
 - b. Manufacturing Date
 - c. In Service Date
 - d. Load Tap Changer Type & Operation History (if applicable)
 - e. Dissolved Gas Analysis
 - f. Bushing Power Factor
 - g. Through Fault Events (Duval Triangles)
 - h. Moisture Content (Oil)
 - i. Oil Interfacial Tension
 - j. Dielectric Strength
 - k. Maintenance History
 - l. Malfunction Records
- B. Circuit Breakers
 - a. Manufacturer & Type

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- b. Manufacturing Date
- c. In Service Date
- d. Interrupting Medium
- e. Fault Operations
- f. Switched Operations
- g. Spare Part Availability
- h. Maintenance History
- i. Malfunction Records
- j. Breaker Type Population

C. Secondary/Auxiliary Substation Equipment*

- a. Station Batteries
- b. Control House
- c. Station Security
- d. Station Structures
- e. Capacitor Banks
- f. Bus, Cable and Insulators
- g. Disconnect Switches
- h. Station Configuration
- i. Station Service
- j. Relay Types
- k. RTU Types
- l. Voltage Sensing Devices

**AEP substation inspections include assessments of secondary/ancillary equipment. If needed, upgrades to these components are typically included in the scope of projects addressing major equipment and may not necessarily drive stand-alone projects.*

3.3 Historical Performance (Factor 2)

AEP's Historical Performance assessment quantifies how an asset or a group of assets has historically impacted the Transmission system's reliability and Transmission connected customers, helps identify the primary contributing factors to a facility's performance, and

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baselines the outage probability used in our Future Risk analysis. The metrics used as part of this historical performance assessment include:

- A. Forced Outage Rates
- B. Manual Outage Rates
- C. Outage Durations (Forced Outage Duration in Hours)
- D. System Average Interruption Indices (T-SAIDI, T-SAIFI, T-SAIFI-S, T-MAIFI)
- E. Customer Minutes of Interruption (CMI)
- F. Customer Average Interruption Indices (IEEE SAIDI, CAIDI & SAIFI)
- G. Number of Customers Interrupted (CI)

AEP utilizes this standard set of metrics as a means to quantify the historical performance of an asset. These historical performance metrics allow AEP to further investigate assets that have historically impacted customers the most.

Due to the vast size of the AEP operating territory covering 11 states, AEP segments its needs into seven distinct operating company regions and six voltage classes. This segmentation ensures that variations in geography with respect to vegetation, weather patterns, and terrain can be accounted for within the process of identifying needs for each operating company area. In addition to customers of AEP operating companies, consideration for retail customers that are served at non-AEP wholesale customer service points is also included. In order to account for customers served behind wholesale meter points, AEP gathers information from the parent wholesale provider or in its absence, applies a surrogate customers per MW ratio to estimate the number of customers served by a wholesale power provider's delivery point. This customer count is used to calculate the individual metrics above.

AEP's standard approach is to annually review the historical performance of its assets based on a rolling three-year average, but in some cases AEP may extend the review period beyond three years. AEP classifies all transmission asset outage causes into the following five categories to conduct this review: Transmission Line Component Failure, Substation Component Failure, Vegetation (AEP), Vegetation (Non-AEP), and External Factors. Each transmission asset and its associated performance is quantified and compared against corresponding system totals to determine its percentage contribution to aggregated system performance. An evaluation of outage

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rates is also performed for Transmission line assets. The observed performance of the assets in any of these categories can point to a need that may need to be addressed.

3.4 Future Risk (Factor 3)

AEP reviews the associated risk exposure (future risk) inherent with each identified asset to determine an asset's level of risk. This risk exposure is quantified assuming the probability of an outage scenario and is based on the reported condition of the asset and the severity of that condition and what the impact could be to customers or to the operation of AEP's Transmission system. Some of the key items to assess these impacts included in the risk criteria are:

- A. Number of Customers Served
- B. Load Served
- C. Operational Risks
 - a. Post Contingency Load Loss Relief Warnings (PCLLRW's)
 - b. History of Load Shed Events
 - c. Stations in Black Start Paths

In addition to the future risk calculation performed through this process, AEP is systematically reviewing its system to identify and remediate equipment and practices that have resulted in operational, restoration, environmental, or safety issues in the past that cannot be directly quantified, but that remain as acknowledged risks in the AEP Transmission system. These include:

- A. Wood pole construction
- B. Pilot wire protection schemes
- C. Oil circuit breakers
- D. Air Blast circuit breakers
- E. Pipe type oil filled cables
- F. Electromechanical relays
- G. Legacy system configurations
 - a. Missing or inadequate line switches (e.g., hard-taps)
 - b. Missing or inadequate transformer/bus protection


- c. Three-terminal lines
- d. Overlapping zones of protection
- H. Non-Standard Voltage Classes
- I. Poor Lightning & Grounding Performance
- J. Radial Facilities
- K. Public vulnerability

These items as described above are reviewed on a case by case basis and considered when holistic system solutions are being developed.

4.0 Step 2: Solution Development

The development of solutions for the identified needs considers a holistic view of all of the needs in which several solution options are developed and scoped. AEP applies the appropriate industry standards, engineering judgment, and Good Utility Practices to develop these solution options. AEP solicits customer and external stakeholder input on potential solutions through the Annual Stakeholder Summits hosted by AEP and also through the PJM Project Submission process. This ensures that input from external stakeholders on identified needs can be received and considered as part of the solution development process.

Solution options consider many factors including, but not limited to, environmental conditions, community impacts, land availability, permitting requirements, customer needs, system needs, and asset conditions in ultimately identifying the best solution to address the identified need. Once the selected solution for a need or group of needs is defined, it is reviewed using the current RTO provided power-flow, short circuit, and stability system models (as needed) to ensure that the proposed solution does not adversely impact or create planning criteria violations on the transmission grid. Finally, AEP reviews its existing portfolio of planning criteria driven reliability projects and evaluates opportunities to combine or complement existing planning criteria driven reliability projects with the transmission owner needs driven solutions developed through this process. This step ultimately results in the implementation of the most efficient, cost-effective, and holistic long-term solutions. Stand-alone projects are created to implement the proposed solution where transmission owner needs driven solutions cannot be integrated into existing projects.

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5.0 Step 3: Solution Scheduling


Once solutions are developed to address the identified needs, the scheduling of the solutions will take place. As mentioned in the previous section, if opportunities exist to combine or complement existing planning criteria driven reliability projects with the needs driven solutions developed through this process, the scheduling will be aligned to the extent possible. In all other situations, AEP will schedule the implementation of the identified solutions in consideration of various factors including severity of the asset condition, overall system impacts, outage availability, siting requirements, availability of labor and material, constructability, and available capital funding. AEP uses its discretion and engineering judgment to determine suitable timelines for project execution.

6.0 Conclusion

This document outlines AEP's guidelines for transmission owner identified needs that address equipment material conditions, performance, and risk while considering infrastructure resilience, operational flexibility and efficiency. It outlines the sources and methods considered by AEP to identify assets with needs on a continuous basis and it outlines how solutions are developed and scheduled. AEP will review and modify these guidelines as appropriate based upon our continuing experience with the methodology, acquisition of data sources, deployment of improved performance statistics and the receipt of stakeholder input in order to provide a safe, adequate, reliable, flexible, efficient, cost-effective and resilient transmission system that meets the evolving needs of all of the customers it serves.

7.0 References

- [1] FERC Pro Forma Open Access Transmission Tariff, Section 1.14, Definition of "Good Utility Practice".
Link: <https://www.ferc.gov/legal/maj-ord-reg/land-docs/rm95-8-0aa.txt>

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[2] AEP Transmission Planning Documents and Transmission Guidelines.
Link: <http://www.aep.com/about/codeofconduct/OASIS/TransmissionStudies/>



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KPSC 1-03 Refer to Kentucky Power's application, page 11, paragraph 24, regarding the elimination of the referenced transformers and the standard left and right-hand rural distribution structures with three distribution feeder positions in each bay from the proposed Kewanee 138 kV substation. Explain why these project components are no longer needed.

RESPONSE

Following the cancellation of the EnerBlu facility the Company reevaluated its solution design for the proposed project. One of the 12 kV transformers was eliminated because it was solely dedicated to the EnerBlu facility and thus no longer required. The Company also reexamined near-term load needs in the area and determined that a second 34.5 kV transformer was not necessary at this time. Since the two transformers were eliminated, the corresponding rural distribution structures were also reduced from four to two. However, the proposed design of the Kewanee Station provides for the future addition of these transformers and distribution structures if needed.

Witness: Nicolas C. Koehler

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Dated October 12, 2020

DATA REQUEST

KPSC 1-04 Refer to Kentucky Power's application, page 16, paragraph 36. If not previously filed, provide the status of the rights-of-way acquisition process.

RESPONSE

A Property Acquisition Update was filed on October 14, 2020.

Witness: Ryan M. Howell

Kentucky Power Company
KPSC Case No. 2020-00062
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Dated October 12, 2020

DATA REQUEST

- KPSC 1-05** Refer to Kentucky Power's application, pages 16 through 18, regarding the notices.
- a. Provide a detailed discussion of any responses or comments to these notices received by Kentucky Power, include in this discussion any issues or objections raised, Kentucky Power's efforts to address any issues or objections, whether those objections or issues have been resolved, and copies of any correspondence related to those comments received by Kentucky Power.
 - b. Provide the status of Kentucky Power's efforts to locate the owner of parcel 9.

RESPONSE

- a. See KPCO_R_KPSC_1_5_Attachment1 for correspondence with the attorney for the Trustee of the Sendelbach Trust regarding the timing of the project. Kentucky Power is not aware of any objections or other issues that have been raised in response to notices provided for this Application.
- b. Public records indicate Parcel #9 is owned by Opal Young. Ms. Young is deceased, with current tax bills now being delivered to her only identifiable heir, Jeff Young, her grandson. All attempts to reach Mr. Young, including physically visiting his last known address have failed. If Kentucky Power is unable to locate the owner of the parcel, and if it is required to move the centerline or right-of-way into the Filing Corridor, it may be required to file an eminent domain action to acquire title to the required right-of-way.

Witness: Ryan M. Howell

Overstreet, Mark R.

From: Joseph Burns <jburns@doylehassmanlaw.com>
Sent: Friday, October 9, 2020 8:19 AM
To: Overstreet, Mark R.
Subject: RE: Case No. 2020-00062 - Kentucky Power Company (Kewanee-Enterprise Park)

[External Sender]

Thank you, Mark.

From: Overstreet, Mark R. <MOVERSTREET@stites.com>
Sent: Thursday, October 8, 2020 5:43 PM
To: Joseph Burns <jburns@doylehassmanlaw.com>
Subject: RE: Case No. 2020-00062 - Kentucky Power Company (Kewanee-Enterprise Park)

Joe:

This is to follow-up on our conversation of October 6th. I spoke yesterday with a member of the team acquiring right-of-way for the proposed transmission line. As I mentioned on our Tuesday call, the centerline of the transmission line, and the corresponding right-of-way that will be acquired, can shift as engineering on the line progresses. It now appears that neither the transmission line nor the attendant right-of-way will cross the Sendelbach Trust property. Stated otherwise, Kentucky Power does not anticipate the need to obtain any right-of-way from the trust.

Please let me know if you have any further questions. Thanks,

Mark R. Overstreet

Member

Direct: 502-209-1219

Fax: 502-223-4387

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From: Overstreet, Mark R.
Sent: Tuesday, October 6, 2020 2:58 PM
To: Joseph Burns <jburns@doylehassmanlaw.com>
Subject: RE: Case No. 2020-00062 - Kentucky Power Company (Kewanee-Enterprise Park)

Joe:

Thanks for touching base. Here are Mr. Bishop's motion to intervene and the Commission's final order. My notes reflect that Gary Bishop, who filed the motion, is the Richland County, Ohio prosecuting attorney and a beneficiary of the trust.

Mark R. Overstreet

Member

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From: Joseph Burns <jburns@doylehassmanlaw.com>
Sent: Tuesday, October 6, 2020 2:53 PM
To: Overstreet, Mark R. <MOVERSTREET@stites.com>
Subject: Case No. 2020-00062 - Kentucky Power Company (Kewanee-Enterprise Park)

[External Sender]

Hi Mark,

Good talking with you today. Please feel free to send all email to this email address.

Thanks,
Joe

Joseph S. Burns

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DATA REQUEST

- KPSC 1-06** 6. Refer to Kentucky Power's application, Exhibit 3.
- a. There appears to be one or more structures underneath and in the right-of-way for the Cedar Creek – Elwood 46 kV line. Explain why Kentucky Power has allowed the encroachment of the right-of-way.
 - b. If the Fords Branch Substation did not need retirement and the equipment were in good repair, explain whether the five criteria violations would still exist.

RESPONSE

- a. There appear to be four encroachments located near the Fords Branch Substation. The Company has been unable to find information on when these encroachments occurred. Information available to the Company indicates the encroachments occurred sometime between 1977 and 1994.

Kentucky Power regularly monitors its rights of way and takes necessary actions in the event that the encroachment either represents an immediate safety risk per the National Electric Safety Code (NESC) or impedes access to Company facilities for normal operations and maintenance. None of the structures identified by staff as encroachments met those requirements. All other encroachments are reviewed on a case-by-case basis relative to the type of encroachment, the explicit rights of the company, the impacts of the mitigation, and costs to ratepayers. When lines are proposed for reconstruction, Kentucky Power strives to mitigate encroachments and, if needed, update the terms right of way agreements to provide greater ability to protect rights of way from future encroachment.

- b. The five Baseline criteria violations are unrelated to the condition of the equipment at the Fords Branch Substation. The five Baseline criteria violations would exist without regard to the condition of, or the operational and maintenance difficulties associated with, the Ford's Branch 46 kV Substation. The violations were identified in the load flow analysis performed annually by AEP and PJM. The forward-looking models used do not consider the condition of equipment on the system. For modeling purposes, a substation with 75-year old components that are deteriorating is assumed to function as designed and with the same reliability as a five year old substation with newer components. Additional analyses regularly performed by the Company evaluate the performance and condition of this equipment.

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Witness: Nicolas C. Koehler

Witness: Ryan M. Howell

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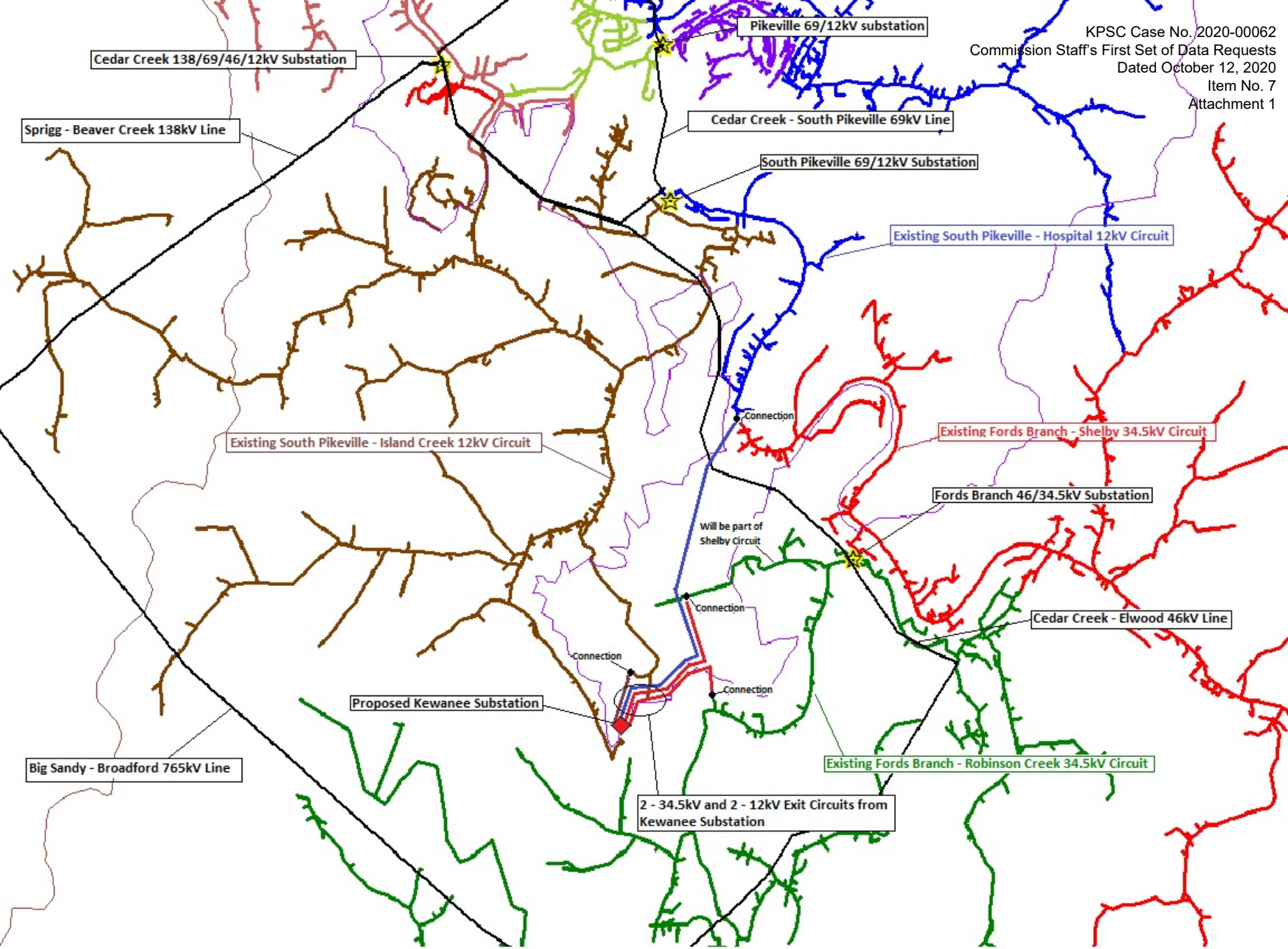
DATA REQUEST

- KPSC 1-07** Refer to Kentucky Power's application, Exhibits 1 through 6 and the Direct Testimony of Nicholas C. Koehler (Koehler Testimony), pages 2 through 4.
- a. Neither the Cedar Creek – Fords Branch 36 kV line nor any of the existing distribution lines that will interconnect with the proposed Kewanee substation appear on any map. Provide a map of suitable scale and detail that shows all of the elements of the proposed project, and all of the elements mentioned in the criteria violations. The map should also include (1) the higher voltage interconnection points of the 46 kV subtransmission system, and (2) all lines 12 kV and above that currently interconnect the present Kentucky Enterprise Industrial Park or will interconnect the proposed Kewanee substation, and the Cedar Creek – Elmwood 46 kV line.
 - b. State whether any 12 kV or higher lines that currently emanate from the Fords Branch substation have to be relocated or new lines need to be constructed to be fed from the Kewanee Substation. Identify those on the map provided in response to Item 7a.

RESPONSE

- a. See KPCO_R_KPSC_1_7_Attachment1.
- b. The Company plans to construct two 12 kV circuits that will connect the proposed Kewanee Substation to the existing South Pikeville – Island Creek 12kV Circuit and the existing South Pikeville – Hospital 12kV Circuit. The Company also plans to construct two 34.5 kV circuits that will connect the proposed Kewanee Substation to the existing Fords Branch – Shelby 34.5 kV Circuit and the existing Fords Branch – Robinson Creek 34.5kV Circuit.

Witness: Michael G. Lasslo



Big Sandy - Broadford 765kV Line

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DATA REQUEST

- KPSC 1-08** Refer to Kentucky Power's application, Exhibit 7, Siting Study.
- a. Refer to page 17 of 110, Section 1.4, regarding the goal of the Siting Study. This section notes that the Proposed Route is one that (1) reasonably minimizes adverse impacts on residential areas and the natural and cultural environment; (2) minimizes special design requirements and unreasonable costs; and (3) permits the line to be constructed and operated in a timely, safe, and reliable manner. Explain whether these three aspects of the Proposed Route are weighed equally. If not, explain the weight that is assigned to each of the identified aspects of the Proposed Route and how the weights were determined.
 - b. Refer to page 20 of 110, Section 2.2. Identify each of the team members on the Siting Team along with each of their areas of expertise and relevant experience.
 - c. Refer to page 28 of 110, Section 2.5.3. Provide a copy of the 16 comment cards referenced in this section.
 - d. Refer to page 43 of 110, Section 4.1.1, Soil and Water Resources – Alternative Route Comparison. Explain why environmental surveys will be conducted prior to the beginning of construction activities and not earlier and state what impact, if any, will be caused if caves or portals are discovered within the corridor of either Alternative Route A or Alternative Route B.
 - e. Refer to page 45 of 110, Section 4.1.2, Wildlife Habitat and Sensitive Species – Resource Characteristics. Provide a copy of the AEP avian protection plan.
 - f. Refer to page 55 of 110, Section 5.1.1, Proposed Route – Proposed Route Modifications (2018). Regarding communications with affected landowners, state whether Kentucky Power has received any objections, concerns, or negative comments to the proposed transmission line route and, if so, state how Kentucky Power addressed those objections or concerns.
 - g. Refer to page 51 of 110, Section 4.3.1, Engineering Design Considerations – Alternative Comparison. The second sentence in this section states: “Additionally, Alternative Route A does not have any gas wells within the 100-foot ROW, while Alternative Route A has two.” (Emphasis added.) Confirm that there is a typographical error and that the second sentence of this section should have stated: “Additionally, Alternative Route B, does not have any gas wells within the 100-foot ROW, while Alternative Route A has two.” (Emphasis added.)

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h. Confirm the Siting Study in Case No. 2018-00209,2 as updated in August 2018, is the predecessor of Exhibit 7, Siting Study in this proceeding.

(1) State whether the alternate routes identified on page 19 of 110 are the same alternate routes identified in the Siting Study for Case No. 2018-00209.

(2) Refer to Map 8, entitled "Proposed Route to be Submitted to Kentucky PSC" found on page 81 of 110. Identify all modifications made to the proposed route compared to the proposed route in Case No. 2018-00209, and state why the modifications were made.

i. Refer to Attachment D, "GIS Data Sources" found on pages 87 through 90 of 110.

(1) Describe any differences identified in the number or location of road crossings by the proposed transmission line between the TIGER road file (2016 dataset) and the current Kentucky Roads database located at kygeonet.ky.gov.

(2) Only the GIS data sources for parcels and imagery have been revised for 2020. Identify any new features in the Kentucky Mine Mapping Information System (eppcgis.ky.gov/minemapping/) for permits and wells in 2020 that are in the area of the proposed transmission line?

RESPONSE

a. These three aspects of the Proposed Route were not numerically weighted but were considered equally in our detailed analysis process, described in Witness Larson Direct Testimony and in Exhibit 7 Siting Study.

b. See [KPCO_R_KPSC_1_8_Attachment1](#).

c. See [KPCO_R_KPSC_1_8_Attachment2](#).

d. In reference to page 43 of 110, Section 4.1.1, the Siting Team reviewed available data, including the mine portal data from the KY Mine Mapping Information System, field reconnaissance, and stakeholder input in an attempt to identify of caves and portals for the evaluation of alternative routes and selection of the Proposed Route. Following the selection of the Proposed Route, and prior to final engineering, the Company completes the appropriate environmental surveys, including bat surveys, which identify the locations of caves and portals. Results from environmental surveys are incorporated into the final design and access plans. Lastly, threatened and endangered bat surveys have

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since been completed, and concluded that winter habitat (caves or portals) would not be impacted by construction of the Project.

e. See KPCO_R_KPSC_1_8_Attachment3. Please note that this is an internal document that is not required by any regulatory requirement and meant to help employees identify, react to, and prevent negative avian interactions. It contains some business sensitive information and intellectual property (e.g., internal event reporting system). It also should not be considered an official document for use by outside entities performing or seeking to perform work for the Company.

f. Please see the Company's response to KPSC 1-05 and Section 5.1.1 of the Siting Study.

g. Yes. There is a typographical error in Section 4.3.1, Engineering Design Considerations - Alternative Comparison; the sentence should read, "Additionally, Alternative Route B does not have any gas wells within the 100-foot ROW, while Alternative Route A has two."

h. Confirmed. The Siting Study provided in Case No. 2020-00062 supersedes the Siting Study filed in Case No. 2018-00209.

h. (1) The alternative routes in the August 2020 Siting Study (Exhibit 7 of Case No. 2020-00062) are unchanged from those identified in the Siting Study for Case No. 2018-00209.

h. (2) KPCO_R_KPSC_1_8_Attachment4 contains a modification of Map 8 entitled "Proposed Route to be Submitted to Kentucky PSC" found on page 81 of 110 of the 2020 Siting Study. This map shows the Proposed Route included in Case No. 2018-00209 and the Proposed Route included in Case No. 2020-00062. The modifications made to the map are summarized below.

Modification #1: The Proposed Route was shifted approximately 300 feet to the south between Left Fork of Island Creek Road and Billy Compton Branch in response to constructability issues and landowner input. Landowner input was received from the Sendelbach Family Trust, during Case No. 2018-00209. The Company considered input from the Sendelbach Family Trust and modified the proposed route to avoid the subject parcel. For additional information See Page 23 of Witness Larson Direct Testimony.

Modification #2: Based on information acquired from Light Detection and Ranging Data (LiDAR) in May 2018, additional modifications to the north and south between Billy

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Compton Branch and Road Fork were completed to better address constructability and accessibility issues due to steep terrain.

i. (1) In review of the two datasets, Sleepy Hollow Road a road was not shown as crossed by the Proposed Route in the Kentucky Road data but was in the TIGER roads data. The TIGER roads dataset was used for mapping and calculations in this filing because it had more accurate road locations and alignments based on aerial review and on the ground reconnaissance.

i. (2) The Kentucky Mine Mapping Information System was re-visited on October 20, 2020 and no new permits or wells were found to be in the area of the proposed transmission line or associated Filing Corridor.

Witness: Emily S. Larson

Kewanee - Enterprise 138 kV
 Transmission Line Project

The below table lists the core Siting Team members, role, and approximate relevant years of experience.

Siting Team Member	Company	Siting Team Role	Approx. Relevant Years of Experience
Aaron Wolf	POWER	GIS Specialist/Mapping	10
Andrea DeMoss	POWER	Transmission Line Engineer	14
Bob Shurtleff	Kentucky Power	External Affairs Manager	35
Brad Bonham	AEP	Station Civil Engineer	12
Chad Howell	AEP	Transmission Line Construction	16
Cortney Mustard	AEP	Public Outreach Specialist	5
Craig Pritt	AEP	Siting Specialist	6
Darren Kidwell	AEP	Environmental Specialist	20
Emily Larson	POWER	Siting Specialist (Witness)	13
James Lovell	EEC	Station Civil Engineer	40
John Booze	AEP	Transmission Line Engineer	7
Keith Yamatani	AEP	Geotechnical Engineer	20
Kyle Fisher	POWER	Transmission Line Engineer	10
Lindsey Weeks	POWER	Cultural Resources Specialist	13
Michael Lasslo	Kentucky Power	Distribution Manager	43
Regina Holbert	AEP	Real Estate (Station Site Acquisition)	10
Roya Pardis	POWER	Siting Specialist	5
Ryan Howell	AEP	Right-of-Way Agent	8
Scott Blevins	ORC	Right-of-Way Agent	15
Scott Kennedy	AEP	Siting Specialist	27
Shaun Lopez	AEP	Transmission Project Manager	14
Timothy Gaul	AEP	Siting Director	20
Tyler Emery	AEP	Environmental Specialist	8

Enterprise Park Economic & Area Improvements Project

Please complete this questionnaire after you have reviewed the information presented at the open house.

Did you find this open house format to be informative? Yes No

If no, please explain

If you would like to be notified once the final route has been selected, please provide your name and contact information below.

Name: David L Thacker
Address: 66 Road Fork Pikeville Ky 41501
Email Address: kyradtec@msm.com Phone Number: ~~606~~ 606-548-025

Additional Comments

Please include additional comments below or visit www.kentuckypower.com/EnterprisePark to leave a comment via our project website.

I am still concerned about health issues you say the line will produce less SAR than the appliances in my home measured @ 6". This might be true but I don't stand 6" from my appliances.

I am worried about the property that might be made unusable due to location of line.

I am also worried that these industries are just coming to this area due to incentives + once the incentives are used, they will leave with us paying the bill.

If you wish to take the questionnaire with you, please return it to the address below prior to May 18.

American Electric Power - Attn: George Porter - P.O. Box 2021 - Roanoke, VA 24011



An AEP Company

BOUNDLESS ENERGY

5

Enterprise Park Economic & Area Improvements Project

Please complete this questionnaire after you have reviewed the information presented at the open house.

Did you find this open house format to be informative? Yes No

If no, please explain

If you would like to be notified once the final route has been selected, please provide your name and contact information below.

Name: Billie Lorraine Thacker ^{Wrong} _(was sent in mail) Broad OPal Golf

Address: 60 Road Fork Pikeville Ky 41501

Email Address: alanathacker@yahoo.com Phone Number: 606-437-6235

Additional Comments

Please include additional comments below or visit www.kentuckypower.com/EnterprisePark to leave a comment via our project website.

Concerned about health risks,

Taking up property that may be sold or
built on in future for my family.

Damages.

If you wish to take the questionnaire with you, please return it to the address below prior to May 18.

American Electric Power – Attn: George Porter – P.O. Box 2021 – Roanoke, VA 24011



An AEP Company

BOUNDLESS ENERGY

Enterprise Park Economic & Area Improvements Project

Please complete this questionnaire after you have reviewed the information presented at the open house.

Did you find this open house format to be informative? Yes No

If no, please explain

If you would like to be notified once the final route has been selected, please provide your name and contact information below.

Name: Kent Swygans

Address: _____

Email Address: _____ Phone Number: 1-734-775-7425

Additional Comments

Please include additional comments below or visit www.kentuckypower.com/EnterprisePark to leave a comment via our project website.

THE ONLY CONCERN WAS THE ROAD OFF OF RD FORK TO PROPERTY IS NOT OWN BY THE CITY OF PIKEVILLE OR MOUNTAIN WATER.

If you wish to take the questionnaire with you, please return it to the address below prior to May 18.

American Electric Power – Attn: George Porter – P.O. Box 2021 – Roanoke, VA 24011



An AEP Company

BOUNDLESS ENERGY

11

Enterprise Park Economic & Area Improvements Project

Please complete this questionnaire after you have reviewed the information presented at the open house.

Did you find this open house format to be informative? Yes No

If no, please explain

If you would like to be notified once the final route has been selected, please provide your name and contact information below.

Name: Violet Tackett

Address: 4984 Toler Creek Rd.

Email Address: _____ Phone Number: 548-0051 or 478-1

Additional Comments

Please include additional comments below or visit www.kentuckypower.com/EnterprisePark to leave a comment via our project website.

I am willing to work with you any way I can

If you wish to take the questionnaire with you, please return it to the address below prior to May 18.

American Electric Power – Attn: George Porter – P.O. Box 2021 – Roanoke, VA 24011



An AEP Company

BOUNDLESS ENERGY



Enterprise Park Economic & Area Improvements Project

Please complete this questionnaire after you have reviewed the information presented at the open house.

Did you find this open house format to be informative? Yes No

If no, please explain

If you would like to be notified once the final route has been selected, please provide your name and contact information below.

Name: Rufus Rogers

Address: 6668 Toler ckr Harold, Ky. 41635

Email Address: _____ Phone Number: 606-478-7484-606-794-913

Additional Comments

Please include additional comments below or visit www.kentuckypower.com/EnterprisePark to leave a comment via our project website.

Would be glad to offer assistance in with the project. w/LAND

Would be glad to offer Access Road to Rigtop'

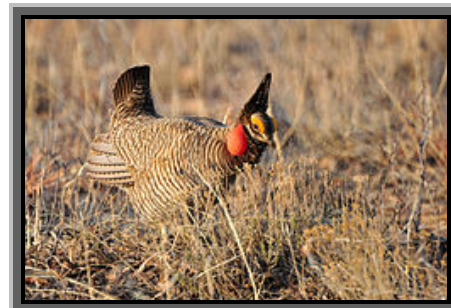
If you wish to take the questionnaire with you, please return it to the address below prior to May 18.

American Electric Power – Attn: George Porter – P.O. Box 2021 – Roanoke, VA 24011



An AEP Company

BOUNDLESS ENERGY



Avian Protection Plan

EXECUTIVE SUMMARY

AEP is developing and implementing an avian protection plan (APP). The APP is a vehicle agreed to by our industry, represented by the EEI Avian Power Line Interaction Committee (APLIC)(AEP is a member), and the United States Fish and Wildlife Service (USFWS) through which an electric utility company can voluntarily achieve compliance with the federal bird protection laws enforced by the USFWS.

The federal laws that protect most species of birds found in the U.S. include:

- **The Migratory Bird Treaty Act (MBTA)** which protects all native North American bird species (>1,000 species). *Takings* (injuring or killing) as well as possession of a protected bird or its parts are subject to enforcement action. Each violation involving a bird, egg, nest, or parts thereof, carries potential fines, jail time, and negative publicity.
- **The Bald and Golden Eagle Protection Act (BGEPA)** provides additional protection to eagles and applies penalties for taking, disturbing, and harassing—with or without intent.
- **The Endangered Species Act (ESA)** further protects plants and animals that may be facing extinction. Penalties are also associated with *takings* and habitat destruction.

An APP considers 12 elements and develops those that are relevant to a company's operations. Some have higher priority than others, and can and should be implemented in phases. In the first phase of AEP's APP we emphasize:

- Avian Protection Policy
- Bird Mortality Reporting System
- Employee Training
- Avian-safe Construction Standards
- Avian Electrocution Reduction Program
- Permit Acquisition

As the bird-caused outage database grows, the next phase of APP development will begin. It will involve follow-up on the effectiveness of retrofitting devices and preventive measures applied for previous outages and the durability of devices and materials used. It will also supply information on configurations, locations, environmental conditions, and species that are involved with the most outages. By knowing where the greatest risks are, we will be able to prevent problems on existing structures and with new structure design.

Growing out of the efforts to identify, react to, and prevent negative avian interactions will be public awareness and stewardship opportunities. Further, much of what is applicable to bird-caused outages can be used to remedy other animal-caused outages and improve system reliability.

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1.0 INTRODUCTION AND SCOPE OF AVIAN PROTECTION PLAN

There are 12 elements to consider in an Avian Protection Plan (APP). AEP will prioritize these elements and implement them in phases. The Avian Protection Policy ([Section 3](#)) was the first priority because it authorized the APP's development and implementation. The next key element is the reporting system. Initially, compliance reporting will be done with a form that can be completed by hand or electronically. In time, Distribution's *Spectrum* may accept the necessary data. Formal training is also part of the first phase as is the acquisition of a permit from the USFWS.

12 Elements: Reorder according to APP Guidelines

- Corporate Avian Protection 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
-

AEP manages bird/power line interactions through a system-wide program. This program intends to decrease the incidence of bird interactions, reduce operating and maintenance expenses, reduce legal liability related to the three federal acts that prohibit bird *take*, and to help conserve North American bird species.

In AEP's 11-state service territory a wide variety of bird species occur. Of most importance to our operations are the species that are large enough to be electrocuted in substations and on poles, towers, and lines. These include eagles, hawks, owls, osprey and wading birds (e.g., herons) and smaller birds that nest on equipment or perch in large flocks. In addition to electrocutions, collisions with utility structures occur for many reasons including: siting, weather, and lighting conditions. USFWS issues permits for handling nests and disposing of carcasses. However, to administer a permit, a bird management program (APP) must be part of company energy-delivery operations.

Growing concern with avian mortalities and problem nests along with their resulting outages and legal liability means the company needs a program to identify, solve, and prevent the problems avian interactions create.

Record keeping and reporting provide the basis for proactive management. They also allow the company to determine the incidence of bird-caused outages and to take steps to improve system reliability.

The plan's first phase focuses primarily on large birds (e.g., raptors, waterfowl, herons, and cranes) and their nests. However, the same principles apply to smaller bird species and other animal species especially in substations and on equipment poles.

Avian safety will be considered in Standard's revisions of new and rebuilt line designs in rural areas. Where birds have been killed, existing lines and poles need to be retrofitted to prevent additional electrocutions. Retrofitting includes (but is not limited to): 1) covering jumper wires, phase conductors, ground wires, and equipment, 2) discouraging perching, 3) reframing, or 4) replacing a structure.

The purpose of AEP's APP is to assist field personnel in:

- Managing bird/power line issues
- Documenting avian mortalities and problem nests
- Reducing avian mortality associated with AEP's electrical operations
- Reducing avian-caused impacts on power reliability
- Identifying methods, products, and standards to ensure avian protection
- Identifying bird species encountered
- Documenting remedial actions taken to reduce bird mortality
- Reducing risk of enforcement action resulting from bird mortalities
- Providing employees with training and resources

AEP's bird management strategy includes preventive, reactive and proactive measures that focus on the risks and reliability commitments facing the company:

- **Preventive:**
 - Design new or rebuilt lines in rural areas and areas with high raptor activity to avian-safe standards.
 - Ensure compliance with applicable laws, regulations and permits.
 - Identify problem species during line siting and anticipate those problems in design stages.
 - Use bird interaction and outage data to retrofit the most dangerous structures before an electrocution occurs.
- **Reactive:**
 - Document bird mortalities and problem nests,

- Conduct remedial measures where feasible, and
- Notify ES in accordance with AEP's APP. (see [Fig. 6.1](#) and [9.6](#) for dead bird and nest management flow diagrams. See Key Resources, [Appendix D](#) for contacts.
- **Proactive:**
 - Provide resources and training to improve employees' knowledge and awareness.
 - Partner with organizations in programs and research regarding bird/power line interactions.
 - Consider the retrofitting needs of structures adjacent to problem poles.

AEP's APP is based on the *Avian Protection Plan Guidelines* developed by the EEI Avian Power Line Interaction Committee and the U.S. Fish and Wildlife Service (USFWS).

2.0 AVIAN PROTECTION PLAN OBJECTIVES AND TARGETS

To measure the APP's success, objectives and targets have been and will continue to be identified. AEP's objective is to comply with the federal bird-protection laws, increase system reliability, and to reduce bird/power line interactions and the company's legal liabilities.

More thorough reporting of bird-caused outages will make the incidence appear to increase with this concerted effort to document them, however, retrofitting the involved poles and other preventive and proactive measures will be reducing the actual incidence rate. The overall reduction can be measured relative to the number of animal-caused outages recorded each year; the expectation being that the number will be decreasing because the proportion of those attributed to birds will be decreasing. We may also see that in retrofitting structures where bird incidents have occurred the squirrel incident rate may decline as well. The outage database will allow us to determine these trends.

Three federal and numerous state laws protect most bird species in AEP's service territory. To ensure AEP's compliance with these laws, it is necessary to:

- establish procedures that will allow AEP to determine where impacts are most likely to occur,
- determine what additional measures may need to be implemented,
- determine whether mitigation is needed, and
- undertake other activities to facilitate avian protection on or near AEP power lines, substations, and other facilities.

There are 12 elements (see page 5) that can constitute an APP. AEP will implement these elements in a prioritized order, with the following elements in the first implementation phase.

- **Avian Protection Policy**
- **Employee Training**
- **Bird Mortality Reporting System**
- **USFWS Permit**
- **Avian Electrocutation Reduction Program**
- **Avian-safe Construction Standards**
- **Key Resources**

This plan is to be distributed to the Transmission, Distribution, and Substation managers throughout AEP service territory to assist them and their crews with bird-related electrocutions, collisions, and nests. It will also be available at *AEP NOW/A-Z Index/Bird*.

2.1 Avian Protection Policy

AEP has established an Avian Protection Policy ([Section 3](#)) to recognize its compliance obligations, increase energy delivery reliability, and provide the authority to implement this APP. A copy of this policy is also located at *AEP NOW/A-Z Index/Policy Central/Environmental Policies/EP-08-14*.

2.2 Employee Training

Employee training is a vital part of implementing and maintaining the APP. Training provides a program overview that emphasizes bird fatality reporting, nest management, and the principles of retrofitting (See [Section 8](#)).

AEP's Region Environmental Coordinators will train field personnel with an instruction module developed for that purpose. Environmental Services', Water and Ecological Resource Services Group (ES) personnel will present this training and an overview module on retrofitting to Engineering, Standards, T&D managers and supervisors, and other personnel who will be affected by this policy and plan.

APLIC also conducts one-and-a-half day avian protection workshops at least twice yearly at varying locations around the country, which may present opportunities when in or near AEP service territory (see www.APLIC.org for upcoming APLIC events and workshops).

This plan has been distributed to each Transmission, Distribution, Substation district, region, or area. An electronic copy is also kept at *AEP Now/A-Z Index/Bird*. The APP will be revised as the program evolves. ES will provide training or technical assistance concerning bird issues upon request.

It is the responsibility of each manager to pass this information to his/her personnel. ES is available to provide any assistance or training needed.

2.3 Bird-Caused Outage/Mortality Reporting System

The reporting element of the APP has been developed to collect data required for reporting to the USFWS. This system also provides information needed for assessing program effectiveness by AEP management.

Though initially focused on bird mortality and compliance with the bird protection laws, the database developed through the reporting system could be used to reduce other animal-caused outages.

A report form ([BIRD form – Appendix C](#)) has been developed to be completed by hand or electronically and submitted to ES. Distribution also has its *Spectrum* system that might be adaptable to the bird reporting needs in its future revisions. ES is required to report bird mortality to the USFWS with incident circumstances, remedial actions taken, and costs incurred.

2.4 Avian Electrocutation Reduction Program

As the APP is implemented, a risk assessment of lines and poles in high bird use areas will begin. With the structure configuration, species, number of dead birds found, and

remedial work accomplished or recommended on the structure, we will be better able to identify configurations and locations that pose the most risk to birds and preventively retrofit them. This should reduce the number of animal-/bird-caused outages over time, and fulfill AEP's compliance obligations.

2.5 Avian-safe Design and Construction Standards

AEP has adopted, in principle, the Edison Electric Institute's Avian Power Line Interaction Committee's *Suggested Practices for Raptor Protection on Power Lines: State of the Art 2006* (or most current edition) and *Reducing Bird Collisions with Power Lines: The State of the Art In 2012* (or most current edition) for its transmission and distribution, retrofitting, construction, and design standards. These standards are consistent with avian-safe specifications recommended by the USFWS. They must also be consistent with NESC standards. Avian-safe standards should be applied to new or rebuilt lines in the habitats and high-use, high-concentration areas of vulnerable species. See AEP Now/A-Z Index/Bird/Suggested Practices.

2.6 Key Resources

Contact information for AEP personnel, state and federal agencies, and rehabilitators is found in [Appendix D](#). AEP Environmental Services files AEP's compliance reports with the USFWS, and is the company's resource for bird and animal electrocution, collision, and nesting issues.

Appendix D also lists other resources that may be useful when addressing bird electrocution, collision, and nesting problems.

2.7 Reporting

Bird electrocutions and power line collisions must be reported to ES using the BIRD reporting form - [Appendix C](#). In a future release of *Spectrum*, personnel will be able to enter this information and dispense with the paper form. Questions concerning electrocutions of other animals may be referred to ES for guidance (Appendix D).

2.8 Retrofitting and Reconfiguring Existing Structures

Any AEP power line, structure, or substation involved in a raptor or other large bird electrocution will be evaluated to determine how the incident occurred, i.e., with what components of the structure was contact made? The same process would apply to collisions and nests. If it is determined that the incident was preventable the structure will be retrofitted to avian-safe standards. ES is available for consulting about retrofitting to avian-safe standards.

Retrofits may include, but are not limited to installing approved covers on:

- Transformer bushings
- Arresters
- Cutouts
- Phase conductors

- Ground wires
- Jumper wires or taps, etc., and

Reconfiguring may involve:

- Increasing crossarm length
- Repositioning crossarms, arresters and cutouts, etc.
- Installing elevated perches
- Making other modifications as is feasible and appropriate ([Section 11](#)).

For collisions, a number of line marking devices are available that increase the profile and visibility of a line. ([Section 11.1.1](#)).

2.9 Monitoring

Monitoring avian mortality and suggesting appropriate corrective action is the responsibility of ES. A database is being generated from outage reports from which patterns and trends may be studied to guide retrofitting and preventive actions.

2.10 Permits

AEP holds a Federal Fish and Wildlife Special Purpose – Miscellaneous permit (See [Appendix J](#)). AEP has service territory within four USFWS regions, but the Region 3 office in Fort Snelling, MN administers the permit for the four regions—Region 2: Oklahoma and Texas; Region 3: Indiana, Michigan and Ohio; Region 4: Arkansas, Kentucky, Louisiana, and Tennessee; and Region 5: Virginia and West Virginia.

2.11 Quality Control

In the long-term the following parameters will be evaluated in a quarterly animal-/bird-caused outage review. By identifying high risk circuits, structures, configurations, and habitats, limited resources may be applied to the most serious problems first. The same process may be applied to retrofitting evaluations.

- Outages reported in *Spectrum*
- Outage frequency by animal type
- Retrofitting measures applied
- Retrofitting measure evaluations
- Retrofitting measure failures
- Standards updates according to retrofitting experience
- ID circuits with most bird-caused outages (BCO)
- ID structures and configurations predominantly involved in electrocutions
- ID habitat associated with BCO
- Update APP based on the above data and other measures as identified.

3.0 AEP'S AVIAN PROTECTION POLICY

In its APP, AEP has established commitments intended to ensure compliance with laws, company Environmental Policy, and to increase the reliability of its energy delivery system.

Below is the AEP Avian Protection Policy, which is the first element of the APP, and the one upon which the APP is authorized.



AEP Avian Protection Plan

Title:	EP-08-14 Avian Protection Plan Implementation	Date:	October 1, 2008
Owner:	John M. McManus – Vice President, Environmental Services	Sponsoring Area(s):	Environmental Services

Policy Statement:

Effective immediately, American Electric Power will develop and implement a written plan for the protection of avian species which are protected by federal laws, following guidelines developed jointly by the electric utility industry and the U.S. Fish & Wildlife Service.

Detail:

Bird interactions with power lines can cause bird mortalities, which in turn, can result in outages, violations of bird protection laws, and concerns from employees, resource agencies, shareholders, customers, and other stakeholders.

This policy is intended to ensure compliance with legal requirements, while improving energy delivery system reliability. AEP's transmission and utility operations personnel are responsible for managing bird interactions with energy delivery facilities and are committed to reducing the detrimental effects of these interactions.

To fulfill this commitment AEP will:

- Implement and comply with a comprehensive Avian Protection Plan (APP).
- Ensure that its actions comply with applicable laws, regulations, permits and APP procedures.
- Document energy delivery system-related bird mortalities and problem nests.
- Provide information, resources, and training to improve its employees' knowledge and awareness of the AEP bird management program.
- Construct new or rebuilt lines in rural areas and appropriate urban and suburban areas to comply with AEP's avian-safe standards.
- Retrofit or modify (whenever feasible) facilities by which protected birds have been killed or have caused an outage. Modifications will be made in accordance with APP procedures.
- Participate with public and private organizations in programs and research to reduce detrimental effects of bird interactions with power lines.

AEP's customer service and regulatory compliance will be enhanced and risk to migratory birds will be reduced through the proactive and innovative resolutions of bird/power line interactions guided by this commitment.

Review / Revision:

Rev. 0 – September 29, 2008

4.0 BIOLOGICAL ASPECTS OF BIRD INTERACTIONS

The interactions between birds and power lines are complicated by the biological characteristics of the species involved. Migrating, courting, nesting, foraging, roosting, size, sex, and age are examples of variables within and among species.

4.1 *Biological Aspects of Bird Electrocution*

Birds are electrocuted by power lines for two reasons:

- **Biology:** topography, vegetation, migration, breeding, prey availability and other behavioral or biological influences on birds attract them to power lines, poles, towers, and substations.
- **Engineering:** some structures or equipment upon them do not have adequate clearance between energized parts or between energized and grounded hardware for the size of bird attracted to them. This provides an opportunity for a bird to complete a circuit, causing its death and often an outage.

Large body size and broad wingspan are the characteristics most responsible for increasing a bird's risk of electrocution, **Figure 4.1**. The most commonly electrocuted raptors in AEP service territory are the red-tailed hawk, great-horned owl, and turkey vulture. Ospreys and other hawk species are also electrocuted, but their habits or lower numbers make contacts less frequent. Most electrocutions occur on distribution equipment poles and the species involved can also be very small.

Of raptors nationwide, red-tailed hawks are the most frequently electrocuted. Their four-foot wingspan, 20-inch height, wide distribution, and adaptability to human activity and devices cause this. However, the bald eagle's population is recovering strongly and its range is expanding. It's preferred habitat—large trees near water—provides many other nesting and perching alternatives to utility structures. This reduces their risk of electrocution considerably. However, as the bald eagle's range and population increases, AEP will have more encounters with it, **Figure 4.2** shows the bald eagle's distribution range. In the west, the golden eagle uses distribution poles and transmission towers for perching and nesting. Because of its size and the lack of alternative tall structures, there is considerable electrocution risk on structures that have not been retrofitted or designed with phase-phase or phase-ground spacing that will accommodate a bird of this size.

The *Bald and Golden Eagle Protection Act* was amended following the bald eagle's removal from the Endangered Species List. A review of those changes and how they will impact AEP operations is reviewed in [Appendix E](#).

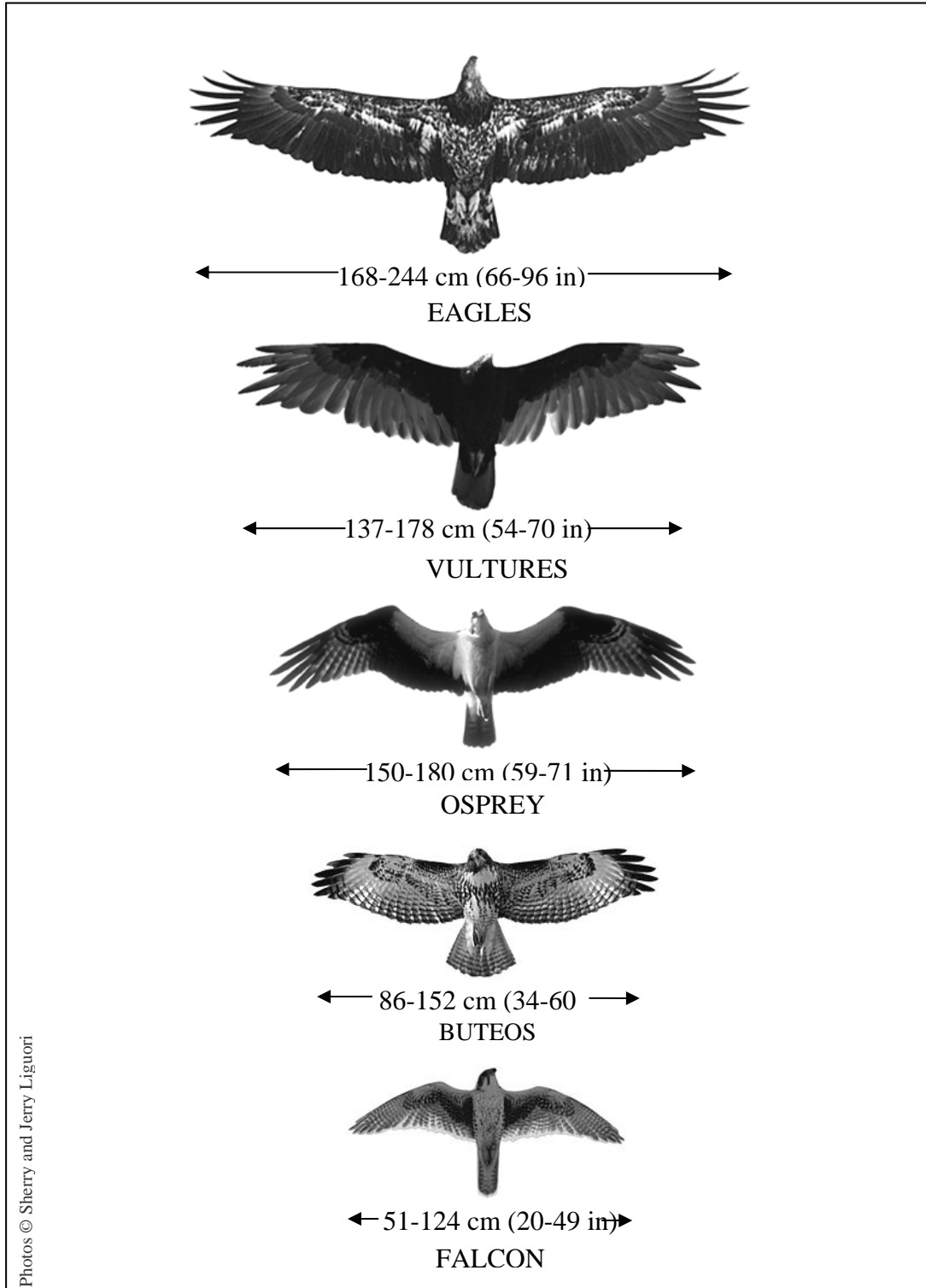


Figure 4.1
Wingspan Comparisons of Selected Raptors.

AEP Avian Protection Plan



Figure 4.2 Bald Eagle Distribution in North America

AEP Avian Protection Plan

Birds are opportunistic and use power line structures to perch, rest, roost, hunt, and nest. Raptors “[still hunt](#)” from a perch, which saves energy when prey habitat is within view. All structures are not equal. Some are “[preferred](#)” because they are in prey habitat, provide a better view, easy takeoff, and a good attack speed. For smaller birds, equipment may provide a nesting foundation or shelter.

Favored perches can be identified by examining crossarms and the ground beneath them for signs of bird use e.g., whitewash, castings, nest debris, or prey debris. Since raptors cannot digest fur, feathers, or bones, they regurgitate these parts as a pellet or casting. Pellets may be found under frequently used structures. In areas with significant rainfall and heavy vegetation, these signs, however, may be difficult to find.

4.2 Biological Aspects of Bird Collisions

Bird collisions with power lines usually involve large-bodied, less maneuverable birds, or species that fly at high speeds and low altitudes (e.g., waterfowl) where they are found in high concentrations (e.g., flocks near wetlands). The risk is also greater for birds that fly at night, which includes small, migrating songbirds. Many factors influence the likelihood of collisions with overhead wires. These include habitat, body size, flight behavior, vision characteristics, health, and age as well as environmental characteristics like weather, time of day, land use practices, line configuration, routing, and pole placement.

4.3 Biological Aspects of Bird Nests

Raptors and wading birds are attracted to utility structures for a number of reasons. In areas with arid climate, birds choose utility structures because they provide a nesting substrate that is better than what is available in the natural surroundings. Lattice transmission towers and double-crossarm structures are ideal locations for nests. Even in areas where trees are readily available, utility structures are chosen because they are higher, may be closer to a prey base, provide better protection from predators, or offer a more commanding defense of territory than do the surrounding natural perch sites.

Equipment poles provide more nesting surfaces for small species as well, and these locations are chosen for the same reasons mentioned above. Substations especially provide nesting and roosting substrate for smaller bird species. It is often the small nests' presence that attracts predators, e.g., hawks, snakes, raccoons, which then are responsible for faults.

Once a nest site is chosen, birds become very dedicated to it. When a nest is removed from a problem site, there is a high probability that the birds will return and rebuild.

Large species found nesting on AEP utility structures are the: red-tailed hawk ,great-horned owl, osprey, raven, great blue heron, and eagle - [Appendix B.4](#). Smaller birds of all types nest on or in utility structures, and of the protected species; woodpeckers cause us the most trouble. More commonly though, the unprotected species nest on utility structures and include house sparrows, starlings, pigeons, and a growing number of monk parakeets. These four species nest in communities, which compounds the problem for utility operations.

5.0 BIRD IDENTIFICATION

5.1 *Bird Identification Card*

Identification cards for the East, West, and Coastal service territories can be found in [Appendix B.5](#) and on *AEP Now/A-Z Index/Bird*. Laminated copies are also distributed at training sessions and are available from Region Environmental Coordinators throughout the AEP system - [Appendix D – Key Resources](#). They do not represent all the birds in these regions but do show some of the most common birds that are encountered in electrocution and collision incidents.

5.2 *Bird Identification References*

There are numerous identification guides available. If you are considering purchasing one, the type with realistic illustrations is easier to use than those with photographs. This is because the illustrated pictures include most of the species-specific characteristics. Photographs are of one individual, which may not have some of the more subtle species traits that aid in identification. The field guide format is preferable for its portability.

The internet can be a good source, especially if you have an idea of what you are looking for. One of the most user-friendly sites is the Cornell University Laboratory of Ornithology site: <http://www.allaboutbirds.org/NetCommunity/Page.aspx?pid=1189>. It allows browsing by name or shape and has silhouettes of most bird categories that may be of help in refining a search. Wikipedia also has comprehensive reviews of many species.

There is also an iPhone/iPad application called iBird.

6.0 REPORTING BIRD MORTALITIES

6.1 Entering Information

Bird injury/mortality data should be entered on the AEP Bird Fatality/Injury Report form – BIRD form, [Appendix C](#). A flow diagram of the process for reporting bird mortalities is shown in **Figure 6.1**.

AEP personnel that discover a dead bird that caused an outage must enter the information on the BIRD form or call the information into ES within 48 hours of discovery for MBTA-protected birds and 24 hours for eagles and endangered species. In addition, dead birds found on or near electrical facilities that may have died of electrocution or collision with a structure or wire should likewise be reported.

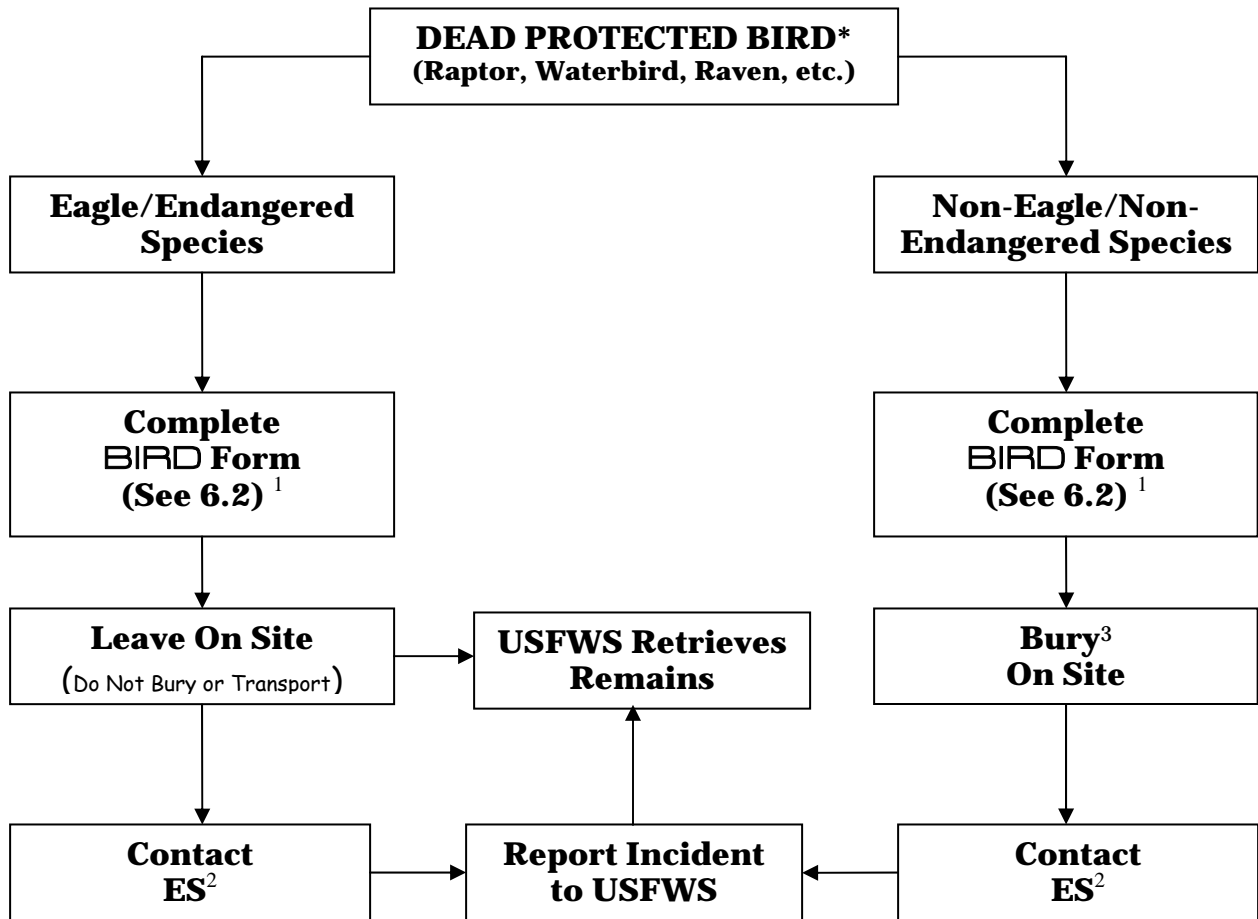
Submit the BIRD form according to Appendix D.1. For eagles and endangered species, the report must be made at the time of discovery. USFWS will retrieve the carcass, so, AEP personnel should only move the bird if it is on the structure, leaving it on the ground for USFWS. For eagles and endangered species, retrofitting or other solutions need to be accomplished within 30 days of discovery. Other species should be handled similarly, but if there are extenuating circumstances remedies should be completed within 90 days. Photos of the retrofitting or reconfiguration for all protected species need to be submitted to USFWS through ES.

In addition to the particulars of the incident, type of bird,¹ number of birds involved, structure configuration, surrounding habitat, etc., it is important to determine how the incident (esp. electrocution) happened and what could be done to prevent another, e.g., *bird made contact with the two cutouts on the same side of the crossarm*; an example of a possible solution: *apply covers to the center cutout all arresters and jumper wires*. The recommended remedial action plan and the completion date need to be included in the report as well. When the retrofitting work is completed, its cost—labor and materials—needs to be reported as well.

Problem nests should also be reported on a BIRD form. A flow chart of these procedures is presented as [Figure 6.1](#) (Dead Bird) and [Figure 9.6](#) (Nest).

¹ Using the Bird ID Card as a reference, even though the species may not be evident, the general category of bird can be determined and reported.

BIRD INCIDENT MANAGEMENT FLOW DIAGRAM



1. Bird Mortalities and Problem Nest: enter information on the BIRD form and send to ES.

2. ES: See Section D.1

3. If burying is not an option, the bird may be—*under the provisions of the AEP Fish and Wildlife Permit*— transported to a satisfactory disposal site, including the dumpster at the service center.

* If a band, collar, or ribbon is found on the bird, include that information on the BIRD form

Figure 6.1 Dead Bird Management Flow Diagram

7.0 BIRD ISSUES MANAGEMENT

The following guidance deals with bird-caused outages, problem nests, dead birds, and injured birds.

7.1 Bird Deaths

The following actions need to be taken when dead birds are found near power lines or structures whether it is in response to an outage or is an incidental finding.

Personnel who discover dead birds (raptors, waterfowl, herons, ravens, etc.) on or near company structures or within rights-of-way are required to submit a BIRD form to ES—[Appendix C](#)². These data will be entered into the bird incident database and reported to USFWS as required by bird-protection laws. If the dead bird is an eagle, or a threatened or endangered species, notify ES immediately and leave the bird where it was found or, if it is on the structure, remove it and leave on the ground at the structure's base. USFWS will advise us on the handling or disposal of the carcass.

7.1.1 Protected, Non-Eagle/Non-Endangered Species

In the first phase of APP implementation, which refers to all owls, hawks, waterfowl, egrets/herons, ravens, and birds larger than a crow, a company employee that discovers one of these birds needs to collect data for the BIRD form and then bury the carcass on site, or transport according to the permit to a more suitable site for disposal. Indicate the means of disposal on the BIRD form. Contact ES if these alternatives are not workable.

7.1.2 Eagle/Endangered Species

An eagle or endangered species carcass **shall not be transported or buried**. AEP (ES) personnel will contact the nearest USFWS agent within one working day of discovery and provide the bird's location. Personnel from a USFWS field office or his/her designated representative will retrieve the carcass for necropsy. Species included are eagles, which are found throughout AEP service territory, the whooping crane, found in Oklahoma and Texas, and the aplomado falcon, found in southern and western Texas.

7.2 Marked or Banded Birds

If a leg band, collar, or other marker is found on a dead bird, include the band information on the BIRD form. Dispose of the carcass as described below.



Figure 7.1 – Example Bands

² This paper system may be superseded Distribution's future *Spectrum* releases.



Figure 7.2 – Banded Peregrine Falcon.

7.3 Disposal

AEP has a Federal Fish and Wildlife Permit; Special Purpose – Miscellaneous permit, issued by the U.S. Fish and Wildlife Service. A copy of this permit, [Appendix J](#), needs to be on board every truck that carries personnel that may deal with bird incidents. This permit allows temporary possession for transport and disposal of carcasses that cannot be left or buried on site. It is a violation to *take* (i.e., kill, transport, sell, or possess) a protected bird regardless of intent, without proper permits or authorization.

7.4 Injured Birds

Bird Death and Injury Summary
<ol style="list-style-type: none"> 1. Bury the carcasses of protected birds, <u>except</u> eagles and endangered species, on site <u>if possible</u>. If it is not possible, with a copy of the AEP Special Purpose – Miscellaneous permit in possession (Appendix I) the bird may be transported to a better disposal site. If the carcass cannot be buried or transported, remove it from the structure and leave it on site. 2. Notify ES as soon as possible after finding an eagle or endangered species to make arrangements with the USFWS for the carcass' retrieval. 3. Contact ES or a local wildlife agent to report the location of an injured bird and to arrange for assistance. 4. Document the mortality or injury on a Bird Incident Report (BIRD) form and send it along with photos of bird, structure, and surroundings to ES.

If an injured bird is discovered on or near a company facility or right-of-way, contact ES immediately, [Appendix D](#). In most circumstances no attempt should be made to capture or restrain an injured bird. If a qualified rehabilitator, [Appendix D.3](#), is available in the area, the individual who discovered the bird (or ES) should contact the rehabilitator, local veterinarian, or a local state or federal wildlife agent, [Appendix D.2](#), and provide them with information for retrieving the injured bird. If an appropriate person is unavailable, contact ES as soon as possible. With the Special Purpose-Miscellaneous permit it is permissible for personnel to transport an injured bird to a rehabilitator, veterinarian, or wildlife agent. However, personnel must not be put at risk.

7.5 Perch Management

By modifying 'preferred' structures, an electrocution problem on an entire line could be solved. Please note that perch discouraging devices may force birds to other equally dangerous poles or locations on the same pole. By making the 'preferred' poles safe, the problem will likely be solved.

Some lines run through unvarying habitat. There, one pole does not offer a significant advantage over another to a hunting raptor. Broader corrective measures must be considered and overall risks evaluated if outages or electrocutions are occurring on a line like this.

Birds make contact phase-to-phase or phase-to-ground. Poles with additional hardware or equipment, e.g. transformers with exposed jumper wires, cutouts, arresters, etc., pose the highest risk. Two of the reasons to reduce these incidents are:

1. Birds are almost always killed by such a contact \Rightarrow violation of law.
2. The circuit often experiences a momentary or sustained outage \Rightarrow recovery costs and lost revenue.

Building or rebuilding lines to avian-safe standards or retrofitting existing lines to the same standards can reduce the incidence of both problems.

7.6 Streamers: Contamination, Outages, and Electrocutions

Streamers are long ropes of waste ejected by large birds. This material may remain continuous for more than 10 feet in some species, [Figure 7.3](#). As a result, a vulture, heron, or wild turkey for example, standing on a grounded arm that squirts a streamer onto the conductor below before it breaks free of the bird's body creates a circuit and electrocutes the bird.

In addition, shorter streamers that do not immediately endanger the bird may accumulate on the insulator below a perch where the contamination may lead to a flash and perhaps an electrocution/fire/outage.

Generally, these occur on towers that are attractive to birds in the area. Year-round residents may also use them for nesting, roosting, and feather drying. Migrating vultures may occasionally perch or roost on these structures for the short-term while headed north or south in the spring or fall.

AEP Avian Protection Plan

It is the repeated use that presents the greatest risk. The risk can be reduced by discouraging perching/nesting in the sensitive areas of the structure while allowing it in other areas, or by shielding the vulnerable components, [Figures 7.4, 7.5](#).

7.7 Bird Collisions with Power Lines

We are most aware of collisions with power lines when a large bird bridges the space between two wires and causes an outage. Most collisions go undiscovered. When repeated collisions do occur there are line-marking devices that can be applied to increase a line's visibility to birds in flight. Carcasses of collision victims are handled the same way as those of electrocution.



Figure 7.3 Streamer (contamination build-up)

(Photo from *Suggested Practices for Avian Protection; the State of the Art in 2006*)

AEP Avian Protection Plan



Figure 7.4 Heron nests on Transmission Tower (center phase and insulators contaminated)



Figure 7.5 Corrugated Half-pipe Shielding Center Phase and Insulators from streamers. (Hérons can safely rebuild nests on top of the crossarm).

8.0 TRAINING

All appropriate Transmission, Distribution and Substation personnel will receive initial training on avian protection issues and at intervals sufficient to keep the APP implemented and improving. All appropriate contractors will receive some level of training on natural resource issues and will have contractual obligations to abide by this training.

8.1 Background

AEP's service territory includes many resident and seasonal raptors and other protected birds including migratory waterfowl, wading birds, shorebirds, and songbirds. This includes bald and golden eagles, which may over-winter, remain year-round, or migrate through the various regions of AEP service territory. Bald eagles also nest throughout our service area. Most of the bird species typically encountered in AEP's service area are protected by the [Migratory Bird Treaty Act](#). The species not protected are those that originated on other continents and were introduced into the U.S. by people. Most common and troublesome to us, are the house sparrow, European starling, common pigeon (rock dove), and monk parakeet.

Through time, AEP's transmission and distribution design standards have been routinely upgraded to improve reliability. In doing so, these advances have also reduced bird mortalities. They include upgraded crossarm material, height, and length, equipment placement on a structure, bird/wildlife protection covers, and covered jumper wire. Today there are also methods for retrofitting dangerous poles to make them safer for birds and other small animals. Training will enable energy delivery personnel to anticipate and avoid problem configurations, retrofit problem spots, handle, and report when protected birds are killed or protected nests need to be managed.

AEP is a member of the Avian Power Line Interaction Committee—[APLIC](#). Through this association, AEP works cooperatively with other utilities and the U.S. Fish and Wildlife Service to identify, understand, and resolve problem interactions between birds and their nests with electric power structures.

8.2 Training Scope

AEP energy delivery system line and management personnel are trained on the facets of the APP, given periodic refresher training, and advised when program changes are made. Training includes:

8.2.1 Regulatory Background and Protected Bird Species

Employees are given information on the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, and the Endangered Species Act.

8.2.2 Bird Biology and Behavior

Employees learn about the bird biology and behavior that lead to interactions with electric utility structures. This includes bird size, perching, nesting, hunting, and feeding behavior, as well as habitat preference and flight path tendencies. These all work together to determine the risk for electrocution or collision—see [Section 4](#).

8.2.3 Bird/Nest Reporting

Employees are instructed to report any protected bird species found dead on or near our energy delivery facilities. The Bird Fatality/Injury Reporting Form (BIRD form)—[Appendix C](#)—also *AEP NOW/A-Z Index/Bird/Bird Form*), is to be used for this purpose. Employees are also to report active protected nests that must be removed to avoid [imminent danger](#). Evaluation of bird carcasses and nests to determine species is addressed, and the cause of the incident, if it is evident, is recorded along with photographs of the bird, the structure, and the landscape, and finally the remedial actions taken.

The species of the involved bird should be identified if possible. In [Appendix B.5](#) contains species ID cards with examples of the larger species most likely to be encountered in the AEP system. The non-protected species most often encountered can be seen on the reverse side of the ID card—also shown in Appendix B.4. Region-specific ID cards will be distributed at the time of training and will be always be available from ES and on the intranet. ID cards are available for AEP East, AEP West, and coastal AEP Texas to reflect different species characteristic of those regions. Also see *AEP NOW/A-Z Index/Bird/Species ID Card*.

Employees are cautioned against handling nests or dead birds with bare hands, and handling large injured birds at all.

8.2.4 Corrective Action Overview

Employees are given an overview of phase-to-phase and phase-to-ground separation, and insulation concepts. Specific applications are viewed and discussed. Separation standards for differing sizes of raptors are reviewed and hardware to mark and cover lines and equipment are shown. Expectations for corrective actions on lines and equipment where mortalities have occurred are discussed. Specific examples and corrective actions are reviewed. Circumstances where no meaningful remedial steps can be reasonably taken due to weather, biological characteristics, or other contributory factors will also be considered. Bird behavior management through devices such as perch discouragers, elevated perches, reframing, and nest platforms is also discussed—[Section 9](#).

8.2.5 Evaluation of High Use Areas

Employees are introduced to the existence areas of high year-round and seasonal bird concentrations and that they generally include wetlands for wading birds and waterfowl, areas of open or flowing water for migrating birds or over-wintering bald eagles, or carrion for vultures. They learn that location-specific solutions such as shield wire markers to reduce the risk of bird collisions, and substitute perches or perch discouragers to direct birds away from dangerous perching locations are reviewed. AEP will continue to identify sites of potential interaction between birds and power structures in an effort to reduce bird and reliability impacts.

8.2.6 Retrofitting

Employees learn that raptors (hawks, eagles, owls, falcons, vultures) along with ravens are greatest concern in Phase I of AEP's APP implementation. Whenever one of these species is electrocuted on an AEP structure; that structure should be retrofitted or

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reframed so birds can perch on it safely. The reason for this is that the poles these birds “prefer” are usually located in surroundings that can be defended or are situated in a good prey source. These circumstances invite repeated use of the structure.

Structures that have been involved in a raptor electrocution usually need to be altered to prevent a recurrence. This may involve moving equipment, jumpers, or conductors or lengthening or lowering the crossarm to increase the phase-to-phase or phase-to-ground spacing; or applying devices that cover equipment, jumper wires, or phase conductors to prevent a bird’s body from completing a circuit. This also applies to small and non-protected birds that cause repeated interruptions at the same structure—[Section 10](#).

8.2.6.1 Timing for Retrofitting Dangerous Structures

- a) Electrocutions – Modification of a structure involved with an eagle death, must be accomplished within 30 days after the incident. For other raptors, retrofitting, when practicable will be accomplished within 90 days, unless there are extenuating circumstances.
- b) Collisions – review circumstances and, if warranted, mark the line in the involved span or spans to increase its visibility within 180 days of determining that marking is necessary.
- c) Nests – Active nests of protected birds may not be handled unless there is imminent danger; inactive nests that interfere with operations may be removed. Keep in mind that the birds are likely to rebuild that nest in the next nesting season at that same location.

8.2.6.2 Alternatives for Handling Active Nests That are in Danger:

- a) Insulate phase/ground conductors around the nest.
- b) Remove nest in consultation with ES and USFWS.
- c) Move nest to a safe location in consultation with ES and USFWS.

8.2.7 Key Resources

A list of key resources is included in [Appendix D](#). It contains the names and numbers of AEP, state, federal, and rehabilitation experts who can help with solving an avian problem.

9.0 BIRD NESTS ON POLES AND TOWERS

Based on Federal Authority: 50 CFR 13

In addition to the operational problems associated with nests, there are also those associated with regulatory compliance. Furthermore, the company may realize public relations benefits from providing and managing safe nesting locations. The [Migratory Bird Treaty Act](#) protects active nests (nests with eggs or young present) of native North American birds. The [Bald and Golden Eagle Protection Act](#) protects active **and inactive** eagle nests. And the [Endangered Species Act](#) protects active **and inactive** nests of endangered species year-around. We are not aware of any endangered bird species that build nests on utility structures in AEP service area.

A permit issued by or permission granted from the USFWS is required before handling or moving an active nest of a protected bird species. In the case of “[imminent danger](#),” AEP crews, according to provisions found in AEP’s Special Purpose – Miscellaneous permit, [Appendix J](#), may take immediate action (e.g., trimming nest material, insulating or moving conductors, removing the nest, or transporting eggs/young to a rehabilitator). However, ES must be contacted immediately so the action that was taken can be reported to the USFWS according to permit requirements. **Whatever dangers nests may pose, the safety of AEP personnel is of paramount importance and must be assured before any action is taken.**

Often moving the nest to an electrically safe location will be acceptable to the nesting birds and the company’s operational interests. In the short-term, insulating wires around a large the nest with “guts” has been successful (Figure 9.1).



Figure 9.1 – Insulation near nest and where adults and young will perch.

9.1 Nests of Eagles/Endangered Species

9.1.1 Active and Inactive Nests

Eagle/endangered species nests will not be moved during routine maintenance operations unless an [imminent danger](#) to the birds, human life, or property exists, then actions may be taken to protect the birds and provide for safe electrical operations. The USFWS will be notified when any of these management actions are taken so permits may be obtained.

Failure to do so may result in civil or criminal penalties. If warranted, installation of a nest platform to provide a safe nesting site will be coordinated with ES and the Regional USFWS Office and/or state wildlife agency.

9.2 Nests of Protected Non-eagle/non-Endangered Species

9.2.1 Active Nests

These procedures apply only to problem nests. **Active nests not interfering with power operations must be left in place.** If a future problem is anticipated with a nest, permitting requirements may be avoided by removing the nest while it is inactive—*except* eagle/endangered nests. The nesting season for most birds falls between February 1 and August 31. However, some young birds are nest-dependent and may stay with the nest until their fall migration. This is often the case with ospreys. If there is a problem determining whether a nest is active or inactive, call ES. All actions taken with active nests must be reported to ES on the BIRD form.

Starlings, sparrows, pigeons, and monk parakeets and their nests, active and inactive, are commonly encountered on utility structures, but as they are not covered by the bird-protection laws, their nests may be removed whenever they are encountered.



Figure 9.2 – Platforms on a Dummy Pole for Osprey Nests

Active nests will not be moved during routine maintenance operations without coordinating with USFWS. A permit, see [Appendix J](#), is required before handling or removing the active nest of a protected species. Contact ES if it becomes necessary to disturb an active nest—except in situations of **imminent danger**, *i.e., outage, risk of fire, immediate threat to human life, birds, or property*. In the **extremely exceptional** case of imminent danger, nest material may be trimmed, conductors moved or covered, nest removed or other action taken first to insure danger is no longer imminent. Practices to ensure the welfare of young birds, if present, must be followed after the safety of AEP personnel is assured. Caution is needed to protect eggs or young and to avoid violating federal law. A rehabilitator may be available to care for eggs or young, but their availability varies around the system. Contact ES as soon as possible after the imminent danger is resolved so the necessary notification to USFWS may be made retroactively.

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9.2.2 Inactive Nests

A permit or permission is not required to remove or manipulate an inactive nest belonging to a non-endangered or non-eagle species. Rebuilding and reoccupying nests during subsequent breeding seasons is common however. If a nest in its current position is not interfering with operations and the birds are safe from making electrical contact, leaving the nest in place may be a better option than removing it only to have it rebuilt next season in a more dangerous nearby location. Using anti-nesting devices or, more dependably, a nesting platform may provide a long-term solution. (See *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 – on AEP NOW, A-Z Index, Bird/Suggested Practices*).

When a nest is removed it should be buried or taken to a suitable disposal site under the terms of the AEP Federal Fish and Wildlife permit, [Appendix J](#). If the nest material is left at the site the birds will use it to rebuild.

Depending on the situation, there are several management options to consider. For raptors, building a nest platform on the pole or on a “dummy” pole, [Figure 9.2](#), installed nearby may be the best long-term solution (for more detail also see *A-Z Index/Bird/Suggested Practices for Avian Protection on Power Lines/Page 119*).

9.3 Nest Summary

9.3.1 Managing Eagle or Endangered/Threatened Species Nests

1. Be sure you have a copy of the AEP Special Purpose – Miscellaneous Permit
2. Contact Environmental Services before taking action.
3. USFWS will provide guidelines for management action and will send a representative to the site
4. Complete a BIRD form and email, fax, or send it with photos to ES.
5. If imminent danger exists, take necessary action then contact ES/USFWS.

Eagle nests (golden and bald), and all nests of endangered/threatened species, [Appendix B.2](#) are protected by federal laws **even when they are inactive!**

9.3.2 Managing Active, Problem Nests of Protected Non- Eagle, Non-Endangered Species:

1. Be sure you have a copy of the AEP Special Purpose – Miscellaneous Permit
2. Contact Environmental Services before taking action.
3. ES/USFWS will provide guidelines for management action.
4. Complete a BIRD form and email, fax, or send it with photos to ES.
5. If imminent danger exists, take necessary action then contact ES.

Violations may result in fines to the company and/or the employee. Although an eagle nest on power equipment is uncommon, they do occasionally occur and may require management action. Contact ES if a problem nest is suspected to be that of an eagle or endangered species. ES will obtain a federal permit **prior to** management action, or immediately following the action in cases of **imminent danger**.

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In the extremely exceptional case of imminent danger nest material may be trimmed, conductors moved or covered, nest removed or other appropriate action taken immediately. Steps to ensure the welfare of young birds, if present, must be taken. Any action taken with an active nest prior to ES notification should be highly unusual. Caution is recommended to protect eggs or young to avoid violating federal laws. Contact ES as soon as possible after action has been taken so permits may be obtained and notice made retroactively.

9.3.3 Nest Management Options

Nesting platforms are valuable for reducing bird *takes* and outages, and increasing favorable publicity. Nesting platforms are more often needed for problem nests on distribution poles (because conductor spacing is closer) than for transmission structures, though transmission insulator contamination from materials dropped from a nest above could require action. Platforms provide for the needs of the birds, while preventing interference with electrical operations. Hawks, eagles, ospreys, and wading birds accept artificial nest platforms in a variety of designs (see *AEP NOW/A-Z Index/Bird/Suggested Practices/Chapter 6*, also [Figure 11.19](#)).

Figure 9.3 shows a means of accommodating an active nest long enough to allow the young to fledge. Permanent covers or a platform can be added after the fledglings are gone and before the next nesting season begins. Even after removal, nests will usually be rebuilt in or close to the same location.



Figure 9.3 “Guts” covering the conductors where the hawks nest and perch.

Because birds usually tend to return to the same pole for nesting, a nesting platform for a large, problem nest could be placed on a dummy pole installed near the existing pole. When a dummy pole is used, the energized pole should be fitted with a nest preventing device, e.g., Figure 9.4 and 9.5.

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Figure 9.4 Corrugated or PVC pipe with diameter the same as the width of the crossarms, halved, and attached slightly above the crossarms will prevent nest sticks from staying in place. (from *APLIC Short Course - Nests*).



Figure 9.5 Clear lexan “tent”

The pole for a nest platform should be at least as tall as the energized pole. When a new pole cannot be installed, a nest platform can sometimes be mounted away from the existing pole's energized parts. Mounting a nest platform above energized equipment is the last choice, because birds are likely to drop nest materials and other contaminants onto the equipment and conductors below. Although there are nest platforms commercially available, platforms can be built with materials available at service centers, hardware stores, or by local groups that like to undertake projects like this. This also allows the platform to be custom-made (see Figure 10.14 and *AEP NOW/A-Z Index/Bird/Suggested Practices/Pg. 119*).

When and where feasible, replacing double crossarms with one fiberglass crossarm is also an effective nest deterrent.

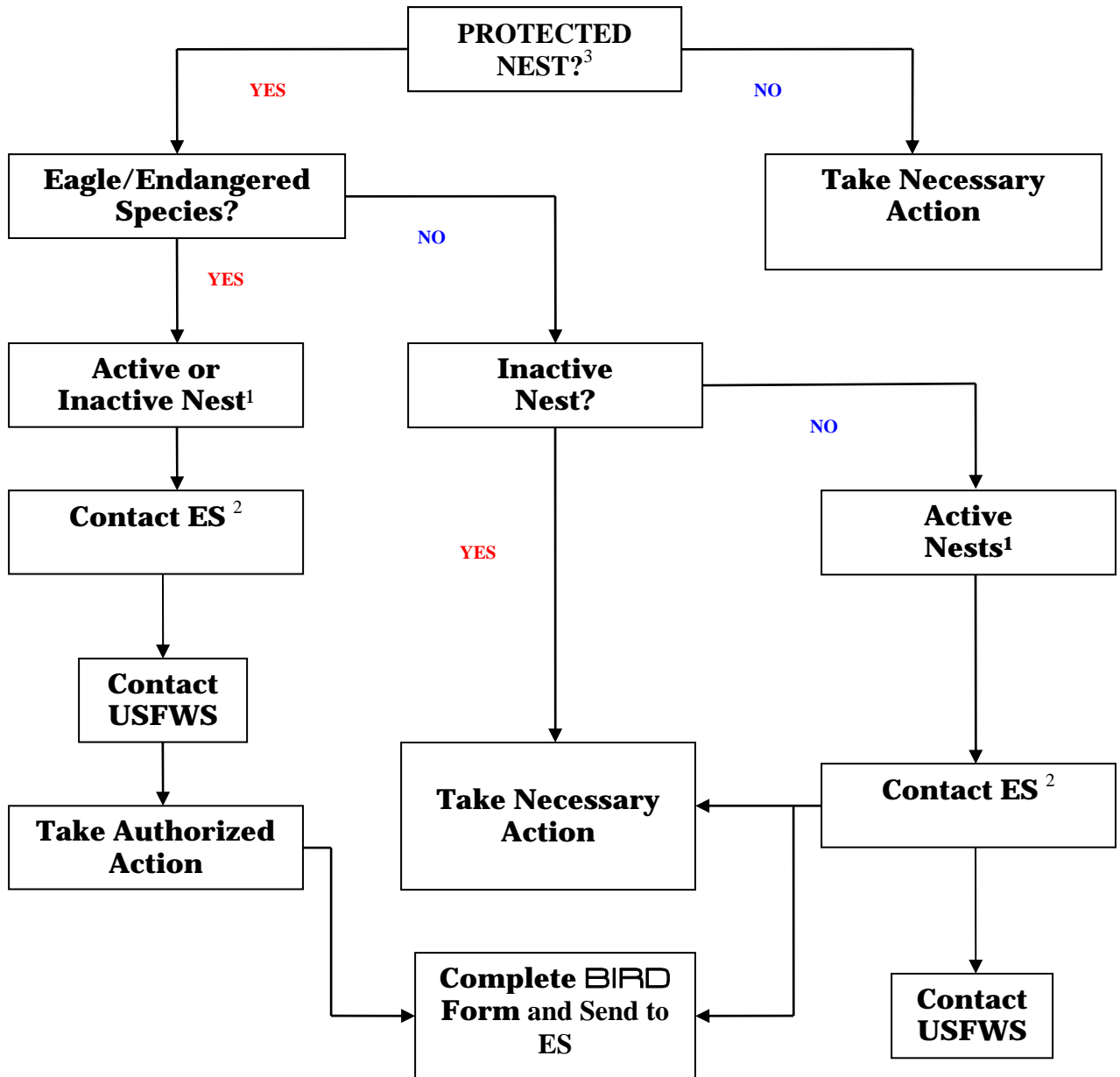
Prior to taking any action on a problem nest, personnel must determine:

1. **What bird species is using the nest?** Is it an eagle or endangered species nest? (Refer to [Appendix B.2](#) and [Appendix B.3](#) for endangered/threatened species and where these species occur).

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2. **The status of the nest.** Is it active (eggs or young present), or inactive?

Figure. 9.6 shows the procedure to follow based on the species of bird using the nest and the status of the nest.



1. If Imminent Danger exists, take the necessary action first, then call ES immediately afterward
2. Contact: see Appendix D.1
3. Nests that are causing or are very likely to cause operational problems.

Figure 9.6 Nest Management Flow Diagram

10.0 AVIAN-SAFE STANDARDS

Avian-safe standards are an important element of the APP. Many existing standards are avian safe though they are not identified as such. Others exist exclusively for animal and bird safety. As standards are revised, the bird-use perspective will be part of the review. Other products, materials, equipment, and procedures will be reviewed and/or added to AEP Standards as our understanding of avian interactions grows with this APP's additional focus upon the issue.

10.1 *Distribution Standards*

To minimize bird electrocutions and outages the APP generally requires that all new or rebuilt lines in rural areas and areas where raptors are active be built to **avian-safe standards**. These design standards should, in principle, meet the recommendations found in *Suggested Practices for Avian Protection on Power Lines: State of the Art in 2006* (see *AEP NOW/A-Z Index/Bird/Suggested Practices/Chapter 5*). Building to these standards will minimize future legal liability, negative public relations, customer outage complaints, equipment damage, extra labor costs, and lost revenues. For more information on retrofitting methods and available materials, see **AEP's Distribution Standards** i.e., *AEP NOW/A-Z Index, Standards/Distribution/Standards Manual/General/Miscellaneous/Animal Guard Applications*.

10.1.1 **New Construction**

AEP Design Standards provide general information on designs and criteria for avian-safe construction. The objective of these standards is to provide adequate phase-phase and phase-ground spacing. **Figures 10.1** and **10.3** present examples of single-phase and three-phase avian-safe structures. **Figure 10.2** shows a retrofitted single-phase structure.

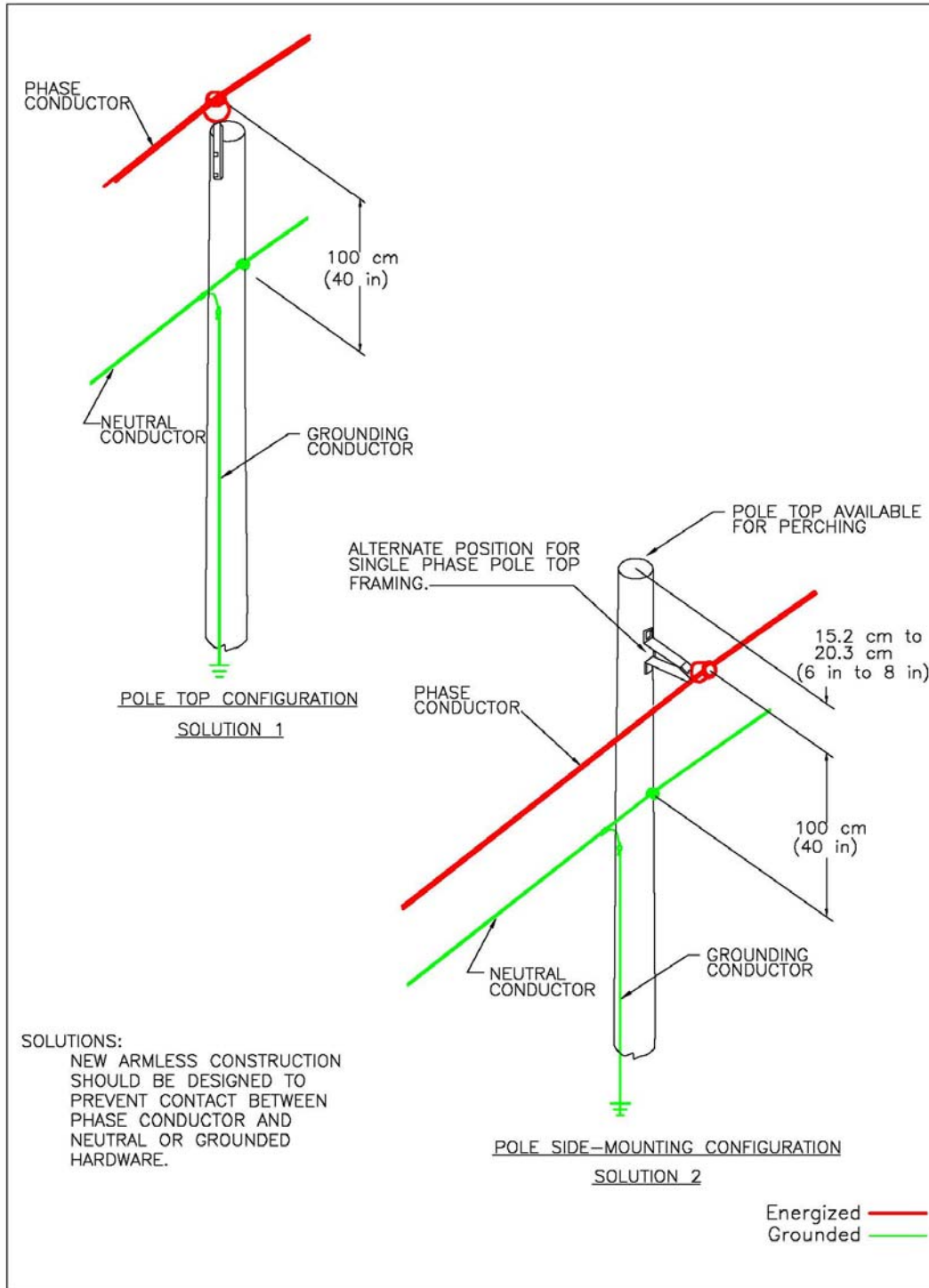


Figure 10.1 Single-phase Avian-safe New Construction.
 (From APLIC Suggested Practices Manual)

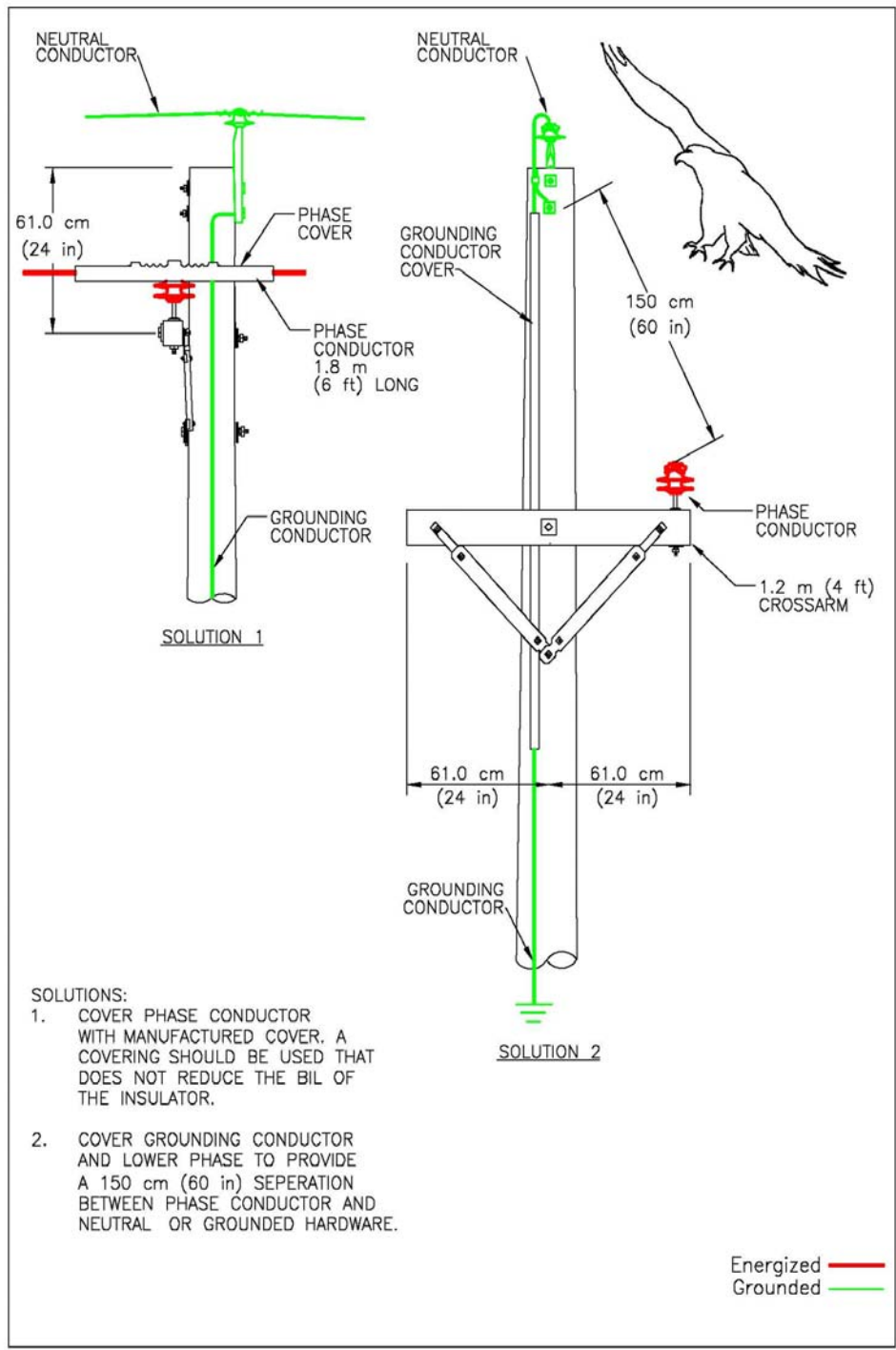


Figure 10.2 Raptor-safe Solutions for Single-phase 4' Crossarm. (From APLIC Suggested Practices Manual)

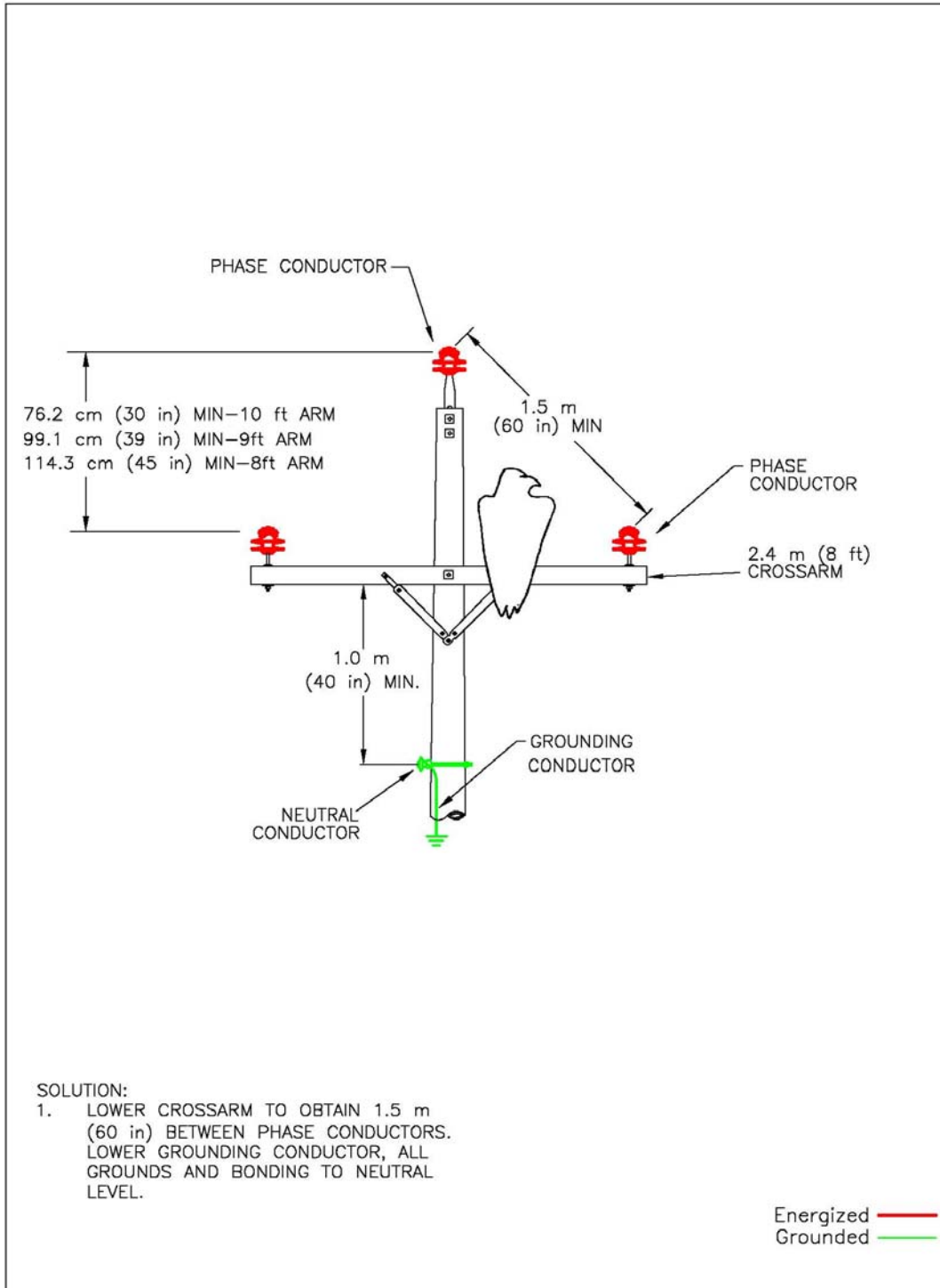


Figure 10.3. Three-phase, Avian-safe Construction for 8' Crossarms.
 (From APLIC Suggested Practices Manual)

10.1.2 Existing Structures

Modifying existing facilities is necessary when:

- 1) Bird-caused outages occur
- 2) Dead birds are repeatedly found
- 3) High-risk lines are identified, or
- 4) Legal/permitting compliance requirement.

The need for remedial action may also result when “[problem poles](#)” are identified through the BIRD database, field observation, or when agency representatives or observant customers call it to the company’s attention. Retrofitting could include:

- 1) Increasing the spacing between phases and/or phase and ground.
- 2) Covering conductors, jumper wires, bushings, cutouts and arresters,
- 3) Perch Management,
- 4) Nest Management,
- 5) Reframing, or
- 6) Structure Replacement.

For more information on retrofitting techniques and materials, see *AEP NOW/A-Z Index/Bird/Suggested Practices and A-Z Index/Standards/Distribution/Standards Manual/General*.

The objectives of remedial action are to:

- 1) Provide adequate phase-phase and phase-ground separation for species involved or anticipated,
- 2) Insulate (cover) hardware or conductors to make simultaneous contact safe if adequate spacing is not possible,
- 3) Increase the visibility of phase conductors or shield wires to prevent bird collisions,
- 4) Discourage birds from perching or nesting in unsafe locations,
- 5) Provide safe alternative locations for perching or nesting.

Figures 10.4 and **10.5** show common single- and three-phase tangent configurations often associated with raptor electrocutions with possible retrofitting solutions.

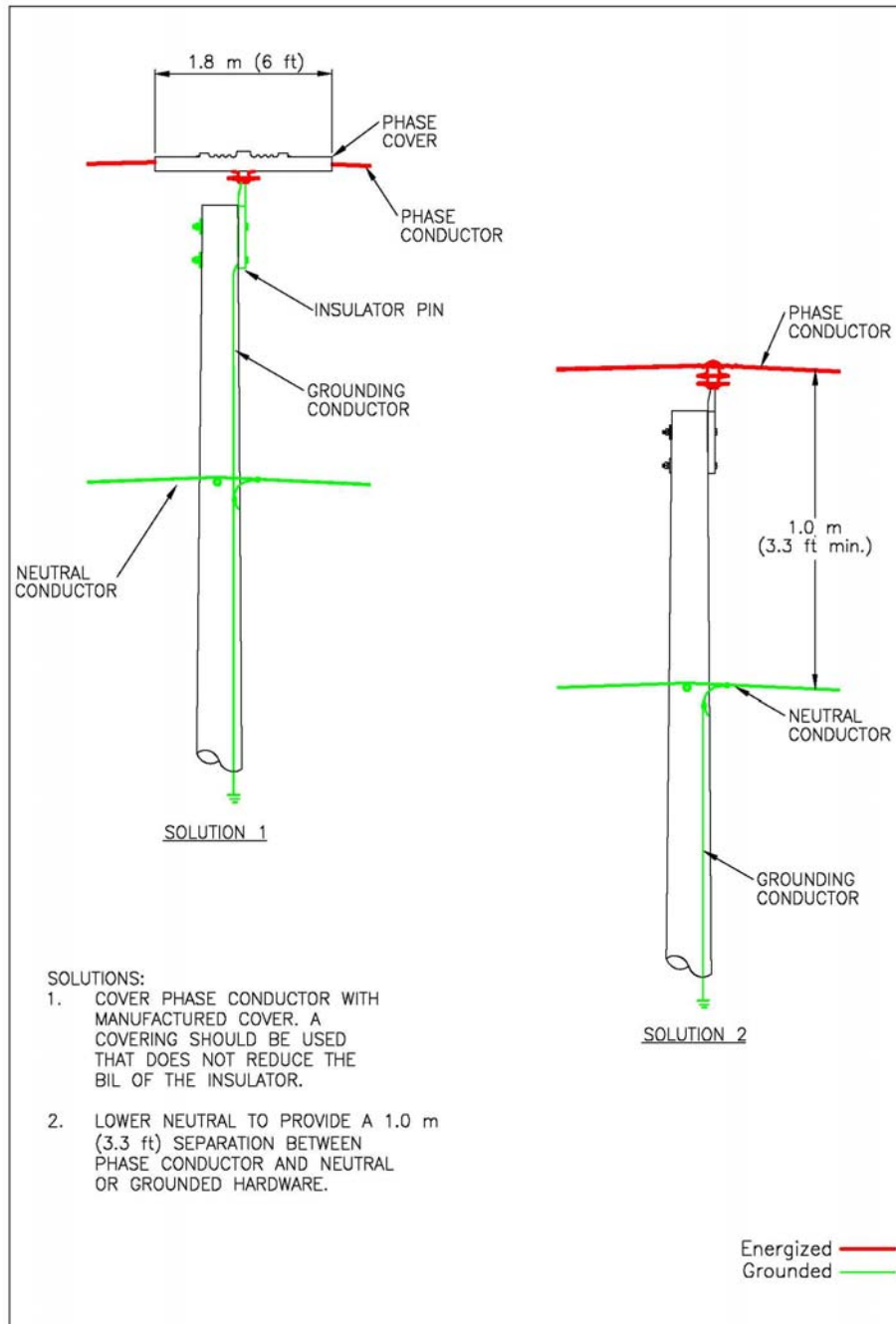


Figure 10.4 – Two Raptor-safe Single-phase Configurations
 (From APLIC Suggested Practices Manual)

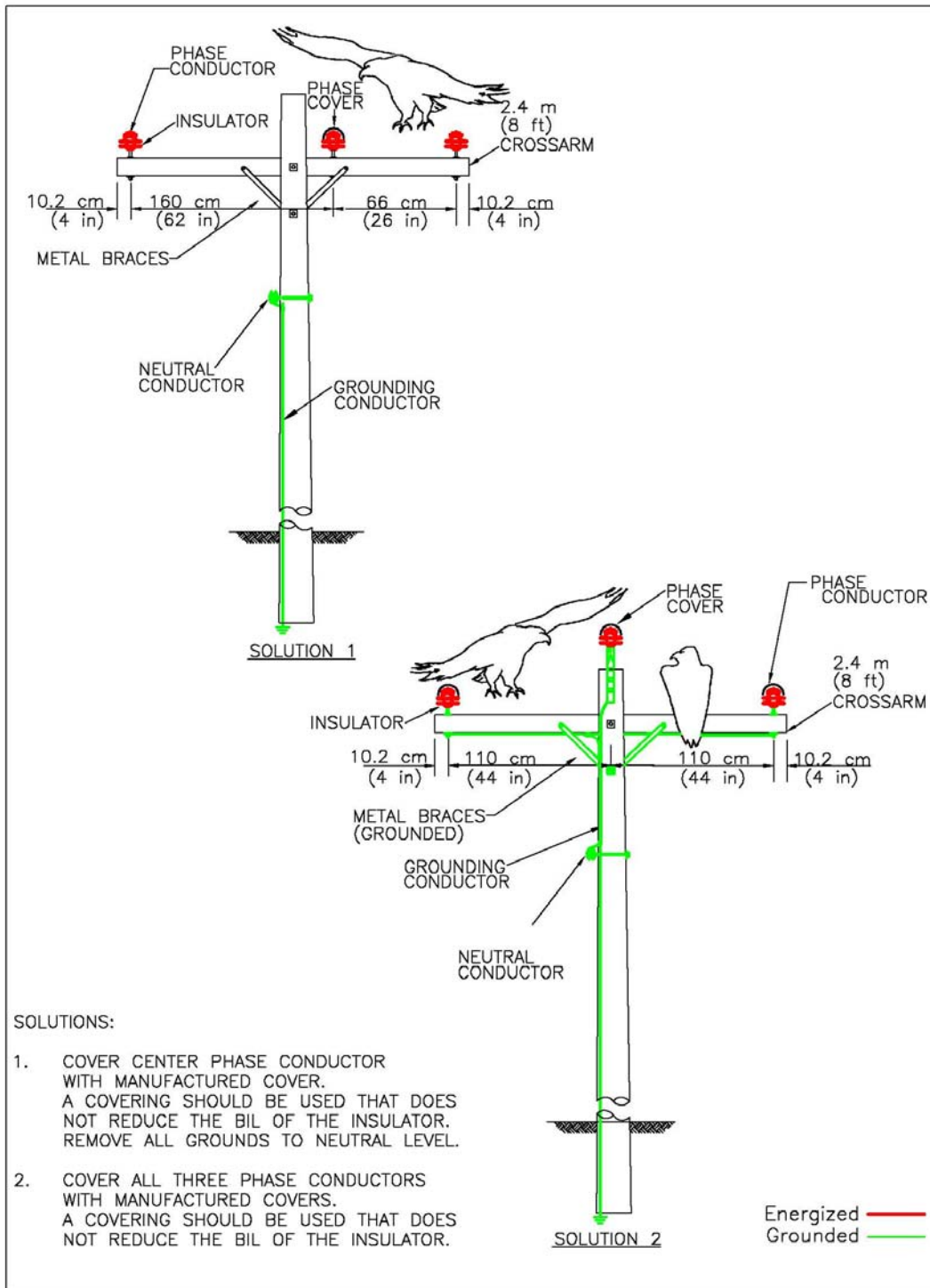


Figure 10.5 Solutions for Three-phase Crossarm Designs with and without Grounded Hardware. (From APLIC Suggested Practices Manual)

On existing structures where large birds have been killed or injured, an alternative to covers is to provide 60-inch separation between energized conductors. This separation accommodates the wingspan of almost all birds. If the center phase is on the pole top, reframing with a 10-foot crossarm allows a 60-inch separation between conductors. However, structure replacement using an avian-safe design may be required on poles where mortalities have been documented and other modifications are not feasible. ES is available for consultation on effectiveness of remedial approaches, and for negotiating cost-effective site prescriptions with state and federal agencies. Contact ES (see Appendix D.1), with questions.

Upon completing a remedial action, the local supervisor should record the work on a BIRD form including the labor and materials costs. This information will document program effectiveness and compliance with state and federal laws. Data from these forms will be reported to USFWS.

10.1.3 Site-Specific Retrofitting Plans

The conditions that create hazards for birds on power lines are often complex and site-specific. The most efficient correction for a problem line is one suited to the unique site conditions (species, topography, local prey, land use, line configuration, etc.). It would also include a timetable for job completion. When a problem area or line is identified, a site meeting or teleconference may be necessary. AEP engineering and operations personnel in attendance would provide line modification guidance. Company biologists would provide the perspective of the affected species. The timeframe for action will be based on agency requirements, public relations, budget and manpower constraints, as well as biological considerations that affect species vulnerability, e.g., nesting, migrating, foraging, roosting, and perching behaviors.

Remedial measures applied to a few “problem” poles or spans usually reduce *take* over a wide area. For example, these include equipment poles, three-phase poles that position two conductors on one side of the crossarm, and three-phase lines with the neutral sharing the crossarm. Conductor, jumper wire, transformer bushing, cutout, etc. covers are effective (see **Figure 10.6** and **10.7**). [Section 11.2](#) shows more of these devices.

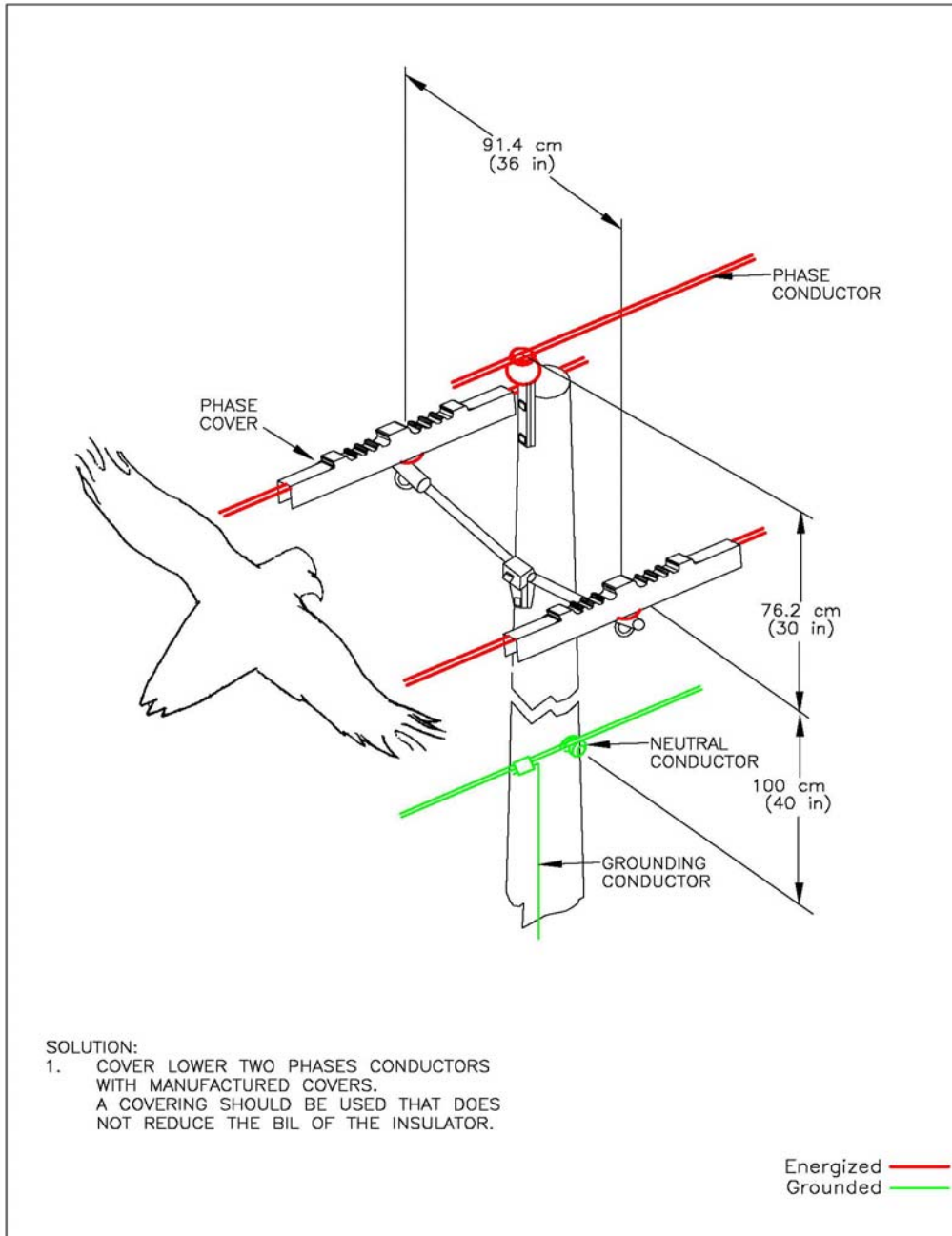


Figure 10.6 Conductor Covers. (From APLIC Electrocutation Manual)

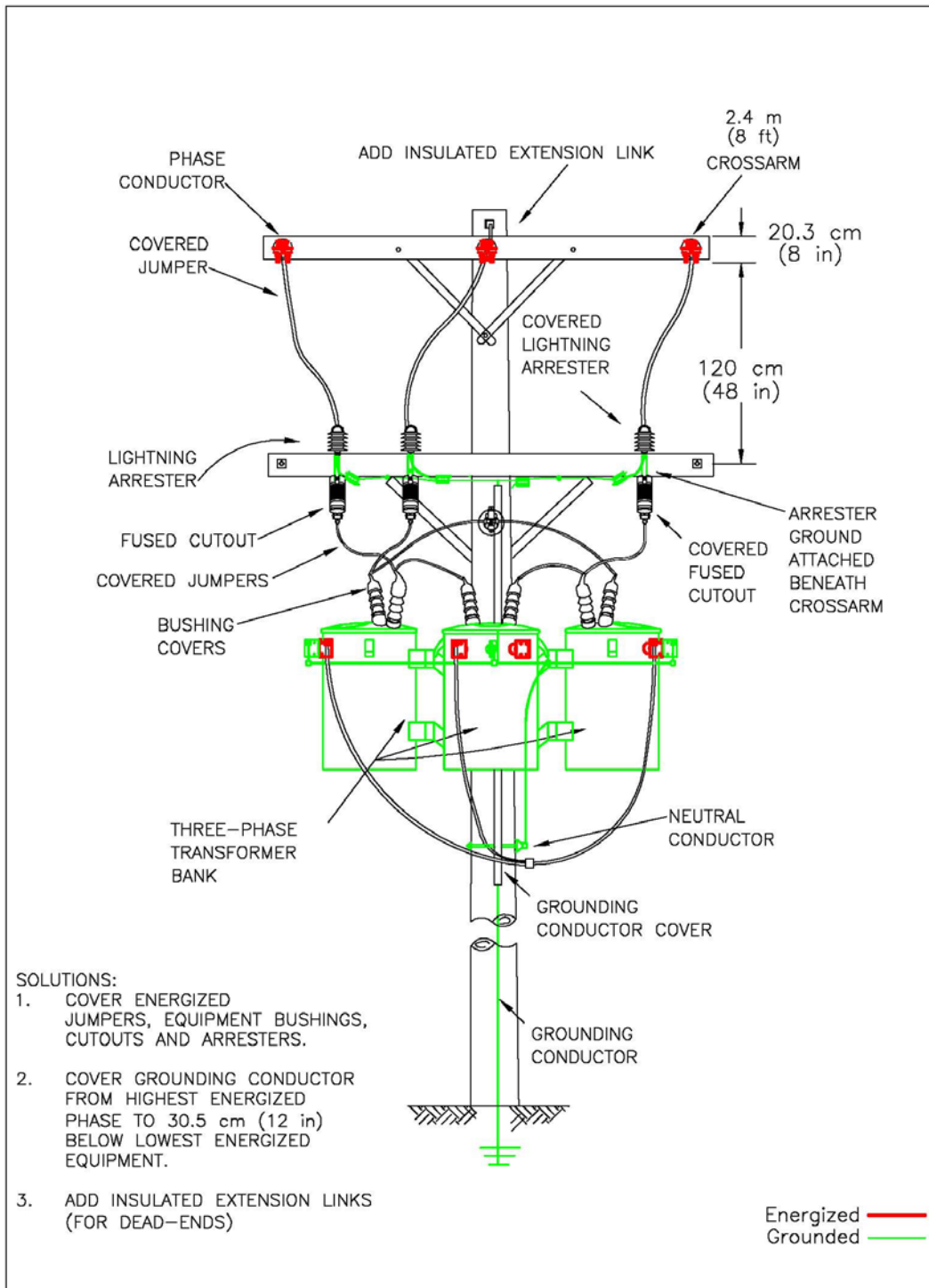


Figure 10.7 Equipment Coverings. (From APLIC Electrocutation Manual)

10.2 Substation Standards

AEP Substation Standards require all new substation construction to be animal-, bird-safe. Other devices for retrofitting also appear in substation standards. Below are drawing numbers for wildlife protection in substations:

Drawing Number	Application
6EAX002U SH.A	Electrified animal deterrent fencing.
6EAX002U SH.B	Animal deterrent varmint proof fencing
6EAX002U SH.C	Distribution feeder underground exits. Porcelain vertically mounted disconnect switch. Porcelain vertically mounted bypass switch. Porcelain vertically mounted tandem disconnect switch. Line guard. Pole guard.
6EAX002U SH.D	Circuit breaker – various voltages, power transformer 2 ^o oil filled bushings – various voltages.
6EAX002U SH.E	Power transformer 2 ^o bushing, arresters on power transformers, dry type potential transformers
6EAX002U SH.F	Station feeder regulator bushings, transformer bushings, cutouts, cutouts with arresters, capacitor bank vacuum switches, capacitor bushings, and bus support

Some of these devices focus on keeping snakes and four-legged predators out of substation. Birds, however, find substations desirable because they are isolated from those ground-based predators. Small-bird nests often draw avian predators into the station. Raptors are killed when marauding nests where the adjacent bushings and wires are not covered or sufficiently separated (most often on the low side). Raptors also find equipment and the supporting structures good nesting foundations for themselves. However, if they build nests in unsafe areas, two bad things can happen: 1) the nest or the young being raised in it will cause an outage, or 2) station will have to take an outage to insulate around, move, or remove the nest. Bushing and jumper covers are useful for preventing these faults.

Since raptors return annually to the same nest area, providing a dummy pole with a platform for the nest can be successful in relocating a pair to a safe location. With raptors nearby, small birds will be less likely to nest in the substation.

10.3 Transmission Standards

10.3.1 Electrocutions

The existing standards for new transmission structures typically provide enough spacing to preclude electrocutions. There are exceptions, most of which are with some 69 kV and fewer 138 kV configurations. Horizontal post designs can be troublesome on steel poles and with bonded bases on wood poles with insulators shorter than the wingspan of the larger birds found in the area.

Other unanticipated problems arise that require some form of retrofitting. At the lower transmission voltages, depending on design, insulator and conductor covers may be effective. At higher voltages perch discouragers are useful in moving birds to safer locations on the structure without denying them access to the structure they prefer.

10.3.2 Collisions

Birds collide with many things including structures and lines. Currently (2012), it is the shield wire on transmission structures that is most often implicated in bird collisions. A variety of devices can be used to increase the visibility of existing power lines. Sometimes a problem can be avoided by considering this possibility when choosing among the route alternatives for a new line.

10.3.3 Contamination

Large birds may perch over insulators where their droppings accumulate. Long ropes of waste that stay intact are known as “streamers.” Transmission outages can develop when this contamination closes the air gap. When the right mix of contaminants and moisture are present a flash from the phase to the grounded tower can occur. Whether or not the bird is a victim, structure damage can be severe. Perch deterrents and insulator shields are available to either move the bird away from the “drop zone” or to shield insulators from droppings. Many types of these devices have been used when the need occurred. In time, these types of devices may appear in Transmission Standards, but accommodating all the design and species differences generally requires a site-specific solution.

Existing transmission designs present varying electrocution and collision risk. When the design for a new line is proposed, avian risk avoidance should be on the pre-construction checklist of issues to examine.

11.0 RETROFITTING FOR COLLISIONS, ELECTROCUTIONS, AND NESTS

11.1 *Bird Collisions*

Collisions usually occur when birds fly at low altitude from roosts to feeding areas. In the day the conductors are usually visible at a sufficient distance to allow successful evasive action. At this point, most species choose a slight gain in altitude to over-fly the conductors. When the shield wire becomes visible, a bird's reaction time may be too short to alter course. Collision risk is increased by high winds, low light, rain, fog, snow, a rising or setting sun behind the lines, and when birds are flushed from the roost or foraging area. Nocturnal birds experience greater risk and available preventive devices are very limited. Possibilities include devices that glow and have both UV and light reflective surfaces. Regulators have required some companies to put high collision incident lines underground or reroute those that could not be otherwise retrofitted.

Areas where birds may frequently collide with power lines, e.g., near wetlands, water crossings, wildlife refuges, etc., or where agencies are concerned about the safety of protected birds, may be avoided if considered while routing options are open. When possible, avoid bird concentration areas and take advantage of the vegetation or topography that can guide birds over lines, e.g., placement next to cliffs or trees that the birds must fly over, and by doing so, clear the lines as well. If this is not possible, installing visibility-enhancing devices can reduce the collision risk. These devices include spirals, aerial marker spheres, and various flapping devices. Their effectiveness, when used properly, has been verified by research worldwide. Additional information may be found in the APLIC publication, *Mitigating Bird Collisions with Power Lines: State of the Art 1994 or latest edition – See AEP NOW/A-Z Index/Bird/Collision Mitigation*.

Marker balls, **Figure 11.7**, spirals, **Figures 11.1 - 4**, suspended devices, **Figure 11.5 and 64**, and other devices, when applied on shield wires or distribution voltage phase conductors increase the visibility of overhead lines.

Their spacing is a function of line caliber, device used, and collision risk, but except for aerial marker balls, which are subject to Federal Aviation Administration regulations, the usual spacing is 5 -20 meters depending on device used, the species, and the site.

The proximity of lines to bird-use areas, attractive vegetation, and topography that affects local and migratory flight should be considered when routing a new line or when determining the extent of remedial action its presence will require.

Figure 11.1 Examples of devices used to increase line visibility.

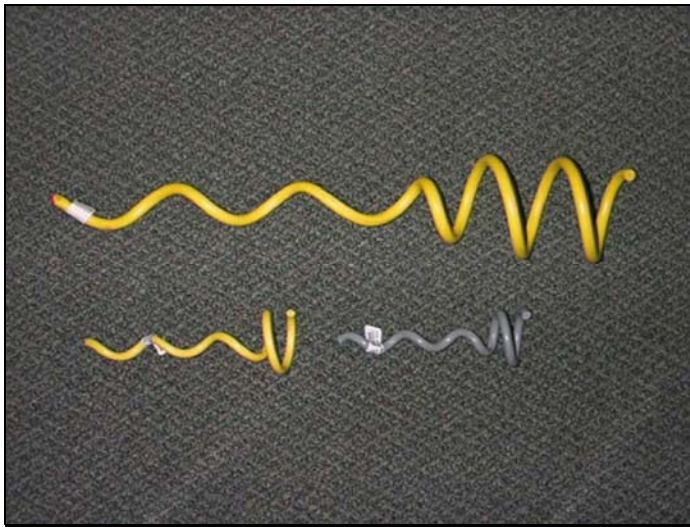


Figure 11.2 Spiral Bird Flight Diverters



Figure 11.3 Bird/Swan Flight Diverters, installed

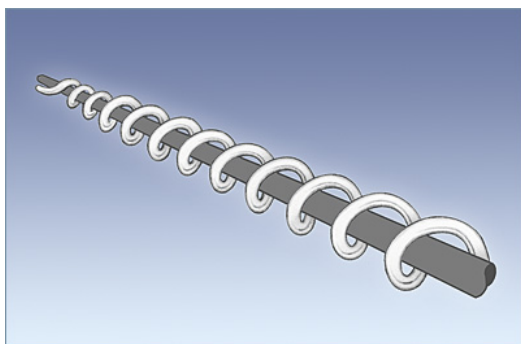


Figure 11.4 Spiral vibration damper



Figure 11.5 Waffle-design Flapper



Figure 11.6 Firefly – glowing, and reflective panels for visible and UV light.



Figure 11.7 Aerial Marker Sphere

11.2 Electrocution Prevention (Retrofitting Devices)

11.2.1 Covers

There are many types and sources for conductor, bushing, jumper and other equipment covers for use on systems up to 35 kV to prevent birds from making phase-to-phase or phase-to-ground contact. Some examples are shown below.

The details (future), including item stock number, will eventually be found at *AEP NOW/A-Z Index/Standards /Distribution/General*.



Figure 11.8 Bushing and Jumper Covers

Distribution standards specify that new reclosers will be installed with protective coverings. Older units without covers can be retrofitted so they look like those in **Figure 11.9**.



Figure 11.9 Transformer and Recloser Bushing Covers

Examples of other devices used for reducing avian electrocution risk.

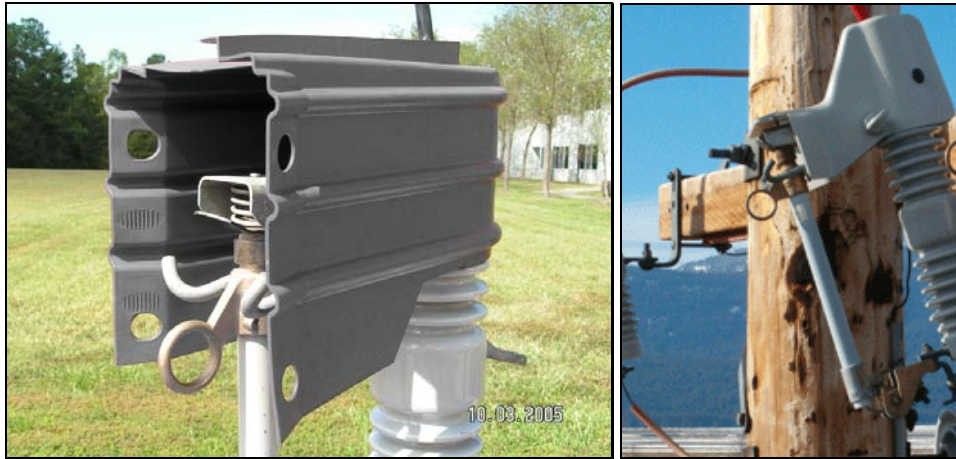


Figure 11.10 Cutout Covers – Tyco

Eco



Figure 11.11 Insulator and Conductor Covers (Tyco/Eco)



Figure 11.12 Transformer Bushing Covers (Tyco)



Figure 11.13 Barriers between phase and ground



Figure 11.14 Split-hose Jumper Cover

rotection Plan

11.2.2 Perch Diverters

“Triangles” can be placed between insulators to prevent birds from perching in this electrocution-risk area. They can also be used on transmission structures to prevent birds from perching above insulators susceptible to contamination. Note, however, this device is not always successful. Birds have been known to perch on them, in them, and build nests over them. Their best application is to guide birds to a safe perch on the same structure rather than preventing perching altogether. Their presence can also reduce the BIL and cause flashes in some conditions. In **Figure 11.15** an electrocution problem would be better handled by covering the center phase as shown in **Figures 11.10.5, Solution 1** then using the perch discourager.

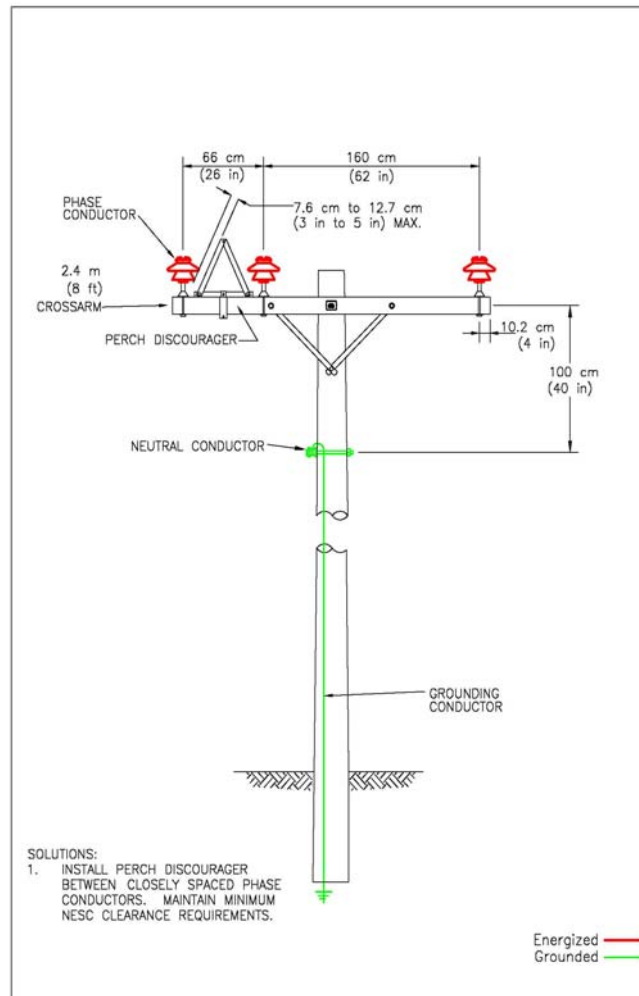


Figure 11.15 Triangular Perch Discourager.

11.3 Nests

Ospreys, hawks, and others large species are attracted to double-crossarmed poles in areas where they can find prey to feed their young. Though nests of these species may be removed when inactive, they will very likely be rebuilt in the next nesting season. **Figure 11.16** illustrates how strong the desire is to “come back home.” Perch deterrent triangles (once recommended for this use) provided a foundation for the next nest instead of prevention. A more successful alternative is to replace the existing crossarms with a single fiberglass crossarm. However, in a location that is very desirable like in **Figure 11.16**, the transformers might be chosen for the future nest foundation.



Osprey nest in a bad location (nest removed late in year)



Next season.

Figure 11.16 Nest Platforms

11.3.1 Nest Platforms

Platforms can be used on dummy poles or energized poles, **Figures 11.17** and **11.18**. They are used to relocate a nest that poses a risk to the birds or system reliability. Other nest platform designs are available and excellent platforms have been made from materials on hand in service centers or local hardware stores. Also see *A-Z Index/Bird/Suggested Practices/Chapter 6*.

In **Figure 11.19** there are directions for installing a safe, pole-mounted raptor nest platform when a dummy pole cannot be accommodated. Perch discouraging triangles might also be added to the perimeter of the platform to stabilize and center the nest.



Figure 11.17 Nest platforms on dummy poles.



Figure 11.18 Platform design and maintenance especially important on energized poles.

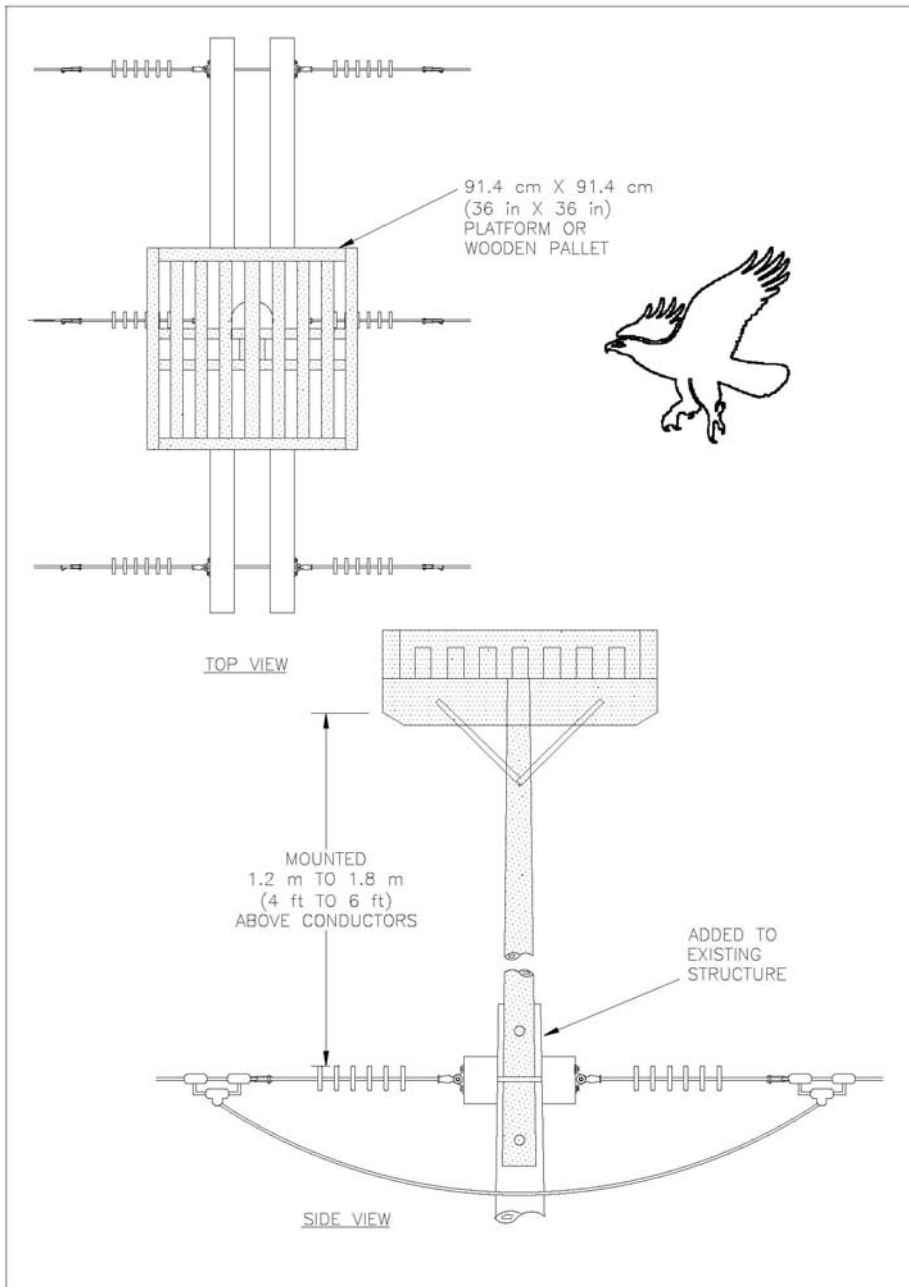


Figure 11.19 Raptor Nest Platform; perch deterrent triangles around the perimeter could help keep a nest centered.

(From *Suggested Practices for Avian Protection On Power Liners: the State of the Art in 2006*).

11.4 Budget

Bird protection labor and material costs will come from each AEP Operating Company's Distribution or Transco's operations and maintenance budget. When bird protection work is performed on energy delivery facilities, the labor and material costs must be reported on the BIRD form or as a follow-up after submitting the BIRD form to ES.

12.0 LEGAL ASPECTS OF BIRD INTERACTIONS

The USFWS enforces three federal acts that create compliance issues for the electric utility industry; they are the *Migratory Bird Treaty Act*,³ *Bald and Golden Eagle Protection Act*, and the *Endangered Species Act*. The agency seeks voluntary cooperation from the electric utility industry to implement bird-protection programs that help keep utility companies in compliance with the federal laws and reduce the mortality rate to birds that are protected by these laws, which are birds that are native to North America.

All three acts make the **taking** of a bird, with or without intent, a violation that may be tried in civil or criminal court. To **take** means to wound, collect, kill, harm, harass, or capture migratory birds or their nests. In addition, under the Eagle Act, to **disturb** is included in the definition of **take** (see Eagle Rules [Appendix E](#)). The laws further prohibit the possession and transport of either live or dead protected birds or their parts, eggs, or nests. Consequently, dead birds may only be removed from the site under the conditions stated in the AEP Federal Fish and Wildlife Special Purpose – Miscellaneous permit ([Appendix J](#)). Certain other large and small birds are also protected under the *Endangered Species Act*. These species are referred to as “threatened” or “endangered.” [Appendix B](#) lists federal and state endangered and threatened species in AEP territory, which may help identify bird species involved with structures and lines. There are also photos of large birds that are most often involved in electrocutions and collisions with in the AEP system.

Of the endangered birds in AEP service territory, the whooping crane has the greatest potential for conflict with power lines. Its large size and slow maneuverability have made collisions with power lines such a matter of concern that one USFWS regional office has issued guidance that recommends marking new transmission lines in the migration corridor and an equal number of miles of existing line in potential crane stopover habitat.

12.1 Fines and Penalties

The three federal acts that protect birds have similar fines and penalties. The table below is a short summary of the maximum penalties these laws allow.

One purpose of this APP is to continuously decrease the number of bird/power line incidents, and AEP’s liability under these acts.

	Misdemeanor	Felony	Civil
MBTA	\$15,000 / 6 mo Jail	\$500,000 / 2 yr Jail	
BGEPA	\$200,000 / 1 yr Jail	\$500,000 / 2 yr Jail	\$5,000
ESA		\$200,000 / 1 yr Jail	

³ Birds not considered “migratory” or protected by the MBTA are the house sparrow, European starling, common pigeon (rock dove), and monk parakeet.

12.2 Permit Compliance

AEP has service territory in the jurisdictions of 11 states and four USFWS regions. Region 3, headquartered in Fort Snelling, MN is administering the AEP permit for all four of the regions in which AEP operates. This permit contains conditions for handling nests and disposing of carcasses. See [Appendix J](#) for AEP's Federal Fish and Wildlife, Special Purpose – Miscellaneous permit.

12.3 Record Keeping

Federal regulations require that: Records for permits issued by USFWS will be maintained in accordance with 50 CFR 13.46: [Code of Federal Regulations] [Title 50, Volume 1] [Revised October 1, 2002]

From the U.S. Government Printing Office via GPO Access

[CITE: **50 CFR 13.46**] TITLE 50--WILDLIFE AND FISHERIES CHAPTER I--
UNITED STATES FISH AND WILDLIFE SERVICE, DEPARTMENT OF THE
INTERIOR PART 13--GENERAL PERMIT PROCEDURES

Subpart D--Conditions

Sec. 13.46, Maintenance of Records.

From the date of issuance of the permit, the permittee shall maintain complete and accurate records of any taking, possession, transportation, sale, purchase, barter, exportation, or importation of plants obtained from the wild (excluding seeds) or wildlife pursuant to such permit.

Such records shall be kept current and shall include names and addresses of persons with whom any plant obtained from the wild (excluding seeds) or wildlife has been purchased, sold, bartered, or otherwise transferred, and the date of such transaction, and such other information as may be required or appropriate. Such records shall be legibly written or reproducible in English and shall be maintained for five years from the date of expiration of the permit.

[39 FR 1161, Jan. 4, 1974, as amended at 42 FR 32377, June 24, 1977; 54 FR 38150, Sept. 14, 1989]

12.4 Legal Notice

1. Neither the law nor AEP's voluntary APP program authorizes the take of any migratory bird or endangered species by collision or electrocution.
2. Any information provided by AEP to the USFWS will be reviewed by the agency from the perspective of criminal prosecution for violations of bird protection laws.

APPENDIX A GLOSSARY

Active nest	A nest with eggs or young present. A nest being tended by two adult birds prior to egg-laying may sometimes be considered active. With colonial nesting birds, e.g., herons, when one active nest is on a structure, all the nests on that structure are considered active.
APLIC	APLIC: the Avian Power Line Interaction Committee is a separately funded EEI committee with members from EEI member companies, USFWS, public utility districts, municipal utilities, cooperatives, RUS, and NRECA. The committee focuses on research and education regarding bird electrocutions and collisions with electric utility facilities. www.aplic.org .
BGEPA	Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. 668-668d, 54 Stat. 250). The bald eagle population was declining at the time this act was passed by Congress. This act protects these two species beyond the protection provided them by the MBTA.
BIL	Basic impulse level or basic insulation level or basic impulse insulation level: The measure of a line's ability to withstand surge voltages.
Bird Interactions	The birds of legal concern are those that are native to North America and protected by the MBTA and/or ESA. Even though members and populations of a migratory species may remain in the same area year-around they remain protected by the MBTA. The interactions of concern are electrocutions, collisions, and nests.
ES	AEP Environmental Services
ESA	Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884). The ESA protects animals and plants listed as endangered or threatened of becoming extinct. In most cases, birds listed by the ESA are also covered by the MBTA. However Attwater's prairie chicken is an exception that is found in AEP territory.
Habitat Fragmentation	Changes from native vegetation to other uses such as agriculture, roads, and utility rights-of-way can create islands of habitat that are suitable for a species, but are too small to sustain the population confined to those boundaries. Fragmentation also limits the gene pool within the "island", which reduces a population's ability to recover after a weather disaster or an epidemic. This, with habitat loss, is believed to be a major contributor to the population declines of many birds.
Imminent danger	Due to the presence of a bird nest, there exists an impending danger of fire, bird electrocution, or threat to human life or property that requires immediate action. This is considered to be an

	<u>exceptional situation.</u>
Inactive nest	A nest that does not contain eggs or young birds. These nests may be removed from a structure if they are causing operational problems unless the nest is one of an <u>EAGLE</u> or <u>ENDANGERED SPECIES</u> .
MBTA	Migratory Bird Treaty Act of 1918, (16 U.S.C. 703-712; Ch. 128; July 13, 1918; 40 Stat. 755). The MBTA originally included the U.S., Canada, and Mexico. Russia and Japan were added later since all these countries share many of the same birds. The act protects birds that spend some of their lifecycle in North America from “take.” Take means to <u>wound</u> , <u>collect</u> , <u>kill</u> , <u>harm</u> , <u>harass</u> , <u>capture</u> , <u>possess</u> , or <u>transport</u> migratory birds or their parts or nests.
Migratory bird	A migratory bird is a legal term defined in the Migratory Bird Treaty Act with a list of birds that are found in North America in some part of their life cycle. There are 1,026 species listed (proposed in 2011). Upland game species like quail, grouse, and turkeys are protected by state laws and are considered protected in this APP, though not listed by the MBTA.
Overhead ground wire (OHGW)	The OHGW wire on a transmission line is also called the “shield”, “static,” or “sky wire.” It is there to conduct static electricity, shield the phase conductors and to take that static current from that overhead position to ground . It is also the wire with which birds most often collide. In this document it is referred to as the “shield” wire.
Perch	Place where a bird lands to rest, observe, guard or from which it may “still hunt.”
Preferred	Refers to utility structures located in areas that meet a bird’s need for hunting, resting, roosting, nesting, or defending territory. A structure that is frequently used rather than randomly used.
Problem nest	A nest that may cause electrocution and death to bird occupants, electrical outage, property damage, or otherwise interfere with power operations.
Problem pole	A pole, that by its configuration or location, is involved in repeated bird fatalities. Equipment poles, riser poles and wiring arrangements with inadequate spacing for the affected species are examples of problem poles. Problem poles are usually located in areas that provide attractive habitat for the species involved.
Raptor	Bird of prey, e.g., eagle, hawk, falcon, and owl. Raptors use utility poles for perching, nesting, defending territory, and still hunting.
Riparian	Relating to the bank of a natural watercourse (as a river) or sometimes of a lake or a tidewater.

Roost	A place where a bird perches or flocks of birds perch to sleep.
Shield wire	This term is used in this document synonymously with the OHGW, “static,” or “sky” wire on a transmission line. It is there to conduct static electricity, shield the phase conductors and to take lightning current from that overhead position to ground without damage to the phase conductors. It is also the wire with which birds most often collide.
Site-tenacious	An instinct characterized by a bird’s willingness to occupy and defend what it considers its territory year after year. It brings mating pairs back to the same nest site every year.
State species of concern	A locally threatened species which is given additional protection by state regulations. State agencies may require reporting mortalities and problem nests of these species. For more information about those species of concern that do not appear on the federal endangered and threatened species list, contact ES (also see Appendix B.2).
Static wire	The OHGW wire on a transmission line is also called the “shield”, “static,” or “sky wire.” It is there to conduct static electricity, shield the phase conductors and to take lightning current from that overhead position to ground without damage to the phase conductors. It is also the wire with which birds most often collide. In this document it is referred to as the “shield” wire.
Still hunting	Hunting from a perch. This is an energy-saving strategy birds will use when a perch is available in areas where there is prey.
Take	To pursue, hunt, shoot, wound, kill, trap, capture, or attempt to collect, wound, kill, trap, capture, or collect. This refers to birds, nests, eggs, and other bird parts such as feathers! The MBTA, BGEPA and ESA have variations in definition, but all are essentially captured by the description above.
Threatened and endangered species	Species that are threatened with extinction and protected by federal law (<i>Endangered Species Act</i>). For more information or help with species identification, contact ES. Species listed in 50 CFR 17.11 - 17.12.
USFWS	The United States Fish and Wildlife Service , an agency of the Department of Interior charged with fish and wildlife conservation and with enforcing the laws that apply to fish and wildlife.

APPENDIX B IDENTIFYING LARGER BIRDS

B.1 AEP Service Area Species List

Included in this section are illustrations of larger birds that sometimes fall victim to electrocution. The names in bold in the list below indicate some of the large birds more often encountered in AEP territory. Those in blue are on the list of federally threatened/endangered species.

1. **Aplomado falcon**
2. American kestrel
3. **Bald eagle**
4. Barred owl
5. **Black vulture**
6. Broad-winged hawk
7. Brown pelican
8. **Canada goose**
9. **Common raven**
10. Cooper's hawk
11. Crested caracara
12. Ferruginous hawk
13. Golden eagle
14. **Great blue heron**
15. Great egret
16. Great gray owl
17. **Great-horned owl**
18. Gyrfalcon
19. Harris' hawk
20. Merlin
21. Northern goshawk
22. Northern harrier
23. **Osprey**
24. Peregrine falcon
25. Prairie falcon
26. **Red-tailed hawk**
27. Rough-legged hawk
28. Sandhill crane
29. Screech owl
30. Sharp-shinned hawk
31. Swainson's hawk
32. **Turkey vulture**
33. **Whooping crane**

Some of these species may appear frequently in some areas of AEP's service area and not at all in others. An example is the crested caracara. It may be found in much of Texas at times, but is most common along the Texas coast and the Rio Grande Valley. It is not found anywhere else in the AEP system.

Many interactions are caused by smaller birds – crow-sized and smaller. Often flocking birds like blackbirds, pigeons, and doves cause outages because they cause conductor gallop when they are startled into flight or become conductors themselves when perched close together.

Most states have their own threatened and endangered species lists that may include birds that are not on the federal list. For AEP incident reporting, the federal acts will guide the reporting process. Every bird on a state's threatened and endangered list is also protected by the Migratory Bird Treaty Act.

B.2 Threatened and Endangered Species

Birds may be listed as threatened or endangered by state and federal governments. The list below includes all the federal and state T&E species found in AEP territory.

States' lists of T&E species may differ with the federal list and with each other. Birds on state lists that are not on the federal list are given greater attention and protection by the state than birds not listed, but they do not have the same status as the federally listed species. Some states list species that are common elsewhere.

The *Endangered Species Act*, *Bald and Golden Eagle Protection Act*, and the *Migratory Bird Treaty Act* are the three laws that protect birds. The listing below indicates the states each species is most likely to be encountered.

B.3 Federal and State Threatened and Endangered Species in AEP Territory

Federal Endangered Species

- Interior least tern (TX OK LA AR IN OH KY WV VA)
- Northern aplomado falcon (TX)
- Red-cockaded woodpecker (KY TN OK TX LA AR)
- Whooping crane (OK TX)

Federal Threatened Species

- Mexican spotted owl (TX)

Protected by the Bald and Golden Eagle Protection Act

- Bald eagle (All states in AEP Territory)
- Golden eagle (Indigenous in West Texas, occasional elsewhere in AEP Territory)

State Endangered Species⁴

- Bald eagle (IN LA MI OH TN)
- Barn owl (IN MI)
- Black-crowned night heron (IN)
- Brown pelican (LA TX)
- Cattle egret (OH)
- Great egret (TN)
- Long-eared owl (MI)
- Merlin (MI)
- Northern aplomado falcon (TX)
- Northern harrier (IN OH TN WV)
- Osprey (IN MI)
- Peregrine falcon (all but KY and VA)
- Red-shouldered hawk (MI)
- Sandhill crane (OH)
- Sharp-shinned hawk (TN)
- Short-eared owl (IN)
- Snowy egret (OH)
- Trumpeter swan (IN MI OH)
- Whooping crane (OK TX [IN⁵ LA⁶])
- Yellow-crowned night heron (IN)

State Threatened Species or Species of Concern

- American black duck (WV)
- Bald eagle (AR KY OK TX WV)
- Common black hawk (TX)
- Cooper's hawk (WV)
- Golden eagle (TN)
- Gray hawk (TX)
- Great blue heron (WV)
- Long-eared owl (WV)
- Northern goshawk (WV)
- Northern raven (TN)
- Reddish egret (TX)
- Red-headed woodpecker (WV)
- Saw-whet owl (TN WV)
- Sharp-shinned hawk (WV)
- Short-eared owl (WV)
- Swallow-tailed kite (TX)
- White-faced ibis (TX)
- White-tailed hawk (TX)
- Wood stork (TX)
- Zone-tailed hawk (TX)










⁴ State threatened and endangered species are often the same as the federal T&E species. There are some species, however, that do not appear on the federal list, but are rare or are species of concern in a particular state. This list is taken from the species listed by each state in the AEP system.

⁵ May be found in Indiana during the migration of an experimental population that nests in Wisconsin and winters in Florida.

⁶ Louisiana lists the whooping crane as extinct or nearly extinct in that state, but plans are underway to establish a year-around population in southwestern Louisiana.

B.4 Large Bird Electrocutation Victims

These photos represent some of the large species in AEP territory involved in electrocutations and collisions.


















		
Great-horned owl	Red-tailed hawk	Bald eagle
		
Turkey vulture	Canada goose	Brown pelican
		
Great blue heron	Cattle egret	Common raven

B.5 AEP Bird Species ID Cards





















Three AEP zones are represented on the following cards: AEP East, TCC, and AEP West. The reverse side, the non-protected birds, of each card is the same as the one shown in [Figure B.4.1](#).

Also see *A-Z Index/Bird/ID Cards*.












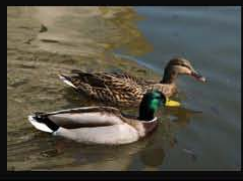








AEP Bird Identification Guide – AEP East

BALD EAGLES AND NESTS VS. OSPREY NEST			
			
Bald Eagle	Bald Eagle - young	Eagle Nest	Osprey & Nest
OTHER PROTECTED SPECIES			
			
Red-tailed Hawk	Great-horned Owl	Heron	Geese/Swans
			
Red-shouldered Hawk	Barn Owl	Crane	Ducks
			
Osprey	Barred Owl	Egrets	Pileated Woodpecker
			
Cooper's Hawk	Screech Owl	Raven (KY, TN, VA, WV)	Turkey Vulture









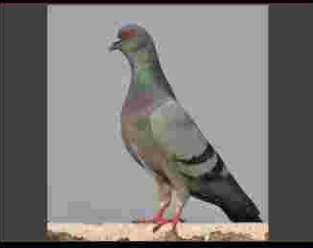



AEP® Bird Identification Guide - TCC

EAGLES AND ENDANGERED SPECIES			
			
Bald Eagle	Bald Eagle-Young	Aplomado Falcon	Whooping Crane
OTHER PROTECTED SPECIES			
			
Red-tailed Hawk	Great-horned Owl	Heron	Goose/Swan
			
Harris's Hawk	Barred Owl	Cranes	Ducks
			
Osprey	Screech Owl	Egrets	Roseate Spoonbill
			
Turkey Vulture	Brown Pelican	Ibis	Ravens/Crows

AEP Bird Identification Guide – AEP West

EAGLES AND ENDANGERED SPECIES			
			
Bald Eagle	Golden Eagle (TX)	Aplomado Falcon (TX)	Whooping Crane (TX, OK)
OTHER PROTECTED SPECIES			
			
Red-tailed Hawk	Great-horned Owl	Herons	Geese/Swans
			
Harris's Hawk (TX)	Barn Owl	Cranes	Ducks
			
Osprey	Barred Owl	Egrets	Prairie Chicken (OK, TX)
			
Turkey Vulture	Screech Owl	Pileated Woodpecker	Raven (TX, OK)

Egg and Nest Identification of NON-PROTECTED Bird Species

S T A R L I N G			
S P A R R O W			
		Female	male
P I G E O N			
M O N K			

To report an incident or to ask a question: David Bouchard, 1201 Elm St., Suite 800, Dallas, TX 75270 or PO Box 660164, Dallas, TX 75270-0164. Email dcbouchard@aep.com, Fax – 214-777-1138, Phone: 214-777-1109, Cell – 214-536-6993.

Note: These four species are found or are potentially found (monk parakeet) throughout the AEP system.

Figure B.4.1 Non-Protected Bird Species



AEP Avian Protection Plan

APPENDIX C – BIRD REPORTING FORM



BIRD Incident Reporting Document

CONTACT INFORMATION

Who found the bird(s): Phone number:	Date:
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FATALITY/INJURY DETAILS

Type of bird (e.g., eagle ^{* see reverse side} , hawk, owl, vulture (buzzard), crow, raven, heron/egret, goose or other waterfowl, or other if known)			
Number of birds involved			
Condition of the bird: Alive <input type="checkbox"/> Dead <input type="checkbox"/> [If bird is alive, call David Bouchard (214-777-1109)]			
Injuries observed: Singed Feathers <input type="checkbox"/> Severe Burns <input type="checkbox"/> Exit Wound <input type="checkbox"/> None Visible <input type="checkbox"/>			
Was dead bird Buried on site ^{** see reverse side} <input type="checkbox"/> Left on Ground <input type="checkbox"/> Disposed of Otherwise <input type="checkbox"/> (explain)			
Cause of fatality/injury: Electrocuton <input type="checkbox"/> Collision <input type="checkbox"/> Unknown <input type="checkbox"/> Other <input type="checkbox"/> (explain)			
If a collision occurred, what did the bird strike? Neutral Line <input type="checkbox"/> Phase Conductor <input type="checkbox"/> Shield Wire <input type="checkbox"/> Structure <input type="checkbox"/> Other <input type="checkbox"/> (explain)			
Was there an outage? Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> If yes, Time Outage Occurred: Time Power Restored: Outage Number:			
If no, was there a Recloser Operation? Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/>			

CONTACT/DAMAGE LOCATION ON STRUCTURE

With what parts of the structure did the bird make contact?	
Voltage at contact point: kV	What structure/equipment was damaged?
Where was bird found? (e.g., location on the structure, at its base, etc.)	

DISTRIBUTION

Was this an equipment pole? Yes <input type="checkbox"/> No <input type="checkbox"/>	Number of Phases	Number of Circuits
If yes, what equipment is attached?		
Pole location number		
Is there a crossarm? Yes <input type="checkbox"/> No <input type="checkbox"/> If Yes, what is its length? ft.		
If no, how is it configured?		

TRANSMISSION

Type of structure (Lattice Tower, H-Frame, Single Pole, etc.)		
Is there a distribution underbuild? Yes <input type="checkbox"/> No <input type="checkbox"/>		
Is there a shield wire? Yes <input type="checkbox"/> No <input type="checkbox"/>		
Structure No.:	Crossarm type/length (if applicable)	ft.

SUBSTATION

Substation name and number:

LOCATION OF INCIDENT

State:	Nearest city or town:	District:	OMS Area
GPS, Intersection, or Address:			

ENVIRONMENTAL CONDITIONS

Surrounding environment (check all that apply):

Wooded Grassland/Field Wetland Shoreline Lake/Pond/Stream Cultivated Flat Rolling Hilly Rural Suburban Urban
 Residential Industrial Commercial

Weather conditions when bird incident occurred: Clear Fog Wind Snow Rain Unknown Other – (describe):

Is there a nest on the structure? Yes No

If yes, is the nest active (eggs or young present)? Yes No Unknown

If yes, call David Bouchard (214-777-1109 or 214-536-6993)

PROTECTION / RETROFIT MEASURES

Is there bird/animal/wildlife protection on the structure? Yes No If Yes, check beside each protection device present:

Electrocution Related		Collision Related
Bushing cover(s) (transformers, arresters, cutouts)	Perch guard(s)	Bird flapper device
Conductor spacing increased	Pole-top perching extension	Bird or swan flight diverter
Elevated perch	Primary insulator and conductor cover	Spiral vibration damper
Extension link	Bird deterrent device describe:	Aviation spheres
Ground wire cover/insulation	Nest platform	Other (describe):
Jumper wire cover/insulation	Move or remove nest	
Jumper wire(s) suspended under crossarm	Other bird/animal protection (describe):	

ADDITIONAL INFORMATION / PHOTOGRAPHS / SUGGESTIONS ON PREVENTION

If possible include photographs of structure, surroundings, close-up of carcass and injuries, nest, and burn marks on structure/equipment where contact was made. If the bird is on the ground, photograph it with something beside it for reference, e.g., ruler, coin, pen, etc.

Send report to David Bouchard, 1201 Elm St., Suite 800, Dallas, TX 75270
Or Email dcbouchard@aep.com, Fax: 214-777-1138, Office: 214-777-1109, Cell: 214-536-6993.

***EAGLE** laws are stricter, which means USFWS must retrieve the carcass from the site. In addition, if a nest is found on AEP equipment, it may not be handled (trimmed or removed) without agreement from USFWS. If you encounter an eagle or eagle nest, call D. Bouchard as soon as possible to make these arrangements.

****Birds** that are not eagles may be buried on site or may be transported for disposal according to the conditions of AEP's Federal Fish and Wildlife permit. If neither method is feasible, carcasses may be left where or near where they were found. **Nests** if inactive (no eggs or young) may be removed from the structure if they could cause operational or safety problems. If nests are active they may not be moved or removed without a permit. If the nest is an imminent danger (definite hazard to the birds, public, or operations) it may be removed and placed on the ground. Notify D. Bouchard immediately when this occurs.

APPENDIX D KEY RESOURCES

D.1 AEP Contacts

Environmental Services

Contact David Bouchard – Environmental Services, Water and Ecological Resource Services (ES) regarding bird injuries or mortalities, or to obtain a permit or permission to move, remove, trim, etc., an active nest.

Phone: 214-777-1109

Cell: 214-536-6993

Fax: 214-777-1138

Email: dcbouchard@aep.com

ES will contact USFWS for the authorization for nest management or for carcass disposal (endangered species or eagles). ES is also available for technical assistance for bird-related siting, design, retrofitting, and mitigation issues.

If David Bouchard is not available at the time of the call, leave a voice mail message. If the message indicates he is out of the office leave a message and follow-up with a cell phone call to 214-536-6993.

If the phone message indicates D. Bouchard is unavailable, call David Hall, Environmental Services, Water and Ecological Resource Services (ES)

Phone: 214-777-1072

Cell: 469-878-3676

Fax: 214-777-1138

Email: dbhall@aep.com

Region Environmental Coordinators

East		West	
Rick Dietz	Dave Shipe	Dave Durler	Becky McJunkins
Bill Kasson	Joe Robinson	John flood	Alan Cox
Jenni Miller	Ray Wirt	Kevin Smothermon	
Tom Campbell	Bryan Barker	Julia Rogers	
Danny Dooley		Diana Perez	

D.2 Federal and State Agencies

The following is a list of federal and state agency contacts. ES will report bird mortalities to appropriate agencies, and will assist in contacting local agencies if assistance is required for an injured bird or if it is necessary to deal with an active nest.

U.S. Fish & Wildlife Service.....(USFWS)	Ohio Division of Wildlife.....(ODW)
Arkansas Game and Fish Commission.....(AGFC)	Oklahoma Dept of Wildlife Conservation.....(ODWC)
Indiana Department of Natural Resources.....(IDNR)	Tennessee Wildlife Resources Agency.....(TWRA)
Kentucky Dept of Fish and Wildlife Resources...(KDFWR)	Texas Parks and Wildlife Department.....(TPWD)
Louisiana Department of Wildlife and Fisheries....(LDWF)	Virginia Dept of Game and Inland Fisheries....(VDGIF)
Michigan Department of Natural Resources.....(MDNR)	West Virginia Div of Natural Resources.....(WVDNR)

United States Geological Survey's Bird Banding Laboratory:

<http://www.pwrc.usgs.gov/bbl/>

D.3 USFWS and State Contacts

D.3.1 Arkansas

ARKANSAS	Arkansas Game and Fish Commission	USFWS
		RAC - Robert Oliveri, Jackson, MS 601-965-4699
Northwest Regional Office	455 Dam Site Road Eureka Springs , AR 72631 479-253-2506 1-866-253-2506	Special Agent, Little Rock, 501-324-5643
Southwest Regional Office	7004 Highway 67 E Perrytown, AR 71801 1-877-777-5580 870-777-5580	
Fort Smith Regional Office - Fort Chaffee	8000 Taylor Avenue Fort Smith, AR 72917 1-877-478-1043 - Toll Free 479-478-1043	

D.3.2 Indiana

INDIANA	Indiana Department of Natural Resources	USFWS
District 2 Headquarters	1353 South Governors Drive Columbia City, IN 46725-9539 (260) 244-3720	Special Agent, Indianapolis, 317-346-7014
District 4 Headquarters	3734 Mounds Rd. Anderson, IN 46017 (765) 649-1062 email: icodistrict4@iquest.net	
District 10 Headquarters	100 W. Water Street Michigan City, IN 46360 (219) 879-5710	

D.3.3 Kentucky

KENTUCKY	Kentucky Department of Fish and Wildlife Resources	USFWS
Northeastern KY	Capt. Paul Teague, 606-498-2840, office in Montgomery County	Special Agent, Louisville, 502-582-5989
Southeastern KY	Capt. Ken Ambergey, 606-785-0712	Special agent, Frankfort, 502-695-2722

D.3.4 Louisiana

LOUISIANA	Louisiana Wildlife and Fisheries	USFWS
[Parishes]		
Minden	1401 Talton Street Minden, LA 71055 Phone (318) 371-3049 Fax (318) 371-3332	Special Agent, Lafayette, 337-291-3114
Alexandria	1995 Shreveport Highway Pineville, LA 71360 Phone (318) 487-5634 Fax (318) 487-5636	Special Agent., Monroe, 318-325-1735

D.3.5 Michigan

MICHIGAN	Michigan Department of Natural Resources	USFWS
	Law Enforcement - 517-373-1230	RAC, Ann Arbor, 734-971-9755
Plainwell Operations Service Center	621 North 10th Street Plainwell, MI 49080 269-685-6851	

D.3.6 Ohio

OHIO	Ohio Division of Wildlife	USFWS
[Counties]		
Adams	Chris Gilkey (937) 372-5639 X5205	Special Agent, Delaware/Columbus, 740-368-0137
Allen	Craig Barr (419) 429-8379	ES – Megan Seymour, 614-416-8993 x 16
Ashland	Brian Banbury (330) 644-3802 X3201	
Ashtabula	Wade Dunlap (330) 644-3802 X3219	
Athens	Chris Dodge (740) 589-9980	
Auglaize	Matthew Hoehn (937) 372-5639 X5218	
Belmont	Brian Baker (740) 589-9981	
Brown	Allan Wright (937) 372-5639 X5220	
Butler	Aaron Ireland (937) 372-5639 X5207	
Carroll	Dan Shroyer (330) 644-3802 X3205	

Champaign	Jeffrey Tipton (614) 644-3929 X1201	
Clark	Byron Rice (937) 372-5639 X5212	
Clermont	Terence Glynn (937) 372-5639 X5209	
Clinton	Matthew Roberts (937) 372-5639 X5206	
Columbiana	Scott Angelo (330) 644-3802 X3212	
Coshocton	Garth Goodyear (740) 589-9982	
Crawford	Jason Parr (419) 429-8380	
Cuyahoga	Jason Hadsell (330) 644-3802 X3216	
Darke	Dwight Edwards (937) 372-5639 X5208	
Defiance	Matthew Smith (419) 429-8381	
Delaware	Leighland Arehart (614) 644-3929 X1225	
Erie	Kevin Good(419) 429-8382	
Fairfield	Brad St. Clair(614) 644-3929 X1203	
Fayette	Roy Rucker (614) 644-3929 X1204	
Franklin	Brad Kiger (614) 644-3929 X1205	
Fulton	Robert Wolfrum (419) 429-8383	
Gallia	Roy Rucker (740) 589-9983	
Geauga	Scott Denamen (330) 644-3802 X3218	
Greene	Matthew Hunt (937) 372-5639 X5204	
Guernsey	Roby Williams 740-589-9984	
Hamilton	Josh Zientek (937) 372-5639 X5217	
Hancock	Matthew Leibengood(419) 429-8384	
Hardin	Ryan Kennedy (419) 429-8385	
Harrison	Neil Lynskey (330) 644-3802 X3206	
Henry	Robert Hesterman (419) 429-8386	
Highland	Jim Carnes (937) 372-5639 X5214	

Hocking	Troy Reimund (740) 589-9985	
Holmes	Jeremy Carter (330) 644-3802 X3202	
Huron	Jeff Collingwood (419) 429-8387	
Jackson	Ted Witham (740) 589-9986	
Jefferson	Timothy Stevens (330) 644-3802 X3207 Dan Cramer	
Knox	Mike Miller (614) 644-3929 X1206	
Lake	Tom Rowan (330) 644-3802 X3217	
Lawrence	Darin Abbott (740) 589-9987	
Licking	Bill Bullard (614) 644-3929 X1207	
Logan	Scott Sharpe (614) 644-3929 X1208	
Lorain	Randy White (330) 644-3802 X3215	
Lucas	Kevin Newsome (419) 429-8388	
Madison	Roger Niese (614) 644-3929 X1209	
Mahoning	David J. Brown (330) 644-3802 X3213	
Marion	William Runnels (614) 644-3929 X1210	
Medina	Rick Louttit (330) 644-3802 X3208	
Meigs	Josh Shields (740) 589-9988	
Mercer	Ryan Garrison (937) 372-5639 X5210	
Miami	Jasmine McConnell (937) 372-5639 X5215	
Monroe	Wes Feldner (740) 589-9989	
Montgomery	Trent Weaver (937) 372-5639 X5211	
Morgan	Todd Stewart (740) 589-9990	
Morrow	Dirk Cochran (614) 644-3929 X1211	
Muskingum	Michael Reed (740) 589-9991	
Noble	Brad St. Clair (740) 589-9992	

Ottawa	John Waltos (419) 429-8389	
Paulding	Duane Bailey (419) 429-8390	
Perry	Eric Lane (740) 589-9993	
Pickaway	Ken Bebout (614) 644-3929 X1212	
Pike	Matt Van Cleve (740) 589-9994	
Portage	Barry Hennig (330) 644-3802 X3210	
Preble	Brian Goldick (937) 372-5639 X5219	
Putnam	Jason Porinchok (419) 429-8391	
Richland	Gregory Wasilewski (419) 429-8392	
Ross	Bob Nelson (740) 589-9995	
Sandusky	Brian Bury (419) 429-8393	
Scioto	Matt Clark (740) 589-9996	
Seneca	Jim Davis (419) 429-8394	
Shelby	Tim Rourke (937) 372-5639 X5213	
Stark	Mark Basinger (330) 644-3802	
Summit	Jason Warren (330) 644-3802 X3209	
Trumbull	Jerrod Allison (330) 644-3802 X3214	
Tuscarawas	John Suchora (330) 644-3802 X3204	
Union	Christopher Rice (614) 644-3929 X1213	
Van Wert	Brad Buening (419) 429-8395	
Vinton	Jared Abele (740) 589-9997	
Warren	Rick Rogers (937) 372-5639 X5216	
Washington	Eric Bear (740) 589-9998	
Wayne	Eric Ucker (330) 644-3802 X3203	
Williams	Thomas Kochert (419) 429-8396	
Wood	Martin Baer (419) 429-8397	
Wyandot	Brad Baaske (419) 429-8398	

D.3.7 Oklahoma

OKLAHOMA	Oklahoma Department of Wildlife Conservation	USFWS
[Counties]		
Craig	Jim Gillham, Nowata .918-440-0029	RAC, Edmond, 405-715-0617
Atoka	Larry Luman, Atoka. 580-513-0081 Lt. Joe Young, Atoka 580-513-4823	
Caddo	Gary Roller, Clinton 405-590-5696 James Edwards Jr., Carnegie (405) 850-1960	
Choctaw	Jay Harvey, Bennington 580-513-0814 Wendall Smalling, Hugo 580-317-5000	
Cleveland	Lt. Tony Woodruff, Lexington 405-850-9757 Chad Strang, Moore 405-323-7863	
Coal	Todd Smith, Coalgate 580-927-5071	
Comanche	Mike Carroll, Lawton 580-695-7535	
Cotton	Bill Hale, Duncan 580-512-4704 Mike Carroll, Lawton 580-695-7535 Phillip Cottrill, Ryan 580-313-0451	
Craig	Jim Gillham, Nowata 918-440-0029	
Custer	Lt. James L. Edwards, Thomas 580-695-3642	
Delaware	Bill Hobb, Jay 918 857-8597 Jim Littlefield, Afton 918533-2678	
Dewey	Clint Carpenter, Putnam 580-623-3255	
Grady	Lt. Gene Pester, Tuttle 405.779-1479	
Greer	Dane Polk, Mangum. 580-450-7706	
Harmon	Brandon Lehrman, Hollis 580-450-7701	
Haskell	Rick Olzawski, Stigler 918-429-3122 Leland Sockey, Stigler 918) 429-3123	
Hughes	Tom Cartwright, Holdenville 405-380-6729	
Jackson	Greg Sexton, Altus 580-450-7702	
Jefferson	Phillip Cottrill, Ryan 580-313-0451	
Johnston	Curtis Latham, Tishomingo 580-320-2948 Bud Cramer, Jr, Tishomingo 580-320-2950	
Kay	Marshall Reigh, Medford 580-541-6087 Lt. Tracy Daniel, Ponca City 580-761-6565	

Kiowa	David Smith, Hobart 580-450-7703	
Latimer	Allan Couch, Clayton 580-271-0808 Shane Fields, McAlester 918-470-5097	
McCurtain	Dru Polk, Smithville 580-513-6866 Kenny Lawson, Idabel 580-513-4963 Mark Hannah, Broken Bow 580-513-4651	
McIntosh	David Robertson, Henryetta 918-625-5971 Lt. Mike Stafford, Eufaula 918-617-0326 Ed Rodebush, Eufaula 918-617-0126	
Mayes	Steve Loveland, Pryor 918-857-4802 Monte Reid, Locust Grove 918-373-0767	
Nowata	Jim Gillham, Nowata 918-440-0029	
Okfuskee	Lt. Carlton Sallee, Weleetka 580-320-2949 Dwight Luther, Slick 918-625-6363	
Okmulgee	Patrick Matlock, Henryetta 918-625-6013 David Robertson, Henryetta 918-625-5971	
Osage	Larry Green, Ponca City 580-761-4097 Paul Welch, Skiatook 918-381-4099 Spencer Grace 918-440-9880	
Pittsburg	Lt. Todd Tobey, McAlester 918-429-3908 Shane Fields, McAlester 918 470-5097	
Pottawatomie	Mike France, Shawnee 405-850-8546	
Pushmataha	Allen Couch, Clayton 580-271-0808 Eric Barnes, Antlers 580-513-5014	
Roger Mills	Lt. Loren Damron, Cheyenne 580-497-6897	
Rogers	Lt. Brek Henry, Claremore 918-857-8563 Steve Loveland, Pryor 918-857-4802	
Stephens	Bill Hale, Duncan 580-512-4704	
Tillman	Robin Pugh, Frederick 580-305-1484	
Tulsa	Carlos Gomez, Jenks 918-857-5557	
Wagoner	Don Cole, Porter 918-625-5796 Marvin Stanley, Wagoner 918-625-5085	
Washington	Joe Alexander 918-640-0316	
Washita	Jeff Headrick, Burns Flat 580-515-4484	

D.3.8 Tennessee

Tennessee		USFWS
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		220 Great Circle Road, Suite 150 Nashville, TN 37228 P: (615) 736-5532
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D.3.9 Texas

TEXAS	Texas Parks and Wildlife Department	USFWS
Baylor, Fisher, Foard, Hardeman, Haskell, Jones, King, Knox, Nolan, Shackelford, Stevens, Stonewall, Taylor, Throckmorton, Wilbarger.	281 North Willis Abilene, Tx 79603 325-673-3333 Lacy Loudermilk (2011)	RAC – San Antonio, 210-681-8419
Aransas, Goliad, Refugio	715 S. Highway 35 Rockport, Tx 78382 361-790-0312	Special Agent, Corpus Christi, 361-289-5037
Bee, Brooks, Jim Wells, Kenedy, Kleberg, Live Oak, Nueces, San Patricio, Willacy	5541 Bear Lane Corpus Christi, Tx 78405 361-289-5566	Special Agent, Fort Worth, 817-334-5202
Coke, Iraan, Schleicher, Sterling, Sutton, Tom Green	3407 S. Chadbourne San Angelo, Tx 76904 325-651-4844	Special Agent, Laredo, 956-729-0617
Crane, Crockett, Ector, Glasscock, Loving, Midland, Pecos, Reagan, Terrell, Upton, Ward, Winkler	4500 West Illinois Midland, Tx 79703 432-520-4649	Special Agent, McAllen, 956-686-8591, 956-279-0769
Brewster, Culberson, El Paso, Hudspeth, Jeff Davis, Presidio, Reeves	401 East Franklin El Paso, Tx 79901 915-834-7050	Special Agent, San Antonio, 210-681-8419
Brown, Callahan, Coleman, Concho, Eastland, McColloch, Mills, Runnels	301 Main Brownwood, Tx 76801 325-646-0440	Special Agent, Victoria, 361-575-8608
Atacosa, Bandera, Bexar, Comal, Duvall, Guadalupe, Jim Hogg, Karnes, LeSalle, McMullin, Medina, Star, Webb, Zapata	858 Rhapsody San Antonio, Tx 78216 210-348-7375	
Cameron, Hildago	5460 Paredes Line Road Brownsville, Tx 78521 956-546-1952	
Bowie, Camp, Cass, Delta, Franklin, Hopkins, Lamar, Marion, Morris, Red River, Titus	212 South Johnson Mt. Pleasant, Tx 75455 903-572-7966	
Gregg, Harrison, Panola, Rusk, Smith, Upshur, Van Zandt, Wood	3330 S. Southwest Loop Tyler, Tx 75701	
Rains	346 Oaks Trail Garland, Tx 75043 972-226-9966	

Cottle, Dickens, Motley	1702 Landmark Ln Lubbock, Tx 79415 806-761-4930	
Childress, Collingsworth, Donley, Hall	203 West 8 th Amarillo, Tx 79101 806-379-8900	

D.3.10 Virginia

VIRGINIA	Virginia Department of Game and Inland Fisheries	USFWS
	1796 Highway Sixteen, Marion, VA 24354 (276) 783-4860	Special Agent Richmond, VA 804/771-2883, ext. 23

D.3.11 West Virginia

WEST VIRGINIA	West Virginia Department of Natural Resources	USFWS
	Law Enforcement Section Division of Natural Resources Bldg. 3, Capitol Complex Charleston, West Virginia 25305 law@wvdnr.gov 304-558-2784 (Officer Gary Amick)	Same as VA

D.4 Wildlife Rehabilitators in AEP States

Tips for Rescue*

"Good Samaritan" laws allow you to rescue and retain raptors in pain or peril until professional help is found. However, you cannot keep and rehabilitate birds without a federal permit.

- 1.** An unflighted bird may be captured with a large fishing net, a jacket tossed over it, or a large cardboard box placed over the bird. Baby birds can be returned to their nests (when accessible) and not be rejected by the parents.
- 2.** Wear thick gloves. Raptors use their talons for defense, and most bite hard. Cover the bird's head to block its vision for easier handling.
- 3.** House the patient in a large cardboard box with flaps or cover (never a wire cage). Punch air holes in the box before placing the bird inside. Pad the box floor with newspaper, not towels (talons get caught). Store the box in a dark, quiet, climate-controlled room away from pets and family. Never play with a baby bird.
- 4.** Do NOT offer any food or water unless instructed to by a qualified rehabilitator.
- 5.** Contact a rehabilitator immediately. To locate one, phone your veterinarian, local or county police, or state Conservation (Fish & Game) department. Transport the patient in the box, and give a detailed and honest history.

* (From Save Our American Raptors (SOAR) website, www.soar-inc.org).

D.4.1 Arkansas

ARKANSAS, NORTHWEST

Benton County (Gravette) 501-795-1515 Lynn Sciumbato, Morning Star Wildlife Rehabilitation wildlife@mc2k.com.

Washington County (West Fork) 501-839-3828 Sherry Bolstad, West Fork River Rescue opossum5@aol.com *Wildlife Species:* raccoons and opossums (National Opossum Society member), veterinary technician.

ARKANSAS, WESTERN

Polk County (Mena) 501-243-0976 Thomas Young, Ouachita Mountain Rehab *Wildlife Species:* Endangered species rehab, Black Bear rehab for Arkansas, raptor chicks, falconry, and ornithologist.

Washington County 479-839-8155 Mitzi Rankin (sole rehabilitator), Wings and Claws Wildlife Rehabilitation mitjoar@aol.com *Wildlife Species:* Raptors, deer, other small mammals, esp. raccoons and squirrels.

Pulaski County (North Little Rock) 501-835-2288, Llanne Floyd, 37 Sheraton Oaks.

Van Buren County (Bee Branch), 501-745-5025 Bonnie Payne M. 2468 Shelton Road.

D.4.2 Illinois

LaSalle County (Earlville)..... 815-246-9985 Bernadette Richter (executive director), [SOAR \(Save Our American Raptors\) SOAR.INC@juno.com](#) *Wildlife Species:* birds of prey ONLY (eagles, hawks, falcons, owls, kites, osprey, vultures) *Specialty:* rehabilitation, falconry, capture and banding, nuisance resolutions, breeding, husbandry, outreach education programs, management classes for new raptor handlers *Comments:* If you phone SOAR, please leave a message and your call will be returned ASAP. * Source of *Tips for Rescue* above.

D.4.3 Indiana

INDIANA, CENTRAL

Hamilton County (Noblesville) 317-776-9401 Diana Biggs, licensed home wildlife rehabilitator [ddbiggs@juno.com](#) or [dianabiggs@iquest.net](#) *Wildlife Species:* small mammals and owls, etc. (No rabbits please!).

Indianapolis 317-848-6926 Bob and Denise Moore, wildlife professionals, licensed home wildlife rehabilitators *Wildlife Species:* deer, birds of prey.

Valparaiso 219-462-4114 Rachael Jones, D.V.M., Southlane Veterinary Hospital [drjdrk@gte.net](#) *Wildlife Species:* Treatment and rehabilitation of critical care wildlife species.

Yorktown 765-759-9112 Diana Shaffer, Wildlife Resqu Haus, Inc [moon@indy.net](#) *Wildlife Species:* raptors (but admit all wildlife except raccoons, coyote, and fox).

INDIANA, EAST CENTRAL

Delaware County (Yorktown) 765-759-9112 Diana Shaffer (director), Wildlife Resqu Haus, Inc. [moon@indy.net](#) *Wildlife Species:* raptors (but admit all wildlife except raccoons, coyote, and fox).

Delaware County (Yorktown) 765-617-9335 Lezli Julius (Director), [The Dakota Wildlife Rescue and Research Center lezlijulius@earthlink.net](#) *Wildlife Species:* We accept all forms of wildlife.

INDIANA, NORTHERN

Pulaski County (Star City) 574-595-7806 Kim Hoover (president), Hoots to Howls Wildlife Rehab. Inc. [gilligan793@yahoo.com](#) *Wildlife Species:* all wildlife birds and animals EXCEPT RACCOONS *Specialties/Knowledge:* Raptors, Fawns, Opossums, Song Birds, All Wildlife *Comments:* also licensed for wildlife education programs.

Carroll County (Camden) 574-686-4220 Phyllis Lovett (volunteer rehabilitator), Department of Natural Resources, Division of Fish and Wildlife [lovetranch@tds.net](#) *Wildlife Species:* deer, small mammals, birds *Limitations:* I am not set up at this time for new opossums.

INDIANA, NORTHEAST

Fort Wayne 260-373-2904 John Winebrenner, (clinical director), [Soarin' Hawk Raptor Rehabilitation gentilis10@aol.com](#) *Wildlife Species:* Raptors only.

Wawaka 219-761-3607 Jan Doherty, Circle of Life Wildlife Rehabilitation
baywing@hotmail.com *Wildlife Species:* Do small mammals, birds of prey and birds.
Will offer advice to new bat rehabbers.

INDIANA, NORTHWEST

Porter County (Porter) 219-926-1194 Larry Reed (state emergency coordinator/licensed wildlife rehabilitator), Westchester Animal Clinic
lwreed42@comcast.net *Wildlife Species:* we take care of any wildlife.

INDIANA, SOUTHERN

Indiana Department of Natural Resources Division of State Parks and Reservoirs
(interpretive naturalist) tsdavis@seidata.com *Wildlife Species:* raptors only *Comments:*
We are the only wildlife rehabilitation center in Indiana that is operated by the
Department of Natural Resources.

INDIANA, SOUTH CENTRAL

Morgan County (Martinsville) 765-342-7429 Jill Smith (President), Trail's End Wildlife Refuge critters@rnetinc.net *Wildlife Species:* all mammals, all raptors.

Indiana, Southeast 513-825-3325 Jeff Hays, Raptor, Inc.

D.4.4 Kentucky

KENTUCKY, NORTH CENTRAL

Burlington 859-689-4166 Kathy and Joe Caminiti, licensed home wildlife rehabilitator
krzy4owls@fuse.net *Wildlife Species:* raptors only

Lexington 859-225-5072 Tiffaney Carver, Wildlife Rescue and Rehabilitation of Kentucky *Wildlife Species:* all mammals and birds native to Kentucky and some non-native species as well

Nicholasville 606-887-2256 Wolfrun Wildlife Refuge *Wildlife Species:* all native wildlife *Comments:* digital pager for wildlife emergencies: 606-244-1814

Radcliff 270-351-3509 Monika Wilcox, Woodland Wildlife Rehabilitation, Inc.
DustyMacaw@aol.com *Wildlife Species:* songbirds and hatchlings, birds of prey
Comments: Annually we rehabilitate 1,000+ Song Birds, with a success rate of 80%

KENTUCKY, NORTHERN

859-472-7272 Bea Orendorff, Wild Bird Rescue, Inc. poolia@eos.net *Wildlife Species:* birds

513-825-3325 Jeff Hays, Raptor, Inc. kriedel@tso.cin.ix.net (Kathryn Riedel) *Wildlife Species:* raptors

Kenton County (Edgewood) 859-341-5528 Michele Kline (co-founder/director), Wildbirds in Northern Kentucky, Inc. michelewbk@aol.com *Wildlife Species:* only wild birds (all songbirds, adult waterfowl, and raptors)

Louisville 502-491-1939 Chris Allman, Raptor Rehabilitation of KY, Inc *Wildlife Species:* Fostering of young raptors.

Louisville 502-459-2181 Bob Herndon, Louisville Zoo Raptor Rehabilitation
falco@iglou.com

Louisville 502-968-4904 Robert Marquess, Raptor Rehabilitation of Kentucky *Wildlife Species*: raptors.

Louisville 502-491-1939 John and Eileen Wicker, Raptor Rehabilitation of Kentucky, Inc. raptors@aye.net *Wildlife Species*: Fostering of young raptors *Comments*: All of our birds will foster parent young of their species.

KENTUCKY, WESTERN

Hopkins County (Dawson Springs) 270-797-4553 Kenneth Crawford, licensed home wildlife rehabilitator mountainwoman47@hotmail.com *Wildlife Species*: Birds of prey, any injured or orphaned wildlife.

D.4.5 Louisiana

See adjacent Texas, Oklahoma and Arkansas.

D.4.6 Michigan

Saline 734-944-9600 Karen Young, Bird Rescue of Huron Valley kvyoung@hotmail.com
Specialty: birds (including birds of prey), general falconer

Washtenaw County (Manchester)..... 734-428-8455 Dody Wyman (Director), River Raisin Raptor Center dody@mindspring.com *Specialty*: reconditioning of raptors, general falconer

Muskegon (Twin Lake) 231-821-9125 Braveheart Raptor Rehabilitation Center

D.4.7 Ohio

OHIO, CENTRAL

Columbus 614-793-WILD [Ohio Wildlife Center](#).

Crestline 419-683-3228 Jane Schnelker, [Wildlife Haven](#) wildjane@columbus.rr.com
Wildlife Species: all species, IWRC State Representative, Newsletter Editor for OWRA.

Richland County (Mansfield) 419-884-HAWK Gail Laux (director), [Ohio Bird Sanctuary](#) lauxobs@aol.com *Wildlife Species*: birds only.

OHIO, NORTH CENTRAL

Castalia 419-684-9539 Mona Rutger, [Back To The Wild](#) mona@backtothewild.com
Wildlife Species: all species of native wildlife except racoons *Specialties*: raptors and both native and non-native turtles and tortoises *Comments*: I have six large flight cages including a 112' Bald Eagle flight cage and accept raptors from other centers for further conditioning before release.

Medina 330-667-2386 Laura Jordan (director/owner/operator), [Medina Raptor Center](#) lcRaptor@aol.com *Wildlife Species*: raptors and injured adult songbirds only *Specialty*: Raptor conditioning for release *omments*: We have 5-36 foot flight cages and 1-108 foot cage; we do flight work for several organizations.

Medina County (Spencer) 330-667-2386 Laura Jordan, Medina Raptor Center
LCraptor@aol.com *Wildlife Species:* raptors.

OHIO, NORTHEASTERN

Cleveland 440-886-5598 Jackie Campomizzi, licensed home wildlife rehabilitator Ohio, Northeast region, Cleveland area, (Broadview Heights) Kathy Hilliard, Cleveland & Cuyahoga Wildlife Rescue & Rehab. linder@myself.com *Wildlife Species:* Raptors.

Cuyahoga County (Cleveland) 216-235-5014 Megan Lynn Barrett, licensed home wildlife rehabilitator hasrescue@yahoo.com *Wildlife Species:* All species native to the state of Ohio.

OHIO, NORTHWEST

Allen County (Elida) 419-339-1188 Cathy Hiestand (director), Tulpehocken Wildlife Rehabilitation Center kestrel@bright.net *Wildlife Species:* Raptors, opossums, squirrels, rabbits, ducks, songbirds, reptiles, amphibians *Specialty:* raptors and reptiles.

OHIO, SOUTHWEST

513-825-3325 Jeff Hays, Raptor, Inc. kriedel@tso.cin.ix.net (Kathryn Riedel).

Hamilton County (Cincinnati) 513-825-3325 Kathy McDonald (volunteer), [Raptor, Inc.](#)
Wildlife Species: Birds of prey only.

D.4.8 Oklahoma

OKLAHOMA, CENTRAL

Cleveland County (Noble) 405-872-9338 Rondi Large, WildCare Foundation, www.wildcareoklahoma.org, rondilarge@yahoo.com *Wildlife Species:* Oklahoma wildlife.

OKLAHOMA NORTH CENTRAL

Garfield County (Enid) 580-446-5679 Julie Miller, licensed home wildlife rehabilitator julie@virtuallyjulie.com *Wildlife Species:* all species.

OKLAHOMA, NORTHEAST

Tulsa County (Broken Arrow) 918-455-6627 Kathryn Siftar, licensed home wildlife rehabilitator gsiftar@okraptors.com *Wildlife Species:* raptors and opossums.

Mayes County (Pryor) 918-557-8119 Racquel (Director/Owner), Racquels Little Rascals racquelssquirrel@yahoo.com or kelsey91@upperspace.net *Wildlife Species:* all.

Rogers County (Claremore) 918-341-9629 Annette King, [Wild Heart Ranch](#) WHeartRnch@aol.com *Wildlife Species:* all species of wildlife (including raptors)
Comments: We are a fully operational and volunteer staffed wildlife rescue facility and able to care for all species on site. Friendly phone assistance available 24 hours.

Tulsa County (Tulsa) 918-749-ResQ (7377) (24-HOURS) Valeri Bodkin (founder), Tulsacritters@aol.com *Wildlife Species:* all mammals, birds, reptiles *Comments:* fax 918-293-0605.

Forest Trails Animal Hospital (Tulsa) 918-299-8448 6528 East 101st Street, Suite A,
Tulsa, OK 74133-6724

Wagoner County (Broken Arrow) 918-266-8804 Kurt Beckelman (Director), Verdigris
Animal Rehab Facility safarikurbe@aol.com *Wildlife Species:* Accept bobcats and
cougars. Raccoons, opossums, squirrels, rabbits. *Specialties/Knowledge:* Native species
of cats. *Comments:* Am applying for Federal permit to rehab and release raptors and
migratory birds.

OKLAHOMA, SOUTHWEST

Tillman County (Frederick) 580-335-5460 Perrie Renfro, Perrie's Critters
jrrenfro@pldi.net *Wildlife Species:* all except reptiles.

D.4.9 Tennessee

D.4.10 Texas

TEXAS, SOUTHERN

Aransas County (Port Aransas) 361-442-7638– Anthony Amos, raptors.

Nueces County (Port Aransas) 512-749-6793 Andrea Wickham-Rowe, Animal Rehabilitation Keep (ARK) wickham@utmsi.zo.utexas.edu Wildlife Species: sea turtle and shorebird rehabilitation.

Matagorda County (Bay City) 979-245-4392 (9am - 8pm) Cherie Allan, raptors.

Uvalde 830-278-4441 John Barnes, raptors and small mammals. (8am - 5:30pm), 830-278-8401 (after 5 pm).(Southwest Texas Veterinary Center)

Hidalgo County (Edinburg) 956-381-6713 Valerie Ciomperlik, raptors, (day and evening hours) (space limited)

Victoria County, (Victoria) 361-576-3806– Janene Adamson, small mammals, birds, specialty: raptors, email: rosspaull@cox-internet.com.

Zapata County (Zapata), 956-765-8526 (Cell: 956-847-6322) Nancy Umphres, raptors, (anytime, leave msg. if no answer).

Nueces County (Corpus Christi) 361-881-1216 raptors, sea birds, Texas State Aquarium.

TEXAS, EASTERN

Shelby County (Shelbyville) 936-368-2663 Mindy Smotherman, licensed home wildlife rehabilitator moointhesticks@yahoo.com Wildlife Species: deer, small mammals
Comments: will accept any wildlife for transfer to appropriate facilities.

Tyler County (Colmesneil) 409-283-2438 Judy Courtney, licensed home wildlife rehabilitator jc4raccoonrehab@prodigy.net Wildlife Species: all species.

Texas, West

Abilene Zoo (Abilene, TX) 325-676-6085 x 6476 ([Vonceil Harmon in 2011](#))

TEXAS, NORTH CENTRAL

Wichita County (Wichita Falls) 940-691-3893– Mary Kemp, raptors.

TEXAS, NORTHEAST

Gregg County (Longview) 903-663-5086 Robbi Goodrich, licensed home wildlife rehabilitator niteglider@texramp.net Wildlife Species: small raptors, squirrels (grey, fox, flying), opossums

Smith County (Lindale) 903-882-7480 Beverly Grage, licensed home wildlife rehabilitator bgrage@tyler.net Wildlife Species: raccoons, opossums, squirrels, skunks, fox
Comments: Federal permit for raptors only.

Wood County (Cypress) 713-824-3289 Rebecca McKeever (Director), Lone Star Wildlife Rescue, Inc. Wildlife Species: Raptors, wading birds, waterfowl, shorebirds, reptiles including endangered/threatened species

TEXAS, NORTHWEST

Potter County (Amarillo) 806 622 9858 Joy and Alvis Graham, Timber Creek Veterinary Hospital alvis@webtv.net

Lubbock County (Lubbock) 806-535-4220 or 806-863-3217 Gail Barnes (Asst. manager), home rehabber and South Plains Wildlife Rehabilitation Center, Inc. ggbowls@sptc.net Wildlife Species: bats, owls, skunks (wildlife center all species) Specialties: bats and barn owls.

Lubbock County (Lubbock) 806-799-2142 Carol Mitchell (director), South Plains Wildlife Rehabilitation Center, Inc. Debbie Tennyson (on-site manager) sprwrc@cox.net.

D.4.11 Virginia

VIRGINIA, CENTRAL

Elk Creek 276-655-4822 (office/home/fax/ans) or 276-233-2848 (cell) William Roberts, licensed home wildlife rehabilitator Wildlife Species: opossum and raptor rehabilitation Virginia, Central region (Waynesboro)..... 540-942-9453 [The Wildlife Center of Virginia](http://TheWildlifeCenterofVirginia.org) wildlife@wildlifecenter.org Wildlife Species: all native Virginia species Comments: large professionally staffed hospital for native wildlife.

VIRGINIA, NORTHERN

Clarke County (Millwood) 540-837-9000 Peggy Coontz (Director/Wildlife Biologist), [Blue Ridge Wildlife Center](http://BlueRidgeWildlifeCenter.org) peg@blueridgewildlife.org Wildlife Species: Raptors, corvids, waterfowl, small mammals, reptiles Specialties/Knowledge: Raptor and corvid rehabilitation Comments: Educational programs on native wildlife offered. Veterinarian care available at the Center.

VIRGINIA, NORTH CENTRAL

Boston 540-987-8431 Amo Merritt, Wildlife Rescue League of VA, Native Wildlife Rescue, Inc. amo@695online.com Wildlife Species: accept all wildlife Specialty: raccoons.

Hanover County (Hanover) 804-779-0224 Catherine (member), Area Rehabber's Klub (ARK) friendoftheanimals@yahoo.com Wildlife Species: Squirrels, rabbits, opossums, migratory birds, reptiles to include snakes.

VIRGINIA, NORTHEAST

Falls Church 703-532-1475 Kimberly Manthy, Wildlife Rescue League, Falls Church Animal Warden, Virginia Dept. of Game and Inland Fisheries, Arlington Animal Welfare League rescue@WL911.com Specialty: Very young "pinky" mammals -- flying squirrels, mice, squirrels, fawns, beaver, rats, moles, otters, etc. Mostly orphans. No raccoons. Also injured and orphaned birds, including herons.

Falls Church 703-578-4729 Kent N. Knowles, Wildlife Rescue League of Virginia the Raptor Society of Metropolitan Washington KentK3@aol.com Specialty: Raptor

rehabilitation, handling, and conditioning. Education talks with non-releaseable raptors.
Falconry techniques with raptors.

Manassas 703-368-5539 Madeline Libre, Center for Rehabilitation of Wildlife (C.R.O.W.) vibrant@gte.net Wildlife Species: pigeons, crows, gulls, opossum, groundhog, hawks, owls, and vultures.

VIRGINIA, NORTHWEST

Roanoke County (Salem) 540-387-9764 Sharon Reese (Category II rehabber), Wildlife Care Alliance reese2resque@aol.com Wildlife Species: rabbits squirrels mice birds(subpermitee, Federal)opossum NO RACOONS Specialties/Knowledge: rabbits,squirrels Comments: also take care of domestic baby rabbits(dead mother or mother has no milk).

VIRGINIA, SOUTHWEST

Scott County (Nickelsville) 276-479-1405 Monica Hutchinson, licensed home wildlife rehabilitator moniwlr@yahoo.com Wildlife Species: all large/small mammals, specialize in opossums, raptors, turtles, gamebirds/waterfowl; no infant songbirds.

Scott County (Nickelsville) 540-479-3316 Alanna Dingus, licensed home wildlife rehabilitator abdingus@mounet.com Specialty: all animals, licensed veterinary technician.

D.4.12 West Virginia

WEST VIRGINIA, SOUTHERN

Brooks 304-466-4683 Wendy Perrone, [Three Rivers Avian Center](#).

WEST VIRGINIA, WESTERN

Jefferson County 304-724-4500 (day) 304-267-3482 (evening) Diana Mullis, home wildlife rehabilitator.

Putnam County (Poca) 304-586-2714 Beth Bryan, Windsmeet Farm Wildlife Recovery Station.

APPENDIX E EAGLE RULES

Since the bald eagle was removed from the Endangered Species List in August 2007, new rules amending the Bald and Golden Eagle Protection Act have followed. The final rules appeared in The Federal Register/Vol. 74, No. 175/Friday, September 11, 2009/Rules and Regulations. They create new sections in 50 CFR Part 13 and Part 22.

The rules that most affect the electric utility industry and require permitting have to do with:

- Moving or removing nests from utility structures.
- Construction or maintenance operations that would either *take* or *disturb* eagles.
- Operational areas where there is continuing risk of electrocution, collision, or disturbance to eagles.

On an intermittent basis, permits would be required for the first two points above when the condition is recognized. The permit would require AEP to develop a remedial plan. Over the long term, *programmatic take permits* are available for entities whose normal, lawful operations threaten to routinely *take* or *disturb* eagles. In these situations *advanced conservation practices*, developed in conjunction with USFWS, must be implemented by the company to obtain a programmatic permit.

In the contiguous 48 states, there were 9,789 breeding pairs of bald eagles (data represent 2004-2007). From this information the total population is roughly estimated to be $\pm 70,000$ individuals.

Impact on AEP

Based on these data, in the 11 states AEP serves, there were $>1,800$ breeding pairs, or approximately $\pm 13,000$ bald eagles in that 2004-07 time frame. The growth rate has been approximately 2%/year. Estimating from that, in 2012 the AEP states would have $\sim 2,055$ breeding pairs and $\pm 14,000$ individuals.

By contrast, in 1990 there were ± 400 breeding pairs, and approximately 3,200 bald eagles in the AEP states.

Golden eagles are generally found in the west and, in AEP territory, are found year-around only in West Texas. However, they winter in the western halves of Texas and Oklahoma, and in pockets in northwest Arkansas, southern Indiana, and on the border between Virginia and West Virginia/Kentucky. They are also rare visitors, usually during migration, to all states in the eastern U.S.

With the growing bald eagle population (see table below) and the simultaneously increasing number of power line miles, the risk of eagle interactions is increasing.⁷ At this point, the proactive step needed is to be aware of eagle activity on or near our facilities and to take preventive measures before problems develop. This is also an issue for ROW vegetation management as *disturbance* during the breeding season and around

⁷ With the golden eagle possibly in decline, the importance of avoiding eagle interactions is growing, e.g., \$10M judgment against PacifiCorp in 2009.

foraging and roosting areas is considered *take* by the Eagle Act and could also precipitate enforcement action by the USFWS.

Bald Eagle Population Growth in AEP Service Area 1990-2006

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
AR	10	10	16	20	20	20	b/d	24	29	34	36		36	42			
IN	2	5	10	12	12	15	17	18	15	21	24	28	28	38			68
KY	5	8	8	10	8	16	12	17	13	21	23	24	27	27			35
LA	50	62	103	103	90	101	101	124	135	140	182	219	246	228			284
MI	174	204	220	246	269	268	287	298	291	334	370	376	405	211			482
OH	16	19	20	24	26	30	33	38	47	57	63	73	79	88		125	
OK	0	8	16	10	14	18	22	24	26	32	31	27				49	
TN	16	17	13	22	21	26	25	30	38	44	43	29	50	43			120
TX	29	35	37	37	40	40	49	52	62	64	78	98					156
VA	106	115	132	149	164	176	200	228	260	244	283	312	263	371			485
WVA	2	3	4	5	5	5	5	6	6	7	10	12	13	14		19	
Sum	410																~1811

http://www.fws.gov/midwest/eagle/population/nos_state_tbl.html

APPENDIX F HERON ROOKERIES

Hérons and other long-necked, long-legged wading birds nest in colonies called rookeries. Normally they do this in trees, however, they will nest on transmission towers built in their habitat. They will build numerous nests on the same structure and sometimes will occupy a number of adjacent structures.

These species are protected, but the definition of an active nest is a bit different than the definition as it applies to solitary nests. Colonial nests are considered active even if only one of many on a structure is actually active. This makes the active season much longer than it is with solitary nests. When maintenance is necessary on a tower supporting multiple nests all nests must be inactive to proceed with the work. Only in a situation of imminent danger may active nests be disturbed or moved. Such actions require agency consultation.

APPENDIX G ENDANGERED AND CANDIDATE SPECIES

In AEP service territory there are two endangered birds that may interact with poles/towers and lines: the northern aplomado falcon and the American whooping crane. There are also species that are candidates for addition to the endangered species list in our service area and may be indirectly affected by energy-delivery facilities.

Aplomado Falcon

The risk that power lines pose for the aplomado falcon is low. Generally, they nest in scrubby trees or yuccas, but have been known to use raven nests on utility structures. Because there is not a way to distinguish an aplomado nest from a raven or hawk nest when the nest is inactive, such a nest should be treated as one of a non-endangered, but protected species' nest (see [9.2.2 Inactive Nests](#)). However, when occupied or known to have been occupied by aplomado falcons, any nest management needed must be permitted by the USFWS (see [9.1.1](#)).

Whooping Crane

The whooping crane is the tallest North American bird, >4', with >7' wingspan. They are graceful fliers, but fly and maneuver slowly. As a result, their risk of colliding with power lines in high winds, poor visibility, or other adverse conditions increases as the time needed for taking evasive action is reduced. The only native population of whooping cranes is the Aransas Wood Buffalo Population (AWBP), which winters on the Texas Gulf Coast and nests in Wood Buffalo National Park in Alberta, Canada. In AEP service area the AWBP migration corridor passes through Oklahoma and Texas.

With the increasing growth of wind farms and transmission lines in the Great Plains, the U.S. Fish and Wildlife Service (USFWS) believes the collision risk may become serious enough to compromise whooping crane recovery. To this end, USFWS wants all new transmission lines to be marked with visibility-enhancing devices along with an equal number of existing line miles. Their reasoning is that line marking has reduced collision incidence 60-70% on lines experiencing a significant collision rate. However, preventive marking of all lines would not show this kind of statistic because the studies that have indicated this rate of reduction were focused on areas known to be experiencing a high collision rate. Until now, crane collisions have been rare enough that they cannot be quantified for existing lines in the AWBP migration corridor. From 1941 to 2012 the AWBP has grown from 15 to >245. During that same time power line mileage in the corridor has increased as well. This seems to confirm the hypothesis that collisions are site- and condition-specific, and that, under normal conditions, cranes successfully avoid power lines.

Studies that have shown significant collision rates have been with experimental populations of whooping cranes. These populations were started from the AWBP by USFWS to re-establish these birds in areas where they existed historically and to be a back-up if something catastrophic happened to the AWBP. There is a Florida population, a Wisconsin-Florida population, and one beginning in Louisiana. There was once a Rocky Mountain population, which did fail. The Rocky Mountain population was created by putting eggs from whooping crane nests that contained multiple eggs into sandhill

crane nests, so the sandhill parents would raise them. This experiment failed because the whooping cranes thought of themselves as sandhill cranes and did not recognize each other as potential mates. There are many and significant variables between the native and experimental populations that weaken their comparison in collision risk. Yet it is these collision study data that are being used to justify a large-scale marking in the AWBP corridor.

AEP, when routing transmission lines in the AWBP migration corridor, will evaluate the potential for crane activity near that line and, when crane activity is known or expected, or near potentially suitable stopover habitat, will mark those lines or spans with visibility enhancing devices. This however, will be based on estimated risk potential for each line rather than overarching policy.

Lesser Prairie Chicken

Though the lesser prairie chicken (LPC) is not on the Endangered Species List, it is a *species of concern* in five states including Oklahoma and Texas, and a candidate for listing under the Endangered Species Act. Its status will be redetermined by the USFWS in September of 2012.

The reason for its decline is thought to be primarily habitat loss and habitat fragmentation. Development replaces, surrounds, and cuts through habitat or “fragments” it. Causes include agriculture, oil and gas, roads, invasive species, fire suppression, and urbanization. Power line poles, towers and rights-of-way may also contribute to habitat loss and fragmentation.

If the LPC is added to the endangered species list, projects with a federal partnership planned for development in the LPC critical habitat will require review and consultation with the USFWS under Section 7 of the Endangered Species Act. Non-federally funded projects may undergo informal consultation or formal, Section 10 ESA consultation, which leads to the development of a habitat conservation plan (HCP).⁸ This usually slows a project down and requires additional management and/or mitigation. USFWS would also like to collaborate with large-scale private developers in creating an HCP when development will take an endangered species' critical habitat.

At this time, the State of Oklahoma has identified wind resource and LPC habitat areas by color shading and overlaying them in a GIS model. The state proposes that wind farm developers in these areas plan their projects in high quality wind resource areas that do not coincide with or overlap good LPC habitat. The same request is made for routing transmission lines to these wind farms. The model assigns a value to the land for levels of quality, which will be used to determine the mitigation cost for development in LPC habitat. With the mitigation revenue, the state would reestablish historic LPC habitat to off-set the losses caused by wind developments and power line rights-of-way. The model's habitat cost figures are also expected to be an incentive for avoiding development in high quality habitat.

⁸ A Habitat Conservation Plan is a means of avoiding habitat destruction or mitigating its destruction when there is development within it. This is a time consuming process and will set a development plan back many months or even years.

Transmission lines do not present collision or electrocution risks to LPC, but power line rights-of-way may “fragment” habitat. This means that it divides habitat into islands that may be separated from each other by habitat voids that are not passable to LPC. Some studies have found or suggested that LPC also shy away from tall structures especially while nesting. Since they evolved in the prairie, it is thought that they instinctively avoid trees, and, consequently, other tall structures, because birds of prey gain an attack advantage from those positions. The hypothetical problem is magnified when the LPC cannot retreat from vertical structures to suitable habitat because of the fragmentation.

To date (2012), AEP is indirectly involved⁹ in transmission line development in Oklahoma LPC habitat, but has conceptually committed to the model and the voluntary program for development that avoids existing or potential LPC habitat.

Attwater’s Prairie Chicken

Another member of the grouse family, the Attwater’s prairie chicken (APC), found only in Texas, is on the Endangered Species List. It too suffers from habitat loss. Favoring native coastal prairies, it is now only found wild in Galveston and Colorado counties (Attwater’s Prairie Chicken National Wildlife Refuge).

The power line collision risk for APC is also very low, but if it begins to gain a foothold outside the wildlife refuges, ROW maintenance may need special management if it is on land involved in the program mentioned above.

Endangered Species Summary

The **whooping crane** in AEP’s Oklahoma and Texas territories experiences a low probability risk of power line collisions. As this endangered species is also very rare, its interaction potential with our new power lines needs to be considered during the route planning process. The whooping crane’s migration corridor, in the U.S., extends from Montana and North Dakota to Coastal Texas. The USFWS is very active in protecting this corridor as extensive wind and transmission line development in it is underway.

The **aplomado falcon** faces a very low risk of electrocution or collision, but may nest on poles or towers where it uses the nests of other birds. When this happens, the falcon is easily distinguished from a raven, crow, or hawk that originally built the nest, so the active nest must be treated according to the correct protocol (see [9.1.2.1 Active Nests](#) and [9.2.2. Nests of Eagles and Endangered Species](#)).

The **lesser prairie chicken**, an upland game bird, has been in decline for a long time. In 1995 the USFWS determined that its listing was warranted, but precluded by USFWS’ workload at the time. USFWS will revisit that decision in the fall of 2012. It is possible that this species will be added to the endangered species list. Now with the growth of wind generation and associated transmission lines, structures, and ROW, its listing may make project development much more complicated. The potential exists of adding considerable cost to projects that may be required to either circumvent or mitigate habitat, and to go through consultation with the USFWS prior to breaking ground.

⁹ AEP is a partner with Oklahoma Gas and Electric in Oklahoma and with Westar Energy in Kansas. AEP is doing the engineering for these projects.

Attwater's prairie chicken is an endangered species that survives wild only on wildlife refuges, which are not in AEP service area. However, private land owners are joining the effort to enlarge habitat acreage, which may affect future power line planning as much of Texas Central Company's service area is in historic APC range.

There are other endangered species, bird and otherwise, throughout AEP service territory with which interactions cannot be anticipated until project plans are specific. This is something that must be addressed during project planning. The issue of the Indiana bat's presence in the area of Beech Ridge Energy's (Invenergy Wind) wind turbine development in Greenbrier County, West Virginia is a reminder of this necessity. The Animal Welfare Institute, along with other organizations, sued over the project's impact on these endangered bats. The settlement reduced the number of turbines that will be built, limited the time during which turbines at this site may operate, and required the developer to obtain an "incidental take" permit for the Indiana bat and to implement a habitat conservation plan to manage and minimize *takings* of this species.

In September 2011, a dead Indiana bat was found on a Duke Energy windfarm in Pennsylvania. It resulted in night-time curtailment during bat migration season and the requirement to develop a habitat conservation plan to obtain an "incidental take" permit. Part of the plan will likely include night-time curtailment during bat migration season and survey requirements for detecting incidents.

APPENDIX H LINE MARKING FOR COLLISION PREVENTION – CONSTRUCTION

New Lines

Over time the environment surrounding power lines changes. Land use, short-term and long-term flood and drought, shifts in flyway and migration patterns, population dynamics, species prevalence, etc., all conspire to make lines that were originally benign, into a collision hazard and vice-versa.

With this in mind, routing a new line should consider topography, bird use patterns especially around water, riparian¹⁰ habitat complexity, and adjacent habitat type and quality. Spans or lines where there is a high level of bird activity, assuming they cannot be routed differently, should be marked to reduce the risk of collision. It is useful to observe the habitat, do a plant inventory (if this was not already done as part of an EA), and spend some time watching bird activity in the area to get an idea of current or potential activity.

There are numerous marking devices available. They include aerial marker spheres, which are also used for aviation visibility, spiral devices derived from spiral vibration damper material and design, and suspended devices that clamp onto lines and either hang or swing and spin in the wind. Many suspended devices have reflective and glowing surfaces intended to enhance their visibility in low light and at night. Each has cost, durability, and labor elements that need to be tailored to the situation in which they will be applied. See [Section 10.2.1](#) for examples. Generally, transmission line marking is only necessary on the shield wire. The diameter of the phase conductors increases their visibility and reduces collision risk. In addition, the electric field around higher voltage lines is incompatible with the materials used in most collision prevention devices.

Wildlife biologists recommend that power lines cross streams at right angles, at points of narrowest width, and/or at the lowest banks whenever feasible to minimize the disturbance to stream corridor habitat.

Existing Lines

Marking devices should be applied to existing lines that experience repeated collisions. On transmission lines, the shield wire should be marked. On distribution lines the phase conductors are usually marked. With some species and under some circumstances, birds attempt to underfly a line. In those cases the neutral also needs to be marked.

Rules of Thumb for Marking

As a guideline, mark new transmission line shield wires within 1/4 mile of high concentration areas of wading birds, waterfowl, and eagle nests or roosts. There are other site-specific considerations as well, and this distance should not be considered absolute.

Marking lines in high-traffic flyways helps reduce the collision potential. Routing that avoids [riparian](#) areas is desirable. Selective clearing is the less-than-ideal second choice.

¹⁰ Riparian: relates to plant and animal communities found on or near the shores and banks of a water body.

When riparian habitat cannot be avoided, selective clearing is recommended for minimizing damage to this valuable wildlife habitat.

Avian collision risk should be evaluated for new construction that will cross creeks, rivers, and streams, that have well developed riparian corridors or significant changes in topographic relief. Birds often use river and creek drainages as flyways, and riparian areas are important for nesting and foraging. Other areas with continuous or seasonal bird concentrations should be recognized during routing analysis and factored into the route preference. Bird concentration areas should be avoided when possible, or the line should be designed to reduce effects to acceptable levels. Bird concentration areas may include wetlands, grasslands, wildlife refuges, wilderness areas, state and national parks, etc.

APPENDIX I VEGETATION MANAGEMENT

Applicable parts of this APP will eventually be incorporated into AEP's Vegetation Management Plan. Environmental Services and Forestry Operations will study the relationships between vegetation management and potential conflicts with birds and their nests to develop approaches that are compatible with both interests.

In the future AEP Environmental Services will train AEP Forestry personnel. The focus of that training will be bird interaction awareness and raptor nest management. A reporting process will be developed to advise ES of active nest observations so avoidance plans can direct clearing work to accommodate these nests when feasible. Submitting a report on the BIRD form will also apply when an inadvertent *take* is discovered.

1.1 Bird Nesting Considerations

Most birds nest from late winter to mid-summer, varying with latitude, species and weather. ROW construction and maintenance that must be carried out in the nesting period should observe some precautions to avoid causing nest failures. Birds and their nests are protected by the [Migratory Bird Treaty Act](#) from any human actions that would cause the nest to fail. When active nests of smaller, protected birds are found, they should be given a buffer zone—rule of thumb 25'—when feasible, from clearing activity that maintains the nest's protection from the elements and predators.

In the case of [raptors](#), the nesting season tends to begin earlier. Owls begin in December and January. Southern eagles as early as November, while hawks and other eagles follow shortly after owls. Because of their size, these nests are easier to find and avoid. When active raptor nests are encountered during clearing activity, a rule-of-thumb buffer zone of 300' should be observed depending on the birds' tolerance, weather conditions, topographical features, and time the activity will occur within the buffer area. Eagle buffers may need to be greater depending on site-specific conditions. Except for eagle nests, inactive nests of protected birds may be *taken* if they are on branches that must be cleared from the ROW. Eagle nests, on the other hand, are always protected and may not be moved, removed, or modified without U.S. Fish and Wildlife Service authorization.

Nests of endangered birds must be treated the same as eagle nests. Though it is a very low probability, the only endangered bird nest that might be encountered in AEP area is that of an aplomado falcon. This species is only found in parts of South and West Texas. It uses existing hawk, crow, or raven nests and does not build nests itself. To determine an aplomado nest, one must see the bird. Known aplomado nests are monitored by the USFWS and the Peregrine Fund. One or both of these organizations should be consulted when there is reason to believe an aplomado nest is present.

1.2 Bird Electrocution Considerations

An unknown number of birds are involved in what are recorded as tree-caused outages and unknown-cause outages. This occurs when birds bridge the limb-phase space or are near the limb-phase contact point and are caught in the flash. Often a servicer will trim the limbs away from a pole while responding to an outage. Trimming the limbs away from the pole to refuse it may also be adequate prevention for future bird-related

incidents. There may be incidents where a fatality occurs without disturbing operation, which may preclude a visit to the site. Foresters that encounter electrocuted birds while trimming around poles should use the [BIRD form](#) to report the finding.

APPENDIX J – PERMIT



DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE

FEDERAL FISH AND WILDLIFE PERMIT

Item No. 8

Attachment 3

Page 114 of 117

2. AUTHORITY-STATUTE
16 USC 703-712

REGULATIONS
50 CFR Part 13
50 CFR 21.27

3. NUMBER
MB19844A-1 AMENDMENT

4. RENEWABLE	5. MAY COPY
<input checked="" type="checkbox"/> YES	<input checked="" type="checkbox"/> YES
<input type="checkbox"/> NO	<input type="checkbox"/> NO

6. EFFECTIVE 05/08/2014	7. EXPIRES 03/31/2016
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1. PERMITTEE

AMERICAN ELECTRIC POWER
dba AMERICAN ELECTRIC
1201 ELM STREET
SUITE 800
DALLAS, TX 75270
U.S.A.

8. NAME AND TITLE OF PRINCIPAL OFFICER *(if #1 is a business)*
DAVID B HALL
PROGRAM COORDINATOR

9. TYPE OF PERMIT
MIGRATORY BIRD SPECIAL PURPOSE UTILITY PERMIT -
ELECTRIC

10. LOCATION WHERE AUTHORIZED ACTIVITY MAY BE CONDUCTED
Company property and rights-of-way in the following states with corresponding state approval:
Oklahoma and Texas (R2) Virginia and West Virginia (R5)
Indiana, Michigan and Ohio (R3)
Arkansas, Kentucky, Louisiana and Tennessee (R4)

11. CONDITIONS AND AUTHORIZATIONS:
A. GENERAL CONDITIONS SET OUT IN SUBPART D OF 50 CFR 13, AND SPECIFIC CONDITIONS CONTAINED IN FEDERAL REGULATIONS CITED IN BLOCK #2 ABOVE, ARE HEREBY MADE A PART OF THIS PERMIT. ALL ACTIVITIES AUTHORIZED HEREIN MUST BE CARRIED OUT IN ACCORD WITH AND FOR THE PURPOSES DESCRIBED IN THE APPLICATION SUBMITTED. CONTINUED VALIDITY, OR RENEWAL, OF THIS PERMIT IS SUBJECT TO COMPLETE AND TIMELY COMPLIANCE WITH ALL APPLICABLE CONDITIONS, INCLUDING THE FILING OF ALL REQUIRED INFORMATION AND REPORTS.
B. THE VALIDITY OF THIS PERMIT IS ALSO CONDITIONED UPON STRICT OBSERVANCE OF ALL APPLICABLE FOREIGN, STATE, LOCAL, TRIBAL, OR OTHER FEDERAL LAW.
C. VALID FOR USE BY PERMITTEE NAMED ABOVE.

Company property and rights-of-way in the following states with corresponding State approval:
Oklahoma and Texas (R2) Virginia and West Virginia (R5)
Indiana, Michigan, Ohio (R3) Arkansas, Kentucky, Louisiana and Tennessee (R4)

D. Possession and transport.

- (1) You and subpermittees are authorized to collect, transport and temporarily possess carcasses and partial remains of migratory birds found at the location/property specified in Block 10 for migratory bird mortality monitoring purposes or for human health and safety purposes.
- (2) **For Bald and Golden Eagles (Eagles) and federally listed Threatened or Endangered Species under the U.S. Endangered Species Act (see 50 CFR 17.11)** you must call a U.S. Fish and Wildlife Service (Service), Office of Law Enforcement (OLE) special agent for instructions and approval BEFORE collecting or moving the carcass(es) or parts, unless you are working under a specific alternative protocol established by you and OLE. It may be necessary to preserve the carcass(es) or parts onsite until an agent or other Service or State representative arrives to collect them. Your OLE contact phone number is 612-713-5320
- (3) For all other migratory birds, gather data required by Condition F below PRIOR to collecting or moving the carcass or its parts.

E. Active Nest Relocation. Except for Eagles and federally listed Threatened or Endangered Species, in emergency situations you are authorized to relocate active migratory bird nests, including eggs or nestlings, found on the utility structures

ADDITIONAL CONDITIONS AND AUTHORIZATIONS ALSO APPLY

12. REPORTING REQUIREMENTS

ANNUAL REPORT DUE 01/31

You must submit an annual report to your Regional Migratory Bird Permit Office each year, even if you had no activity. Form: <http://www.fws.gov/forms/3-202-17.pdf>.

ISSUED BY

TITLE
CHIEF, MIGRATORY BIRD PERMIT OFFICE - REGION 3

DATE
05/08/2014

when (1) the safety of the migratory birds, nests or eggs is at risk, or (2) the migratory birds, nests, 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. You may not use this authority for situations in which 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 your permit issuing office prior to destruction.) To conduct activities involving nests of **Eagles or federally listed Threatened or Endangered Species**, you must obtain additional appropriate permit(s).

F. Data Collection.

- (1) All relevant data associated with each carcass/part(s)/injured bird discovered or collected, must be recorded, including the information below.
 - (a) discovery date
 - (b) collection date
 - (c) species, or if unknown, either the type of bird (e.g., gull, raptor), or "unknown"
 - (d) sex and age (hatchling, juvenile, adult), if known
 - (e) how carcass was located (during standardized carcass search or opportunistic or incidental find?)
 - (f) condition (alive or dead?)
 - (g) description of bird or carcass (If alive, indicate if sick or injured. If dead, indicate if intact; freshly killed (eyes moist); semi-fresh (stiff, eyes desiccated); partially decomposed feathers and/or bones; other)
 - (h) the GPS coordinates in decimal degrees using clearly identified datum (the standard position or level that measurements are taken from such as WGS 84) for the location where found OR nearest pole/structure ID number and city or county
 - (i) suspected cause of mortality/injury (collision with wire, collision with other structure, electrocution, shot, other)
 - (j) disposition (freezer onsite, left in place, buried, incinerated, rehabilitator, OLE, nest relocated, other)
 - (k) any special notes or additional information (e.g., mortality events involving unusually high numbers of birds or species groups; weather conditions at likely time of death, if known).
- (2) All carcasses and partial remains you collect and transport must be bagged and labeled with a unique specimen identification number and the collector's name PRIOR to transport unless you are working under a specific alternative protocol established by you and OLE. The data sheet with the information listed in Condition E.2. must be attached to or included in the bag.

G. **Injured/orphaned birds.** In the event migratory birds, including **Eagles and federally listed Threatened or Endangered Species**, are injured or orphaned, you must immediately contact a federally permitted migratory bird rehabilitator or a licensed veterinarian for instructions. Rehabilitation and/or veterinary costs for birds that may have been injured or orphaned by utility operations or infrastructure are the utility's responsibility. See Condition I for reporting instructions.

H. Except as authorized by Condition E, **take and collection of live, non-injured migratory birds, eggs, or nests is not authorized by this permit.** In addition, this permit does not authorize the take, capture, harassment or disturbance of **Eagles and federally listed Endangered or Threatened Species.**

I. Reporting.

(1) How to report.

- (a) Immediate (written follow-up) reports. Until a new on-line reporting system is completed, you have three options for submitting reports:
 - (i) If you have an account with the Service's Bird Injury and Mortality Reporting System (BIMRS) for reporting injury and mortality incidents, you may report incidents in BIMRS at: [<https://birdreport.fws.gov/>](https://birdreport.fws.gov/).
 - (ii) You may report the incident using the Avian Injury/Mortality Reporting System (AIMRS) database (form 3-202-17). Download the database at <http://www.fws.gov/forms/3-202-17.pdf>.
 - (iii) You may submit an Excel spreadsheet from your own database in lieu of using AIMRS provided all of the "required" information in AIMRS (in exact AIMRS format) is included.
- (b) Annual report. Submit your annual report using the AIMRS database or you may submit an Excel spreadsheet from your own database in lieu of using the AIMRS database, provided all of the "required" information in AIMRS (in exact AIMRS format) is included. If your company holds a BIMRS account, you may generate your annual report in Excel from BIMRS.

(2) Immediate reports.

- (a) Eagles and T&E species. You must report any **Eagles and federally listed Threatened or Endangered Species** found dead or injured to your OLE special agent (see Condition D for contact information) or the

general OLE phone number 612-713-5320 and your Ecological Services Field Office ~~(612) 713-5350~~ **immediately** if possible, but no later than 48 hours from discovery of the bird, or at the beginning of the next business day. Your report must include as much of the information from Condition F(1) as possible.

A written injury/mortality report, including information not available at the time of your initial report, must be submitted to your migratory bird permit issuing office to include the data in Condition F(1) and/or as directed by your OLE special agent no later than **7 days** from the date of discovery and collection of the carcass.

A list of Threatened and Endangered species by State may be found in the Service's Threatened and Endangered Species System (TESS) database at: <http://www.fws.gov/endangered>.

- (b) **Significant mortality events.** Report mortality events involving unusually high numbers of birds or unusual species groups to your migratory bird permit issuing office **via Fax 612-713-5393 or email to permitsR3MB@fws** immediately if possible but not later than 48 hours from discovery of the birds, or at the beginning of the next business day.
- (3) **Annual report.** You must submit a cumulative annual report of all dead and injured birds, including **Eagles and federally listed Threatened or Endangered Species**, discovered or collected and any active nests relocated, to your migratory bird permit issuing office by **January 31** following each calendar year in which the permit is in effect. Your report must include at a minimum the information required in Condition F(1). For active nests, please indicate the species and date relocated.

J. Disposition of Carcasses and Parts.

- (1) In accordance with Condition D(1) above, the Service will advise you on disposition of **Eagles and federally listed Threatened or Endangered Species** specimens. The special agent will advise if they will recover an eagle carcass or if you need to ship the carcass to the Service. With PRIOR written authorization from an OLE special agent, you may contact the U.S. Fish and Wildlife Service, National Eagle and Wildlife Property Repository (NER) at (303) 287-2110 for shipping instructions. The written authorization from the special agent must accompany the Eagle if it is shipped to the NER. Disposition must be reported in your annual report to your migratory bird permit issuing office.
- (2) Carcasses of migratory birds, other than Eagles and federally listed Threatened or Endangered Species, may be necropsied to determine cause of death PROVIDED necropsy is authorized in writing by OLE.
- (3) Unless otherwise specified in this permit, Migratory **Bird carcasses** and parts (**other than Eagles and federally listed Threatened or Endangered Species**) collected during the calendar year (ending Dec 31) that have been documented in your records must be stored in the freezer at the facilities at the location specified in Block 10 **until January 15** of the following year in which they were collected. Unless otherwise specified by your migratory bird permit issuing office or OLE, after **January 15** and after your annual report has been submitted to the migratory bird permit issuing office (due January 31), carcasses and parts may be:
- turned over to the State wildlife agency for official purposes, or,
 - donated to a public scientific or educational institution, or to an individual or entity authorized by Federal permit to acquire and possess migratory bird specimens.

After all permit requirements have been met, carcasses and parts (**except Eagles and federally listed Threatened or Endangered species**) that you do not transfer to another authorized party must be disposed of by burial or incineration.

K. **Renewal.** Any renewal request for this permit must include information on any modifications made to your operations or infrastructure to avoid or minimize migratory bird mortalities, and if you have made modifications, any preliminary results of those modifications.

L. **Subpermittees.** Any person who is employed by or under contract to the permittee for the activities specified in this permit, or any person who is otherwise designated as a subpermittee in writing by the permittee may exercise the authority of this permit.

M. **Standard Conditions.** You and any subpermittees must comply with the attached Standard Conditions for Migratory Bird Special Purpose Utility Permits. **These standard conditions are a continuation of your permit conditions and must remain with your permit.**

N. **Amended 5/8/2014:** Permit amended this date per new requirements from the Division of Migratory Bird Management via email of April 28, 2014.

For suspected illegal activity immediately contact the USFWS Law Enforcement at: 612-713-5320

This permit does not, nor shall it be construed to, authorize lethal take or injury of migratory birds or limit or preclude the U.S. Fish and Wildlife Service from exercising its authority under any law, statute, or regulation, or from taking enforcement action against any individual, company, or agency. This permit is not intended to relieve any individual, company, or agency of its obligations to comply with any applicable Federal, State, Tribal, or local law, statute, or regulation. We strongly encourage you to develop/update and implement a proactive Avian Protection Plan (APP) per current U.S. Fish and Wildlife Service/Avian Power Line Interaction Committee (APLIC) guidelines found at: www.aplic.org <<http://www.aplic.org/>>.

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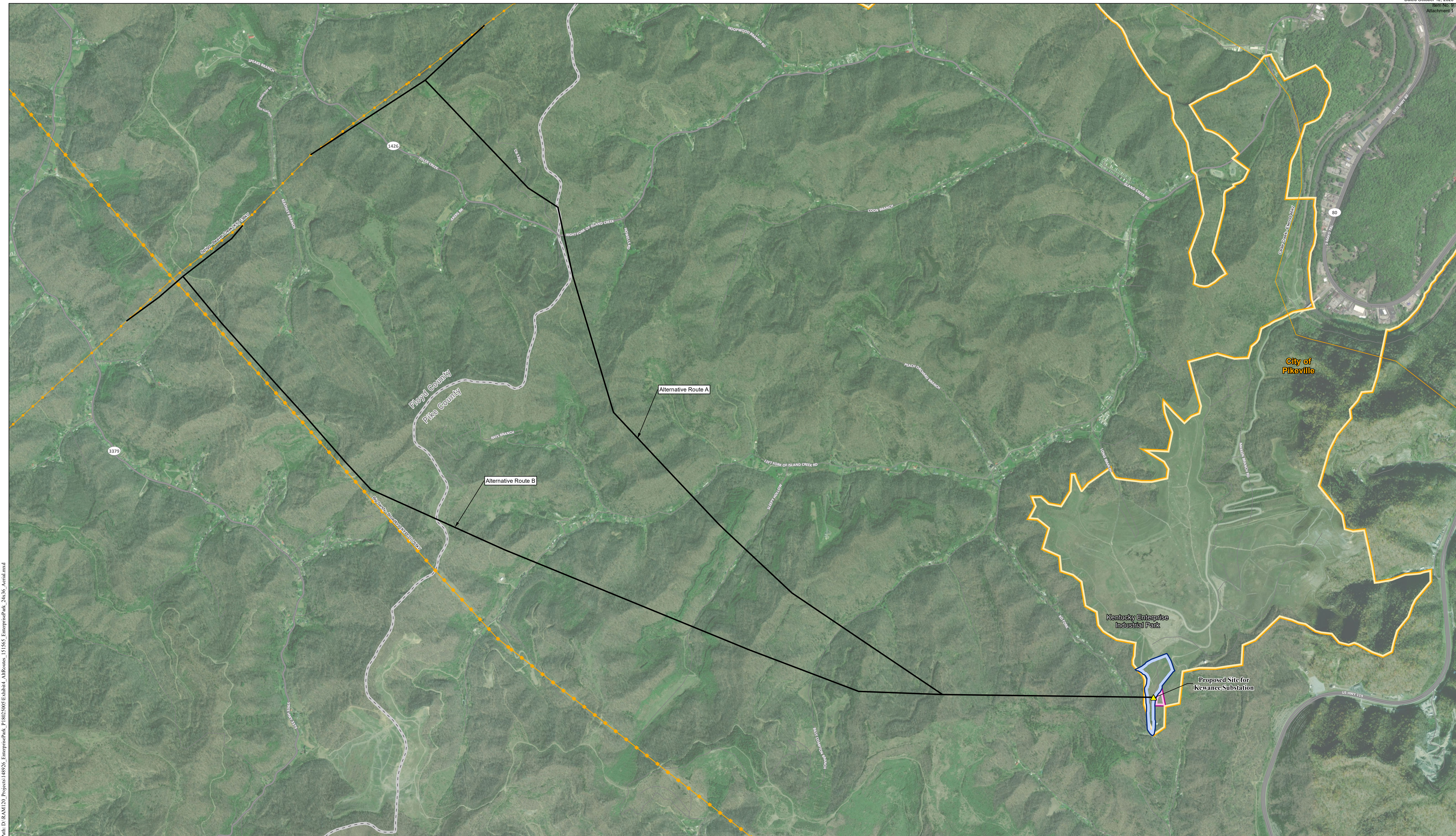
DATA REQUEST

KPSC 1-09 Refer to Kentucky Power's application, Exhibit 14. Explain why this map is dated August 3, 2018, and why it is entitled "Kewanee-Enterprise Park, 138 kV Transmission Line Project, Exhibit 4: Alternative Routes."

RESPONSE

An updated Exhibit 4 was inadvertently not updated as part of the Application package. See KPCO_R_KPSC_1_9_Attachment1 for a copy of Exhibit 4 that is dated August 28, 2020.

Witness: Emily S. Larson











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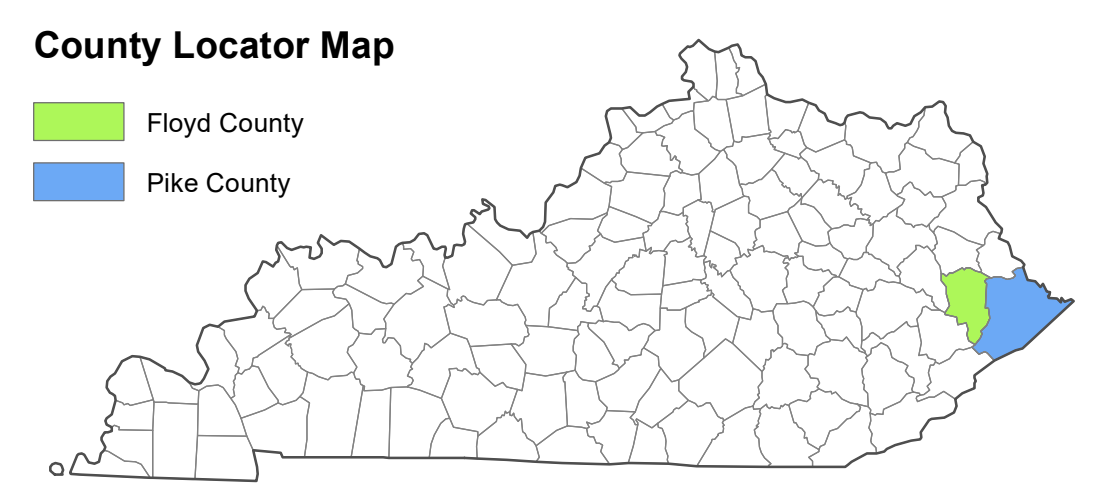
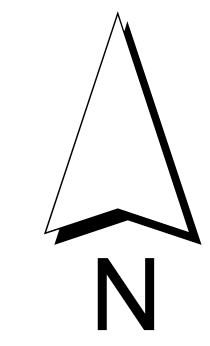
Kewanee-Enterprise Park 138 kV Transmission Project

Exhibit 14: Alternative Routes

Date: 8/28/2020
Sheet 1 of 1

-  Proposed Substation Site
-  Alternative Routes
-  Existing AEP Transmission Line (69kV or lower)
-  Existing AEP Transmission Line (115-230kV)
-  Existing AEP Transmission Line (345kV or higher)
-  Parcel Purchased for Substation
-  City of Pikeville
-  Land to be Purchased from the City of Pikeville

Base Map Source: Esri, DigitalGlobe, GeoEye, Earthstar
0 1,000 2,000 3,000
Feet
1" = 1,000 feet



DATA REQUEST

- KPSC 1-10** 10. Refer to Kentucky Power’s application, pages 1 and 4, and the Koehler Testimony, pages 2 through 4. Criteria violation 1 appears to be two single contingency violations (1) the loss of the Cedar Creek 138/69/46 kV transformer or (2) the loss of the Cedar Creek – Fords Branch 46 kV line. Criteria violations 2, 3, and 4 appear to be double contingency violations, which involves the loss of the Cedar Creek 138/69/46 kV transformer and either the loss of a line or another transformer. Criteria violation 5 appears to be a double contingency violation that involves neither the loss of the Cedar Creek 138/69/46 kV transformer, the loss of the Cedar Creek – Fords Branch 46 kV line, nor the loss of the Fords Branch substation.
- a. Explain how the replacement of an existing Cedar Creek relay panel and constructing a 138 kV line and substation that removes the distribution load served by the Fords Branch substation and the existing 46 kV system satisfies each of the five listed contingency violations.
 - b. Explain the differences in how North American Electric Reliability Corporation (NERC) recommends or requires the prioritization of network upgrades for single and double contingency criteria violations.
 - c. Explain whether there are any single contingency criteria violations that require the completion of this project.

RESPONSE

- a. The criteria violations exist due to the amount of load being served from the 46 kV network in the projected 2023 RTEP series cases. The various outage scenarios identified that result in the violations reduce the number of sources serving the 46 kV network, forcing the power to flow through a single path to serve the load. The proposed project reduces the amount of load remaining on the 46 kV network by removing the load served at Fords Branch from the 46 kV network and relocating it to the 138 kV network and thereby eliminating the thermal and voltage violations identified in the study. The work identified in the Project, including the replacement of the Cedar Creek relay panel and constructing a 138 kV line and substation, is the required work to remove the Fords Branch load from the 46 kV network.
- b. There is no difference in recommendation or prioritization of network upgrades required for either single or double contingencies. Each contingency defined in the NERC standards that result in a violation is required to be remedied.

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c. The single contingency criteria violations identified are for the loss of the Cedar Creek 138/69/46 kV transformer or the loss of the Cedar Creek - Fords Branch 46kV line section. The solution for all identified violations, including those caused by these single contingencies, is the completion of this project.

Witness: Nicolas C. Koehler

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DATA REQUEST

- KPSC 1-11** Refer to the Koehler Testimony, pages 2 through 4 and page 5, lines 4 through 10.
- a. Confirm that removal of the load served by the Fords Branch substation eliminates the need to mitigate five criteria violations.
 - b. Given the premise the Fords Branch substation load must be removed from the 46 kV system, explain whether the construction of the Kewanee substation was the only option explored as an alternate way of serving the load. If not, explain what other options were explored.
 - c. Once the project is completed and the four distribution circuits emanating from the Kewanee substation are removed from the 46 kV system, explain whether they will be served solely from the Kewanee substation. If not, explain how the four distribution circuits will be served.

RESPONSE

- a. The statement as presented cannot be confirmed. The project in total is required to eliminate the five criteria violations identified in Company Witness Koehler's testimony. The retirement of the Fords Branch 46 kV Substation without the completion of the other project components required to transfer that load to the 138 kV system, including the construction of the Kewanee Substation and the transmission line, would not eliminate the violations on the 46 kV system.
- b. The Company considered the possibility of shifting the load from the Fords Branch Substation to other substations in the area. However, this possibility was determined to be both prohibitively expensive and infeasible. With regard to the optimum location for the new Kewanee Substation, the Company investigated multiple sites as detailed on pages 5-8 of Witness Larson's direct testimony.
- c. The Kewanee Substation will serve as the normal source for the two 12 kV circuits and the two 34.5 kV circuits. See the response for KPSC 1-7 (a) and (b) for the names and locations of these circuits. While each of the circuits will also have ties to other substations in the area, these substations would only be able to accept a portion of the total load normally served out of the Kewanee Substation.

Witness: Nicolas C. Koehler

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DATA REQUEST

KPSC 1-12 Refer to the Koehler Testimony, page 10–11. Explain why low short circuit strength and coordinating multiple capacitor banks in a small area are problems.

RESPONSE

The process of coordinating the automatic operation of shunt capacitor banks involves the MVAR rating of the capacitor and the short circuit availability that exists at the time of the capacitor bank being operated. In a transmission network, the voltage response of a shunt capacitor bank is directly proportional to the short circuit availability at that point in the system, based upon industry wide Flicker Analysis Response Studies. The voltage controlling relay scheme associated with this shunt capacitor bank must be able to account for the system normal, single contingency outage and worst double contingency outage operational scenarios that can develop. When a capacitor bank switches on, it causes an immediate rise in the voltage by injecting reactive power into the network. In instances where the strength of the system is low, meaning there are no strong sources feeding the area to help balance voltages, this immediate injection of reactive power causes the voltage to spike in a sudden burst. This sudden burst can cause operational performance issues. There are also existing capacitor banks at Henry Clay and Fords Branch station. Coordinating the settings and voltages set points on multiple capacitor banks in a small area could potentially result in hunting as described below. Capacitor banks operate in a defined voltage range. When a capacitor bank is switched on, it is because voltage at the station where the capacitor bank is located is below the defined threshold. Similarly, when the voltage is above a defined threshold, the capacitor bank will switch off. In the Project area, there are multiple capacitor banks located in stations that are very close to each other. In weak systems with low short circuit strength, switching one capacitor on may cause another station to exceed the high voltage setting, thereby switching that capacitor off, which could then cause the low voltage setting to be exceeded, causing another capacitor bank to switch on again. This phenomena, referred to as hunting, presents many challenges in determining the correct voltage settings. The Project eliminates this concern by removing load from the 46 kV network, thereby removing the need for more reactive power to mitigate the identified voltage violations.

Witness: Nicolas C. Koehler

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DATA REQUEST

- KPSC 1-13** Refer to the Koehler Testimony, pages 7 and 10 through 12.
- a. Explain whether the cost of the two alternatives discussed represent the total estimated costs that would be borne by Kentucky Power ratepayers and are comparable to the \$35.2 million cost of the current project on a like-item to like-item comparison basis.
 - b. The stated \$35.2 million cost estimate is not the true cost to Kentucky Power's ratepayers because, presumably, they will also be paying for Kentucky Transco's project investment as well. Provide the total cost to Kentucky Power ratepayers inclusive of Kentucky Transco's investment and explain how Kentucky Power ratepayers will bear Kentucky Transco costs.
 - c. Explain whether it is accurate to say that (1) because of the Fords Branch Substation's age and location, it can't be effectively upgraded and should be retired, and (2) removing the load served by the Fords Branch Substation by whatever means, from the 46 kV system alleviates the criteria violations. If not, explain what other work needs to be completed in order to alleviate the criteria violations.

RESPONSE

- a. The \$35.2 million cost for the proposed project is inclusive of both transmission and distribution costs. As provided in KPSC 1-2, subpart (a), Kentucky Transco would also invest \$3.3 million in the project, bringing the total cost of the proposed project to \$39.0 million. Conversely, the estimates provided for the project alternatives in Witness Koehler's testimony, \$52 million for the first alternative and \$70 million for the second alternative, are limited to transmission costs only. Any additional distribution costs would increase the estimated costs of these alternatives.
- b. See the Company's response to KPSC 1-2, subparts (a) and (c).
- c. (1) Fords Branch Station cannot be effectively upgraded because: (A) its constrained footprint will not allow the Company to properly sectionalize the section to protect its equipment and bring the station up to current standards; and (B) the condition of its equipment has deteriorated to the point that it would not be cost effective or feasible to rebuild the existing station while addressing the criteria violations in some other manner. Please note that the age of the components at Fords Branch is just one contributing factor to the current condition of the components and is not specifically a deciding factor in this situation.

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c. (2) The statement as presented cannot be confirmed. The load currently served by the Fords Branch Substation will be transferred to the 138 kV network. Moving load from Fords Branch to the proposed Kewanee 138 kV station as the Company proposes to do in connection with the project alleviates the identified criteria violations. The age, location, and condition of Fords Branch station is immaterial to the criteria violations. However, the PJM approved solution has the additional benefits of allowing AEP to retire Fords Branch station due to its condition and limitations at the station site.

Witness: Nicolas C. Koehler

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DATA REQUEST

- KPSC 1-14** 14. Refer to the Koehler Testimony, page 12.
- a. Identify and explain the additional supplemental needs existing on the Cedar Creek – Elwood 46 kV line that need to be addressed now or in the future.
 - b. Explain whether the Cedar Creek – Elwood 46 kV line will still need to be replaced if the project as proposed is approved and, if so, when.
 - c. Explain how the Cedar Creek – Elwood 46 kV line would be retired and the rest of the 46 kV system continue to be served without interruption of service.
 - d. Explain what cost elements are included in the estimated \$55 million cost to rebuild the Cedar Creek – Elwood 46 kV line.

RESPONSE

- a. The Cedar Creek - Elwood 46 kV circuit is 1966 Vintage and has 81 open conditions. The majority of the open conditions are structure related and include pole rot (rot top/shell), woodpecker and burn damage. The two sustained outages on this circuit have caused 179,728 CMI over the past five years. In this same five years there were 18 momentary outages. This need was reviewed with PJM stakeholders at the August 29, 2019 meeting as need number AEP-2019-AP032.
- b. Solutions to address the need associated with the Cedar Creek-Elwood 46 kV line are still being evaluated. One potential solution includes the retirement of this asset.
- c. Solutions to address the need associated with the Cedar Creek-Elwood 46 kV line are still being evaluated. There is one load serving station remaining on the 46 kV line after the retirement of Fords Branch station. Kentucky Power and AEP Transmission are working with the customer served at the remaining station to determine the best plan of service in the future. Once developed, a solution for the need associated with the line will be presented to PJM stakeholders through the M-3 process.
- d. The cost provided for the approximately 15.5 mile rebuild are high level conceptual costs and do not involve detailed engineering basis. The cost estimate assumes approximately \$3.5 million per mile for the rebuild, considering the terrain and location of the line in comparison to similar projects completed in the area.

Witness: Nicolas C. Koehler

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DATA REQUEST

KPSC 1-15 Refer to the Koehler Testimony, Exhibit NCK-2 page 4 of 12. Explain the meaning of the percentages in parentheses with regard to voltage deviation issues experienced at various substations and what the recommended tolerances are.

RESPONSE

The percentages in parentheses illustrate the voltage deviation at the station bus. As defined by AEP's FERC approved 715 planning criteria, following the occurrence of any operating condition in categories P1 through P7 of the NERC Reliability Standard TPL-001-4, a voltage deviation from system normal of 8% or greater is not acceptable at any station.

Witness: Nicolas C. Koehler

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DATA REQUEST

- KPSC 1-16** Refer to the Koehler Testimony, Exhibit NCK-2 page 9 of 12. Under the heading, "Equipment Material/Condition/Performance/Risk," the PJM report states, "In addition, breakers "A" & "B" have experienced 262 and 333 fault operations, exceeding the manufacture recommendation of 10."
- a. Explain why Kentucky Power allowed the breakers and other equipment to deteriorate to this point without replacement.
 - b. Provide a list of other substations and other relevant equipment throughout Kentucky Powers' service territory with conditions that exceed manufacturers' recommendations.

RESPONSE

a. The manufacturer's recommendations are guidelines and do not always mandate that an asset be retired after the indicated number of fault operations. Further, circuit breaker counters record faults without regard to the fault current level. Lower fault current levels typically result in less degradation of the contacts and other internal components. The manufacturer's recommendations thus serve as benchmarks for the examination and testing, and if indicated, the repair or replacement, of the affected asset. Kentucky Power also routinely inspects and tests substation components for evidence of degradation and damage as a result of fault operations. These efforts, in conjunction with the Company's maintenance activities, have allowed the Company to keep the equipment experiencing these fault operations in safe and reliable service. In addition, the Company may schedule the replacement of an asset in conjunction with other work so as to be able to perform the work in a cost-effective manner without unreasonably jeopardizing reliability. The Fords Branch circuit breakers "A" and "B", for example, were suitable for retirement in conjunction with the comprehensive Kewanee-Enterprise Park solution.

b. See KPCO_R_KPSC_1_16_Attachment1.

Witness: Nicolas C. Koehler

<u>Substation</u>	<u>Circuit Breaker</u>
ALLEN (KP)	ALLEN E
ALLEN (KP)	MCKINNEY A
ALLEN (KP)	PRESTONSBURG #1 C
ALLEN (KP)	PRESTONSBURG #2 D
ALLEN (KP)	STANVILLE B
ASHLAND	25-25 Y
ASHLAND	25-29 S
ASHLAND	KENOVA A
BAKER 345KV	CB-J2
BAKER 765KV	CB-P1
BARRENSHE	FREEBURN A
BARRENSHE	POUNDING MILL C
BARRENSHE	SLATE BRANCH B
BARRENSHE	VULCAN D
BEAVER CREEK	BECKHAM K
BEAVER CREEK	CEDAR CREEK T
BEAVER CREEK	CIRCUIT SWITCHER BB
BEAVER CREEK	DORTON R
BEAVER CREEK	ELWOOD G
BEAVER CREEK	FLEMING AB
BEAVER CREEK	FREMONT M
BEAVER CREEK	LIGON H
BEAVER CREEK	MCKINNEY #1 A
BEAVER CREEK	MCKINNEY #2 F
BEAVER CREEK	MORGAN FORK S
BEAVER CREEK	PRICE J
BEAVER CREEK	SOFT SHELL N
BECKHAM	CARR CREEK A
BECKHAM	HINDMAN B
BELFRY	BELFY/POND CREEK A
BELFRY	TOLER B
BELHAVEN	ARGILLITE/1167-03 A
BELHAVEN	DIEDERICH /1167-01 C
BELHAVEN	INDIAN RUN/1167-02 B
BELLEFONTE 138KV	CB-AD
BELLEFONTE 138KV	CB-AE
BELLEFONTE 138KV	CB-LL
BELLEFONTE 138KV	CB-W
BELLEFONTE 138KV	CB-X
BELLEFONTE 34KV	BUS TIE 1 K
BELLEFONTE 69KV	ASHLAND G
BELLEFONTE 69KV	COALTON Z
BELLEFONTE 69KV	PLEASANT ST C
BELLEFONTE 69KV	SOUTH POINT #1 I
BELLEFONTE 69KV	SOUTH POINT #2 JJ
BIG SANDY 138KV	CB-A

<u>Substation</u>	<u>Circuit Breaker</u>
BIG SANDY 138KV	CB-A2
BIG SANDY 138KV	CB-B
BIG SANDY 138KV	CB-B2
BIG SANDY 138KV	CB-D
BIG SANDY 138KV	CB-D1
BIG SANDY 138KV	CB-F
BIG SANDY 138KV	CB-H
BIG SANDY 138KV	CB-L2
BIG SANDY 138KV	CB-U
BIG SANDY 138KV	TRI STATE B1
BLUE GRASS	HAZARD B
BLUE GRASS	WALKERTOWN A
BONNYMAN	BIG CREEK S
BONNYMAN	HAZARD #1 B
BONNYMAN	HAZARD #2 C
BONNYMAN	HAZARD R
BONNYMAN	JACKSON A
BREAKS	CAP BANK CS AA
BREAKS	COLEMAN/JOHNSCREEK CB C
BREAKS	DORTON/ELWOOD CB A
BULAN	AJAX/DWARF A
BULAN	HEINER/AIRY C
BURDINE	JENKINS B
BURDINE	LEVISA A
BURTON	BEVINSVILLE B
BURTON	WHEELWRIGHT A
BUSSEYVILLE	LOUISA D
BUSSEYVILLE	MATTIE E
BUSSEYVILLE	TORCHLIGHT A
BUSSEYVILLE	WALBRIDGE B
CANNONSBURG	CANNONSBURG B
CANNONSBURG	ROUTE 3 A
CEDAR CREEK	ELWOOD A
CHADWICK	CB-G
CHADWICK	CB-H
CHAVIES	CAP BANK SWITCHER AA
CHAVIES	CHAVIES A
COALTON	CB-B
COALTON	CB-C
COALTON	CB-P
COALTON	CB-R
COALTON	CB-S
COLEMAN	BREAKS/JOHNS CREEK G
COLEMAN	CALLOWAY C
COLEMAN	KY. CARBON A
COLEMAN	PETER CREEK B

<u>Substation</u>	<u>Circuit Breaker</u>
COLEMAN	SPRIGG H
COLEMAN	STONE J
COLLIER	DAISY A
COLLIER	LOWER ROCKHOUSE J
COLLIER	SMOOT CREEK L
COLLIER	UPPER ROCKHOUSE K
COMBS	COMBS A
DAISY	HAZARD E
DAISY	LEATHERWOOD A
DAISY	LESLIE F
DEWEY	INEZ A
DEWEY	INEZ C
DEWEY	THELMA B
DORTON	BREAKS/ELWOOD A
DORTON	CB-G
DRAFFIN	BELCHER B
DRAFFIN	YELLOW HILL A
EAST PRESTONSBURG	LANCER B
EAST PRESTONSBURG	PRESTONSBURG A
ELWOOD (KP)	BEAVER CREEK A
ELWOOD (KP)	BREAKS - DORTON C
ELWOOD (KP)	CEDAR CREEK B
ELWOOD (KP)	VIRGIE/INDIAN CREEK P
FALCON	BURNING FORK G
FALCON	EKPCC #624 C
FALCON	OIL SPRINGS B
FALCON	SALYERSVILLE F
FEDS CREEK	FEDS CREEK B
FEDS CREEK	LICK CREEK A
FISHTRAP	DISTRIBUTION A
FLEMING	BEAVER CREEK A
FLEMING	BUS TIE 1 & 2 F
FLEMING	CIRCUIT SWITCHER AA
FLEMING	COLLIER E
FLEMING	FREMONT B
FLEMING	MCRBERTS C
FORDS BRANCH	ROBINSON CREEK B
FORDS BRANCH	SHELBY A
FORTY SEVENTH STREET	39TH ST A
FORTY SEVENTH STREET	CATLETTSBURG B
GARRETT (KP)	GARRETT B
GARRETT (KP)	LACKEY A
GRAHN	DISTRIBUTION A
GRAYS BRANCH	GREENUP A
GRAYSON	DIXIE PARK B
GRAYSON	LANDSDOWNE A

<u>Substation</u>	<u>Circuit Breaker</u>
HADDIX	CB-A
HADDIX	CB-B
HATFIELD (KP)	CB-A
HATFIELD (KP)	CB-B
HAYWARD	HALDERMAN B
HAYWARD	LAWTON A
HAZARD	BEAVER CREEK N
HAZARD	BLACKGOLD B
HAZARD	BONNYMAN #1 F
HAZARD	BONNYMAN #2 R
HAZARD	DAISY S
HAZARD	HAZARD C
HAZARD	KENMONT A
HAZARD	LESLIE E
HAZARD	WOOTON M
HENRY CLAY	ASHCAMP B
HENRY CLAY	REGINA A
HIGHLAND (KP)	DOW CHEMICAL A
HIGHLAND (KP)	WURLAND D
HITCHINS	DENTON D
HITCHINS	GRAYSON C
HITCHINS	WILLARD B
HOODS CREEK	SUMMIT C
HOWARD COLLINS	13TH ST. D
HOWARD COLLINS	29TH ST. E
HOWARD COLLINS	FLOYD ST G
HOWARD COLLINS	SUMMIT F
INDEX	CB-A
INDEX	CB-B
INEZ	CB-B
INEZ	CB-B2
INEZ	CB-C
INEZ	CB-C1
INEZ	CB-C2
INEZ	DEWEY M
JACKSON	BONNYMAN B
JACKSON	LEE CITY A
JACKSON	PANBOWL K
JACKSON	SOUTH JACKSON L
JEFF	BOONE LEDGE A
JENKINS	JENKINS B
JENKINS	KONA A
JOHNS CREEK	CEDAR CREEK CB G
JOHNS CREEK	COLEMAN-ELKHORN CITY B
JOHNS CREEK	INEZ H
JOHNS CREEK	META CB R

<u>Substation</u>	<u>Circuit Breaker</u>
KENWOOD	AUXIER B
KENWOOD	HAGER HILL A
KENWOOD	VAN LEAR C
KEYSER	CB-A
KEYSER	CB-B
KEYSER	CB-C
KIMPER	CB-B
LEE CITY	JACKSON B
LEE CITY	MORGAN COUNTY C
LEON SW (KP)	MOREHEAD A
LESLIE	#1 BANK B
LESLIE	DAISY C
LESLIE	HALSFORK F
LESLIE	HAZARD A
LESLIE	HYDEN E
LESLIE	PINEVILLE K
LESLIE	WOOTON/CUTSHIN D
MAYKING	ERMINE A
MAYKING	MILLSTONE B
MAYO TRAIL	DAVIS BRANCH C
MAYO TRAIL	EUCLID B
MAYO TRAIL	NIPPA A
MCKINNEY	CB-A
MCKINNEY	CB-B
MCKINNEY	CB-G
MCKINNEY	CB-H
MIDDLE CREEK	CB-B
MOBILE KP-3	KP-3 MOBILE CB-A
MOREHEAD	LEON B (OLD)
MOREHEAD	MORGAN COUNTY E
MORGAN COUNTY	LEE CITY A
MORGAN COUNTY	MOREHEAD D
MORGAN FORK	BEAVER CREEK B
MORGAN FORK	STANVILLE A
NEW CAMP	ARH B
NEW CAMP	SOUTHSIDE A
OLIVE HILL	GLOBE B
PIKEVILLE	CB-A
PIKEVILLE	CB-B
PIKEVILLE	CB-C
PRESTONSBURG	ALLEN #1 E
PRESTONSBURG	ALLEN #2 D
PRESTONSBURG	CITY B
PRESTONSBURG	THELMA F
PRESTONSBURG	UK A
RACELAND	BELLEFONTE A

<u>Substation</u>	<u>Circuit Breaker</u>
RACELAND	CSX RR B
REEDY COAL	CB-A
RUSSELL	ASHLAND OIL C
RUSSELL	BEAR RUN A
RUSSELL	KENWOOD B
RUSSELL FORK	DISTRIBUTION A
SALISBURY (KP)	CB-A
SALISBURY (KP)	CB-B
SALISBURY (KP)	CB-C
SECOND FORK	DISTRIBUTION CB-A
SHAMROCK	CB-A
SIDNEY	BIG CREEK A
SIDNEY	COBURN MTN. B
SILOAM	C. PORTSMOUTH C
SILOAM	DISTRIBUTION A
SLEMP	CB-A
SLEMP	CB-B
SLEMP	CB-C
SOFT SHELL	BEAVER CREEK K
SOFT SHELL	LEBURN B
SOFT SHELL	SPICEWOOD J
SOFT SHELL	VEST A
SOUTH PIKEVILLE	CEDAR CREEK-STANVILLE CB A
SOUTH PIKEVILLE	ISLAND CREEK D
SOUTH SHORE	SOUTH SHORE F1020-02 A
STINNETT	BEECH FORK B
STINNETT	REDBIRD A
STINNETT	WENDOVER C
TENTH STREET	10-12 B
TENTH STREET	10-2 C
TENTH STREET	10-3 D
TENTH STREET	10-6 A
TENTH STREET	FRONT STREET G
TENTH STREET	MIDTOWN F
TENTH STREET	WEST CENTRAL H
THELMA	THELMA(VIA MAYO TR) C
THELMA	THELMA(VIA W. PAINT) A
THELMA	TIE E
TOM WATKINS	CB A
TOPMOST	DEMA A
TOPMOST	KITE C
WEEKSBURY	CB-A
WEST PAINTSVILLE	CITY A
WEST PAINTSVILLE	PLAZA C
WEST PAINTSVILLE	SCHOOL B
WHITESBURG	CB-A

Substation

Circuit Breaker

WHITESBURG	CB-B
WHITESBURG	CB-C
WHITESBURG	CB-D
WOOTON	ARNOLD/DELVINTA C
WOOTON	HAZARD B
WOOTON	LESLIE A
WURLAND	GREENUP B
WURLAND	PCI - ROUTE 503 C
WURLAND	WURLAND A

Kentucky Power Company
KPSC Case No. 2020-00062
Commission Staff's First Set of Data Requests
Dated October 12, 2020

DATA REQUEST

- KPSC 1-17** Refer to the Koehler Testimony, Exhibit NCK-2 pages 10-11 of 12 and Exhibit NCK-3, page 3 of 5.
- a. The selected solution has an estimated transmission cost of \$28.2 million. Reconcile that cost with Kentucky Power's estimated \$35.2 million plus the cost that will be borne by Kentucky Transco.
 - b. Explain how the three scenarios (the selected solution and two alternatives) were conceived; i.e., does the software program itself conceive and evaluate different solutions independently or does the program operator specify parameters within which the program works.

RESPONSE

- a. The Company assumes the reference to "\$28.2 million" is a typographical error and the intended reference is to the \$23.2 million in project costs shown on Exhibit NCK-2. The total costs shown on NCK-3 are \$23.7 million. The estimates presented during PJM Sub Regional RTEP meetings, such as those shown in Exhibits NCK-2 and NCK-3, represent transmission costs only. The \$35.2 million estimate shown in the Company's CPCN Application includes the necessary distribution costs that are part of the overall project.
- b. The Planning Engineer specifies program inputs and parameters within which the software operates. The software itself does not identify solutions. The Planning Engineer identifies multiple solutions and utilizes the software to analyze whether any given proposed solution addresses the identified violations and/or create any new violations. Engineering and high-level cost comparisons are completed to optimize the best solution. Additionally, all solutions are also reviewed with PJM planning to ensure that the solution addresses all identified violations, does not cause additional violations, and is the most cost effective solution. The solution proposed in the Company's Application was approved by PJM as the most cost-effective solution to address all violations.

Witness: Nicolas C. Koehler

Kentucky Power Company
KPSC Case No. 2020-00062
Commission Staff's First Set of Data Requests
Dated October 12, 2020

DATA REQUEST

- KPSC 1-18** Refer to the Koehler Testimony, Exhibit NCK-3, page 3 of 5. For each of the two criteria violations under “Reason for the additional scope.”
- a. Provide a map illustrating the criteria violation and explain how a 28.8MVar switching shunt at the new Fords Branch (Kewanee) substation will function to mitigate the criteria violations.
 - b. Explain what the recommended NERC tolerances are for voltage magnitude violations.

RESPONSE

- a. Low voltage magnitude violations were identified at Kewanee station for the N-1-1 loss of the Beaver Creek Transformer 1 plus the Cedar Creek-Johns Creek 138 kV line or the N-1-1 loss of the Beaver Creek-Kewanee 138 kV line plus the Cedar Creek-Johns Creek 138 kV line. By installing a capacitor bank at Kewanee Station, the voltage violations are mitigated by injecting reactive power at the station, keeping the voltage above the low voltage criteria threshold.
- b. AEP's FERC approved 715 planning criteria prescribes voltage magnitude thresholds of 0.92 per unit to 1.05 per unit in the post-contingency state following the occurrence of any operating condition in categories P1 through P7 of the NERC Reliability Standard TPL-001-4 that addresses Transmission System Planning Performance Requirements.

Witness: Nicolas C. Koehler

Kentucky Power Company
KPSC Case No. 2020-00062
Commission Staff's First Set of Data Requests
Dated October 12, 2020

DATA REQUEST

KPSC 1-19 Refer to the Direct Testimony of Emily S. Larson (Larson Testimony), page 6. Confirm that one basic premise of the siting study was that the existing Fords Branch substation be retired and that a new substation be located in the Kentucky Enterprise Industrial Park.

RESPONSE

Confirmed, except that the Kewanee Substation will be located immediately adjacent to and south of the Kentucky Enterprise Industrial Park. At the restart of the Project in 2020, Company planners confirmed the need to transfer a portion of the load served by the Fords Branch 46 kV substation to the 138 kV system to address the PJM Baseline criteria violations on the 46 kV subtransmission system. Once this load was transferred, the Fords Branch 46 kV no longer served any electrical purpose. Moreover, it would have been impracticable and ineffective to upgrade or replace the equipment in the Fords Branch 46 kV Substation even if a need to do so existed. Finally, the location for the proposed, and required, Kewanee 138 kV Substation (previously approved Case No. 2018-00209) remained the most suitable location notwithstanding the cancellation of EnerBlu.

The proposed location for the Kewanee 138 kV Substation will allow the Company to serve the existing Fords Branch 46 kV Substation customers, was in proximity to the existing distribution system, and incidentally would allow the Company to address any future growth within the Enterprise Park. See the Testimony of Company Witness Koehler at 7-9; Testimony of Company Witness Larson at 5-8.

Witness: Emily S. Larson

Kentucky Power Company
KPSC Case No. 2020-00062
Commission Staff's First Set of Data Requests
Dated October 12, 2020

DATA REQUEST

- KPSC 1-20** 20. Refer to the Larson Testimony, pages 9 and 10.
- a. Provide further explanation as to the reasons why the Kentucky EPRI Methodology would not be suitable for siting the new 138 kV line.
 - b. Given the response provided to Item 20a., provide a comparison between the Kentucky EPRI Methodology and Kentucky Power's methodology showing how the latter overcomes the flaws in the former.

RESPONSE

a. In this particular instance, it is the opinion of the Company that the methodology employed for the Project was more suitable than the Kentucky EPRI methodology. The Company methodology was more appropriate given the small geographic size of the Study Area, uniform land use, and minimal constraint or avoidance areas. The Kentucky EPRI methodology develops and ranks alternative routes by assigning differing weights to different landscape resources or variables; in the case of this Project stark or varying differences in landscape resources or variables were not available. Instead the Company needed to rely on the Siting Team's professional judgment and experience in locating routes for and constructing transmission lines in rugged terrain. The Study Area has extremely steep terrain and alternative routes must span peak to peak on reclaimed or undeveloped ridgelines, while also avoiding individual buildings along roadways located in narrow valleys. The Company Methodology allowed the Siting Team to use detailed data obtained through site visits and investigations in a more efficient manner and based on expert judgement.

Lastly, the methodology used is consistent with the approach taken in connection with the Company's last five applications for a certificate of public convenience and necessity to construct a transmission line in the Company's service territory.

b. The use of the Kentucky EPRI model, in contrast to the Company's methodology, would likely require continual updates to the underlying GIS data inputs to respond to field investigation results and engineering and construction management input, which in turn would require iterative modeling runs to ensure that the results responded to new information from engineering, design, and access reviews. Ultimately, the results of the EPRI model would be behind the methodology used by the Company and would not produce more accurate or suitable alternative routes.

Witness: Emily S. Larson

Kentucky Power Company
KPSC Case No. 2020-00062
Commission Staff's First Set of Data Requests
Dated October 12, 2020

DATA REQUEST

KPSC 1-21 Refer to the Larson Testimony, page 18. Provide all written comments from the 2018 public open house held on May 3, 2018.

RESPONSE

The only written comments that the Company is aware of are comment cards that were obtained during the public open house meeting referenced in the question. See KPCO_R_KPSC_1_8_Attachment1 that is included as part of the response to KPSC 1-8, subpart (c).

Witness: Emily S. Larson

VERIFICATION

The undersigned, Brian K. West, being duly sworn, deposes and says he is Director Regulatory Services for Kentucky Power Company that he has personal knowledge of the matters set forth in the forgoing responses and the information contained therein is true and correct to the best of his information, knowledge and belief after reasonable inquiry.



Brian K. West

State of Indiana)
) ss Case No. 2020-00062
County of Allen)

Subscribed and sworn to before me, a Notary Public, in and for said County and State, Brian K. West this 23rd day of October, 2020.

Regiana M.
Sistevaris

Digitally signed by Regiana M.
Sistevaris
Date: 2020.10.23 08:46:23 -04'00'

Regiana M. Sistevaris, Notary Public

My Commission Expires: January 7, 2023



Larson Verification Case No 2020 00062 002.doc

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E-Signature Summary

E-Signature 1: Emily Larson (ESL)

October 26, 2020 10:05:43 -8:00 [0A23003ED857] [71.176.250.198]
 emily.larson@powereng.com (Principal) (Personally Known)

E-Signature Notary: Brenda Williamson (BW)

October 26, 2020 10:05:43 -8:00 [EFB421D561EB] [167.239.2.88]
 bgwilliamson@aep.com
 I, Brenda Williamson, did witness the participants named above electronically sign this document.





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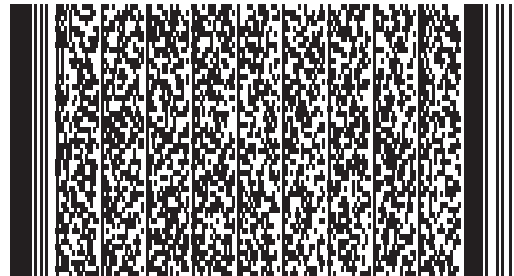
E-Signature Summary

E-Signature 1: Ryan Howell (RMH)

October 26, 2020 10:19:32 -8:00 [6307F886B017] [167.239.221.84]
 rmhowell@aep.com (Principal) (Personally Known)

E-Signature Notary: Brenda Williamson (BW)

October 26, 2020 10:19:32 -8:00 [54D1B8E94DED] [167.239.2.88]
 bgwilliamson@aep.com
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E-Signature Summary

E-Signature 1: Nicolas C Koehler (NCK)

October 26, 2020 07:02:40 -8:00 [35D6513CF2EE] [167.239.2.87]
nckoehler@aep.com (Principal) (Personally Known)

E-Signature Notary: Brenda Williamson (BW)

October 26, 2020 07:02:40 -8:00 [9F0E8E1D9E10] [167.239.2.88]
bgwilliamson@aep.com
I, Brenda Williamson, did witness the participants named above electronically sign this document.



