

SECTION 9-A4

PROGRESS ENERGY FLORIDA

LEVY NUCLEAR PLANT

**69-kV NORTH (IS) CONSTRUCTION/ADMINISTRATION TRANSMISSION
LINE PROJECT**

AND

**69-kV SOUTH (IO) CONSTRUCTION/ADMINISTRATION TRANSMISSION
LINE PROJECT**

LEVY COUNTY AND THE TOWN OF INGLIS (LEVY COUNTY)

JUNE 2, 2008

Levy Nuclear Plant 69-kV North (IS) and South (IO)
Construction/Administration Transmission Lines
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ACRONYMS AND ABBREVIATIONS

ACSR	Aluminum Conductor Steel Reinforced
AM	Amplitude Modulation
Barge Canal By-Pass	Cross Florida Barge Canal By-Pass Spillway
CAFEP	Corona and Field Effects Program
CR	County Road
CRAS	Cultural Resource Assessment Survey
CREC	Crystal River Energy Complex
Cross Florida Greenway	Marjorie Harris Carr Cross Florida Greenway State Recreation and Conservation Areas
dB	Decibels
dBA	A-Weighted Sound Level
EMF	Electric and Magnetic Fields
ERP	Florida Environmental Resource Permit
ESRI	Environmental Systems Research Institute, Inc.
FAA	Federal Aviation Administration
F.A.C.	Florida Administrative Code
FCC	Federal Communications Commission
FDACS	Florida Department of Agriculture and Consumer Services
FDEP	Florida Department of Environmental Protection
FDHR	Florida Department of State, Division of Historical Resources
FDNR	Florida Department of Natural Resources
FDOT	Florida Department of Transportation
FFWCC	Florida Fish and Wildlife Conservation Commission
FLUCCS	Florida Land Use Cover and Forms Classification System
FM	Frequency Modulation
FMA	Florida Managed Area
FMSF	Florida Master Site File
FNAI	Florida Natural Areas Inventory
FPSC	Florida Public Service Commission
F.S.	Florida Statutes
GIS	Geographic Information System
Golder	Golder Associates Inc.
IO	Levy Nuclear Power Plant South(IO) Construction/Administration Transmission Line
IS	Levy Nuclear Power Plant 69-kV North (IS) Construction/Administration Transmission Line
KCmil	thousand circular mil
kV	Kilovolt
kV/m	kilovolt per meter
LNP	Proposed Levy Nuclear Plant Units 1 and 2
MCR	Maximum Current Rating

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mG	milliGauss
MHz	megahertz
NESC	National Electric Safety Code
NRHP	National Register of Historic Places
OFW	Outstanding Florida Water
PEF	Progress Energy Florida, Inc.
PPSA	Florida Electrical Power Plant Siting Act
RV	Recreational Vehicle
SHPO	Florida's State Historic Preservation Officer
SR	State Road
SWFWMD	Southwest Florida Water Management District
TIITF	Florida Board of Trustees of the Internal Improvement Trust Fund
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
USFWS	U.S. Fish and Wildlife Service
Utility Search Conference	Community Partnership for Energy Planning Utility Search Conference

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9-A4.0 INTRODUCTION

Florida Power Corporation, d/b/a Progress Energy Florida, Inc. (PEF), is committed to providing safe, reliable, and affordable energy to its customers. PEF provides electric service to 1.7 million customers and a population of more than 5 million people. The company maintains a diverse mix of power generating facility resources to help maintain affordable, efficient, and reliable service when fuel prices and supplies are volatile.

As demand for electricity grows, generation and transmission capability must be prepared to do the same. The Levy Nuclear Plant (LNP), new transmission lines and certain transmission system upgrades are components in PEF's baseload generation plan for serving the increasing load and customer base in the Central Florida region. PEF is seeking certification of the corridors identified in this application pursuant to the Florida Electrical Power Plant Siting Act (PPSA), Chapter 403, Florida Statutes (F.S.) and Chapter 62-17, Florida Administrative Code (F.A.C.). The certification provides for the centralized and coordinated permitting of the LNP as well as the associated facilities, including the transmission lines included in this application. For linear facilities associated with an electrical power plant, such as the proposed transmission lines, the PPSA provides for the certification of "corridors," the area within the associated linear facilities' rights-of-way must be located. Once the rights-of-way for the new transmission lines have been acquired, the boundaries of the corridors will be revised to those of the acquired rights-of-way. The remainder of the corridors will then have no further legal significance with relation to this project. Certification under the PPSA is the sole license of the State of Florida and non-federal agency approval of the location of the LNP, associated facilities and transmission corridors and authorizes, in part, construction and maintenance of the transmission lines. Section 9-A4 addresses the certification of corridors for the two proposed 69-kV transmission lines in Levy County related to the construction and administration of the LNP: the 69-kV North Construction/Administration transmission line (IS) and the 69-kV South Construction/ Administration transmission line (IO). These proposed transmission lines are also known as the Levy North and Levy South transmission lines.

9-A4.1 MAPS

The figures included in this application comply with or exceed the standards set forth in the Draft Proposed Rule 62-17.900, F.A.C. (Application Guidelines)¹ dated June 27, 2007 related to electrical transmission lines.

¹ Pursuant to Sections 403.501-518, F.S. and Chapter 62-17, Part (62-17.011 through 62-17.293), F.A.C.

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9-A4.2 PROJECT DESCRIPTION

9-A4.2.1 Introduction

To identify the corridors for the 69-kV IS and IO proposed transmission lines, PEF assembled a corridor selection team consisting of specialists in line design, environmental science, land use planning, system planning, real estate acquisition, and corporate communications to complete the studies necessary to identify corridors that could be permitted, appropriately balance the various siting criteria, and meet the reliability, safety, and constructability criteria of the company and applicable agencies and organizations.

The multidisciplinary corridor selection team included representatives of PEF's Environmental Services, Engineering, Real Estate, Regional Administration, and External Relations departments; and consultants with expertise in transmission line siting and licensing, ecology, land use planning, Geographic Information System (GIS), engineering, historical and archaeological resources, regulatory and community relations. In addition, PEF's legal staff and outside legal counsel provided guidance during the corridor selection process.

The corridor selection team was also assisted throughout this process by PEF's proactive process to inform the public and obtain community input on the planning for transmission facilities associated with the LNP. PEF created the Community Partnership for Energy Planning which is a partnership between PEF and a broad range of stakeholders designed to include all interests within the communities that may be impacted by new transmission lines. Stakeholders involved in the process included local governments, regional planners, land and property owners, environmentalists, agencies for environmental resources, and business among others.

The Community Partnership for Energy Planning Utility Search Conference (Utility Search Conference) and its Community Working Groups, an innovative process designed to create an open dialogue between divergent stakeholders and public interest groups, was utilized as part of the public involvement process. In addition, 13 publicly-noticed open houses were conducted in the ten counties with candidate transmission line corridors and PEF established a Web site to provide the public with the latest news and information on the work of the corridor selection team. Attachment 9-A4-1 summarizes the project's public involvement process.

9-A4.2.2 Corridor Location

The general location of the 69-kV IS and IO proposed transmission lines within Levy County is presented in Figure 9-A4.0-1. The 69-kV IS Corridor is located between the LNP and US 19, and is located entirely on PEF owned property. The 69-kV IO Corridor is located between the LNP and County Road (CR) 40. A majority of the 69-kV IO Corridor is located on PEF owned property.

9-A4.2.3 Need for the Project

As Florida's population and energy use continue to grow, PEF is pursuing a balanced solution to meeting future energy demands. That solution includes a continued emphasis on energy efficiency and alternative sources of electricity, as well as investments in new power generating facilities. Because power generating facilities take years to plan and build, PEF is evaluating options for new facilities that will be needed in the future. Through careful planning, PEF seeks to ensure that Florida has a safe, reliable and affordable source of electricity.

The demand for electricity in PEF's service territory is estimated to increase by 25 percent over the next decade as a result of population growth, larger homes and more appliances and electronics per customer. Adequate electric system capability ensures reliable power for customers and continued economic stability for the community.

The LNP is a key component in PEF's baseload generation plan for serving the increasing load and customer base in the Central Florida region. In addition to the generation plant itself, construction of the LNP will, among other things, require construction of new transmission lines, including the 69-kV IS and IO proposed transmission lines.

9-A4.2.4 Proposed Transmission Line Design Characteristics

The 69-kV IS and IO proposed transmission lines will be constructed using single-shaft tubular steel or spun cast concrete structures. Typical structure configurations anticipated for use on these proposed transmission lines are shown in Figure 9-A4.2-1 through Figure 9-A4.2-2. The structures will be supported with engineered foundations. The tangent structure foundations will normally consist of either direct buried structures with compacted rock or concrete backfill. The angle and deadend structure foundations will normally consist of either direct buried structures with compacted rock backfill, concrete backfill or a reinforced concrete drilled pier, depending on soil and loading conditions. Structures may also utilize guys and anchors at angle and deadend structures to help support the load. Structures other than those shown may be required to accommodate specific features such as streams, major road intersections and highway crossings, other transmission lines, or other site-specific engineering considerations.

The conductor is anticipated to be 795 thousand circular mil (KCmil) Aluminum Conductor Steel Reinforced (ACSR) "Drake" or equal. The maximum conductor operating temperature will be 100°C (212°F) for normal operation and 140°C (284°F) for emergency operation conditions. The maximum current rating (MCR) is 1295 amps. The structures will include one overhead ground wire (shield wire). The shield wire selected will be either standard steel stranded ground wire or standard optical ground wire (fiber optic cable) and will be used for protection and control and other communications. The typical conductor configuration,

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insulators, and hardware are shown in Figure 9-A4.2-3. The conductor profile for the typical structure configuration is shown in Figure 9-A4.2-4

The typical span lengths between structures will range from approximately 250 feet to 600 feet. The typical structure heights will range from approximately 60 feet to 90 feet depending upon types of underbuild facilities encountered along the route conditions. The individual span lengths will be based on the topography of the specific route, the width of the right-of-way, and other transmission engineering design parameters.

Although the vertical clearance of the transmission lines will vary along the right-of-way, in all instances the transmission lines will meet the requirements of the National Electrical Safety Code (NESC) (Institute of Electrical and Electronics Engineering, Inc, approved April 2007) and will have a typical minimum clearance above the ground of 24 feet. Clearance will also be provided for operational requirements of regulatory agencies such as over roads and works of a water management district.

Existing roadways, access roads, and structure pads will be used for construction and maintenance access to the transmission lines, wherever practicable. In areas where the new transmission lines will be constructed adjacent to existing transmission right-of-way, improvements to the associated access roads and/or pads may be made depending on the status of the existing conditions. Where adequate access roads or structure pads do not exist, new roads and pads may be constructed. These roads will be unpaved with a top elevation up to 2 feet above expected seasonal high water and a typical road surface width of 18 feet. Figures 9-A4.2-5 and 9-A4.2-6 present a plan and profile view of a typical access road and typical structure pad. No new bridges are anticipated to be constructed for the 69-kV IS and IO proposed transmission lines.

9-A4.3 CORRIDOR

9-A4.3.1 Corridor Selection

Siting studies were conducted to identify the corridors for the 69-kV IS and IO proposed transmission lines. The corridor selection team's primary focus was to develop the transmission line corridor siting methodology, establish corridor segments and candidate corridors, conduct a systematic evaluation of the candidate corridors, assist in the public involvement process, and identify corridors for the 69-kV IS and IO proposed transmission lines that provides an appropriate balance when considering the siting criteria. The work of the corridor selection team consisted of a sequential screening and evaluation process which included the establishment of a study area, regional screening and mapping of that study area, selection and evaluation of candidate corridors; and selection of the 69-kV IS and IO corridors. A summary description of each phase of the corridor selection process is presented in the following sections.

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9-A4.3.1.1 Establish and Define the Project Study Area

Based on the location of the endpoints for the 69-kV IS and IO proposed transmission lines, study areas were established with boundaries established that would allow for multiple candidate corridors to be developed between the endpoints. The study areas can be described as follows:

Proposed 69-kV IS Transmission Line

The 69-kV IS proposed transmission line study area includes an area of less than 5 acres in Levy County between the LNP and US 19. The location of this study area is designated on Figure 9-A-4.3-1 by a red triangle.

Proposed 69-kV IO Transmission Line

The 69-kV IO proposed transmission line study area is approximately 2.5 miles (east-west) by 2.8 miles (north-south) in southern Levy County. The location of this study area is designated on Figure 9-A-4.3-1. Its boundaries are as follows:

North: The northerly boundary line extends in an east-west direction approximately 2.8 miles north of the Cross Florida Barge Canal;

East: The easterly boundary extends in a north-south direction approximately 4 miles east of the intersection of US 19 and CR 40;

South: The southerly boundary line extends in a generally east-west direction near the Cross Florida Barge Canal; and

West: The westerly boundary line extends in a north-south direction near the intersection of US 19 and CR 40.

9-A4.3.1.2 Regional Screening and Mapping

Based on environmental and land use features, the regional screening exhibit (see Figure 9-A4.3-2) for the 69-kV IS and IO proposed transmission lines was developed to preliminarily identify potentially unfavorable and restricted areas within the study areas as well as to identify existing linear facilities that could be considered as co-location opportunities for the two 69-kV proposed transmission lines in subsequent analysis phases.

Using collected geographic information and the regional screening criteria developed by the corridor selection team, environmental and land use features were identified and input to the GIS database. The features included on the regional screening map are identified in Table 9-A4.3-1. Aerial photography, the regional screening exhibit, as well as other data collected by the corridor selection team was used in the candidate corridor identification process.

9-A4.3.1.3 Selection and Evaluation of Corridor Segments

Based on the corridor selection team's knowledge of this part of the State of Florida, experience in previous transmission line studies, and input from the public involvement process, criteria for identifying corridor segments were developed. Those criteria required corridor segments, to the extent practicable, to:

- Maximize co-location with existing PEF transmission lines;
- Maximize co-location with other linear features including arterial and collector roads, major canals, and railroads;
- Minimize locating corridor segments adjacent to existing residential development where no transmission line already exists;
- Minimize the severance of land under common ownership;
- Maximize following previously disturbed alignments (roads, trails, canals, ditches, etc.) through Florida Managed Areas (FMA), wetlands and upland forested areas;
- Minimize river and canal crossings where no crossing (road, railroad, transmission or other utility crossing) already exists;
- Minimize locating corridor segments abutting schools;
- Minimize locating corridor segments abutting community facilities;
- Encourage location close to existing industrial and extractive land uses;
- Minimize location within traditional business districts with concentrations of older or historic buildings; and
- Maintain distance from registered public and private airports consistent with Federal Aviation Administration (FAA) and other applicable state and county regulations.

Candidate corridor segments were identified by applying these criteria to the data collected during the regional screening stage of this project. Those candidate corridor segments were then mapped on aerial photography and reviewed and accepted by the corridor selection team. Candidate corridors were developed by linking the candidate corridor segments together to extend between the two transmission line endpoints and carried forward for further evaluation. The GIS database was used to determine quantitative measurements and other engineering considerations that formed the basis of the cost evaluation for the candidate corridors. The candidate corridors were subjected to a quantitative and qualitative evaluation to determine the transmission line corridors most suitable for construction, operation, and maintenance in a safe, reliable manner considering the environmental, land use/real estate, design, engineering, safety, and cost criteria described herein.

9-A4.3.1.4 Candidate Corridor Review

Available engineering information for candidate corridor review included system maps for the existing PEF transmission lines and other facilities within the study area, PEF's general substation arrangement drawings for existing, planned, and proposed plant switchyard and substations. The identification and evaluation of

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ecological, physiographical, infrastructure, land use and cultural resource data was also conducted based on data collected from various federal, state, and local agencies as well as private sources including the following data sources:

- U.S. Geological Survey (USGS) 7.5-minute series quadrangle maps;
- Florida Fish and Wildlife Conservation Commission (FWCC) protected wildlife species data;
- Florida Department of Agricultural and Consumer Services (FDACS); protected plant species data;
- Florida Natural Areas Inventory (FNAI) element occurrence data;
- Southwest Florida Water Management District (SWFWMD) land use/land cover data;
- Levy County information regarding existing and proposed schools, community facilities, parks, and roadway improvements;
- Levy County GIS databases consisting of property ownership maps, public records and aerial photography; and
- Comprehensive Plans, future land use maps, and land development codes for Levy County and the Town of Inglis (Levy).

Review of the 69-kV IS and IO Corridors consisted of a review of a series of environmental, land use, engineering, safety, and cost criteria. This evaluation included information collected during each phase of the analysis supplemented by information received from the public involvement process, site visits and meetings with PEF field personnel, state and local agencies, and the corridor selection team. The corridor selection team reviewed the 69-kV IO Corridor with concurrent studies of potential corridors for the 500-kV transmission lines which originate at the LNP; the LNP to the Citrus substation transmission line (LPC), the LNP to Crystal River Energy Complex (CREC) switchyard transmission line (LCR), and the LNP to the proposed Central Florida South substation transmission line (LCFS).

Systematic land use field reconnaissance was conducted for the 69-kV IO Corridor on publicly-accessible roads and by helicopter. In the field, the team's land use observations were recorded on the aerial photographs. When 2007 aerial photography became available to the corridor selection team in January 2008, those aerials were compared to the previously marked-up aerials. All of this information, as well as the county property appraiser's records, were added into the project GIS database.

The ecological review of the 69-kV IS and IO Corridors utilized existing SWFWMD land use/land cover data and FNAI element occurrence data for the study areas. Protected species (flora and fauna), eagle nests, upland forests, forested wetland areas, and herbaceous wetland areas were mapped and entered into the GIS database. Listed species that were not directly observed or identified in the FNAI database, but considered likely to occur based upon available habitat within the corridors, were described and their protected status identified. The corridor selection team concluded that co-locating the 375-foot

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long 69-kV IS Corridor with the proposed construction access road for the LNP site would reduce ecological and other impacts as well as reducing overall construction costs when compared to locating this corridor separate from the access roads.

9-A4.3.2 Corridor Descriptions

The 69-kV IS and IO Corridors have been developed to connect the LNP with existing 69-kV transmission lines to provide power to the LNP for construction and administrative needs. Locating the 69-kV IS and IO Corridors involved data collection and analysis and the exercise of professional judgment by the corridor selection team, balancing land use, environmental, safety, engineering and cost considerations.

The 69-kV IO Corridor is approximately 4.5 miles in length and is a mile wide for most of its length. This corridor width provides PEF with an appropriate amount of flexibility in avoiding site-specific constraints or accommodating co-location opportunities when selecting the final transmission line right-of-way within the 69-kV IO Corridor. A right-of-way of up to 70 feet is anticipated which will be reduced within the Levy/Citrus Common Corridor and wherever the right-of-way is adjacent to an existing road right-of-way.

The 69-kV IO Corridor will originate at the south boundary of the LNP site and extend south a distance of approximately 1.8 miles to encompass CR 40; just north of the Barge Channel By-Pass. This segment of the IO Corridor is approximately a mile wide. At CR 40, the 69-kV IO Corridor extends further west along CR 40 for approximately 0.7 mile. It is anticipated that this segment of the 69-kV IO Corridor will be located within or adjacent to the CR 40 right-of-way. Within the western portion of the 69-kV IO Corridor, it is anticipated that the transmission line will divert from the CR 40 right-of-way and intersect with the existing PEF Inglis-Ocala 69-kV transmission line, a distance of approximately 300 feet. The Buddy Risher Sports Complex is located within the 69-kV IO Corridor. The predominant land use within this section of the 69-kV IO Corridor is rural residential.

The 69-kV IS Corridor, an approximately 375-foot long corridor with a width of approximately 400 feet, will extend from the LNP westerly site boundary to allow connection to an existing 69-kV transmission line east of US 19. The corridor width provides PEF with flexibility in co-locating this proposed transmission line to the north or south of its construction access road.

The boundaries of the corridor will be revised when the rights-of-way are acquired. The remainder of these corridors will then have no further legal significance with relation to this project. The 69-kV IS and IO Corridors Map is presented as Figure 9-A4.3-3.

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9-A4.3.3 Alternate Corridors

PEF is not proposing any alternative corridors for this proposed corridor.

Pursuant to 2008 Florida House of Representatives' Bill 7135, Section 70 (Enrolled 2008), PEF will allow consideration of alternate corridors that may be proposed by other parties for all or portions of this corridor, including alternate substation sites for the two proposed substations. Accordingly, PEF requests that the Florida Department of Environmental Protection (FDEP) use the application processing schedule set forth in Sections 403.521 – 403.526, 403.527(4), and 403.5271 for this corridor, including the opportunity for the filing and review of alternate corridors or substation sites, if a party timely proposes an alternate transmission line corridor route or substation site for consideration. Any party that chooses to propose an alternate corridor or substation site should consult with the FDEP Siting Coordination Office, 2600 Blair Stone Road MS-48, Tallahassee, FL 32399-2400, (850) 245-8002, Attn: Mike Halpin, to obtain guidance on the statutes, rules, and policies that govern the filing of alternate corridors. All information regarding any proposed alternate corridor must be submitted in accordance with the procedures and in compliance with the schedule for submittal of such alternate corridors under Florida House of Representatives' Bill 7135 Section 70 (Enrolled 2008), amending section 403.5064(4), F.S., or on such other schedule established by the Administrative Law Judge assigned to this site certification proceeding.

9-A4.3.4 Access Roads

Access roads are required to provide efficient and safe ingress and egress to the transmission line structures for construction and maintenance of the transmission lines. Access roads are generally installed the full length of the transmission line right-of-way. Existing access roads will be reviewed to determine if they can be used for construction and maintenance activities associated with the proposed transmission lines. In some areas these existing roads may need to be upgraded for construction and maintenance activities associated with the new transmission lines.

Where there are existing structure pads on an existing transmission line, these areas may be expanded to include the structure pad area for the new transmission line. In some areas, additional structure pads may be required. In areas where new rights-of-way are required, new access roads and structure pads may also be required. Figure 9-A4.2-5 and Figure 9-A4.2-6 provide typical access road and structure pad cross sections.

Construction in wetlands begins with installation of silt fences or stacked hay bales along the perimeter of the right-of-way, followed by selective clearing of the right-of-way. Construction of access roads and pads in wetland areas follows the initial clearing and consists of additional silt fence installation along the perimeter of the proposed access road and pads followed by final clearing and grubbing of the access road and pad areas. Once the area is free of trees and stumps, a

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geo-textile liner is laid and staked in place. Following the liner installation, compacted clean fill is installed up to about 6 inches below finished grade. The final 6 inches consists of compacted sand and gravel mixture to ensure a stable surface. The final grade of the road and/or pad is generally set up to 2 feet above the seasonal high water line elevation (see Figures 9-A4.2-5 and 9-A4.2-6).

Culverts are added under the access roads in wetlands to maintain flow. A minimum of 2 feet of cover is installed over culverts. The culvert inverts are placed so that the invert elevation is the same as the wetland floor elevation. A combination of 18-inch, 24-inch, and 36-inch diameter culverts is typically utilized with the 18-inch-diameter pipe used in most cases to limit the depth of fill. Culverts and access roads are designed to equalize the water volume created from a small rainfall event. The culvert's intended use is to maintain normal pool equilibrium. The culvert system is not intended to create a retention or detention area. Under a major intensity rainstorm the water level will flow over the access road. The access road will function as an emergency spillway, thus equalizing the wetland pool.

Where construction of roads is required in upland areas, soil from both sides of the road surface may be used for fill. Bulldozers and/or motor graders will be used. In cases where hauled fill is required, the fill will be spread, compacted, and shaped to the design width and elevation (See Figure 9-A4.2-5).

9-A4.3.5 Cost Projections

Cost projections for the transmission lines are based on preliminary design data and estimated costs. The cost projections are based on comparable lines of similar voltage constructed in the region along with average real estate costs in Levy County. The actual costs for the transmission lines will depend upon the final location of the right-of-way within the corridor, line length, structure configuration, the number and type of structures, mitigation costs, costs of right-of-way, and other site-specific conditions. The exact location, number, and types of structures needed will be determined following certification of the corridor and selection of the right-of-way.

The estimated cost for transmission line construction, including right-of-way acquisition, right-of-way clearing, access road construction, mitigation, and line installation, ranges from approximately \$1.5 million to \$3 million, per mile or a total construction cost of approximately \$3 million to \$7 million for the 69-kV IS and IO proposed transmission lines. Cost estimates were calculated in current year dollars and then escalated for the year of the expected expenditure.

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9-A4.3.6 Social and Political Environment of the Corridor Area

9-A4.3.6.1 Governmental Jurisdictions

The 69-kV IS Corridor is located within Levy County, Florida and 3 miles north of the Town of Inglis. The 69-kV IO Corridor is located within Levy County, Florida and in the Town of Inglis (see Figure 9-A4.3-4).

None of the following federal, state, and local jurisdictional areas are located within 0.5 mile of the 69-kV IS Corridor: National Parks, National Forests, National Seashores, National Wildlife Refuges, Wilderness Areas, National Memorials or Monuments, National Landmarks, Marine Sanctuaries, Estuarine Sanctuaries, Roadless Area Review and Evaluation areas, National Wild & Scenic Rivers, Critical Habitat of endangered species, State Parks, State Forests, Game Management Areas, Areas of Critical State Concern, Conservation and Recreation lands, Save Our Rivers lands, State Archaeological Landmarks or Landmark Zones, Aquatic Preserves, Outstanding Florida Water (OFW), Florida Springs, Florida Wild & Scenic Rivers, County Park, Indian Reservations, and Military Reservations (see Figure A4.3-4).

There is one recreation area (Buddy Risher Sports Complex) within the 69-kV IO Corridor. There is one greenway (Marjorie Harris Carr Cross Florida Greenway State Recreation and Conservation Areas [Cross Florida Greenway]) and one OFW (Withlacoochee River) within 0.5 mile of the 69-kV IO Corridor (see Figure A4.3-4.) The properties in the vicinity of the 69-kV IO Corridor that are considered scenic, cultural, and natural landmarks are further discussed in Section 9-A8.3.6.4.

Other federal, state, and local jurisdictional areas that were evaluated but found to be neither in nor within 0.5 mile of the 69-kV IO Corridor include: National Parks, National Forests, National Seashores, National Wildlife Refuges, Wilderness Areas, National Memorials or Monuments, National Landmarks, Marine Sanctuaries, Estuarine Sanctuaries, Roadless Area Review and Evaluation areas, Critical Habitat of endangered species, State Forests, Game Management Areas, Areas of Critical State Concern, State Archaeological Landmarks or Landmark Zones, Aquatic Preserves, Florida Springs, Indian Reservations, and Military Reservations.

9-A4.3.6.2 Zoning and Land Use Plans

The PPSA, Sections 403.501 to 403.518, F.S., is the State's process for the licensing of large power plants. The PPSA is designed to provide a streamlined multi-agency review and approval process including local governments and is coordinated by FDEP. While most facilities typically need to obtain any number of permits or approvals from local, regional and state agencies, large electrical power plants in the State receive all necessary regulatory approvals through the PPSA process. All procedures for the issuance of local, regional and state permits or approvals are pre-empted by the PPSA, and only one license is issued, called a "certification." A PPSA-certified project may include a power

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plant's directly associated facilities and the electrical transmission lines carrying the power to the electrical grid. Such is the case for the PEF Levy Nuclear Project. As a result, the licensing of the transmission lines is conducted pursuant to the PPSA and applicable FDEP procedural rules. Unless a variance, exemption or exception is approved through the PPSA process, all applicable non-procedural requirements of agencies and local governments are applied to the transmission line via the agency review process and appropriate conditions of certification.

Florida law excludes electrical transmission lines from the definition of “development” that is subject to local government comprehensive plans and the land development ordinances that implement those comprehensive plans. See Section 163.3164(6), F.S. of Florida's Local Government Comprehensive Planning Act, which incorporates the definition of “development” found in Section 380.04, F.S. That statutory definition excludes electrical transmission lines and other linear utility facilities from the statutory definition of “development.” Section 380.04(3)(b), F.S. The 69-kV IS and IO transmission lines are covered by this exclusion and are not subject to local land use plans and zoning regulations under Section 403.50665, F.S. Electrical substations are not included in this statutory exclusion.

The following sections describe comprehensive plans, land development regulations, and codes of ordinances of the local government jurisdictions through which the 69-kV IS and IO transmission lines traverse. Where appropriate, some of these non-procedural requirements may be imposed as conditions of certification for the transmission lines. As stated above, references in ordinances and comprehensive plan provisions to separate approval processes and regulatory permits are not applicable under the PPSA process and are summarized in the following discussion only for the purpose of reflecting the contents of the ordinances or plans.

9-A4.3.6.2.1 Comprehensive Plans

Each Florida county and municipality has adopted a local comprehensive plan to meet the requirements of the Local Government Comprehensive Planning and Land Development Regulations Act of 1985 (also referred to as Florida's Growth Management Act), as presented in Chapter 163, Part II, F.S. and Chapter 9J-5, F.A.C.

The 69-kV IS and IO Corridors have been evaluated relative to the local comprehensive plans of Levy County and the Town of Inglis (Levy County). The following summarizes the policies that may be relevant to the 69-kV IS and IO transmission lines. This information is also presented in Attachment 9-A4-2 as an information source.

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Levy County

The Levy County Comprehensive Plan discusses electric utility facilities in the Infrastructure Element, Coastal Management Element, and the Conservation Element of the plan (as amended through June 1999). In the Infrastructure Element there is a Utilities sub-element that references electric utility projects. In the sub-element, the County identifies the need for electric utilities to support growth in the County and mentions the need to adequately and efficiently provide these utilities through coordination with private and state entities. The County encourages utility facilities to be located in areas that would serve growth areas while minimizing impacts to the appearance and character of the area (Policy 1.1); encourages utility facilities to be co-located with each other (Policy 1.2); and encourages utility facilities to use underground lines, where feasible (Policy 1.3). Policy 1.4 states that essential public utilities are permitted in all land use classifications and should be consistent with standards and guidelines in the Capital Improvement, Conservation and Coastal Management Elements. Policy 1.6 of the sub-element states that the County will develop guidelines and maintain contact with the provider to assure continuity and availability of service.

In the Coastal Management Element, Policy 1.6 states that underground utilities should be encouraged to maintain and enhance the aesthetic quality of the coastal area. Policy 14.2 states that electric utilities are considered “essential” infrastructure. Policy 5.11 recognizes the need for electrical utilities, and states that relevant siting studies should consider the importance of minimizing adverse social and environmental impacts. Policy 5.13 recognizes areas of ecological sensitivity and encourages utilities to direct potential growth resulting from a project towards favorable areas. Policy 5.14 encourages avoidance of disruption to environmentally sensitive areas existing in the coastal zone and minimization of line installation that may impact existing aquatic systems.

In the Conservation Element, Policy 1.1 states that enhancing air quality could be implemented by preserving trees, natural vegetation and open space through provisions identified in the land development regulations. Policy 5.2 states that habitat of any threatened or endangered species will be managed to ensure survival of that species. In addition, mitigation activities should be identified to sustain or increase the carrying capacity of habitat in accordance with State approved management plan(s).

Town of Inglis (Levy County)

The Town of Inglis Comprehensive Plan (as amended through July 2007) identifies public utilities in the Future Land Use Element of the plan. Policy 1-5 (h) identifies utilities to include electric transmission facilities and states the need to establish, adopt and implement density and intensity standards. Policy 3-2 states that a minimum 300-foot zone of protection is required for each of the Town’s potable water wells.

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9-A4.3.6.2.2 Future Land Use Categories

The relevant future land use categories of the local governmental jurisdictions traversed by the two 69-kV IS and IO Corridors are described below for information purposes only. The future land use categories within the 69-kV IS and IO Corridors and extending at least 0.25 mile from their boundaries are depicted on Figure 9-A4.3-5. Attachment 9-A4-2 contains reproductions of the future land use maps of Levy County and the Town of Inglis (in Levy County).

Levy County

Forestry/Rural Residential - The Forestry/Rural Residential future land use category is intended to provide for commercial forestry, accessory and supportive uses to the forestry industry. In addition the category provides for resource based and/or non-spectator based recreational uses, conservation uses and very low rural density development, which are spatially separated from forestry uses. The maximum residential density within this category is one unit per 20 acres with a minimum parcel size of 20 acres.

Low Density Residential – The Low Density Residential future land use category is intended to provide for single family residential uses and accessory and supportive uses to residential development. The maximum density is two dwelling units per acre.

Public (Use) – The Public (Use) future land use category is intended to provide for public buildings and grounds, including city halls; post offices; fire and police stations; libraries; public utilities; public potable water-wells; the County airport and maintenance yards; educational facilities; and other public facilities (such as churches, health centers, hospitals, etc). The minimum lot size is 0.25-acres.

Town of Inglis (Levy County)

Single Family Residential (Low Density) - The Single Family Residential future land use category is intended to provide for single family residential uses. The maximum density of one dwelling unit per acre is permitted. Typical uses allowed in the category include site-built homes, schools, and manufactured homes.

Educational/Public Buildings & Grounds/Other Public Facilities - The Educational/Public Buildings & Grounds/Other Public Facilities future land use category is intended to provide governmental services to support the residents of the Town of Inglis. Typical uses allowed in the category include public administration buildings, public safety and protection facilities, post offices, libraries, educational institutions, churches, cemeteries, highways and roads and associated rights-of-way for public and semi-public uses.

Conservation - The Conservation future land use category is intended to preserve, conserve and appropriately manage the natural resources of the town.

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Typical uses allowed in the category include single family residences (with a maximum density of one dwelling unit per 5 acres) and public passive recreational or open space uses.

Commercial – The Commercial future land use category is intended to provide retail, sales and business services to residents and visitors. Typical uses allowed in the category include retail (food, beverages, clothing, toys, bait and tackle, books, home furnishings, and auto), business services, personal services (barber shops, salons, locksmiths, and video), offices (attorney, accountant, laundry mat) as well as restaurants, bars, nightclubs and taverns. One residential unit per property owner or caretaker/watchman is allowed when regulations are met.

Mobile Home Parks – The Mobile Home Parks future land use category is intended to provide for residents of mobile homes parks. Uses allowed in the category include rental or condominium ownership of manufactured homes, park management office, ancillary services, and recreational vehicles. In addition, the category allows one detached single family dwelling per park for park owner or manager. A maximum density of five units per acre is permitted.

Existing Wellhead Protection Area – The Existing Wellhead Protection Area future land use category is intended to protect existing and future groundwater supply sources. The storage, handling, use, disposal or production of hazardous or toxic substances within, adjacent to, or in close proximity of the designated area is prohibited.

9-A4.3.6.2.3 Land Development Regulations and Codes of Ordinances

Potentially relevant substantive provisions for the relevant local government's land development regulations or codes of ordinances are summarized and discussed in the following paragraphs. This summary includes local government right-of-way use regulations. PEF will demonstrate compliance with the substantive provisions of these regulations through post-certification submittals to the respective local governments. Separate permits will not be required.

Levy County

The Levy County Code of Ordinances defines essential public utility services to include electric transmission and distribution lines, including electric utility poles, transmission towers and electric substations (Chapter 50 Land Development Code, Article I, Section 50-1). Provisions have been established for essential public utility services that include the routing or locating of utilities to avoid existing populated areas; and where avoidance is impossible, locate and design utilities to minimize adverse aesthetic impacts as specified in Section 50-765.

The Levy County Code of Ordinances (Chapter 50, Land Development Code, Article VII Miscellaneous Provisions, Division 2 Noise) identifies and discusses

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noise regulations for areas designated for urban development or primarily for residential uses as identified on the County future land use map. As specified in Section 50-1 Definitions, noise is defined as any sound that is produced in such quantity and for such duration that it annoys, disturbs or may injure persons of normal sensitivity. Noise is defined as sound of any kind or source that exceeds levels identified by the County. Noise is measured in decibels/A-weighted (dBA). This section also stated that no person can create, operate, or cause to be operated on private property any source of sound that exceeds the limits set by the County (Section 50-349). The maximum sound levels are designated by receiving land uses at the property line. As specified in Section 50-349 the following noise limitations have been established:

Maximum Sound Levels at the Property Line		
Receiving Land Use	Time	Sound Level Limit (dBA)
Residential Districts	7:00am to 10:00pm	65
	10:00 pm to 7:00 am	55
Rural Agricultural Districts	7:00am to 10:00pm	65
	10:00 pm to 7:00 am	55
Commercial Districts	7:00am to 10:00pm	65
	10:00 pm to 7:00 am	60
Industrial Districts	Anytime	75

The 69-kV IS and IO transmission lines construction, operation, and maintenance will comply with the Levy County noise ordinance except as authorized by the County.

Town of Inglis (Levy County)

The Town of Inglis Code of Ordinances (Chapter 42 Offenses and Miscellaneous Provisions, Article 1 In General, Section 42-6 Noise) identified and discusses noise regulations. As specified in Section 42-6, noise is defined as any sound which disturbs humans or other animals, or causes or tends to cause an adverse psychological or physiological effect on humans or other animals. A disturbance is defined as any sound that disturbs a reasonable person of normal sensitivities. The use of equipment used in construction, drilling, repair, alteration or demolition work between the hours of 9:00 pm and 6:00 am that creates a noise disturbance across a property boundary, except for emergency work of public service utilities or for work previously authorized by the Town Mayor, is typically prohibited. Special permits for relief from the noise level regulations are granted by the Town Mayor for temporary uses, as specified in Section 42-6(d). Relief is typically granted by special permit, for the hours of 7:00 am to 11:00 pm. As specified in Section 42-6(h)(3), noise limits have been designated as the following:

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By Noise Generating Zone		
Generating Zone	7:00 am to 7:00 pm	7:00 pm to 7:00 am
Commercial	70 dBA	55 dBA
Utility	70 dBA	55 dBA
Industrial	70 dBA	55 dBA
By Receiving Zone		
Receiving Zoning District	7:00 am to 7:00 pm	7:00 pm to 7:00 am
Residential zone, public space, or public/institutional zone	60 dBA	50 dBA
Commercial zone	70 dBA	55 dBA

The 69-kV IS and IO transmission lines construction, operation, and maintenance will comply with the Town of Inglis noise ordinance except as authorized by the Town.

Article XI (Tree Protection) of the Land Development Code discusses tree protection regulations and permitting requirements within the Town. As specified in Section 34-653(d) electrical utilities are exempt from the tree protection regulations, provided that the areas for maintenance or construction of new lines is conducted to avoid unnecessary removal and follows the NESC to achieve safe electrical clearances. Written notice of any tree removal should typically be provided to the Town five days prior to removal, unless under emergency situations.

As specified in Section 34-654, protected trees that interfere with the location of, servicing of, or functioning of existing lines may be removed without prior notification made to the Town.

9-A4.3.6.3 Easements, Title, Agency Works

Easements or other appropriate authorizations will be necessary to cross lands under the jurisdiction of the Florida Board of Trustees of the Internal Improvement Trust Fund (TIITF) and other governmental agencies. Crossing federal highways such as I-75 typically require approval from the Florida Department of Transportation (FDOT). Other entities that would normally be contacted for permits or approvals to cross existing facilities include state, county, and municipal governments for maintained roads; water management districts; railroad companies for their facilities; and gas pipeline companies. All crossing of state roads will conform to the specifications in the FDOT's Utility Accommodation Manual (2007), applicable.

There is one recreation area (Buddy Risher Sports Complex) within the 69-kV IO Corridor. Crossing this property may require easements or other appropriate authorizations.

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Table 9-A4.3-3 identifies the facilities anticipated to be crossed by the transmission lines, the affected agency, and the type of approval that would typically be required.

9-A4.3.6.4 Vicinity Scenic, Cultural, and Natural Landmarks

There are no scenic, cultural, and natural landmarks within the 69-kV IS and IO Corridors. The properties within the vicinity of the 69-kV IS and IO Corridors that can be considered scenic, cultural, and natural landmarks are described below.

The Cross Florida Greenway is located adjacent to the southern edge of the 69-kV IO Corridor. The Cross Florida Greenway, which includes Inglis Island, is approximately 110-miles long traversing through Citrus, Levy, Marion and Putnam Counties, and occupying much of the land that was formerly the Barge Channel By-Pass. The Cross Florida Greenway stretches from the Gulf of Mexico to the St. Johns River.

The Withlacoochee River, which is an OFW, is located approximately 0.2 mile south of the 69-kV IO Corridor. An OFW is defined as “waters designated by the Environmental Regulation Commission as worthy of special protection because of their natural attributes” (Chapter 62-302.700(9), F.A.C.).

9-A4.3.6.5 Archaeological and Historic Sites

Coordination was conducted with the Florida Department of State, Division of Historical Resources (FDHR) to identify previously recorded archaeological sites and historic resources and to determine the potential for unrecorded resources within the 69-kV IS and IO Corridors. This coordination included a detailed search of the Florida Master Site File (FMSF), which is the official inventory of previously documented archaeological sites and historic resources, and a guide to National Register of Historic Places (NRHP)-listed or eligible resources in the State. This search included an analysis of the most current GIS data, which include both a spatial and tabular representation of previously recorded cultural resources within the State. Attachment 9-A4-3 contains an analysis of archaeological and historic sites in the 69-kV IS and IO Corridors and the other transmission line corridors.

No NRHP-listed or eligible archaeological sites or historic resources were identified in the 69-kV IS and IO Corridors through the FMSF. Although portions of the corridor have been subjected to previous survey, no comprehensive survey that meets current FDHR standards has been conducted. The FMSF included three previously recorded archaeological sites within or adjacent to the 69-kV IS and IO Corridors. Although not designated as NRHP-eligible in the FMSF, the presence of these archaeological sites indicates the potential for additional unrecorded sites to be present. A teleconference with the FDHR confirmed the need to conduct a cultural resource assessment survey once routes for the 69-kV IS and IO proposed transmission lines have been finalized. This survey will be conducted prior to construction and will meet the

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requirements of Chapter 1A-46, F.A.C. (Archaeological and Historical Report Standards and Guidelines).

9-A4.3.6.7 Biological and Physical Environment of the Corridor Area

9-A4.3.7.1 Land Use/Vegetation (Habitat)

The northernmost portion of the 69-kV IO Corridor originates at the LNP southern site boundary in an area of planted pine intermixed with cypress domes. CR 40 bisects the 69-kV IO Corridor at the south portion through an area composed primarily of planted pine and hardwood conifer mixed forests that lie adjacent to the Cross Florida Greenway. Adjacent to CR 40, the 69-kV IO Corridor intersects the existing 69-kV transmission line right-of-way, traverses open land and hardwood-conifer mixed forests, and terminates at the Cross Florida Greenway north of the Cross Florida Greenway State Recreation and Conservation Area.

The 69-kV IS Corridor is located east of US 19 in Levy County, and begins at the LNP western site boundary in an area of planted pine intermixed with cypress domes and intersects an area of mostly coniferous plantations, and a small area of cypress and freshwater marsh at the southwest portion.

Existing land use and habitat types were identified for the 69-kV IS and IO Corridors using Florida Land Use, Cover and Forms Classification System (FLUCCS) data (FDOT, 1999) and the Guide to the Natural Communities of Florida (FNAI and FDNR, 1990). Existing land use/land cover data dated 2004 was obtained from SWFWMD (SWFWMD, 2008). Land use/land cover data was updated for the IO Corridor after ground truthing in October 2007. Land use is mapped at Level II or Level III and land cover (habitat) is mapped at Level III. Land use and habitats are depicted in Figure 9-A4.3-6. Table 9-A4.3.-4 lists the various land use and habitats found along the 69-kV IS and IO Corridors and their approximate acreages. A summary of the major land use and habitats that occur within the 69-kV IS and IO Corridors is provided in the following subsections.

Land Use

The land use/land cover classifications that occur within the 69-kV IS and IO Corridors represent human-induced changes within the landscape. Much of the historical vegetation that occurred within the 69-kV IO Corridor and in the region has been cleared for low and medium density residential areas.

Much of the historical vegetation that occurred within the 69-kV IS Corridor and in the region has been cleared for coniferous plantations and transmission line rights-of-way.

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Habitats

Although some of the areas within the 69-kV IS and IO Corridors have been altered by the various land uses previously mentioned, a variety of habitats exist within the corridors. A summary of the major land use and habitats that occur within the 69-kV IS and IO Corridors are provided in the following subsections.

Upland - The upland habitats in the 69-kV IS Corridor are mostly disturbed, consisting of coniferous (pine) plantations north of the Cross Florida Greenway. These upland habitats are described in Attachment 9-A4-4.

The upland habitats in the 69-kV IO Corridor range from relatively undisturbed areas, such as mixed hardwood-conifer forests to disturbed areas, such as pine plantations north of the Cross Florida Greenway. The upland habitats that exist within the corridor include open land, shrub and brushland, pine flatwoods, hardwood-conifer mixed forests, and coniferous plantations.

Wetland and Aquatic - Forested and herbaceous wetlands in the 69-kV IS Corridor area are comprised of two different associations; cypress and freshwater marshes. The quality of these wetlands is likely impacted by nearby silvicultural operations and previous impacts from the construction of the transmission line right-of-way. There are no aquatic habitats in the 69-kV IS Corridor.

Forested and herbaceous wetlands in the 69-kV IO Corridor area are comprised of four different associations. Of these, cypress swamps, mixed forested wetlands, and freshwater marshes are most prevalent. The quality of wetlands ranges from those exhibiting expected floristic and structural characteristics providing valuable wildlife habitat, such as those adjacent to the Withlacoochee River to cypress swamps intermixed within coniferous plantations that may be impacted during silvicultural operations. Wetland communities observed within the 69-kV IO Corridor include cypress, mixed forested wetlands, freshwater marshes, and wet prairies. Aquatic habitats within the 69-kV IO Corridor are composed of reservoirs.

9-A4.3.7.2 Affected Waters and Wetlands

Water Bodies

Surface water bodies and wetlands crossed by the 69-kV IS and IO Corridors were identified using 2004 SWFWMD land use/land cover data (SWFWMD, 2008) and recent aerial photographs (Aerial Express, 2007). Ground truthing was conducted within the 69-kV IO Corridor. There are no named water bodies crossed by the 69-kV IS or IO Corridors.

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Wetlands

The wetland types that occur in the area are listed in Section 9A4.3.7.1 and described in Attachment 9-A4-4.

9-A4.3.7.3 Ecology

The 69-kV IS and IO Corridors were evaluated for the potential presence of important plant and wildlife species. Important species of plants and animals, as specified in the *Draft Proposed Rule 62-17.900, F.A.C. (Application Guidelines) dated June 27, 2007*, include: (1) species listed as endangered or threatened by the U.S. Fish and Wildlife Service (USFWS), (2) species listed by the FFWCC in Rule 39-27, F.A.C. as endangered, threatened or species of special concern, (3) species listed as game, furbearers, or freshwater game fish in Rule 39-1, F.A.C. (4) species which are indicators of, endemic to, or are otherwise unique to specific plant communities and habitat types. In addition to these important species, the 69-kV IS and IO Corridors were also evaluated for the potential presence of plant species listed as threatened or endangered by the Florida Department of Agricultural and Consumer Services (FDACS).

Wildlife habitat in the area of the 69-kV IS and IO Corridors has been altered significantly from its natural state for planted pine, utilities, commercial and residential use. However, based on site observations, several wildlife species do utilize the area within the 69-kV IS and IO Corridors for foraging and cover. Wildlife resources were evaluated through site reconnaissance, literature reviews, and availability of suitable habitat. Wildlife observations were recorded during site reconnaissance activities conducted in October 2007 for the 69-kV IO Corridor, and included direct visual observation, calls, tracks, scat, burrows, or other signs. Both the FNAI GIS database of documented occurrences of listed species (FNAI, Element Occurrence Point Data, 2006) and FFWCC bald eagle nest locator (FFWCC, 2008) were queried. FNAI listed species occurrences, the FFWCC bald eagle nest locations, and listed species identified during site visits are depicted on Figure 9-A4.3-6 for the area within 0.5-mile of the 69-kV IS and IO Corridors. Detailed discussions for the listed flora and fauna that occur, or have the potential to occur, within the 69-kV IS and IO Corridors can be found in the text below and associated Tables 9-A4.3-5 and 9-A4.3-6.

Within the 69-kV IS Corridor there were no FNAI listed species occurrences or FFWCC bald eagle nests identified.

Flora

Initiated in 1984, the preservation of Native Flora of Florida Act (Sections 581.011 and 581.185(2), F.S. and Rule Chapter 5B-40.001, F.A.C.) defines plant species in Florida that are protected due to danger of extinction, rapid decline, or are commercially exploited, thus averting damage to native plant populations (FNAI, FNAI Tracking List, 2008). Agency permits as well as permission from the landowner are required to harvest or disturb plants listed in

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this Act and a permit is required to sell commercially exploited plants. The FNAI list of threatened and endangered plants was used to determine which threatened and endangered plants occur within Levy County since the FNAI list incorporates both the FDACS (state) and USFWS (federal) listed species (FNAI, 2008).

Within the 69-kV IS and IO Corridors, 12 listed plant species are known to occur within Levy County within similar habitats (see Table 9-A4.3-5) (FNAI, FNAI Tracking List, 2008). None of the species are federally listed. Of the 12 species, eight are classified as endangered by the State and four are classified as threatened (FNAI, FNAI Tracking List, 2008).

Due to the presence of potential habitat and the known range of these species, it is possible that some of these species could occur within the 69-kV IS and IO Corridors; however, none of these listed plant species were observed at the time of the site reconnaissance.

Fauna

The presence and potential for occurrence of important faunal species in the 69-kV IS and IO Corridors was determined by evaluation of habitat types present and literature review (including FNAI and FFWCC bald eagle nest database queries). In addition, a ground survey was conducted for the 69-kV IO Corridor. The status and potential for occurrence of these species in the 69-kV IS and IO Corridors are summarized in Table 9-A4.3-6. USFWS and FFWCC listed species are discussed in the following paragraphs.

The habitat types identified in the 69-kV IS Corridor that serve as the principal wildlife habitat types include cypress and freshwater marshes. Habitats such as coniferous plantations and transmission line rights-of-way are of relatively lower value to wildlife. The habitat types identified in the 69-kV IO Corridor that serve as the principal wildlife habitat types include hardwood-conifer mixed forests, and wetland/aquatic areas such as cypress, mixed forested wetlands, and freshwater marshes. Habitats such as open lands, residential, and coniferous plantations are of relatively lower value to wildlife.

Within the 69-kV IS and IO Corridors, a total of 60 important wildlife species were identified as species occurring or possibly occurring (FNAI, FNAI Tracking List, 2008). Of these 60 species, 37 are game species or furbearers, as identified in Rule 39-1, F.A.C., and the remaining 23 are USFWS (federal) and/or FFWCC (state) listed species known to occur in Levy County (FNAI, FNAI Tracking List, 2008).

Fish

No listed fish species are reasonably expected to occur within the 69-kV IS and IO Corridors due to lack of preferred habitat (FNAI, FNAI Tracking List, 2008).

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General information on freshwater game fish, including their potential for occurrence within the 69-kV IS and IO Corridors, is summarized in Table 9-A4.3-6.

Amphibians

Gopher Frog (*Rana capito*)

The gopher frog is listed by the FFWCC as a species of special concern. It is typically found in sandhill and scrub habitat in the vicinity of isolated wetlands or large ponds; considered to be a commensal species to the gopher tortoise, using their burrows for shelter (FNAI, FNAI Search, 2001).

Within the 69-kV IS Corridor, due to the lack of preferred habitat there is a low probability that the gopher frog is present.

Within the 69-kV IO Corridor, due to the prevalence of preferred habitat there is a high probability that the gopher frog is present.

Reptiles

American Alligator (*Alligator mississippiensis*)

The alligator is listed by the USFWS as threatened due to similarity in appearance to the endangered American crocodile (*Crocodylus acutus*), and is listed by the FFWCC as a species of special concern (FNAI, FNAI Tracking List, 2008). Alligators are common in almost all permanent bodies of fresh water in Florida, including marshes, swamps, lakes, and rivers (FNAI, FNAI Search, 2001).

Within the 69-kV IS and IO Corridors there is a moderate likelihood that the alligators are present due to the presence of cypress and freshwater marshes.

Eastern Indigo Snake (*Drymarchon couperi*)

The eastern indigo snake is listed as threatened by both the USFWS and the FFWCC. These snakes can occur within a broad range of suitable habitats, from scrub and sandhill to wet prairies. In its northern range, it is often commensal with the gopher tortoise, using their burrows for shelter during the winter (FNAI, FNAI Search, 2001).

Within the 69-kV IS Corridor, there is a moderate likelihood that the eastern indigo snake is present due to the presence of potential habitat within the corridor.

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Within the 69-kV IO Corridor, there is a high likelihood that the eastern indigo snake is present due to the prevalence of preferred habitat within the corridor.

Gopher Tortoise (*Gopherus polyphemus*)

The gopher tortoise is currently listed as a threatened by the FFWCC. Gopher tortoises are commonly found in dry upland habitats, such as sandhills, scrub, xeric oak hammock, and dry pine flatwoods. They are also found in pastures and old fields (FNAI, FNAI Search, 2001).

Within the 69-kV IS Corridor, there is a moderate likelihood that the gopher tortoise is present due to the presence of preferred habitat. If gopher tortoise burrows are encountered, when possible, transmission structures and associated access roads will be located such that entrances of gopher tortoise burrows are avoided by a buffer that exceeds 25 feet in radius. In the event that impacts to burrow entrances cannot be avoided, a relocation permit will be obtained from the FFWCC and gopher tortoises will be relocated to either on or off-site areas pursuant to FFWCC guidelines.

Within the 69-kV IO Corridor, there is a high that the gopher tortoise is present due to the presence of preferred habitat. If gopher tortoise burrows are encountered, when possible, transmission structures and associated access roads will be located such that entrances of gopher tortoise burrows are avoided by a buffer that exceeds 25 feet in radius. In the event that impacts to burrow entrances cannot be avoided, a relocation permit will be obtained from the FFWCC and gopher tortoises will be relocated to either on or off-site areas pursuant to FFWCC guidelines.

Florida Pine Snake (*Pituophis melanoleucus mugitus*)

The Florida pine snake is listed as a species of special concern by the FFWCC. It often coexists with gopher tortoises and pocket gophers (*Geomys pinetis*) in sandhills old fields and pastures, sand pine scrub, and scrubby flatwoods (FNAI, FNAI Search, 2001).

Within the 69-kV IS Corridor there is a low likelihood that the Florida pine snake is present due to the lack of preferred habitat.

Within the 69-kV IO Corridor there is a high likelihood that the Florida pine snake is present due to the prevalence of preferred habitat.

Short-tailed Snake (*Stilosoma extenuatum*)

The short-tailed snake is listed as threatened by the FFWCC. It prefers sandhill, xeric hammock, and sand pine scrub habitat (FNAI, FNAI Search, 2001).

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There is a low likelihood that the short-tailed snake is present within either of the 69-kV IS and IO Corridors due to the lack of preferred habitat.

Birds

Florida Scrub-jay (*Aphelocoma coerulescens*)

The Florida scrub-jay is listed as threatened by both the USFWS and the FFWCC. They prefer low-growing oak scrub habitats, but they can persist in overgrown scrub habitats (FNAI, FNAI Search, 2001).

Within the 69-kV IS and IO Corridors due to the limited low-growing oak scrub habitat, the likelihood of occurrence of scrub-jays is low.

Limpkin (*Aramus quarauna*)

The limpkin is listed as a species of special concern by the FFWCC. Limpkins generally inhabit mangroves, freshwater marshes, swamps, springs and spring runs, and pond, lake, and river margins (FNAI, FNAI Search, 2001).

Within the 69-kV IS Corridor it is reasonably expected that the Limpkins are present in the freshwater marshes present in the corridor.

Within the 69-kV IO Corridor it is reasonably expected that the Limpkins are present in reservoirs and freshwater marshes present in the corridor.

Florida Burrowing Owl (*Athene cunicularia floridana*)

The Florida burrowing owl is listed as a species of special concern by the FFWCC. It lives in burrows in sandy soils associated with cattle pastures, prairies, and sandhills (FNAI, FNAI Search, 2001).

Within the 69-kV IS Corridor there is a low likelihood of occurrence in open, drier habitats along the corridor.

Within the 69-kV IO Corridor there is a moderate likelihood of occurrence in open, drier habitats within the corridor.

Little Blue Heron (*Egretta caerulea*)

The little blue heron is listed as a species of special concern by the FFWCC. They prefer freshwater lakes, marshes, swamps, and streams for foraging, and cypress trees for roosting (FNAI, FNAI Search, 2001).

Within the 69-kV IS Corridor the little blue heron can reasonably be expected to occur in the freshwater marshes and cypress areas.

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Within the 69-kV IO Corridor the little blue heron can reasonably be expected to occur in the reservoirs, freshwater marshes and cypress areas.

Snowy Egret (*Egretta thula*)

The snowy egret is listed as a species of special concern by the FFWCC. It is widely distributed in Florida in both freshwater and coastal wetlands, as well as surface waters (FNAI, FNAI Search, 2001).

It is likely to occur in wetlands and surface waters within the 69-kV IS and IO Corridors.

Tricolored Heron (*Egretta tricolor*)

The tricolored heron is listed as a species of special concern by the FFWCC. It inhabits a variety of wetland habitats, such as ditches, pond and lake edges, and coastal areas (FNAI, FNAI Search, 2001).

Within the 69-kV IS and IO Corridors it is likely that the tricolored heron is present due to the presence of wetland habitats.

White Ibis (*Eudocimus albus*)

The white ibis is listed as a species of special concern by the FFWCC. It inhabits a variety of wetland habitats, including freshwater and brackish marshes, salt flats, forested wetlands, wet prairies, swales, and man-made ditches (FNAI, FNAI Search, 2001).

Within the 69-kV IS and IO Corridors it is likely that the white ibis is present due to the presence of wetland habitats and surface waters.

Peregrine Falcon (*Falco peregrinus*)

The peregrine falcon is listed as endangered by the FFWCC (FNAI, FNAI Tracking List, 2008). They generally inhabit open land near rivers and lakes, and also live in suburban areas (Bull & Farrand, 1994).

Due to the lack of preferred habitat, it is not likely that the peregrine falcon will inhabit the 69-kV IS Corridor.

The peregrine falcon is likely to occur within the 69-kV IO Corridor in areas near the Withlacoochee River.

Southeastern American Kestrel (*Falco sparverius paulus*)

The southeastern American kestrel is listed as threatened by the FFWCC. The southeastern American kestrel is found year-round in open areas, such as open pine habitats, woodland edges, prairies, and pastures, primarily in peninsular Florida, while the non-listed, northern, migrant American kestrel (*F. sparverius*) generally arrives in September and departs by March. All birds found in the breeding season (April through early September) should be treated as the listed subspecies (FNAI, FNAI Search, 2001).

Due to similarity of appearance and presence of the southeastern American kestrel's preferred habitat within the 69-kV IS and IO Corridors, it is moderately likely that the listed subspecies inhabits both of the 69-kV IS and IO Corridors.

Florida Sandhill Crane (*Grus canadensis pratensis*)

The Florida sandhill crane is listed as threatened by the FFWCC. The Florida sandhill crane is found throughout Florida year-round, while the non-listed, migrant greater sandhill crane (*Grus canadensis tabida*) generally arrives in October and departs by March. The two species are indistinguishable, so identification is largely dependent on the time of year the cranes are observed (FNAI, FNAI Search, 2001).

Within the 69-kV IS and IO Corridors due to the presence of the Florida sandhill cranes' preferred habitat (freshwater marshes and open areas within transmission line rights-of-way) it can reasonably be assumed that the Florida sandhill crane inhabits the 69-kV IS and IO Corridors.

Bald Eagle (*Haliaeetus leucocephalus*)

Although the bald eagle is not currently classified as threatened or endangered by the USFWS or the FFWCC, it is protected under the Federal Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act, as well as Florida's Bald Eagle Management Plan. Impacts to bald eagles may be avoided through adherence to the management plan guidelines of a 330 foot to 660 foot construction setback from any active nests. Bald eagles typically inhabit areas close to coastal areas, bays, rivers, lakes, or other bodies of water that provide concentrations of food sources (FNAI, FNAI Search, 2001). Within the 69-kV IS Corridor it is not likely that the bald eagle is present due to the lack of preferred habitat.

Within the 69-kV IO Corridor one nest is located within the northern section of the corridor, approximately 2 miles east of US 19 (Miller, 2007) (see Figure 9-A4.3-11). To avoid disturbance, the IO 69-kV transmission line in this area will be located at least 660 feet from the nest.

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Wood Stork (*Mycteria americana*)

The wood stork is listed as endangered by both the USFWS and the FFWCC. Wood storks prefer nesting in cypress swamps and mixed forested wetlands, and they forage mainly in shallow water in freshwater marshes, swamps, lagoons, ponds, tidal creeks, flooded pastures and ditches (FNAI, FNAI Search, 2001).

Within the 69-kV IS Corridor it is moderately likely that the wood stork is present due to the presence of wetland habitat within the corridor.

Within the 69-kV IO Corridor it is likely that the wood stork is present due to the presence of wetland habitat within the corridor.

Red-cockaded Woodpecker (*Picoides borealis*)

The red-cockaded woodpecker is listed as endangered by the USFWS and species of special concern by the FFWCC. They have specific habitat requirements of old growth pine forests (typically longleaf or slash pine), with an open, grassy understory (FNAI, FNAI Search, 2001).

The potential occurrence of the red-cockaded woodpecker within the 69-kV IS and IO Corridors is low since old growth pine habitats are limited.

Roseate Spoonbill (*Platalea ajaja*)

The roseate spoonbill is listed as a species of special concern by the FFWCC. It forages in shallow water of variable salinity, including marine tidal flats and ponds, coastal marshes, mangrove-dominated inlets and pools, and freshwater sloughs and marshes (FNAI, FNAI Search, 2001).

Within the 69-kV IS and IO Corridors it can reasonably be expected to find foraging within freshwater marshes.

Mammals

Florida Mouse (*Peromyscus floridanus*)

The Florida mouse is listed as a species of special concern by the FFWCC. They prefer xeric upland communities with sandy soils, such as scrub, sandhill, and ruderal sites, and they often inhabit burrows of the gopher tortoise (FNAI, FNAI Search, 2001).

Within the 69-kV IS Corridor it is not likely that the Florida mouse is present due to the lack of preferred habitat.

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Within the 69-kV IO Corridor it is moderately likely that the Florida mouse is present due to the presence of preferred habitat.

Sherman's Fox Squirrel (*Sciurus niger shermani*)

The Sherman's fox squirrel is listed as a species of special concern by the FFWCC. They commonly inhabit sandhills, pine flatwoods, pastures and other open, ruderal habitats with scattered pines and oaks (FNAI, FNAI Search, 2001).

Within the 69-kV IS Corridor there is a low potential for the fox squirrel to be present due to the lack of preferred habitat.

Within the 69-kV IO Corridor there is a moderate potential for the fox squirrel to be present due to the presence of open, ruderal habitat.

Florida Black Bear (*Ursus americanus floridanus*)

The Florida black bear is listed as threatened by the FFWCC. They prefer large upland forests and large swamps (FNAI, FNAI Search, 2001).

Within the 69-kV IS and IO Corridors it is not likely that the Florida black bear is present due to the absence of large, contiguous tracts of mixed forested wetlands and mixed hardwood-conifer forests.

9-A4.3.7.4 Other Environmental Features

There are no additionally known environmental features of interest along or within the 0.5-mile area surrounding either the 69-kV IS or IO Corridors.

**9-A4.4 EFFECTS OF RIGHT-OF-WAY PREPARATION AND
TRANSMISSION LINE CONSTRUCTION**

9-A4.4.1 Construction Techniques

The IS Corridor will extend from the LNP westerly site boundary for approximately 375 feet westerly and the 69-kV IO Corridor will extend from the LNP southerly site boundary south for approximately 1.78 miles. If the 69-kV IS and IO proposed transmission lines are co-located with existing rights-of-way, the use of adjacent undisturbed areas will be minimized during all phases of construction, including right-of-way clearing, road and pad construction, and line construction. Where the 69-kV IS and IO Corridors are not co-located with existing transmission line rights-of-way, construction activities including clearing, road and pad construction, and transmission line construction in these new rights-of-way will be performed in accordance with all regulatory requirements to minimize potential impacts on human populations, water bodies, archaeological and historic sites, vegetation, and wildlife.

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The construction techniques discussed in this section describe the common practices of PEF in the types of environments identified. In general, line construction activities will include erosion control, right-of-way preparation, construction and placement of foundations, assembly and erection of structures and installation of conductors. Each of these stages of construction is described below.

9-A4.4.1.1 Erosion Control

Construction activities will be planned to minimize disturbance to natural ground covers, to the greatest extent practicable. In areas where soil is anticipated to be disturbed, erosion control measures will be implemented. Construction plans and drawings will depict the erosion control measures required. Measures may include turbidity screens, temporary culverts, silt fence or staked hay bales.

With the exception of access roads and work areas around the structures and structure pads, low-lying vegetation will remain. These types of ground cover re-establish themselves quickly and will assist to reduce erosion at the work areas.

Following construction activities, all disturbed areas will be restored. Right-of-way restoration includes removal of all construction equipment and supplies, grading of the right-of-way, if needed, and planting or seeding of the disturbed area. Erosion control measures will be removed at the conclusion of the project after the right-of-way has been stabilized with ground cover.

9-A4.4.1.2 Right-of-Way Preparation

In its right-of-way selection, right-of-way preparation and construction of the new lines, PEF will minimize affects on human populations, water bodies, archaeological and historic sites, vegetation, and wildlife to the extent practicable.

9-A4.4.1.2.1 Clearing Techniques

General Clearing

For areas where existing PEF transmission line rights-of-way widths are insufficient for placement of the transmission lines, additional clearing will be necessary. In general, the entire width of the rights-of-way will be completely cleared except in wetlands. Clearing shall be in accordance with the descriptions shown below and will be determined by existing conditions, environmental constraints and line design requirements.

Clearing in Upland Areas

Vegetation in upland areas will be cleared to ground level. Stumps will either be cut or ground down to natural grade and treated with an approved herbicide to prevent re-growth or the entire stump and root mat will be grubbed to 6 inches below grade. All holes resulting from the removal of stumps shall be refilled to

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natural grade. Chipping material will be spread up and down the right-of-way unless specific landowner restrictions require them to be removed and disposed off-site. Limbs, brush, stumps and cleared debris may be piled and burned within the limits of the right-of-way in compliance with the appropriate state and local regulations.

Pruning along the right-of-way edge will be performed to remove any overhanging branches in the right-of-way. All required tree pruning will conform to the latest approved edition of ANSI Z133 Safety Standards, ANSI A-300 Plant Maintenance, and OSHA 1910.269 as a minimum to assure safety and industry standards are maintained.

If practicable, a 25-foot deep foliage screen of existing vegetation with mature heights not exceeding 12 feet will be left intact at locations where the right-of-way crosses a navigable waterway. A path may be cleared through the vegetation for PEF maintenance access to the rights-of-way.

Herbicides used on the transmission line right-of-way will include only those registered by the U.S. Environmental Protection Agency (USEPA) and which have state approval. Herbicide application rates and concentrations will be in accordance with label directions and will be carried out by a licensed applicator, meeting all federal, state, and local regulations.

Danger trees are any dead, diseased, damaged or leaning trees standing outside the right-of-way which may interfere with or endanger the transmission lines and related facilities. Danger trees will be removed in accordance with the guidelines above, except in wetlands, where the wetland tree removal guidelines described below will be followed.

Clearing in Wetland Areas

Vegetation in wetland areas will be cleared utilizing restrictive clearing techniques. Restrictive wetland clearing will be done by hand, usually with chain saws, or with low-ground pressure shear or rotary machines to reduce soil compaction and damage to vegetation. These methods may be used alone or in combination, as may be necessary for specific sites. Restrictive clearing shall consist of the cutting and removal of all trees and growth with a mature height greater than 12 feet, leaving all other vegetation in the right-of-way outside of the access road and structure pad areas. Outside of the access road and structure pads, trees will be cut to as low as possible or to existing water level. Stumps may be left in place to preserve the root mat, and treated with an approved herbicide to prevent re-growth. All trees and debris will be removed from the right-of-way and disposed of in upland areas or off-site depending on landowner restrictions. The cut material will be removed from the wetland utilizing either low ground pressure equipment or temporary construction mats. Care will be taken at all times to minimize rutting and disturbance of the root mat.

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The right-of-way in wetland areas will be cleared as described above and maintained in an herbaceous state. Tree stumps under the conductors and in the cleared work areas for the access road and at the structure sites will be removed, sheared, or ground to 6 inches below the ground line to allow for the installation of access roads and structure pads as well as general travel and related construction activities.

9-A4.4.1.3 Construction and Placement of Foundations

The types of foundations that may be used on this project will vary based on the structure types and load capacity required. In general, direct embedded, steel vibratory cased, cast-in-place concrete pile foundations or monolithic slab and pier will be used.

With the exception of steel vibratory cased and monolithic slab and pier type foundations, all installation requires the excavation of a hole, drilled vertically, of varying depths depending on subsurface soil conditions. Typical foundation diameters will vary between 4 feet and 6 feet. The foundation holes are drilled using a truck-mounted hydraulic auger machine.

Depending on the type of subsurface soil conditions, a mixture of water and additive may be used to maintain the cylindrical shape of the open shaft and prevent soil destabilization or cave in. Containment barriers will be used to control runoff of liquids and silts during the drilling operations as required. The natural earth material excavated from the hole may be spread in upland areas as allowed by the conditions of certification.

Typical equipment used in all construction and placement of foundations includes but is not limited to cranes, water trucks, concrete trucks, bucket trucks, semi trucks, front end loaders, backhoes, dump trucks and support vehicles.

Direct Embedded Foundations

Direct embedded foundations are installed following the drilling operation. For direct embedded foundations, the base section of the pole for multi-piece poles or the entire pole for single-piece poles is picked up by a crane, raised vertically and then lowered into the hole. Once centered in the hole at the required depth, concrete or rock backfill is hauled to the site and placed uniformly around the entire annulus of the embedded portion of the pole. The backfill will be compacted and/or vibrated into place.

Steel Vibratory Cased Foundations

Steel vibratory cased foundations utilize cylindrical steel casings of specified length, thickness and diameter that are driven into natural earth using a vibratory hammer. This method may be used when soil conditions are loose and rock or clay substrata do not prevent full embedment of the casing.

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The steel casing is designed to allow the vibratory hammer to clamp to the sides of the casing at one end and is then raised vertically and centered over the proposed foundation location. The casing is then lowered to rest upon the ground and aligned vertically. Once the casing is aligned, the hydraulic hammer is activated and the casing is driven downward into the soil to the specified depth.

The vibratory hammer equipment generally consists of a diesel motor-driven hydraulic pump connected to the vibratory hammer using long hydraulic hoses.

Cast-In-Place Concrete Pile Foundations

Cast-in-place concrete pile foundations are also referred to as reinforced concrete drilled piers and consist of a system of rebar, concrete and anchor bolt cage. The rebar cage provides the method for transferring the anchor bolt loads from the structure to the surrounding soil. The anchor bolt cage attaches to the structure and transfers the structure loads to the rebar cage. The rebar cage consists of many rebar of uniform length and spacing oriented vertically and tied together through horizontal rings to form a cylindrical shaft of the required diameter and length. The anchor bolt cage is constructed in a similar fashion and is generally 6 inches smaller in diameter than the rebar cage and shorter in length. The rebar cage and anchor bolt cages are assembled separately on the ground prior to excavation of the foundation hole. Once the augered hole is drilled, a short steel sleeve is placed over the hole and used to form the foundation cap above ground. This sleeve will provide a uniform shape and finish. Next, the rebar cage is lifted and set into the hole to the desired depth and secured. The anchor bolt cage is then lifted and placed inside the rebar cage with the top bolts extending above the steel sleeve approximately 12 inches and secured in place. Concrete is hauled to the site and placed uniformly in the hole around the rebar and anchor bolt and rebar cages. Concrete is poured from the bottom up and is rodded or vibrated into place during the installation process. When complete the top of the anchor bolt cage is exposed to receive the structure base plate.

Monolithic Slab and Pier Foundations

Monolithic slab and pier foundations are also referred to as spread footings and are suitable for locations that require dissipation of large vertical loads. This application is typical for running angle and deadend structures which use guys and anchors to provide support. The application involves excavation into the top soil layers using mechanized equipment and placement of a stable supporting fill base. A precast or cast-in-place type concrete or steel grillage foundation is hauled to the site and then installed on top of the stabilized base and backfilled with natural earth or other suitable material. The size of the excavation and foundation is dependent on the subsurface soil and load capacity requirements. Typical equipment used is a front end loader or backhoe. This method typically requires only the top 6 to 10 feet of soil around the structure base to be

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disturbed. The excess natural earth material excavated from the hole may be spread in upland areas as allowed by the conditions of certification.

9-A4.4.1.4 Assembly and Erection of Structures

Transmission structures are generally delivered to the site using semi trucks with open trailers and are assembled on site as close as possible to the foundation. Typically the structures are framed with the structure arms, insulator assemblies, climbing attachments, etc. while lying on the ground. Multi-piece structures are typically assembled on the ground prior to lifting into place, but may be installed in the air one section at a time with a crane. During the assembly process, poles are maneuvered into place using cranes and other lifting equipment to facilitate connections. Cribbing is used to maintain a level working surface to prevent excess stress on components and connections. Once assembled, the structures are ready for final placement on the foundation. When ready a crane is used to pick up the structure. Tag lines may be used to facilitate the proper orientation and control of the structure until placed in the hole or on the base section, casing or foundation, as appropriate.

The upper portions of direct embedded poles are generally attached to the embedded base section via a slip fit or bolted flange connection. Structures attached to vibratory cased foundations are generally bolted or slip fit to the top of the embedded casing. Structures utilizing cast-in-place concrete pile foundations or monolithic slab and pier foundations are attached to the embedded anchor bolts via the structure base plate.

Guys and anchors may be required depending on the structure type and the applied load. Anchors will typically consist of multi-helix screw in type, slug type or other engineered solutions. Multi-helix anchors are installed using mechanized equipment designed to screw the anchor into the ground to a specified length or torque which meets the design requirements. Slug anchors are designed to provide high strength applications by burying a mass of material, typically reinforced concrete, a specified depth into natural earth. The slug is then backfilled with a suitable material or concrete to obtain the desired strength. A rod is attached to the slug and extends above ground for connection to the guy wire. When required, an engineered solution may be needed to meet the environmental constraints or physical limits of each location. These applications may require the drilling and installation of a concrete cast-in-place type anchor system. Guy wires are utilized to attach the anchor to the structure. Guys typically consist of high strength steel wire, typically 0.5- inch in diameter or larger. The guy wire is connected to the structure and anchor rods using preformed or adjustable guy grips. Typical equipment used in this operation includes but is not limited to a crane, helicopter, bucket trucks, flatbed, trucks semi trucks, front end loaders, and support vehicles.

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9-A4.4.1.5 Installation of Conductors

After the structures are erected, conductor installation commences. The process of installing conductors involves stringing a lead line into each structure stringing block to form a continuous connection between stringing end points. This lead line is then used to pull the final conductor into position. The conductor is then tensioned to design specifications, transferred to the support clamp and then clipped into final position. This operation is performed on all overhead ground wires and conductors for the line.

Typical equipment used in the conductor installation operation includes, but is not limited to bucket trucks, wire-pulling equipment, guard structures, wire reels trailers, tensioners, helicopters and support vehicles.

9-A4.4.2 Environmental Resource Permit (ERP)

Once the rights-of-way for the 69-kV IS and IO proposed transmission lines are finalized, detailed design information typically provided in an Environmental Resource Permit (ERP) application will be submitted to reviewing agencies for post-certification monitoring for compliance with the conditions of certification, as authorized by Rule 62-17.191, F.A.C.

9-A4.4.3 Solid Wastes

Solid waste generated from right-of-way clearing and line construction typically consists of cleared vegetation and construction debris. Where practicable, PEF may mulch or chip vegetation on-site, which then may be spread on-site or removed for use elsewhere. Alternatively, cleared vegetation and combustible debris may be burned on-site. Applicable state and local fire-related regulations will be followed.

All noncombustible solid waste will be collected and removed for off-site disposal in compliance with all applicable regulations. The quantity of solid waste generated will depend upon site-specific characteristics of the area being cleared.

9-A4.4.4 Changes to Vegetation, Wildlife, and Aquatic Life

Permanent changes to the vegetation, wildlife, and aquatic systems in the 69-kV IS and IO Corridors are anticipated to be minimal and localized. Vegetation will be impacted in the transmission line right-of-way by maintenance activities such as trimming, mowing, or herbicide application. Clearing and placement of fill material may be required in the immediate area of the transmission line structures and at access road locations. Forested wetlands will be cleared to facilitate construction and the safe and reliable operation of the transmission lines. This will result in the conversion of any wetland within the right-of-way from a forested system to an herbaceous wetland.

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Most of the ditches draining improved pastures are shallow and intermittent. It may be necessary to impact some of these manmade, minor drainages. Impacts to surface waters will be addressed in more detail during the post-certification process as authorized by Rule 62-17.191, F.A.C.

A number of structures may require unavoidable impacts to wetlands. In these cases, fill at each structure location may be required to facilitate construction and maintenance. It will be necessary to clear trees within forested wetlands crossed by the transmission lines and limit the growth of vegetation under the lines to no more than 12 feet in height. It is anticipated that construction for the placement of structures, pads, and access roads may be required in some wetlands. Where practicable, access roads will be located to avoid or minimize wetland impacts. All wetland impacts will be addressed in accordance with applicable state and local criteria. Detailed design information will be provided to the appropriate regulatory agencies during post-certification to demonstrate that drainage patterns and characteristics are not further altered from the pre-development condition, as authorized by Rule 62-17.191, F.A.C. Impacts proposed to jurisdictional wetlands will also be detailed during the post-certification process.

No impacts to listed species are anticipated. The majority of listed species observed or potentially present within the 69-kV IS and IO Corridors are mobile avian species that may relocate to similar habitats during construction activities. In the event that impacts to gopher tortoise or other less mobile species cannot be avoided, these impacts will be mitigated as required under existing FFWCC and USFWS regulations.

Once the rights-of-way for the 69-kV IS and IO proposed transmission lines are finalized, they will be surveyed for listed species and PEF will consult with FFWCC on appropriate mitigation or avoidance methods in a post-certification process pursuant to conditions of certification.

9-A4.4.5 Impact on Human Populations

The approximate length of time needed to construct the 69-kV IS and IO proposed transmission lines are 4 weeks per mile per transmission line. During this construction time, a particular crews' time at a structure location could typically be 1 to 2 weeks. Crew sizes will vary depending upon the task. Use of construction equipment may result in temporary noise typical of construction activities. This noise will be brief and intermittently spaced due to the nature of transmission line construction and equipment use. A majority of the construction activities are planned to occur during daylight hours to minimize disturbance. Special circumstances could require nighttime activities. These special circumstances will be coordinated with appropriate agencies and governmental representatives.

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Where the transmission lines follow existing public roads, the construction contractor will follow FDOT guidelines for flagging and use of barriers for traffic control.

9-A4.4.6 Impact on Regional Scenic, Cultural, and Natural Landmarks

As discussed in Section 9-A4.3.6.4, there are no scenic, cultural, and natural landmarks within the 69-kV IS and IO Corridors.

9-A4.4.7 Impact on Archaeological and Historic Sites

Following the certification of the 69-kV IS and IO Corridors and selection of the right-of-way, a cultural resource assessment survey (CRAS) will be conducted that meets the requirements of Chapter 267, F.S. and Chapter 1A-46 (Archaeological and Historical Report Standards and Guidelines), Florida Administrative Code. The results of this CRAS will be documented in a report submitted to the FDHR/SHPO. If significant resources are identified, PEF will avoid these resources. If avoidance is not feasible, then PEF will coordinate with the FDHR/SHPO to develop a strategy to minimize or mitigate impacts.

9-A4.5 POST-CONSTRUCTION IMPACTS AND EFFECTS OF MAINTENANCE

9-A4.5.1 Maintenance Techniques

Maintenance activities for the 69-kV IS and IO proposed transmission lines will consist of preventive and corrective measures. Although transmission lines normally require minimal maintenance, PEF will conduct annual inspections to ensure the safe and reliable operation using ground or aerial means.

In general, maintenance of the rights-of-way will consist of mowing, pruning, danger and other tree removals, as well as herbicide treatments. Maintenance of the rights-of-way will be consistent with the right-of-way clearing described in Section 9-A4.4.1.2. Using these same restrictive clearing practices will allow right-of-way maintenance in wetland areas to be performed while encouraging the growth of low-growing woody and herbaceous vegetation that will not exceed 12 feet in height at maturity, to the greatest extent practicable. Care will be taken not to cause unnecessary damage to vegetation in these environmentally sensitive areas. Any vegetation that may be cut during clearing of the right-of-way may alternatively be girdled or selectively treated with herbicides during line maintenance. Girdled or treated vegetation will be allowed to remain standing to provide habitat and food sources for wildlife unless access to PEF facilities is a concern.

Herbicides used on the 69-kV IS and IO proposed transmission line rights-of-way will include only those registered by the USEPA and approved by the state. Herbicide application rates and concentrations will be in accordance with label

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directions and will be carried out by a licensed applicator, meeting all federal, state, and local regulations.

The exact manner in which maintenance will be performed will depend on the location, type of terrain, and surrounding environment. Each area of the right-of-way will be addressed based on site-specific vegetation and habitat. Endangered or threatened species, if present, are considered and accommodated in the maintenance program.

Maintenance of the transmission line will be performed using various types of equipment. This equipment may consist of helicopters, bucket trucks, cranes, semi-trucks and support vehicles. Typical line maintenance operations may include insulator replacements, conductor repairs, shield wire repairs, grounding and other activities associated with structures, conductors and foundations. In general, PEF crews or authorized contractors will mobilize in line trucks capable of supporting various operations. Once on site, the crew will establish a safe working area and perform the required repair. When maintenance is required in environmentally sensitive areas where access and fill pads do not exist, temporary matting may be employed to minimize damage to the areas during repairs.

9-A4.5.2 Multiple Uses

Multiple uses within a transmission line right-of-way typically can include agricultural operations (e.g., grazing and row crops), controlled landscaping and other activities that do not interfere with PEF's use of the right-of-way for the safe and reliable operation and maintenance of the transmission lines. In areas where the new transmission lines will be located within, adjacent to, or in proximity of an existing transmission line right-of-way, multiple uses consistent with those currently allowed will generally be acceptable.

PEF currently maintains a right-of-way utilization program that will consider future requests for multiple uses. This program reviews requests for such multiple uses to assure that the proposed use of the right-of-way is compatible with safe line operation and maintenance.

9-A4.5.3 Changes in Species Populations

Impacts to plant and animal populations as a result of maintenance and post-construction activities will be minimized. Maintenance practices for the new transmission lines will be similar to the initial clearing activities and will not result in adverse impacts to plant and animal populations.

9-A4.5.4 Effects of Public Access

Neither the establishment of the right-of-way for the 69-kV IS and IO proposed transmission lines nor the construction of access roads is anticipated to increase the exposure of previously undisturbed areas to the public. The only vehicular

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traffic permitted will be that necessary for PEF routine maintenance activities. In areas where the transmission lines will be located either adjacent to, or in proximity of existing transmission right-of-way, the degree of public access is anticipated to remain unchanged. Locked gates will be provided at all points where a transmission line access road intersects previously fenced property. Other access restrictions will be coordinated with the underlying fee owners.

9-A4.5.5 Other Post-Construction Effects

9-A4.5.5.1 Electric and Magnetic Field Effects

Like all electric power lines, the 69-kV IS and IO proposed transmission lines will produce electric and magnetic fields (EMF). The electric field strength is dependent upon the voltage impressed on the transmission line conductors. The magnetic field strength is a function of the amount of current flowing on the transmission line. The voltage on a transmission line is held relatively constant (usually within 5 percent), but the current flowing on the conductors varies depending upon the power needs of the customers ultimately served by a line. Because of these characteristics, the electric field near transmission lines is relatively constant over time, but the magnetic field fluctuates depending on load requirements.

The major cause of variation in electric field strength at various locations along the transmission line right-of-way is the fluctuation in the height of the conductors above the ground. The conductors are securely attached to the support structures at the end of each span but sag somewhat between structures. Consequently, they are usually closest to the ground midway between the structures. This point halfway between the structures is called midspan. Increases in conductor temperature resulting from high current in the conductors and from extreme weather conditions result in temporary elongation of the conductors and additional sag at midspan. The extent to which the conductors sag is carefully designed to ensure that adequate safety clearance is maintained between the conductors and ground for all extremes of electrical load and weather conditions. Since the extreme conditions of electrical load and weather conditions are very infrequent, the actual midspan height of the transmission line conductors is usually considerably higher than their design minimum midspan clearance. At points other than midspan, the conductors are even higher, reaching their greatest height above ground at the structures. Directly beneath the transmission line, the electric field strength is strongly influenced by the conductor height. The electric field is greatest at the point where the conductors are closest to ground. Consequently, the maximum electric field occurs at midspan when load and weather conditions cause the transmission line conductors to sag to their minimum height above ground. At all other times and at all other locations along the span, the conductors are higher above ground and the electric field is less than the maximum value. At locations other than those directly beneath the conductors, such as at the edge of the right-of-way or beyond, the electric field is less dependent on conductor height and will increase

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or decrease depending on location, line design, shielding by vegetation or other structures and other factors.

Magnetic field strength varies depending on load current and on conductor height. The highest magnetic field occurs at midspan when the current in the transmission line is at its maximum value and load and existing weather conditions cause the conductors to sag to their minimum height above the ground. At all other times and at all other locations, the magnetic field will be considerably less than the maximum. As with electric fields, magnetic fields directly beneath the transmission line are most strongly dependent on conductor height. At other locations such as at the edge of the right-of-way and beyond, increased conductor height leads to lower magnetic fields, but the effect is slight.

The FDEP regulates EMF from electrical transmission lines under the provisions of Sections 403.061(30) and 403.523(10), F.S. The 69-kV transmission lines comply with the FDEP EMF regulations found in 62-814.450(3), F.A.C. The FDEP EMF rules applicable to this new 69-kV transmission line project generally provide²:

- The maximum electric field at the edge of the transmission line right-of-way and at the substation property boundary shall not exceed 2 kilovolts per meter (kV/m);
- The maximum electric field on the transmission line right-of-way shall not exceed 8 kV/m; and
- The maximum magnetic field at the edge of the transmission line right-of-way and at substation property boundary shall not exceed 150 milliGauss (mG).

EMF associated with the 69-kV transmission lines was calculated using the EzEMF software program developed through the Florida Electric Power Coordinating Group and accepted by FDEP as a methodology for verifying compliance with the FDEP EMF rule. The EzEMF software was developed using the Bonneville Power Administration Corona and Field Effects Program (CAFEP) as the source for the electric and magnetic calculations.

Table 9-A4.5-1 presents the maximum calculated EMF that can be produced by the transmission lines under maximum normal operating conditions consistent with Chapter 62-814, F.A.C. These fields comply with FDEP rule requirements for new 69-kV transmission lines. The detailed design of the 69-kV transmission

² Where calculations under this section indicate that operation of existing electrical facilities on an existing right-of-way produces electric or magnetic fields at levels higher than the limits specified for new facilities in rule 62-814.450, F.A.C., a new electrical facility may be constructed and operated on that existing right-of-way provided the new facility does not increase the electric or magnetic fields above the maximum field values created by the existing lines. Rule 62-814.470(1) (c), F.A.C.

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lines will start after the corridors are certified, during which a specific right-of-way within the corridors are selected. To the extent the detailed design includes configurations not reflected in Table 9-A4.5-1, PEF will submit EMF calculations for all such configurations used in the final detailed design to FDEP as required by the FDEP EMF rule.

9-A4.5.5.2 Corona Effects

The electric field at the surface of transmission line conductors, under some conditions, results in localized ionization of the air near the conductors. This phenomenon is called corona. As explained in the following paragraphs, corona activity at the surface of transmission line conductors produces low levels of acoustic and radio frequency electric energy which, under some conditions, can result in audible noise and radio or television interference.

9-A4.5.5.2.1 Audible Noise

The primary cause of audible noise on high-voltage transmission lines is corona resulting from an irregularity on the surface of the conductor, such as buildup from fog, water droplets and significant particulate matter. Corona activity at the surface of the conductor produces a low-level audible noise that is a slight humming sound. Under wet conditions, higher noise levels are experienced than would occur under dry conditions. However the background noise from various sources such as falling rain, traffic or blowing leaves has the effect of masking transmission line noise. A secondary cause of audible noise on transmission lines are gap-type discharges on hardware or scintillations on insulators with an accumulation of salt deposits or certain other foreign particles. Gap-type discharges are not anticipated to be significant audible noise sources for this project because gap-type discharges are characteristic of higher frequencies than the audible noise frequency band for “A” weighted human hearing (less than 10,000 hertz).

During fair weather conditions when the conductors are dry, the audible noise levels produced by the 69-kV transmission lines will be less than normal outdoor ambient noise levels. When the conductors are wet from rainfall or heavy fog, the transmission line noise will increase. Table 9-A4.5-2 presents the maximum calculated audible noise levels that could be produced by the transmission lines, at the edge of the right-of-way, during rain or other wet weather conditions. During all other weather conditions, audible noise levels associated with the two 69-kV IS and IO proposed transmission lines are expected to be lower than the levels reflected in Table 9-A4.5-2. Audible noise levels were calculated using the CAFEP developed by Bonneville Power Administration.

9-A4.5.5.2.2 Radio and Television Interference

Electrical noise in the radio frequency range can be produced by corona on transmission line conductors or by gap-type discharges on transmission line hardware. Corona noise is most significant in the lower frequencies such as those used for amplitude modulation (AM) radio broadcasting. Noise from gap-

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type discharges, on the other hand, extends to higher frequencies (peak levels are in the 30 to 100 megahertz (MHz) range) and can be a source of interference with television broadcast reception. Since the transmission lines will be constructed with new hardware, gap-type discharges are not anticipated to occur. Should a gap-type discharge develop on a damaged, defective, or improperly installed piece of hardware and lead to interference, the hardware causing the gap-type discharge will be located and repaired or replaced. Therefore, the following analysis focuses on interference from corona on the transmission line conductors. Radio and television interference levels were calculated using the CAFEP developed by Bonneville Power Administration. The results of the calculations are summarized in the following paragraphs.

Radio

Communications systems using frequency modulation (FM), such as FM radio broadcast or business and public service communications, are not affected by transmission line noise because the corona discharge radio frequency amplitude decreases significantly above 3 MHz (which is below the FM frequency band). Systems using amplitude modulation, such as AM radio and the video (picture) portion of television broadcasts can be affected if the broadcast signal strength is weak or the noise level is high, or both. The Federal Communications Commission (FCC) has characterized AM broadcast signals into categories based on the strength of signal received. Six categories Type A, B, C, D, E & F have been identified, with the stronger signals being Type A. The FCC primarily protects the Type A and Type B signals from co-channel or adjacent channel interference.

AM radio stations providing broadcast signals sufficiently strong to be free of naturally occurring atmospheric interference (static) at least 90 percent of the time are classified as providing Type A signal service by the FCC. In general, stations with Type A signal service will not experience objectionable interference from the transmission lines during fair weather if the receiver is located beyond the edge of the right-of-way.

Weaker AM radio station signals, which are likely to experience naturally occurring atmospheric interference at least 50 percent of the time, are defined as Type B signal service by the FCC. Weak stations minimally meeting the Type B criterion (signal strength equal to 54 decibels (dB)) will not experience objectionable interference from the transmission lines during fair weather if the receiver is located beyond the edge of the right-of-way.

During rainy weather, naturally occurring radio interference from atmospheric electricity (static) increases significantly causing interference with all but the stronger local AM radio stations; thereby masking any interference from transmission lines. The primary source of atmospheric noise is lightning activity. Lightning activity several thousands of miles away can cause severe static to

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weak AM radio signals. Consequently, interference from transmission line corona during rain is not a significant concern.

Television

Grade A television signal strengths have been defined by the FCC as those capable of providing acceptable reception at 70 percent of the receiver locations more than 90 percent of the time. The transmission lines will not likely cause interference with any Grade A television station under any weather conditions regardless of antenna location outside the right-of-way.

Grade B television signals generally provide acceptable reception at 50 percent of the receiver locations 90 percent of the time. The transmission lines will not likely cause interference with any Grade B television station under any weather conditions regardless of antenna location outside the right-of-way. Television receivers may experience interference if the antenna happens to be pointed in a direction of maximum noise. This interference is usually correctable by reorienting the antenna to get more signal, less line noise, or both.

Summary of Radio and Television Interference

Radio and television interference is not anticipated to occur as a result of the 69-kV transmission lines.

Should any homeowner or business experience abnormal interference as a result of these transmission lines, PEF will investigate all complaints and provide appropriate mitigation for impacts to radio or television reception caused by the transmission lines.

9-A4.5.5.3 Induced or Conducted Ground Currents

Objects located near a transmission line can become electrically charged due to their immersion in the lines' electric field. This charge results in a current that flows through the object to the ground. The current is called "induced" because there is no direct connection between the line and the object. The induced current can also flow to the ground through the body of a person who touches the object. An object that is insulated from the ground can actually store an electrical charge, becoming what is called "capacitively charged." A person standing on the ground and touching a capacitively charged vehicle or fence receives an electrical shock due to the sudden discharge of the capacitive charge through the person's body to the ground. After the initial discharge, a steady-state current can develop, the magnitude of which depends on several factors including the following:

- The strength of the electric field which, in turn, depends on the voltage of the transmission line as well as its height and geometry.
- The size of the object on the ground.

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- The extent to which the object is grounded.

Touching the object at a point remote from an electrical ground can result in a shock. To minimize these induced ground currents and distribute ground fault currents, each structure will be grounded. Each structure will have an electrical connection between the shield wire and ground lead that will be connected to ground rods. Ground resistance tests will be made at each structure before the shield wire is electrically connected to the ground lead. Sufficient ground rods will be installed to reduce the resistance to 10 ohms or less under normal atmospheric conditions. In addition, PEF standards require that fences and gates either crossing or parallel to and within the transmission line right-of-way be grounded to mitigate shock hazards.

The NESC addresses induced currents in Rule 232 C1c, F.A.C. for lines with voltage exceeding 98-kV alternating current to ground. This rule does not apply to the 69-kV transmission lines because it is less than the 98 kV threshold.

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TABLES

FIGURES