Federal Aviation Administration

Draft Environmental Assessment for Issuing a Certificate of Waiver to Florida Power & Light Company for Drone Operations in Florida

November 2022

This Environmental Assessment becomes a Federal document when evaluated, signed and dated by the responsible FAA official.

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Notice of Availability, Notice of Public Comment Period, and Request for Comment on the Draft Environmental Assessment for Issuing a Certificate of Waiver to Florida Power & Light Company for Drone Operations in Florida.

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).

ACTION: Notice of availability, notice of public comment period, and request for comment.

SUMMARY: In accordance with the National Environmental Policy Act of 1969, as amended (NEPA), Council on Environmental Quality NEPA-implementing regulations, and FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, the FAA is announcing the availability of and requesting comment on the draft Environmental Assessment for Issuing a Certificate of Waiver to Florida Power and Light Company for Drone Operations in Florida (Draft EA).

DATES: Comments must be received on or before 10 December 2022, or 30 days from the date of publication of this Notice of Availability, whichever is later.

ADDRESSES: Comments should be directed in writing to 9-FAA-Drone-Environmental@faa.gov. Please reference the FPL Statewide Draft EA in the email subject line when sending comments. **SUPPLEMENTARY INFORMATION:** The FAA is the lead agency. The FAA is evaluating Florida Power and Light's (FPL's) proposal to operate small, unmanned aircraft systems

(commonly referred to as drones) which would require the FAA to issue a waiver specific to 14 CFR *§107.31, Visual line of sight aircraft operation*, *§107.39, Operation over human beings*,

and *§107.145, Operations over moving vehicles*. Issuing a waiver is considered a federal action subject to environmental review under NEPA. Under the Proposed Action, the FAA would issue a waiver to FPL, which would authorize FPL to allow drone operations beyond the visual line of sight (BVLOS) of the remote pilot in command (RPIC), without a visual observer, and over people and moving vehicles. This waiver would apply to drone operations at NextEra-owned or serviced property in Florida. FPL uses drones to inspect and assess NextEra-owned or serviced infrastructure across Florida for damage, preventative maintenance, and post-storm assessment.

Alternatives under consideration include the Proposed Action and the No Action Alternative. Under the No Action Alternative, the FAA would not issue a waiver to FPL for drone operations at NextEra-owned or serviced energy infrastructure in Florida. FPL could continue drone operations in accordance with 14 CFR Part 107 and its existing FAA waiver. FPL's existing waiver for nationwide drone operations authorizes FPL to operate drone systems two miles BVLOS of the RPIC and for which a participating visual observer (whose main responsibility is to observe the airspace for intrusions) is not able to see the drone.

The Draft EA evaluates the potential environmental consequences from the Proposed Action and No Action Alternative on air quality; biological resources; climate; coastal resources; Department of Transportation Act Section 4(f); farmlands; hazardous materials, solid waste, and pollution prevention; historical, architectural, archeological, and cultural resources; land use; natural resources and energy supply; noise and noise-compatible land use; socioeconomics, environmental justice, and children's environmental health and safety risks; visual effects (including light emissions); and water resources.

The FAA has posted the Draft EA on the FAA website at:
https://www.faa.gov/uas/advanced_operations/nepa_and_drones

The FAA encourages all interested parties to provide comments concerning the scope and content of the draft EA. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask the FAA in your comment to withhold from public review your personal identifying information, the FAA cannot guarantee that we will be able to do so.

This EA becomes a Federal document when evaluated, signed and dated by the responsible FAA official.

Issued in Washington, DC on: 10 November 2022.

DAVID M MENZIMER

Digitally signed by DAVID M MENZIMER
Date: 2022.11.03 12:17:45 -07'00'

David Menzimer

Manager, General Aviation Operations Section

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Chapter 1
Introduction

1.1 Introduction

Florida Power & Light Company (FPL), owned by NextEra Energy, Inc. (NextEra), has applied to the Federal Aviation Administration (FAA) for a waiver for operations specific to a small, unmanned aircraft system (commonly referred to as a drone) governed by Title 14, Code of Federal Regulations (14 CFR) Part 107. FPL is requesting a waiver specific to 14 CFR §107.31, *Visual line of sight aircraft operation*, §107.39, *Operation over human beings*, and §107.145, *Operations over moving vehicles*, to allow drone operations beyond the visual line of site (BVLOS) of the remote pilot in command (RPIC), without a visual observer, and over people and moving vehicles. This waiver would apply to drone operations at NextEra-owned or serviced property in Florida (see Section 2.2 for a detailed description of the proposed action).

The FAA has determined that issuing a waiver is considered a major federal action under the National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code [U.S.C.] § 4321 et seq.), and the Council on Environmental Quality (CEQ) NEPA-implementing regulations (40 CFR §§ 1500–1508) and requires an environmental review. Under NEPA, federal agencies are required to consider the environmental consequences of proposed federal actions and to disclose to decision-makers and the interested public a clear and accurate description of the potential environmental impacts of proposed major federal actions. Additionally, under NEPA, federal agencies are required to consider reasonable alternatives to the proposed action, as well as a no action alternative. The FAA has established a process to ensure compliance with the provisions of NEPA through FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* and the FAA Order 1050.1F Desk Reference (FAA 2020[a]).

FPL prepared this Environmental Assessment (EA) under the supervision of the FAA to evaluate the potential environmental consequences that may result from the proposed action. FPL provided the FAA with its Concept of Operations for the proposed action that is analyzed in this EA.

1.2 Background and Location

In 2012, Congress first charged the FAA with integrating unmanned aircraft systems (i.e., drones) into the National Airspace System (NAS).[1] The FAA has engaged in a phased, incremental approach to integrating drones into the NAS and continues to work toward full integration of drones into the NAS.

FPL uses drones to inspect and assess NextEra-owned or serviced infrastructure across Florida and other sites in the United States for damage, preventative maintenance, and post-storm assessment. FPL previously received a Certificate of Waiver[2] in early 2022, which authorizes nationwide drone operations

[1] 49 U.S.C. 44802; FAA Modernization and Reform Act of 2012, Pub. L. No. 112-95, Sec. 332. 126 Stat. 11, 73 (2012).

[2] Available at: https://www.faa.gov/uas/commercial_operators/part_107_waivers/waivers_issued/media/107W-2022-00179_Eric_Schwartz_CoW.pdf. This waiver is effective from February 28, 2022, to July 31, 2023.

two miles BVLOS of the RPIC and for which a participating visual observer is not able to see the drone (14 CFR §§ 107.31, 107.33(b), and 107.33(c)(2)).

FPL's waiver application analyzed in this EA applies to drone operations at all NextEra-owned or serviced distribution lines, transmission lines[3], solar facilities, and power generation facilities in Florida. FPL will be the operator for all drone operations in Florida. The areas of operation are all privately owned facilities that are fenced and access is restricted to uninvolved bystanders (i.e., non-participants), or are located on company easements (i.e., distribution and transmission lines). Drone operations would be contained to the operational boundaries of the facility or applicable easement. The width of the easement for a typical distribution or transmission line is 15 to 75 feet wide. Large transmission lines (i.e., 500 kilovolts) may have easements up to 200 feet wide. As NextEra is the owner of all areas of operation, these facilities will be referred to as NextEra facilities.

Figure 1-1 shows the location of existing NextEra-owned or serviced energy facilities and infrastructure. Additional larger scale maps showing locations of NextEra-owned or serviced energy facilities in Florida are located in Appendix E. Tables 1-1 and 1-2 provide the amount and location of existing NextEra-owned or serviced energy facilities and infrastructure.

[3] The main difference between transmission and distribution power lines is transmission lines are for long-distance, high-voltage electricity transportation, and distribution lines are for shorter distances and lower voltage electricity transportation.

Figure 1-1. Location of Existing NextEra-Owned or Serviced Energy Infrastructure

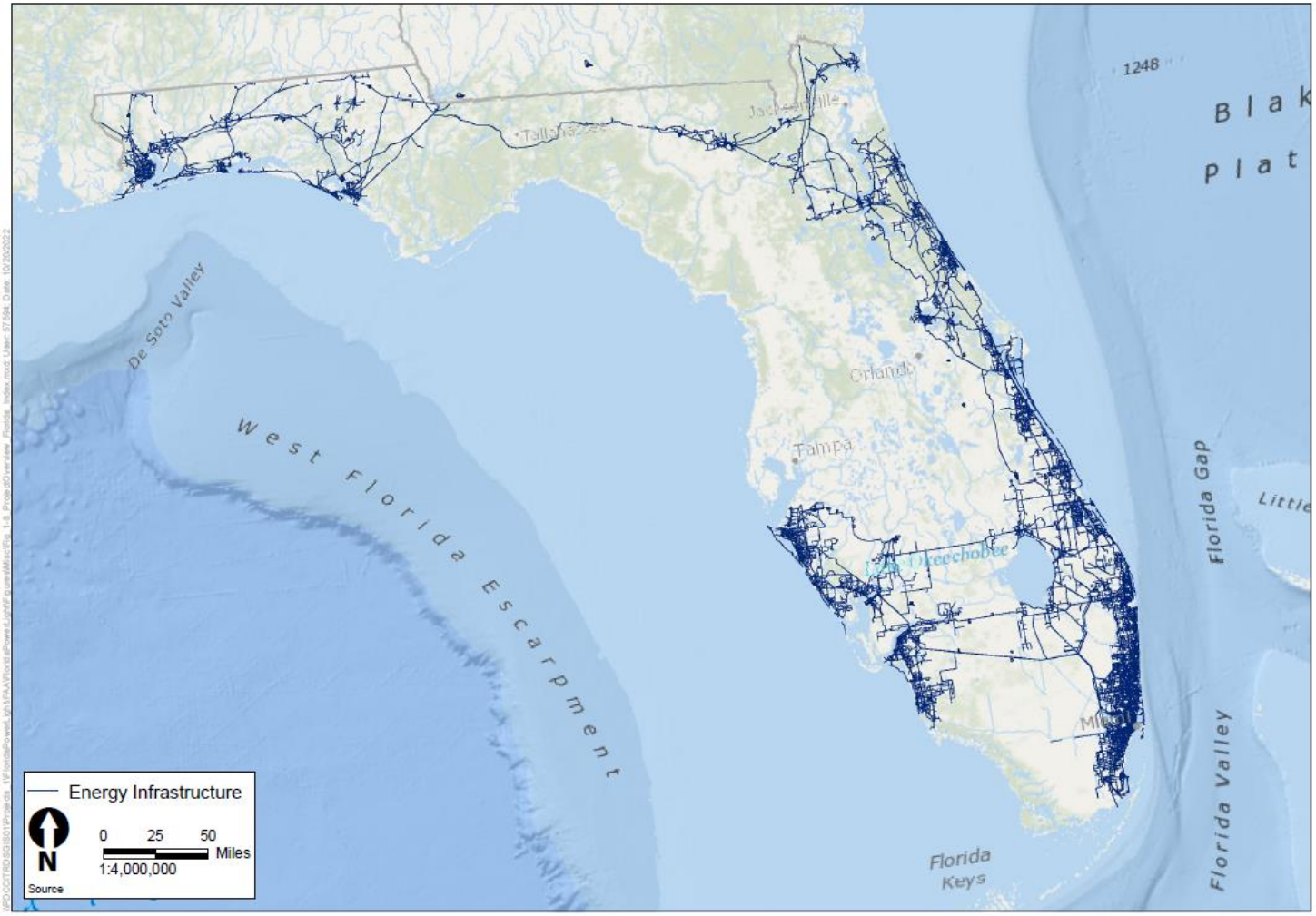


Table 1-1. Number of Existing Solar and Power Generation Facilities in Florida

Number of Facilities by Type	
Solar	**Power Generation**
52	16

Table 1-2. Approximate Number of Existing Distribution and Transmission Lines in Florida

Type of Power Line	Total Length (miles)
Distribution	45,000
Transmission	7,000

1.3 Purpose and Need

As described in the FAA Order 1050.1F, the purpose and need section of an EA briefly describes the underlying purpose and need for the proposed federal action. It presents the problem being addressed and describes what the FAA is trying to achieve with the proposed action.

1.3.1 FAA Purpose and Need

The FAA has specific statutory and regulatory obligations related to its issuance of a Part 107 waiver that would approve operations outside the normal limitations of 14 CFR Part 107. "The [FAA] Administrator may issue a certificate of waiver authorizing a deviation from any regulation specified in §107.205 if the Administrator finds that a proposed small [unmanned aerial system] operation can safely be conducted under the terms of that certificate of waiver...[and] may prescribe additional limitations that the Administration considers necessary" (§107.200). A party that receives a waiver "(1) [m]ay deviate from the regulations of this part to the extent specified in the certificate of waiver; and (2) [m]ust comply with any conditions or limitations that are specific in the certificate of waiver" (§107.200(d)). The FAA must review FPL's waiver application and determine whether to issue a waiver based on safety considerations.

1.3.2 FPL Purpose and Need

The purpose of FPL's request is to conduct BVLOS drone operations at NextEra-owned or serviced energy infrastructure in Florida (Figure 1-1). FPL's proposal is needed to increase NextEra-owned or serviced facility safety, efficiency, and productivity, as well as improve worker safety by reducing the need to expose workers to hazardous work tasks. FPL is required by various regulatory bodies including the Federal Energy Regulatory Commission to maintain the electric grid. Safe and reliable operation of NextEra-owned or serviced facilities are maintained through regular inspection of the equipment and vegetation. The inspections consist of ground (truck) and/or aerial (airplane/helicopter/drone) patrols. FPL inspects the facilities on a regular basis to look for problems caused by weather, vandalism, vegetation regrowth, etc. FPL's proposal would reduce or eliminate the use of larger crewed aircraft and motor vehicles (e.g., fixed-wing aircraft, helicopters, and ground vehicles) to conduct inspections of

energy infrastructure. FPL recognizes the importance of using emerging aviation technology that provides benefits to the public.

1.4 Public Involvement

The FAA created a Notice of Availability (NOA) with information about the EA and will share it with interested parties. The NOA provides information about the proposed action and requests public review and comments on this EA, which was published on the FAA website[4] for a 30-day comment period. Interested parties are invited to submit comments on any environmental concerns relating to the proposed action to a specifically assigned email address. The NOA was provided in English and Spanish.

[4] See: https://www.faa.gov/uas/advanced_operations/nepa_and_drones.

Chapter 2
Description of Proposed Action and Alternatives

FAA Order 1050.1F, Paragraph 6-2.1(d) states that "[a]n EA may limit the range of alternatives to the proposed action and no action when there are no unresolved conflicts concerning alternative uses of available resources." As discussed in Chapter 3, the FAA has not identified any unresolved conflicts concerning alternative uses of available resources associated with FPL's proposal. Therefore, this EA only considers the no action alternative and FPL's proposed action.

2.1 No Action Alternative

Under the no action alternative, the FAA would not issue a Part 107 Certificate of Waiver to FPL for the proposed drone operations analyzed in this EA. This alternative provides the basis for comparing the environmental consequences of the proposed action. FPL could continue drone operations in accordance with 14 CFR Part 107 and its existing FAA waiver. As described in Section 1.2, FPL has a waiver for nationwide drone operations that authorize FPL to operate the Percepto Sparrow drone system described below (Section 2.2.1) two miles BVLOS of the RPIC and for which a participating visual observer (whose main responsibility is to observe the airspace for intrusions) is not able to see the drone.

In addition to using a drone, FPL uses helicopters, fixed-wing aircraft, and automobiles to conduct inspections. FPL uses a helicopter (Bell 206 Jet Ranger) and a fixed-wing aircraft (Piper Cub or Cessna 206) to inspect the 7,000 miles of transmission lines in Florida twice a year. FPL uses cars to drive along and inspect the 45,000 miles of distribution lines in Florida every year; this amounts to approximately 10,000 person hours.

2.2 Proposed Action

The FAA's federal action is to issue a waiver to FPL for drone operations that do not comply with 14 CFR Part 107. As described in Chapter 1, the regulations that would be waived under the federal action are 14 CFR §107.31, §107.39, and §107.145. FPL is proposing to operate its drone systems BVLOS at NextEra-owned or serviced energy facilities and infrastructure in Florida (Figure 1-1). FPL's proposal includes drone operations for distribution and transmission line inspections, power generation facility inspections, and solar facility inspections. The following sections describe the drone systems and proposed operations.

2.2.1 Drone Systems

FPL is proposing to continue to use the Percepto Sparrow highly automated "drone-in-a-box" system to perform inspections of distribution lines, transmission lines, solar facilities, and power generation facilities. Also, FPL is proposing to use the Skydio 2 drone to perform inspections of distribution and transmission lines only (not solar or power generation facilities). FPL is requesting a waiver for §107.31,

Visual line of sight aircraft operation; §107.39, *Operation over human beings*, and §107.145, *Operations over moving vehicles* for the Percepto Sparrow drone.

FPL would use the Percepto Sparrow drone to conduct preventive maintenance or problem detection inspections wherever FPL has a Sparrow drone system installed. FPL would use the Skydio 2 drone mainly for response to emergency situations (e.g., power outages). The Percepto Sparrow drone system consists of two main components: the platform and the software (see Figure 2-1):

- **Platform** – the platform consists of the drone and its base.
- **Drone** (1a in Figure 2-1) – a small quadcopter equipped with a day and thermal camera, powered by a lithium polymer battery, and controlled by onboard software. The drone is equipped with a parachute for use in emergency situations (i.e., sudden loss of altitude and attitude).
- **Base** (1b in Figure 2-1) – industrial-grade, weatherproof shelter and charging station with a take-off and landing zone for the drone (Figure 2-2). A heating, ventilation, and air conditioning unit is attached to the base, and a weather station is located nearby providing on-site weather information.
- **Software** – developed by Percepto, the software includes a cloud management system, which is the operator interface for controlling the system. A secondary communication channel is also provided for emergency situations.

Figure 2-1. Percepto Sparrow Drone System

Source: FPL Concept of Operations for Beyond Visual Line of Sight, December 2021.

Figure 2-2. Percepto Sparrow Drone and Base

Source: https://www.fpl.com/reliability/drones.html

Pictured in Figure 2-3, the Skydio 2 is much smaller than the Percepto Sparrow and does not include a base like the Sparrow. FPL would transport the Skydio 2 to each site. The Skydio 2 is powered by a lithium polymer battery and employs a proprietary flight control/autonomy system. It uses the Global Positioning System (GPS) to assist with location tracking, precision flying, hovering, and return to home commands. Skydio 2 is equipped with obstacle sensing capabilities, which are useful when flying near stationary electrical equipment. If the drone experiences a loss of one motor, it will begin to swerve and lose altitude. If this occurs, the RPIC will have reduced control. If the drone loses multiple rotors, it will be unable to maintain controlled flight. Both cases result in immediate flight termination.

Figure 2-3. Skydio 2 Drone

Source: FPL Concept of Operations for Beyond Visual Line of Sight, December 2021.

Tables 2-1 and 2-2 provide the specifications and flight limitations for each drone.

Table 2-1. Drone Specifications

Attribute	Percepto Sparrow	Skydio 2
Length (inches)	26.88	8.78
Width (inches)	42.91	10.75
Height (inches)	12.08	2.91
Weight (pounds)	22.1	1.7
Flight Time (minutes; usable battery life)	26	23
Maximum Flight Range (miles)	5.28	2
Minimum Flight Altitude (feet)	30	30
Maximum Flight Altitude (feet)	Below 400	Below 400
Maximum Cruise Speed (miles per hour)	26.8	36
Material	Carbon fiber composite	Plastic

Table 2-2. Flight Limitations

Attribute	Percepto Sparrow	Skydio 2
Wind (miles per hour)	Takeoff and landing: 16.7 Flight: 24.8	25
Rain (inches per hour)	0.23	Will not fly in the rain
Temperature (degrees Fahrenheit)	14 to 107.6	23 to 104
Lightning	No operations during lightning	No operations during lightning
Icing	No flight into known icing	No flight into known icing

2.2.2 Drone Operations

To support its commercial operations, FPL is requesting permission to operate drones BVLOS within Class G airspace[5] over NextEra-owned or serviced property, including distribution lines, transmission lines, solar facilities, and power generation facilities:

1. **Distribution lines** – Drone flights would occur for restoration, preventive maintenance, and problem detection.[6] The goal of the inspections is to inspect the structures (including substations, if present within the easement, and power poles), power lines, vegetation, and at-risk trees for potential fall-in. The drone would fly directly above the power lines or easement.

   For the purpose of predicting environmental impacts generated from drone operations during distribution line inspections, the FAA made the following assumptions based on information provided by FPL:

   - Operational height is 35 feet above ground level (AGL)

[5] Class G airspace (uncontrolled) is that portion of airspace that has not been designated as Class A, Class B, Class C, Class D, or Class E airspace, which is airspace within which air traffic control service is provided.

[6] Restoration refers to inspections conducted during power outages when many customers are out of power. The drone would be used to help identify the problem location and what needs to be fixed. Preventive maintenance and problem detection refer to inspections conducted to identify potential equipment issues before those issues cause a power outage.

- Distance between the electric poles is 125 feet
- The drone will hover 60 seconds at each pole during inspection
- The drone moves between poles over the course of 10 seconds
- FPL would inspect each distribution line every 4 weeks on average; each inspection of a distribution line would take one to four weeks, depending on the length of the distribution line

2. **Transmission lines** – Flights would occur for restoration, preventive maintenance, and problem detection. The goal of the inspections is to inspect the transmission structures (including substations, if present within the easement, and power poles), power lines, vegetation, and at-risk trees for potential fall-in. The drone would fly directly above the power lines or easement.

   For the purpose of predicting environmental impacts generated from drone operations during transmission line inspections, the FAA made the following assumptions based on information provided by FPL:

   - Operational height is 75 feet AGL
   - Distance between the electric poles is 200 feet
   - The drone will hover 60 seconds at each pole during inspection
   - The drone moves between poles over the course of 18 seconds
   - FPL would inspect each transmission line every 4 weeks on average; each inspection of a transmission line would take one to four weeks, depending on the length of the transmission line

3. **Solar facilities** – Surveillance flights would occur for preventive maintenance and problem detection of solar panels located within a solar facility boundary. Flights for environmental inspections during pre- and post-construction of sites are also included. Ground access to the solar facility is controlled via fences and locked gates.

   For the purpose of predicting environmental impacts generated from drone operations during solar facility inspections, the FAA made the following assumptions based on information provided by FPL:

   - Operational height is 125 feet AGL
   - Distance between the sweep segments is 12 feet
   - Speed on sweep segments is 10 miles per hour
   - Speed on turnabouts is 5 miles per hour
   - FPL would inspect each solar facility every day with flights over a different part of the solar field each day; each inspection of a solar facility would take one week or less, depending on the size of the facility

4. **Power generation facilities** – Surveillance flights would occur for preventive maintenance and problem detection. Ground access to the power generation facility is controlled via fences and locked gates.

   For the purpose of predicting environmental impacts generated from drone operations during power generation facility inspections, the FAA made the following assumptions based on information provided by FPL:

   - Operational height is 150 feet AGL
   - The drone will hover for 30 seconds, as needed
   - The drone will fly at 20 miles per hour
   - FPL would inspect each power generation facility every day with flights over a different part of the facility each day; each inspection of a power generation facility would take one week or less, depending on the size of the facility

As noted above, FPL is proposing to operate the Percepto Sparrow at all four types of facilities and Skydio 2 at distribution and transmission lines only. Also, FPL is requesting a waiver for flight over people and moving vehicles only for the Percepto Sparrow drone. This means that during Percepto Sparrow inspection flights along distribution and transmission lines, FPL would not have to stop the drone at intersections with roads and wait for vehicles to pass before proceeding along the easement. Similarly, FPL would be able to maintain its course of flight along an easement if a person was present within the easement. When operating the Skydio 2 drone along distribution and transmission lines, FPL would have to comply with the Part 107 regulations with respect to operations over people and moving vehicles.

The flight crew for the proposed drone operations would involve a single RPIC. Rather than relying on the use of a visual observer, for the Percepto Sparrow drone, the RPIC would rely upon the radar and automatic dependent surveillance-broadcast (ADS-B) capabilities of an Accipiter BVLOS Surveillance System[7] to detect aircraft entering the airspace within two miles of the drone and alert the RPIC of any intrusion. Once the intruder aircraft is detected, the RPIC would monitor the intruder aircraft and execute avoidance procedures, as necessary. For example, if needed, the RPIC could initiate a "go safe" command, which would involve one of the following:

- Drop altitude and hover approximately 15-20 feet above the distribution or transmission line until the intruder aircraft is more than two miles away

[7] The Accipiter BVLOS Surveillance System is provided by Accipiter Radar Corporation under license from its parent Accipiter Radar Technologies Inc. Accipiter was the primary participant in U.S. Department of Defense's (DoD) Independent Validation of Avian Radar project (see: https://www.accipiterradar.com/wp-content/uploads/2017/05/IVAR_FS_v-3.pdf) and one of the key participants in the assessment of avian radar systems by the FAA's Center of Excellence for Airport Technology at civil and military airports in the United States. Accipiter is the only company whose avian radar system is fully compliant with both FAA Advisory Circular 150/5220-25 (Airport Avian Radar Systems) and DoD's Functional Requirements and Performance Specification.

- Land the drone in a safe zone; FPL identifies safe zones approximately every ¼ mile along the power line
- Return the drone to the base / takeoff location

For the Skydio 2 drone, which would only fly over distribution and transmission lines, the RPIC would rely upon audio and visual aircraft monitoring. As the RPIC flies the drone from one pole to the next, the RPIC will conduct a 360-degree rotation of the drone to determine if any aircraft have entered the airspace before flying to the next pole.

The proposed drone operations would occur only at NextEra-owned or serviced facilities (solar and power generation) and easements (distribution and transmission lines). The facilities are privately owned, fenced, and access is restricted to uninvolved bystanders (i.e., non-participants). Easements are not necessarily access restricted. Except during power outages, FPL contacts all customers within the operations area ten business days prior to conducting a flight to inform them of upcoming drone operations. FPL would not fly the drone over schools or parks.

All RPICs are instructed on how to properly conduct a pre-flight site assessment, to include checks for nearby airports, prisons, schools, national parks, designated tribal lands, sensitive or protected wildlife species, etc. As part of the flight planning process, the RPIC must complete a risk calculation matrix that outlines all the critical factors for a safe flight. Flight planning and the risk calculation matrix help the RPIC identify any areas of concern before the flight. Once completed, the RPIC submits the flight plan and risk matrix to FPL's flight operations manager. The flight operations manager verifies the information. This two-factor verification is a safety measure FPL has in place to address any safety issues related to flight or personnel, as well as address any environmental concerns. See Appendix B for a copy of FPL's flight planning procedure. Once on site, prior to conducting drone operations, FPL walks or drives the site to identify or confirm hazardous and sensitive areas to avoid (e.g., tall structures or towers, eagle nests, etc.).

FPL expects to fly approximately five flights a day from each drone system it has in the field. FPL currently has six Sparrow drones in the field and plans to have a total of 650 Sparrow drones within the next five years. FPL currently has five Skydio 2 drones in the field and plans to have a total of about 20 Skydio 2 drones within the next five years. Each drone flight is approximately 30 minutes in duration. The battery capacity limits how long, and thus how far, the drone can fly. Proposed operating hours are from 8:00 am to 5:00 pm.

It is important to note that a drone would fly over a given location within a facility or along an easement very infrequently. When conducting inspection flights at solar and power generation facilities, flights could occur daily; however, a different location of the facility would be flown each day until the entire facility is inspected. When conducting inspection flights along distribution and transmission lines, a drone would pass by the same power pole approximately once a month.

2.2.3 Environmental Protection Measures

FPL has established processes and procedures for ensuring that its drone operations do not adversely affect wildlife and protected natural areas. FPL's Environmental Services Department has developed maps that depict the location of federally threatened and endangered species nests, roosts, burrows,

and critical habitat located at each NextEra-owned or serviced facility and easements to ensure drone operations remain an adequate distance from these locations. FPL maintains avoidance buffers in accordance with federal and/or state agency-issued guidance (e.g., U.S. Fish and Wildlife Service [USFWS] National Bald Eagle Management Guidelines), as well as with any facility-specific regulatory permits and agreements associated with operations. FPL regularly updates its facility maps depicting any newly identified protected species locations within the operating area.

Additionally, FPL follows several general protection measures, including facility-posted speed limit signs and driving on designated facility pathways. FPL abides by posted conservation easement, natural area, and other federally or state-designated sensitive area signage within the operating area. Drone operating hours occur outside of dawn, dusk, and nighttime hours further limiting interaction with crepuscular[8] and nocturnal wildlife species.

To avoid risks to children, FPL currently does not and would not conduct drone operations over schools, playgrounds, and parks.

[8] A crepuscular animal is one that is active primarily during the twilight period.

Chapter 3
Affected Environment and Environmental Consequences

3.1 Introduction

This chapter provides a description of the affected environment and potential environmental consequences for the environmental impact categories that have the potential to be affected by the no action alternative and proposed action, as required by CEQ's NEPA-implementing regulations and FAA Order 1050.1F. As required by FAA Order 1050.1F, this EA presents an evaluation of impacts for the environmental impact categories listed below.

- Air quality
- Biological resources (including fish, wildlife, and plants)
- Climate
- Coastal resources
- Department of Transportation Act, Section 4(f)
- Farmlands
- Hazardous materials, solid waste, and pollution prevention
- Historical, architectural, archaeological, and cultural resources
- Land use
- Natural resources and energy supply
- Noise and noise-compatible land use
- Socioeconomics, environmental justice, and children's environmental health and safety risks
- Visual effects (including light emissions)
- Water resources (including wetlands, floodplains, surface waters, groundwater, and wild and scenic rivers)

The study area includes the existing NextEra-owned or serviced distribution lines, transmission lines, solar facilities, and power generation facilities in Florida, as well as potential future sites of the same type in Florida. Figure 1-1 shows the location of existing NextEra-owned or serviced energy facilities and infrastructure.

The level of detail provided in this chapter is commensurate with the importance of the potential impact on the resources (40 CFR § 1502.15). EAs are intended to be concise documents that focus on aspects of the human environment that may be affected by the proposed action. As stated in Chapter 2, the

primary difference between what would occur under the proposed action and the no action alternative is FPL would conduct drone operations without a pilot or visual observer located at the energy site. Under the proposed action, the frequency of drone operations and the number of drones used would increase from the no action alternative. As stated above, FPL expects to fly approximately five flights a day from each drone system it has in the field. FPL currently has six Sparrow drones in the field and plans to have a total of 650 Sparrow drones within the next five years. FPL currently has five Skydio 2 drones in the field and plans to have a total of about 20 Skydio 2 drones within the next five years. Given the nature of the proposed action, the size of the study area, the description of the affected environment is provided at a high level and site-specific descriptions are not provided.

3.2 Environmental Impact Categories Not Analyzed in Detail

This EA does not analyze potential impacts on the following environmental impact categories in detail because the proposed action would not affect the resources included in the category (see FAA Order 1050.1F, Paragraph 4-2.c):

- **Air Quality and Climate** – The Percepto Sparrow and Skydio 2 drones are battery-powered and do not generate emissions that could result in air quality or climate impacts. Electricity consumed for battery charging and for overall operation is minimal and comes from the power grid. Therefore, the proposed action would not result in air quality or climate impacts.
- **Biological Resources (Fish and Plants)** – The proposed action does not involve development or disturbance of any land or aquatic habitat. Any overflight of these resources would not affect them. The terrestrial areas of overflight are already disturbed with existing infrastructure where vegetation is either absent (e.g., highly developed urban areas) or is heavily disturbed and maintained (e.g., transmission line rights-of-way). Any landing of a drone (either on purpose or accident) and recovery in these disturbed areas would have little, if any, impact on vegetation due to the small size of the drone.
- **Coastal Resources** – The proposed action would not affect any coastal resources or shorelines, change the use of shoreline zones, or be inconsistent with any state coastal zone management program. FPL is responsible for complying with the Coastal Zone Management Act, including ensuring its operations are conducted in accordance with state laws.
- **Farmlands** – The proposed action does not involve the development or disturbance of any land regardless of use, nor would it have the potential to convert any farmland to non-agricultural uses. Therefore, the proposed action would not affect farmlands.
- **Hazardous Materials, Solid Waste, and Pollution Prevention** – The proposed action does not include any activities that would use hazardous materials or impact any resources related to hazardous materials, such as disturbance of a contaminated site. The proposed operations would not generate solid waste. Therefore, the proposed action would not result in impacts related to hazardous materials, solid waste, and pollution prevention.

- **Historical, Architectural, Archeological, and Cultural Resources** – The proposed action does not involve development or disturbance of any land. The proposed action would result in minor, infrequent and short-term visual and auditory effects at the power line easement, solar facility, or power generation facility. The FAA has determined the proposed action (or undertaking) does not have the potential to cause effects on historic properties, assuming historic properties were located near the drone operation area. The Miccosukee Tribe of Indians and the Seminole Tribe of Florida have lands within the FPL service territory that include transmission lines and distribution lines covered under the proposed action. As a company policy, FPL always requests permission from the respective Tribes prior to any planned visits or scheduled work on all sovereign, tribal land. FPL has coordinated with both of these tribes on the drone operations for the proposed action. The FAA will contact both of these tribes to determine their interest in formal government-to-government consultation. As noted above, the proposed action involves temporary, infrequent and short-term drone operations along existing easements and facilities and does not involve any ground disturbance. The drone operations would replace existing inspection of these facilities by helicopter, plane, or vehicle. Accordingly, the proposed action would not have the potential to cause effects to tribal cultural resources.

- **Land Use** – The proposed action does not involve the development or disturbance of any land regardless of use. The proposed action includes deviations to drone operations as regulated under Part 107. It does not include activities that would change the existing use of land. Therefore, the proposed action would not affect land use.

- **Natural Resources and Energy Supply** – The proposed action would not require the need for unusual natural resources and materials or those in short supply. The drones are battery powered and do not consume fuel resources. Therefore, the proposed action would not result in impacts to natural resources and energy supply.

- **Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks** – The proposed action would not induce economic growth in an area, disrupt or divide the physical arrangement of an established community, cause relocation of residents or community businesses, disrupt local traffic patterns or reduce the levels of service of roads, or produce a change in the community tax base. Therefore, the proposed action would not result in socioeconomic impacts.

  The proposed action does not involve the development or disturbance of any land. The proposed action includes deviations to drone operations as regulated under Part 107. The proposed action involves flying drones over existing NextEra-owned solar and power generation facilities, as well as over existing NextEra-owned or serviced power distribution and transmission lines. There may be increases in ambient noise levels associated with drone operations in minority or low-income population areas, but these increases would be short-term, infrequent, and result in less than significant impacts. Any temporary increases would resemble those realized by the general population. The proposed action would not result in effects that would be predominately or uniquely borne by a minority or low-income population. Therefore, the proposed action does not have the potential to result in impacts that disproportionately adversely affect a minority or low-income population.

The proposed action would not affect products or substances that a child would be likely to come into contact with, ingest, use, or be exposed to. Additionally, FPL's proposal includes avoiding drone operations over and near schools, playgrounds, and parks. Therefore, the proposed action would not result in environmental health and safety risks to children.

- **Water Resources (Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers** – The proposed action does not authorize or involve any ground-disturbing activities and would therefore not encroach upon areas designated as navigable waters, wetlands, or floodplains. Any overflight of these resources would not affect them. The proposed operations would not result in any changes to existing discharges to water bodies, create a new discharge that would result in impacts to surface waters, or modify a water body. The proposed operations would not involve activities that would withdraw groundwater from underground aquifers or reduce infiltration or recharge to ground water resources through the introduction of new impervious surfaces. None of NextEra's existing energy infrastructure intersects a wild and scenic river protected by the Wild and Scenic Rivers Act. The proposed action does not have the potential to disrupt the free-flowing character of any designated wild and scenic river. Therefore, the proposed action would not affect wetlands, floodplains, surface waters, groundwater, or wild and scenic rivers.

3.3 Noise and Noise-Compatible Land Use

3.3.1 Definition of Resource and Regulatory Setting

Sound is a physical phenomenon consisting of pressure fluctuations that travel through a medium, such as air, and are sensed by the human ear. Noise is considered any unwanted sound that interferes with normal activities (such as sleep, conversation, student learning) and can cause annoyance. Noise sources can be constant or of short duration and contain a wide range of frequency (pitch) content. Determining the character and level of sound aids in predicting the way it is perceived.

The compatibility of existing and planned land uses with proposed FAA actions is usually determined in relation to the level of aircraft noise. Federal compatible land use guidelines for a variety of land uses are provided in Table 1 in Appendix A of 14 CFR part 150, *Land Use Compatibility with Yearly Day-Night Average Sound Levels*. Compatible land use analysis considers the effects of noise on special management areas, such as national parks, national wildlife refuges, and other sensitive noise receptors. The concept of land use compatibility corresponds to the objective of achieving a balance between the proposed action and the surrounding environment.

The FAA has determined that the cumulative noise energy exposure of individuals to noise resulting from FAA actions must be established in terms of yearly Day-Night Average Sound Level (DNL), the FAA's primary noise metric. DNL accounts for the noise levels of all individual aircraft events, the number of times those events occur, and the period of day/night in which they occur. The DNL metric logarithmically averages sound levels at a location over a complete 24-hour period, with a 10-decibel (dB) adjustment added to those noise events occurring from 10:00 p.m. to 7:00 a.m. The 10 dB adjustment is added because of the increased sensitivity to noise during normal nighttime hours and because ambient (without aircraft) sound levels during nighttime are typically about 10 dB lower than

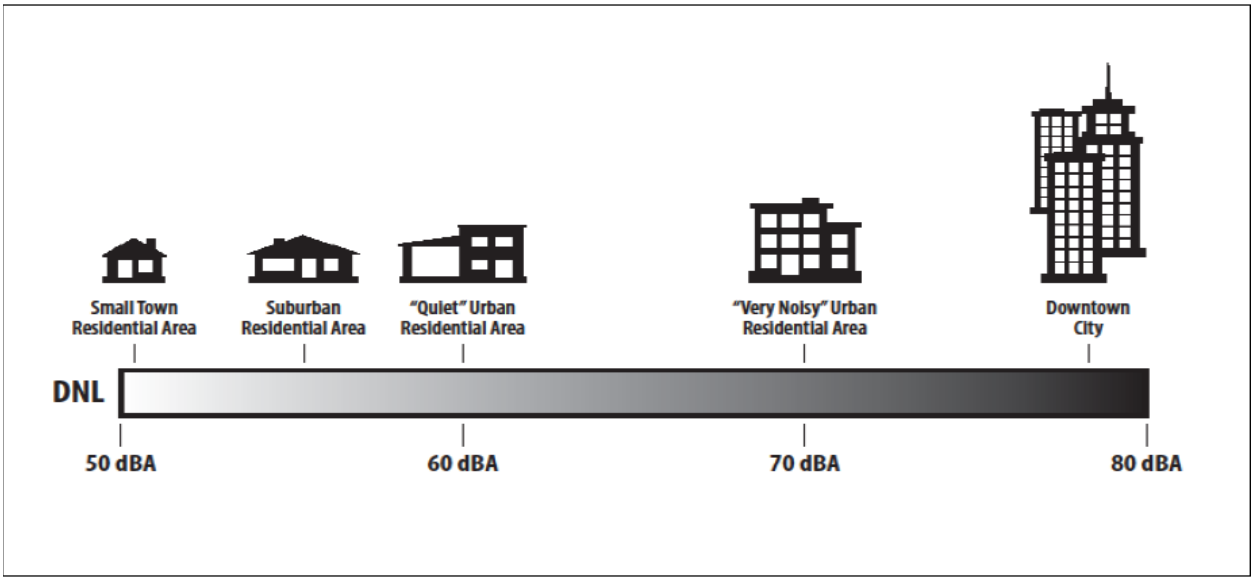
during daytime hours. More information about noise and noise-compatible land use can be found in Chapter 11 of the FAA Order 1050.1F Desk Reference (FAA 2020[a]).

3.3.2 Affected Environment

The ambient (or background) sound level in the study area varies and depends on the current land use at and in the immediate vicinity of the power line easement, solar facility, or power generation facility. For example, the ambient sound level along a transmission line or at a solar facility in a rural area is lower than the ambient sound level along a distribution line or a power generation facility in the middle of a city. Existing sound sources in the study area range from natural sounds (wind, animal calls, thunder) to anthropogenic sources associated with commercial and residential land uses (e.g., vehicles, farm equipment, lawn mowers, railroads, construction equipment, aircraft, etc.).

Figure 3-1 shows typical existing ambient DNL ranging from a small-town residential area to a downtown city. According to the figure, many of the remote areas in the study area are expected to have a DNL less than 50 A-weighted decibels (dBA),[9] while urban areas are expected to have a DNL as high as 80 dBA.

Figure 3-1. Typical Day-Night Average Sound Levels



Source: FAA 2020[b]

3.3.3 Environmental Consequences

Human perception of noise depends on a number of factors, including overall noise level, number of noise events, the extent of audibility above the background ambient sound level, and acoustic frequency content (pitch). Drone noise generally has high acoustic frequency content, which can often be more discernable from other typical noise sources.

Noise impacts would be significant if the action would increase noise by DNL 1.5 dB or more for a noise-sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be

[9] A-weighting approximates the frequency response of human hearing.

exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe. For example, an increase from DNL 65.5 dB to 67 dB is considered a significant impact, as is an increase from DNL 63.5 dB to 65 dB.

3.3.3.1 No Action Alternative

FPL currently uses the Percepto Sparrow and Skydio 2 drones, a helicopter (Bell 206 Jet Ranger), fixed-winged aircraft (Piper Cub or Cessna 206), and vehicles to conduct inspections.

The Percepto Sparrow and Skydio 2 drones generate sound pressure levels of approximately 62.2 dBA and 60.8 dBA at a slant-range (45-degree angle) distance of 71 feet, respectively (see Appendix C). During an inspection of a distribution line, if an individual was directly underneath the Percepto Sparrow drone, and the drone was hovering 35 feet above the individual for 60 seconds (a typical inspection of a distribution power pole), the individual would experience a Sound Exposure Level (SEL)[10] of approximately 86.1 dBA. Under the same circumstances but with a Skydio 2 drone, the individual would experience an SEL of approximately 84.7 dBA.

During an inspection of a transmission line, if an individual was directly underneath the Percepto Sparrow drone, and the drone was hovering 75 feet above the individual for 60 seconds (a typical inspection of a transmission power pole), the individual would experience an SEL of approximately 79.5 dBA. Under the same circumstances but with a Skydio 2 drone, the individual would experience an SEL of approximately 78.1 dBA.

In both situations (i.e., sound exposure during a distribution or transmission line inspection), the sound level would decrease as the drone moves away from the individual. As shown in the attached noise report (Appendix C), FPL would have to conduct hundreds of drone operations a day in the same location to exceed FAA's noise significance threshold.

The no action alternative is not expected to result in significant noise impacts given the sound levels of the drone and aircraft, the short duration of exposure, and the small number (1 or less) of daily operations at any given location.

3.3.3.2 Proposed Action

Noise impacts under the proposed action would be less than those under the no action alternative because under the concept of operations assessed in this EA[11], FPL would replace the use of helicopters and fixed-winged aircraft with the Percepto Sparrow and Skydio 2 drones. Also, the use of drones under the waiver would substantially reduce the number of vehicle miles driven. Under the proposed action, the Percepto Sparrow and Skydio 2 drones would eventually replace 5,000/year vehicle-driven feeder assessments and 30,000/year vehicle-driven customer call tickets (ex: leaning pole, vegetation on the line or low hanging wire) with drone assessments. To ensure that noise would not cause a significant impact to any residential land use or noise sensitive resource within the study area, the FAA initiated an analysis of the potential noise exposure in the area that could result from the proposed action. The

[10] The Sound Exposure Level is a single-event metric that takes into account both the sound level and duration of the event, referenced to a standard duration of one second.

[11] FPL would occasionally still use helicopter and fixed-winged aircraft for transmission vegetation monitoring.

noise analysis methodology detailed in Appendix C was used to calculate DNL for various operational counts. Based on FPL's proposed drone operations, which involves flying by the same power pole once per month or less (for distribution and transmission line inspections) and flying daily at a solar or power generation facility (but at a different location within the facility each day), the proposed action's estimated DNL is less than 45 DNL (see Table 4 in the noise report). Therefore, the proposed action would not result in significant noise impacts.

3.4 Visual Effects

3.4.1 Definition of Resource and Regulatory Setting

Visual effects deal broadly with the extent to which the project would either: 1) produce light emissions that create annoyance or interfere with activities; or 2) contrast with, or detract from, the visual resources and/or the visual character of the existing environment. Visual effects can be difficult to define and assess because they involve subjectivity.

For clarity and uniformity, visual effects are broken into two categories: 1) light emission effects; and 2) visual resources and visual character. *Light emissions* include any light that emanates from a light source into the surrounding environment. Examples of sources of light emissions include parking and facility lighting. *Glare* is a type of light emission that occurs when light is reflected off a surface (e.g., window glass, solar panels, or reflective building surfaces). *Visual resources* include buildings, sites, traditional cultural properties, and other natural or manmade landscape features that are visually important or have unique characteristics. In unique circumstances, the nighttime sky may be considered a visual resource. *Visual character* refers to the overall visual makeup of the existing environment where the project would be located. For example, areas near densely populated locations generally have a visual character that could be defined as urban, whereas less developed areas could have a visual character defined by the surrounding landscape features, such as open grass fields, forests, mountains, deserts, etc.

Some visual resources are protected under federal, state, or local regulations. Protected visual resources generally include, but are not limited to, federal, state, or local scenic roadways/byways; National Scenic Areas; scenic easements; trails protected under the National Trails System Act or similar state or local regulations; biological resources; and features protected under other federal, state, or local regulations. More information about visual resources and visual effects can be found in Chapter 13 of the FAA Order 1050.1F Desk Reference (FAA 2020[a]).

3.4.2 Affected Environment

The affected environment includes a variety of urban, suburban, and rural areas and numerous protected visual resources. The immediate affected environment, however, is the common viewscape of the solar facilities, power generation facilities, distribution lines, and transmission lines, resulting in similar direct visual environments statewide.

Although distribution and transmission lines may be proximate to visual resources, the proposed drone operations would occur directly above power lines and company easements, which are approximately

15 to 75 feet wide for a typical distribution or transmission line and up to 200 feet wide for large transmission lines (i.e., 500 kilovolts).

3.4.3 Environmental Consequences

The FAA has not established a significance threshold for light emissions or visual resources/visual character. Factors to consider when assessing the significance of potential visual effects include the degree to which the action would have the potential to:

- Create annoyance or interfere with normal activities from light emissions
- Affect the visual character of the area due to the light emissions, including the importance, uniqueness, and aesthetic value of the affected visual resources
- Affect the nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources
- Contrast with the visual resources and/or visual character in the study area
- Block or obstruct the views of visual resources, including whether these resources would still be viewable from other locations

3.4.3.1 No Action Alternative

Under the no action alternative, FPL would continue to use the Percepto Sparrow and Skydio 2 drones, a helicopter (Bell 206 Jet Ranger), fixed-winged aircraft (Piper Cub or Cessna 206), and vehicles to conduct inspections of transmission and distribution lines, solar facilities, and power generation facilities. As described in Section 1.2, FPL is currently authorized to operate the Percepto Sparrow drone system two miles BVLOS of the RPIC and for which a participating visual observer (whose main responsibility is to observe the airspace for intrusions) is not able to see the drone.

The no action alternative is not expected to result in significant impacts to visual resources or visual character from drone, aircraft, and vehicle use or foot traffic due to their short duration, small number (one or less) of daily operations at any given location, and occurrence at NextEra-owned or serviced facilities or on company easements. All activities would take place during daytime hours and would not result in significant light emissions impacts.

3.4.3.2 Proposed Action

Visual effects under the proposed action would be less than those under the no action alternative because FPL would replace the use of helicopters and fixed-winged aircraft with the Percepto Sparrow and Skydio 2 drones. As stated above, FPL uses a helicopter (Bell 206 Jet Ranger) and a fixed-wing aircraft (Piper Cub or Cessna 206) to inspect the 7,000 miles of transmission lines in Florida twice a year. FPL uses cars to drive along and inspect the 45,000 miles of distribution lines in Florida every year. All helicopter and fixed-wing aircraft inspections would be replaced by either the Percepto Sparrow or Skydio 2 drones. The proposed action involves a continuation of drone operations at NextEra-owned or serviced facilities and infrastructure in Florida.

Under the waiver, drone operations during the daytime would not introduce new light emissions. The proposed action would not result in construction or a change in land use and would not affect the visual character of the area. FPL would only operate drones BVLOS within Class G airspace over NextEra-owned or serviced property including distribution lines, transmission lines, solar facilities, and power generation facilities. Due to the small size of the drones, views from the ground would likely be obscured by transmission and distribution lines and would decrease the further the viewer is from the drone. Solar and power generation facility drone operations would occur at NextEra-owned or serviced properties where ground access to the facility is controlled via fences and locked gates, resulting in few, if any, viewing opportunities for general observers to see the drones. Therefore, no increased impacts to visual resources would result from the proposed action because drones would only operate over areas where views already include existing power lines and solar and power generation facilities. Any impacts to visual resources under the proposed action would be less than the no action alternative due to the decreased use of helicopters, fixed-winged aircraft, and vehicles. Therefore, the proposed action would not result in significant visual effects.

3.5 Department of Transportation Act Section 4(f)

3.5.1 Definition of Resource and Regulatory Setting

Section 4(f) of the U.S. DOT Act of 1966 (now codified at 49 U.S.C. § 303) protects significant publicly owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. Section 4(f) provides that the Secretary of Transportation may approve a transportation program or project requiring the *use* of publicly owned land of a public park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance, or land of an historic site of national, state, or local significance, only if there is no feasible and prudent alternative to using that land and the program or project includes all possible planning to minimize harm resulting from the *use*.

A Section 4(f) *use* would occur if the proposed action would involve a physical *use* of Section 4(f) property through purchase of land or a permanent easement, physical occupation of a portion or all of the property, or alteration of structures or facilities on the property. Another type of physical *use,* known as *temporary occupancy,* results when a transportation project results in activities that require a temporary easement, right-of-entry, project construction, or another short-term arrangement involving a Section 4(f) property. A *temporary occupancy* is considered a Section 4(f) *use* unless all the conditions listed in Appendix B, Paragraph 2.2.1 of FAA Order 1050.1F and the Section 4(f) regulations at 23 CFR 773.13(d) are satisfied:

- Duration must be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land;
- Scope of the work must be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) property are minimal;
- There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis;

- The land being used must be fully restored, i.e., the property must be returned to a condition which is at least as good as that which existed prior to the project; and
- There must be documented agreement of the official(s) with jurisdiction over the Section 4(f) resource regarding the above conditions.

A physical *use* may be considered *de minimis* if, after considering avoidance, minimization, mitigation, and enhancement measures, the result is either 1) a determination that the project would not adversely affect the activities, features, or attributes qualifying a park, recreation area, or wildlife or waterfowl refuge for protection under Section 4(f); or 2) a Section 106 *finding of no adverse effect* or *no historic properties affected*. Before the FAA may finalize a determination that a physical use is *de minimis*, the official(s) with jurisdiction must concur in writing that the project will not adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection.

Use, within the meaning of Section 4(f), includes not only the physical taking of such property, but also *constructive use*. The concept of *constructive use* is that a project that involves no actual physical use of a Section 4(f) property via permanent incorporation or *temporary occupancy*, but may still, by means of noise, air pollution, water pollution, or other proximity-related impacts, substantially impair important features, activities, or attributes associated with the Section 4(f) property. Substantial impairment occurs only when the protected activities, features, or attributes of the Section 4(f) property that contribute to its purpose and significance are substantially diminished. This means that the value of the Section 4(f) property, in terms of its prior purpose and significance, is substantially reduced or lost.

Procedural requirements for complying with Section 4(f) are set forth in DOT Order 5610.1C, *Procedures for Considering Environmental Impacts*. The FAA also uses Federal Highway Administration (FHWA) regulations (23 CFR part 774) and FHWA guidance (e.g., Section 4(f) Policy Paper) when assessing potential impacts on Section 4(f) properties. These requirements are not binding on the FAA; however, the FAA may use them as guidance to the extent relevant to FAA projects. More information about DOT Act, Section 4(f) can be found in Chapter 5 of the FAA Order 1050.1F Desk Reference (FAA 2020[a]).

3.5.2 Affected Environment

Due to the statewide scope of the proposed action, Section 4(f) properties are located in the study area. Section 4(f) properties include parks and recreational areas of national, state, or local significance that are both publicly owned and open to the public; publicly owned wildlife and waterfowl refuges of national, state, or local significance that are open to the public; and historic sites of national, state, or local significance in public or private ownership regardless of whether they are open to the public.

Section 4(f) properties are not likely to be present within or adjacent to solar or power generation facilities because these facilities are not typically constructed near parks, recreational areas, wildlife refuges, etc. While distribution and transmission lines may be present near Section 4(f) properties, drone operations would occur directly over the power lines within company easements, which are approximately 15 to 75 feet wide for a typical distribution or transmission line and up to 200 feet wide for large transmission lines (i.e., 500 kilovolts).

3.5.3 Environmental Consequences

Impacts on Section 4(f) properties would be significant if the proposed action involves more than a minimal physical use of a Section 4(f) resource or constitutes a *constructive use* based on an FAA determination that the project would substantially impair the Section 4(f) resource.

3.5.3.1 No Action Alternative

Under the no action alternative, FPL would continue to use the Percepto Sparrow and Skydio 2 drones, a helicopter (Bell 206 Jet Ranger), fixed-winged aircraft (Piper Cub or Cessna 206), and vehicles to conduct inspections of transmission and distribution lines, solar facilities, and power generation facilities. As described in Section 1.2, FPL has a waiver for nationwide drone operations that authorize FPL to operate the Percepto Sparrow drone system two miles BVLOS of the RPIC and for which a participating visual observer (whose main responsibility is to observe the airspace for intrusions) is not able to see the drone.

If a Section 4(f) property was located adjacent to one of NextEra's facilities where FPL inspections occur, sound from helicopters and aircraft is expected to be heard within the property. Sound levels from drone operations at the Section 4(f) property would be less than SEL of approximately 86.1 dBA, as noted in Section 3.3.3. While someone on the ground at a nearby Section 4(f) property may be able to hear the drone, their view of the drone could be obstructed, since the drone would be flying directly above the power lines.

The no action alternative is not expected to result in significant impacts to Section 4(f) properties from drone, aircraft, or vehicle use because of the short duration and number (1 or less) of daily operations at any given location and occurrence at NextEra-owned or serviced facilities or on company easements.

3.5.3.2 Proposed Action

Section 4(f) impacts under the proposed action would be less than those under the no action alternative because FPL would replace the use of helicopters and fixed-winged aircraft with the Percepto Sparrow and Skydio 2 drones. Also, the use of drones under the waiver would substantially reduce the number of vehicle miles driven. As noted above, there will be approximately 35,000 assessments (feeder and customer call tickets) per year that are currently conducted with vehicles, which will be replaced by drone operations. Over a ten-year span from 2020 through 2030, FPL will decrease the number of miles driven per year by approximately 85% (FPL 2022). The proposed action involves a continuation of FPL operating drone systems at NextEra-owned or serviced facilities and infrastructure in Florida.

The FAA has determined that infrequent drone overflights as described in the proposed action will not cause substantial impairment to Section 4(f) resources that could occur in the study area and would not be considered a *constructive use* of any Section 4(f) resource. There will be no physical *use* of Section 4(f) resources. Noise and visual effects from FPL's occasional overflights are not expected to diminish the activities, features or attributes of the resources that contribute to their significance or enjoyment.

FPL will only operate drones BVLOS within Class G airspace over NextEra-owned or serviced property including distribution lines, transmission lines, solar facilities, and power generation facilities. Therefore, no increased impacts to Section 4(f) resources would result from the proposed action since drones

would not be flown over Section 4(f) properties which do not have existing energy infrastructure. Additionally, the impacts to Section 4(f) resources under the proposed action would less than the no action alternative due to the decreased use of helicopters, fixed-winged aircraft, and vehicle use. Therefore, the proposed action would not result in significant impacts to Section 4(f) resources.

3.6 Biological Resources

3.6.1 Definition of Resource and Regulatory Setting

Biological resources are valued for their intrinsic, aesthetic, economic, and recreational qualities, and they include fish, wildlife, plants, and their respective habitats. Typical categories of biological resources include terrestrial and aquatic plant and animal species, game and non-game species, special status species (state or federally listed threatened or endangered species, marine mammals, or species of concern, such as species proposed for listing or migratory birds), and environmentally sensitive or critical habitats.

Section 7(a)(2) of the Endangered Species Act (ESA) requires that each federal agency—in consultation with the U.S. Fish and Wildlife Service (USFWS) or National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS)—ensures that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. The FAA is required to consult the USFWS or NMFS if an action may affect a federally listed species or designated critical habitat.[12]

The Migratory Bird Treaty Act (MBTA) protects migratory birds by prohibiting the taking, killing, or possessing of migratory birds (including their eggs, nests, and feathers). FPL is responsible for compliance with the MBTA.

The Bald and Golden Eagle Protection Act (BGEPA), administered by the USFWS, protects bald and golden eagles from the unauthorized capture, purchase, or transportation of the birds, their nests, or their eggs. Any action that might disturb these species requires a permit from the USFWS, which authorizes limited, non-purposeful take of bald and golden eagles. According to federal guidelines, if conservation measures can be implemented such that no aircraft are flown within 1,000 feet of a nest, incidental take of bald eagles is unlikely to occur, and no permit is needed.[13]

More information about biological resources can be found in Chapter 2 of the FAA Order 1050.1F Desk Reference (FAA 2020[a]).

[12] For this project, the action would not affect any federally listed species or designated critical habitat that is under NMFS' purview. Therefore, the FAA is only consulting with USFWS for this action.

[13] USFWS National Bald Eagle Management Guidelines. Available: https://www.fws.gov/library/collections/bald-and-golden-eagle-management.

3.6.2 Affected Environment

3.6.2.1 Wildlife

Wildlife habitats throughout the study area vary widely from developed urban areas with little or no natural habitat to rural areas with more undisturbed natural habitats. The range of habitats likely include, but are not limited to, herbaceous, forest, and shrub vegetation associated with upland, wetland, and riparian areas, as well more disturbed or anthropogenic influenced habitats (e.g., agricultural areas, parks, maintained energy/transportation corridors, lawns). This range of habitat can support a wide variety of wildlife, including amphibians, reptiles, birds, insects, and mammals. Examples of typical wildlife that may be found in the study area include a variety of rodents (e.g., mice, squirrels, rats, beavers, voles), doves, crows, sparrows, raptors, waterfowl, bear, deer, bobcat, coyotes, turtles, frogs, lizards, snakes, butterflies, and beetles. Habitats over which the drones would directly fly are already developed with existing infrastructure where habitat would range from little to no natural habitat (e.g., urban areas) to regularly maintained herbaceous and low shrub habitat (e.g., transmission line ROW). These areas would likely have less wildlife diversity due to the limited habitat types compared to the areas surrounding the existing energy infrastructure areas which could be more diverse in habitat and wildlife. Despite the variety of habitats and wildlife throughout the study area, the primary wildlife that drones would pose risk to are anticipated to be avian species, primarily birds, due to the potential direct interactions with these species while in flight.

3.6.2.2 Special Status Species

Special status species are those species for which state or federal agencies provide an additional level of protection by law, regulation, or policy. Included in this category are federally listed species that are protected under the ESA, species considered as candidates for such listing, bald and golden eagles (protected by BGEPA), and those species that are state-listed as threatened, endangered, or of special concern, or otherwise protected by federal or state laws. Special status species are broadly distributed throughout the state of Florida. Special status avian species (birds, bats, flying insects) would likely be at greatest risk from drone operations. Examples of federally listed threatened and endangered avian species in the study area include the red cockaded woodpecker, piping plover, Florida scrub-jay, Florida bonneted bat, Bachman's warbler, gray bat, Miami blue butterfly, and Florida leafwing butterfly (USFWS 2022). Bald eagles occur throughout the United States, and in the lower 48 states, they occur sporadically over a wide area with notable seasonal concentrations in Florida (MDFW 2019). Florida has one of the densest concentrations of nesting bald eagles in the lower 48 states, with an estimated 1,500 nesting pairs; concentrations of nesting territories are clustered around several significant lake, river, and coastal systems throughout the state (Florida Fish and Wildlife Conservation Commission 2022). Golden eagles can occur throughout the United States but are more common in the western half of the country (USFWS undated[a]), and are not commonly observed in Florida. Golden eagles are typically found in open country in the vicinity of hills, cliffs, and bluffs; they are known to be sensitive to human activity and are known to avoid developed areas (USFWS undated[a]).

The MBTA protects 1,093 migratory birds across the United States from capture, pursuit, hunting, or removal from natural habitat. Migratory birds are species that nest in the United States and Canada during the summer and then migrate to and from the tropical regions of Mexico, Central and South

America, and the Caribbean for the non-breeding season. Example species protected under the MBTA in Florida include eastern whip-poor-will, chimney swift, king rail, least tern, black skimmer, prairie warbler, burrowing owl, reddish egret, and painted bunting. A variety of birds protected under the MBTA could occur in or around the existing energy infrastructure areas where drones would be flown.

The USFWS also identifies birds of conservation concern (BCC), which are migratory and non-migratory bird species not already listed under the ESA that represent the highest avian conservation priorities. The BCC list is based on an assessment of several factors, including population abundance trends, threats on breeding and nonbreeding grounds and size of breeding and nonbreeding ranges. A total of 139 individual bird species on the Continental United States were listed in the BCC 2021 report; just over half of these species are land birds (USFWS 2021). Examples of BCC in Florida include chimney swift, king rail, white-crowned pigeon, reddish egret, willet, snowy plover, and swallow-tailed kite.

3.6.3 Environmental Consequences

A significant impact on biological resources would occur if the USFWS or NMFS determines that the action would likely jeopardize the continued existence of a federally listed threatened or endangered species, or would result in the destruction or adverse modification of federally designated critical habitat. The FAA has not established a significance threshold for unlisted species. Factors to consider when assessing the significance of potential impacts on unlisted species include whether the action would have the potential for:

- A long-term or permanent loss of unlisted plant or wildlife species (e.g., extirpation of the species from a large project area, such as from a new commercial service airport)
- Adverse impacts on special status species or their habitats
- Substantial loss, reduction, degradation, disturbance, or fragmentation of native species' habitats or their populations
- Adverse impacts on a species' reproductive success rates, natural mortality rates, non-natural mortality (e.g., road kills and hunting), or ability to sustain the minimum population levels required for population maintenance

3.6.3.1 No Action Alternative

FPL currently uses the Percepto Sparrow and Skydio 2 drones, a helicopter (Bell 206 Jet Ranger), fixed-winged aircraft (Piper Cub or Cessna 206), and vehicles to conduct inspections of transmission and distribution lines, solar facilities, and power generation facilities. The primary impacts related to these actions would include noise and visual effects, and potential collisions with wildlife.

Wildlife

The presence of helicopters, fixed-wing aircraft, vehicles, drones, and humans can disturb nearby wildlife through visual and noise effects, resulting in potential displacement and altered behavioral responses. Displacement can affect normal foraging, migratory, and breeding behaviors, and could also reduce survival and productivity because animals might need to expend more energy to locate replacement habitat, which may have fewer resources and be of lower value. In addition, wildlife that is

less familiar with new habitat areas might be more susceptible to predation, which could limit survival of offspring or adults. Increased noise levels could result in fright responses (e.g., flushing or escaping) or increased communications, such as louder or more extended periods of birdsong or begging vocalizations from young birds. Noise could cause birds to abandon their nests with the subsequent demise of young. These potential impacts are not anticipated to have any notable effect on crepuscular and nocturnal wildlife species (e.g., bats, owls, opossum, racoon) as operating hours occur between 8:00 am to 5:00 pm (i.e., outside of dawn, dusk, and nighttime hours).

Wildlife responses would vary depending on the species, the vehicle or aircraft present, the proximity to wildlife, flight patterns, and weather. Helicopters, fixed-wing aircraft, and vehicles would likely cause the greatest visual and noise effects due to their size and/or level of noise generated compared to drones, which are small in comparison and use electric motors that are quieter than gasoline powered engines. One study found, that in most instances, drones within 4 meters of birds did not cause a behavioral response (Vas et al. 2015). Noise would be comparable to other noise levels in urban environments where wildlife would be habituated to noise but would be more distinguishable in rural areas where less ambient noise is present. However, any visual and noise disruptions are short-term and temporary as these events are infrequent and short in duration. Flight durations are short, and aircraft, vehicles, and drones do not linger in a particular location for long periods of time and would move past wildlife quickly (e.g., up to 60 seconds at each pole). In addition, aircraft, vehicles, and drones are generally restricted to existing rights-of-way or properties that are already developed and where human presence occurs. Mobile species disturbed by these activities would be expected to leave the area and return once the disruption ends. Less mobile species would likely take shelter while personnel are onsite; however, personnel that would be present with a vehicle would be limited to a few. Given the infrequent and short duration that visual and noise disturbances would have at any given location, and no permanent displacement would occur, impacts to wildlife under the no action alternative are not anticipated to have population-level effects.

Wildlife collisions can occur from the use of helicopters, fixed-wing aircraft, vehicles, and drones, which can result in injury or death of wildlife. Terrestrial animals would be exposed to potential collisions with vehicles, but FPL vehicle speeds along transmission line and distribution line ROWs roads are generally limited to 25 miles per hour on dirt roads and 35 miles per hour on paved access roads. As such, mobile wildlife species would likely be able to move away from oncoming vehicles to avoid collisions, and any injury or death that occurs to less mobile species is unlikely to have population level effects on species. Helicopter, fixed-wing aircraft, and drones pose a collision risk to avian species, such as birds and flying insects. Collisions between birds and aircraft is well documented and is an issue that airport and air transportation agencies take very seriously (due to flight safety issues); however, these collisions are estimated to account for a small percentage of all bird deaths per year (FAA 2022; USFWS undated[b]). As such, collisions from aircraft under the no action alternative are not anticipated to have population-level effects on birds. If aircraft collide with a flying insect, it would, in most cases, result in death of the insect. However, most insects produce high numbers of offspring multiple times during the year. Therefore, the small number of insect strikes that may occur is not likely to result in any population level impacts on flying insect species. Of the airborne craft used, drones are the least likely to pose a collision risk to avian species due to their much smaller size and slower speeds compared to helicopters and fixed-wing aircraft. As stated previously mentioned, operations occur during daytime hours, and therefore, crepuscular and nocturnal wildlife (e.g., bats) are not anticipated to be affected by collisions.

Impact Reduction Measures

As part of the FPL drone pre-flight analysis, locations of known sensitive wildlife habitat (e.g., eagle nest trees, occupied bat maternity roosting trees) are reviewed and verified in the field. This information is obtained from biological surveys and information compiled as part of preconstruction siting and design of a facility location. Facilities receive additional biological surveys by an environmental consultant after the facility is constructed and operational if there is a need to perform maintenance or replacement activities that have the potential to impact sensitive wildlife or habitat. As a result, NextEra environmental staff keep facility records of known sensitive wildlife and habitat fairly current and available for reference by FPL drone operators. This information is used to coordinate with NextEra environmental staff to help drone operators avoid and/or minimize impacts on sensitive wildlife and habitats. For fixed-wing and helicopter flights, known bald eagle nest locations near transmission lines are marked in FPL's environmental layer in their Transmission Vegetation Management Software, which is turned on during flights. FPL helicopters and fixed-wing aircraft stay outside of a 660 feet buffer zone around bald eagle nests.

Special Status Species

Impact types and mechanisms on special status species would be the same as those described above for wildlife, except special status species may be more sensitive or vulnerable to impacts. However, it is anticipated that potential visual, noise, and collision impacts would not be significant or result in population-level effects for the same reasons described above. In addition, drone pre-flight analysis identifies and field verifies any known sensitive wildlife and habitat prior to flight, and helicopters and fixed-wing aircraft avoid bald eagle nests. FPL would be required to comply with all federal, state, and local permitting requirements for the protection of special status species (e.g., Bald and Golden Eagle Protection Act).

Conclusion

Overall, the no action alternative is not expected to result in significant impacts on wildlife, including special status species, given the limited and short duration of exposure to aircraft, drones, vehicles, and humans, and the small number (1 or less) of daily operations at any given location. In addition, FPL's drone pre-flight analysis of known sensitive wildlife habitat (e.g., eagle nest trees, occupied bat maternity roosting trees) would further reduce any potential impacts to wildlife and special status species.

3.6.3.2 Proposed Action

Impacts to wildlife, including special status species, under the proposed action would be less than those under the no action alternative because FPL would eliminate the use of helicopters and fixed-winged aircraft and replace them with the Percepto Sparrow and Skydio 2 drones. While the number of drones in operation would increase and drone flight time would increase compared to the no action alternative, FAA anticipates that there would be an overall reduction in potential impacts because, as stated for the no action alternative, drones are much smaller, quieter, and travel at slower speeds compared to helicopters and fixed-wing aircraft. Therefore, using drones as the sole aerial vehicle would result in less noise, visual, and collision impacts. In addition, drones barely elicit behavioral responses in terrestrial

mammals (Mulero-Pazmany et al. 2017), and studies have shown that, in most instances, drones within 4 meters of birds do not cause a behavioral response (Vas et al. 2015). Further, operations would continue to occur during daytime hours (8:00 am to 5:00 pm), and therefore, crepuscular and nocturnal wildlife (e.g., bats) are not anticipated to be affected by collisions. The use of drones under the waiver would also substantially reduce the number of vehicle miles driven, which would reduce noise, visual, and collisions impacts on wildlife from vehicle use and human presence. FPL would continue to implement the drone pre-flight analysis to identify known sensitive wildlife habitat (e.g., eagle nest trees, occupied bat maternity roosting trees), which would further reduce any potential impacts to wildlife and special status species. To address the FAA's obligations under Section 7 of the ESA, the FAA developed a Biological Evaluation (BE) to assess the potential impacts of the proposed action on federally listed threatened and endangered species and designated critical habitat (see Appendix D). The BE concluded that the proposed action *may affect*, but is *not likely to adversely affect* federally listed threatened and endangered species and designated critical habitat. On November 3, 2022, the FAA sent the BE to the USFWS and requested concurrence with this determination; the USFWS response is currently pending. The FAA will conclude Section 7 consultation before issuing a Final EA.

Chapter 4
Cumulative Effects

The CEQ NEPA-implementing regulations define cumulative effects as "effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time." (40 CFR § 1508.1(g)(3)) Past, present, and reasonably foreseeable actions that occur in close proximity to FPL's operating areas would be expected to have more potential for cumulative effects than those actions more geographically separated from FPL's operating areas.

As discussed in Chapter 3, the proposed action is not expected to impact several environmental impact categories (see Section 3.2) and result in minimal impacts on others. Under the proposed action, drone operations would occur infrequently in any given area. Inspections of distribution and transmission lines involves constant linear movement of the drone, thereby minimizing impacts in any given location during flight of the drone. Drone operations at solar and power generation facilities would occur on private property that is fenced; therefore, the proposed action's potential to contribute to cumulative impacts on any resource within a solar or power generation facility is limited to any other operations that might occur at the facility at the same time the drone is flying. Given the nature of the proposed action, the locations where drone operations would occur, and the minimal expected impacts of the proposed action, there is no potential for the proposed action, when combined with other past, present, or reasonably foreseeable actions, to result in cumulative impacts.

Chapter 5

List of Preparers and Agencies and Persons Consulted

5.1 List of Preparers

Robert Greene, Manager, ICF, 12 years of experience in NEPA environmental planning.

David Johnson, Principal-Biology, ICF, 22 years of experience in water and biological resources.

Elisabeth Mahoney, Environmental Planner, ICF, 1 year of experience in NEPA environmental planning.

Pam Schanel, Managing Director, ICF, 24 years of experience in NEPA Project Management.

Steven Sherman, Senior Environmental Planner, ICF, 8 years of experience in NEPA environmental planning.

5.2 List of Agencies and Persons Consulted

U.S. Fish and Wildlife Service. Rivera, Jose. Supervisory Fish and Wildlife Biologist.

Appendix A
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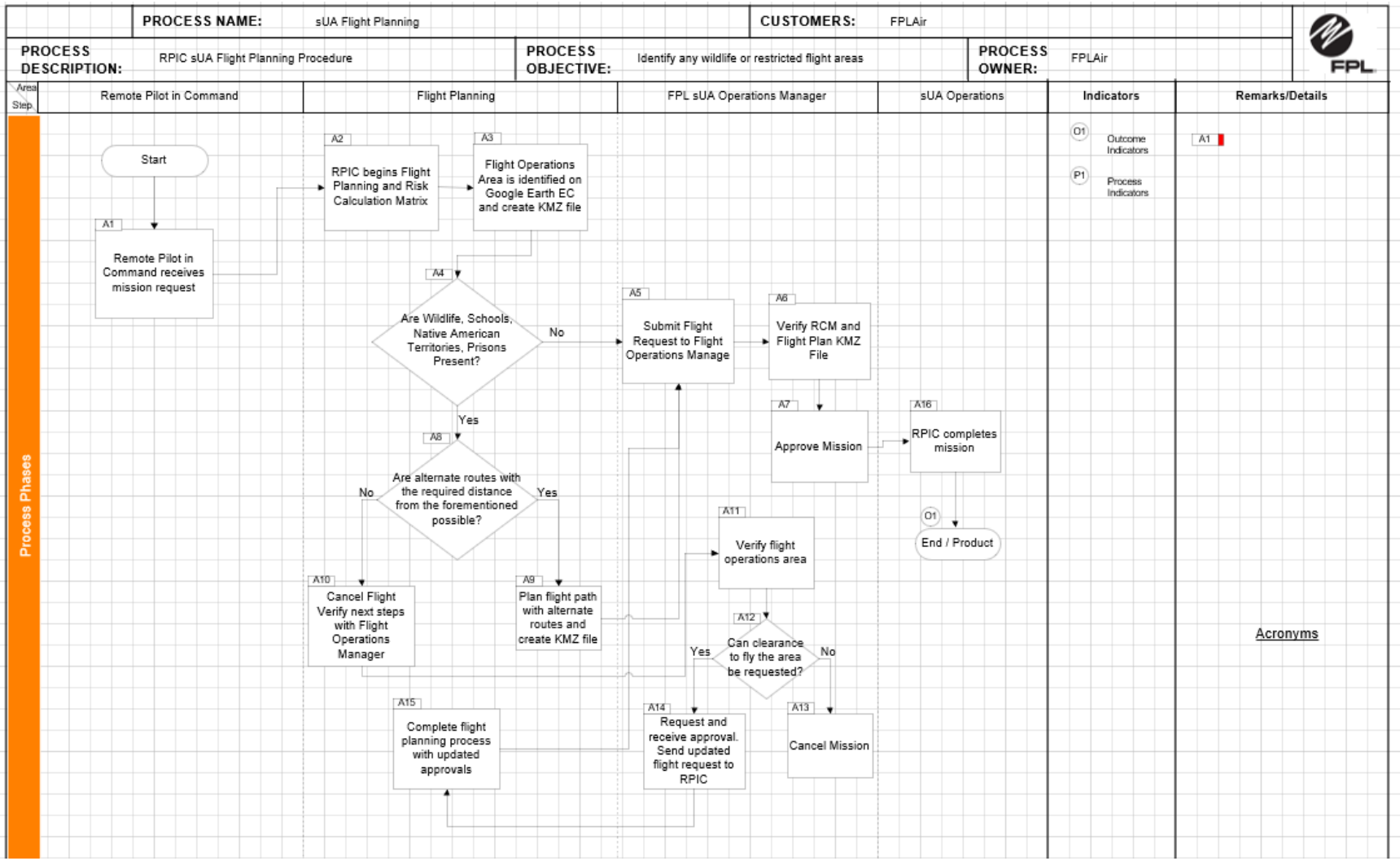
Appendix B

Flight Planning Procedure


PROCESS NAME: sUA Flight Planning
CUSTOMERS: FPLAir
PROCESS DESCRIPTION: RPIC sUA Flight Planning Procedure
PROCESS OBJECTIVE: Identify any wildlife or restricted flight areas
PROCESS OWNER: FPLAir
FPL
Area
Step
Remote Pilot in Command
Flight Planning
FPL sUA Operations Manager
sUA Operations
Indicators
Remarks/Details
Process Phases
Start
A1
Remote Pilot in Command receives mission request
A2
RPIC begins Flight Planning and Risk Calculation Matrix
A3
Flight Operations Area is identified on Google Earth EC and create KMZ file
A4
Are Wildlife, Schools, Native American Territories, Prisons Present?
No
Yes
A5
Submit Flight Request to Flight Operations Manage
A6
Verify RCM and Flight Plan KMZ File
A7
Approve Mission
A16
RPIC completes mission
O1
End / Product
A8
Are alternate routes with the required distance from the forementioned possible?
No
Yes
A10
Cancel Flight Verify next steps with Flight Operations Manager
A9
Plan flight path with alternate routes and create KMZ file
A11
Verify flight operations area
A12
Can clearance to fly the area be requested?
Yes
No
A14
Request and receive approval. Send updated flight request to RPIC
A13
Cancel Mission
A15
Complete flight planning process with updated approvals
O1
Outcome Indicators
P1
Process Indicators
A1
Acronyms

Appendix C
Noise Report

FAA
Environment and Energy

Noise Assessment for Florida Power and Light Inspection Operations with Skydio 2 and Percepto Sparrow Unmanned Aircraft

FINAL

Report No. DOT-FAA-AEE/2022-01

July 7, 2022

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List of Figures

1. Background

This report presents an estimate of the day-night average noise level (DNL) resulting from the proposed Florida Power and Light (FPL) Unmanned Aircraft (UA) operations. FPL proposes UA operations for distribution/transmission line inspections, power plant perimeter inspections, and solar panel inspections. It should be noted that these operations would occur infrequently and proposed operating hours are between 8 AM and 5 PM. This report summarizes the DNL values resulting from a range of daily operation counts. The following sections describe the methodologies, assumptions, and results due to each operation.

2. Unmanned Aircraft

2.1 Skydio 2

The Skydio 2 will be used for distribution/transmission line inspections. It weighs 1.7 pounds at maximum takeoff weight. It has a maximum horizontal speed of 36 miles per hour (mph) (31.3 knots), and a maximum flight time on a full battery charge of 23 minutes. Figure 1 presents the picture of Skydio 2.

Figure 1 Skydio 2

Source: FPL Concept of Operations for Beyond Visual Line of Sight, December 2021.

2.2 Percepto Sparrow

The Percepto Sparrow will be used for all inspections described above. The maximum takeoff weight for the Percepto Sparrow is 48.5 pounds. It has a maximum performance speed of 56 mph (48.6 knots) and a maximum flight time on a full battery charge of 24 minutes. Figure 2 presents the schematic of Percepto Sparrow.

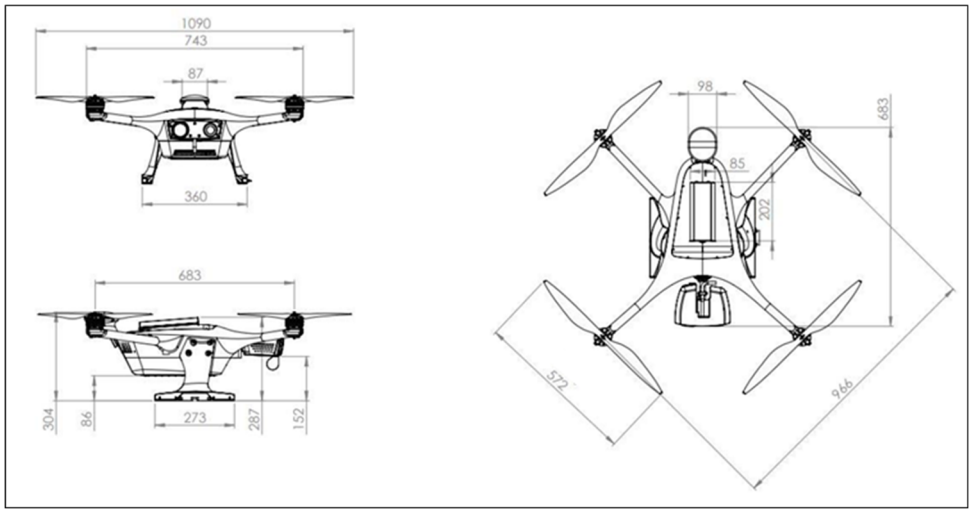

Figure 2 Percepto Sparrow

Note: units are millimeters.
Source: Noise Compliance Report: Percepto Sparrow sUA, May 2022.

3. Noise Data

3.1 Skydio 2

Noise measurement data for the Skydio 2 is not available. Due to the lack of acoustic data for Skydio 2, a conservative substitute was used. The FAA determined to use the available acoustic data from a DJI M210 drone measured by the FAA at Causey Aviation Services near Liberty, North Carolina in 2021. The M210 weighs approximately 11.9 pounds, which is heavier than the 1.7 pounds maximum takeoff weight of the Skydio 2. Therefore, the predicted noise level from the M210 will be a conservative estimate because on the heavier weight of the UA and presumed higher noise levels. Based on available acoustic data, the M210 would generate a sound pressure level of 60.8 dBA at the slant-range distance of 71 feet while in hover at a 45 degree angle to the measurement location.

3.2 Percepto Sparrow

The noise measurements for the Percepto Sparrow were performed at Elk Hills Airport in Buttonwillow, CA on October 27 and 28, 2021. Based on the available data, the Percepto Sparrow would generate a sound pressure level of 62.2 dBA at the slant-range distance of 71 feet while in hover at a 45 degree angle to the measurement location. The noise flight tests also included the sound exposure level for overflight, which was 61.1 dBA at the altitude of 250 feet and at the speed of 46.6 knots.

4. Methodology

4.1 Distribution Line Inspection

FPL will use the Skydio 2 and the Percepto Sparrow to conduct inspections of distribution lines. For the purpose of predicting noise generated from an UA during distribution line inspections, the following assumptions were made to predict DNL values based on the information provided by FPL and assumptions made by AEE.

- Operational height is 35 feet above ground
- Distance between the electric poles is 125 feet
- A vehicle will hover 60 seconds at each pole during inspection
- A vehicle moves between poles over the course of 10 seconds

Figure 3 depicts a typical distribution line arrangement and the general assumptions of how noise levels were calculated. For the purpose of calculating Sound Exposure Level (SEL), a receiver is placed at the bottom of the middle pole. This location will be a conservative estimate of the noise impact on the ground because the noise levels will decrease at further distances from the power lines. To simulate the continuous movement of the vehicle between power poles, the distance between the poles was evenly divided with the vehicle spending the appropriate fraction of the travel time between the poles at each location. White circles represent vehicle locations while moving from pole to pole, and are reflective of the UA spending 1.7 seconds at each location.

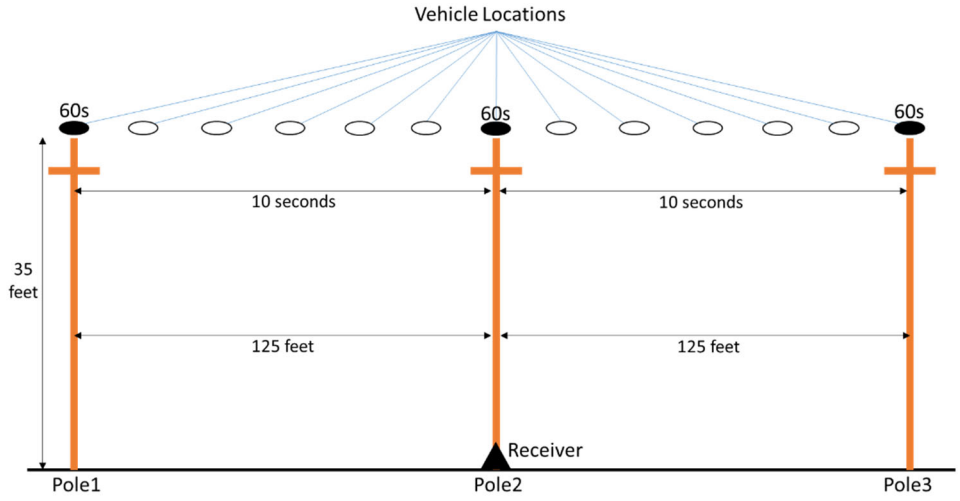

Figure 3 Distribution Line Inspection Operational Condition

4.2 Transmission Line Inspection

FPL will use the Skydio 2 and the Percepto Sparrow to conduct the inspection of transmission lines. For the purpose of predicting noise generated from an UA during transmission line inspections, the following assumptions were made to predict DNL values based on the information provided by FPL and assumptions made by AEE.

- Operational height is 75 feet above ground
- Distance between the electric poles is 200 feet
- A vehicle will hover 60 seconds at each pole during inspection
- A vehicle moves between poles over the course of 18 seconds

Figure 4 depicts a typical transmission line arrangement and the general assumptions of how noise levels were calculated. For the purpose of calculating SEL, a receiver is placed at the bottom of the middle pole. This location will be a conservative estimate of the noise impact on the ground because the noise levels will decrease at further distances from the power lines. To simulate the continuous movement of the vehicle between poles, the distance between the poles was evenly divided with the vehicle spending the appropriate fraction of the travel time between the poles at each location. White circles represent vehicle locations while moving from pole to pole, and are reflective of the UA spending 3 seconds at each location.

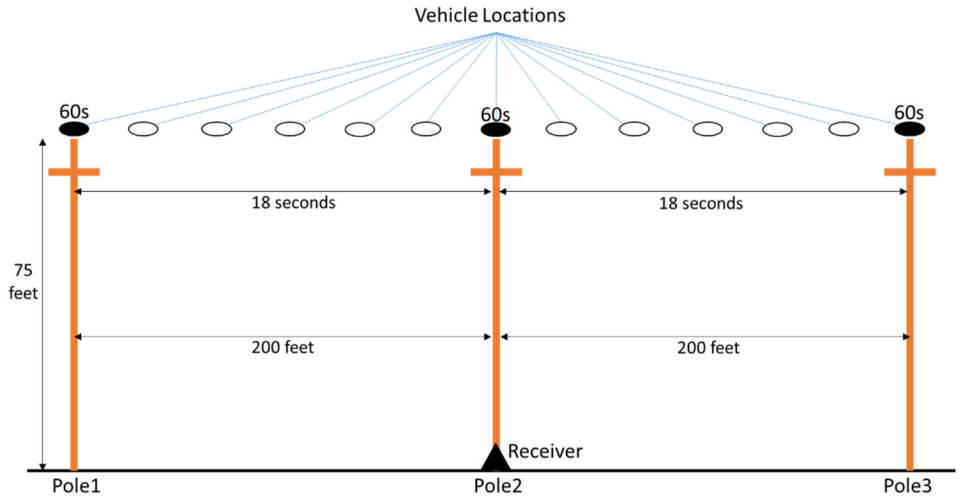

Figure 4 Transmission Line Inspection Operational Condition

4.3 Power Plant Perimeter Inspection

FPL will use the Percepto Sparrow to conduct inspections of power plant perimeter areas. For the purpose of predicting noise generated from an UA during perimeter inspections, the following assumptions were made to predict DNL values based on the information provided by FPL and assumptions made by AEE.

- Flight altitude is 150 feet above ground level
- A vehicle is assumed to hover for 30 seconds as needed
- A vehicle will fly at 20 miles per hour

It should be noted that the perimeter flight would be a constant flight of the UA over the boundary of a power plant. The UA would not hover unless there were technical issues or there was a need to conduct further inspection of a given location. Figure 5 depicts a typical perimeter flight of the UA with the addition of the UA hovering for 30 seconds, which represents the most noise exposure that would be anticipated to occur for a perimeter inspection. For the purpose of calculating SEL, a receiver is placed at the bottom of the hover location. This location will be a conservative estimate of the noise impact on the ground because the noise levels will decrease at further distances from the hover location.

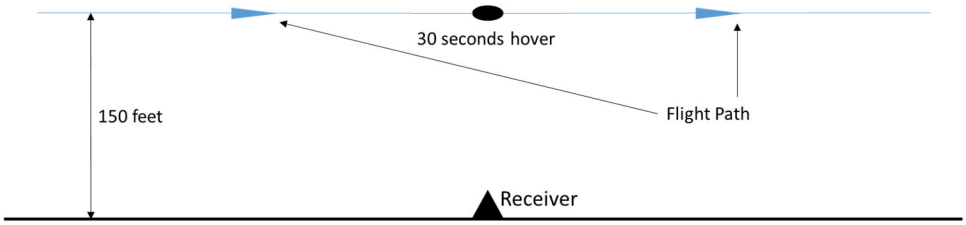

Figure 5 Perimeter Flight Operational Condition

4.4 Solar Panel Inspection

FPL will use the Percepto Sparrow to conduct an inspection of solar panels. For the purpose of predicting noise generated from the UA, the following assumptions were made to predict DNL values based on the information provided by FPL and assumptions made by AEE.

- Operational height is 125 feet above ground
- Distance between the sweep segments is 12 feet
- A receiver is placed in the middle of the solar farm at 5 feet above ground level
- Speed on sweep segments is 10 mph
- Speed on turnabouts is 5 mph

Figure 6 depicts a typical solar panel layout with sweep flight tracks by an UA. The UA will fly back and forth along solar panels at a distance of 12 feet apart. The flight altitude is 125 feet. At each corner, it was assumed the UA will hover for six seconds. The 65 rows of solar panel array were used to estimate the DNL values at the receiver. The number of rows was determined based on the 10 dB drop of SEL values from the single overflight SEL value. For the purpose of calculating SEL, a receiver is placed in the middle of the solar farm. This location will be a conservative estimate of the noise impact on the ground because the noise levels will be less at the outside of the solar farm.

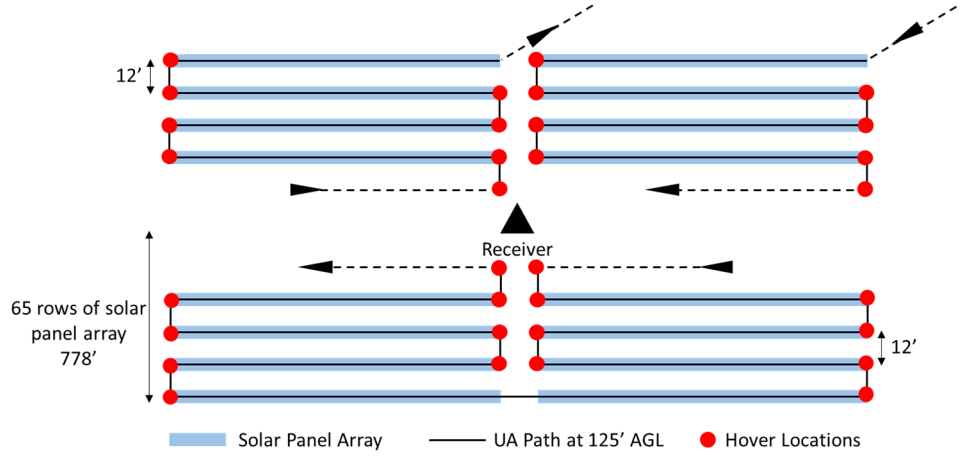

Figure 6 Typical Solar Farm Layout

5. Noise Exposure Estimate Results

5.1 Distribution Line Inspection

FPL will use the Skydio 2 and Percepto Sparrow for distribution line inspections. Based on the available data and measurement data, the Skydio 2 and the Percepto Sparrow would generate a sound pressure level of 60.8 dBA and 62.2 dBA at 71 feet, respectively.

As depicted in Figure 3, using spherical spreading to propagate this sound level from each of the stations to the base of the middle pole, and combining the sound level with the duration of the UA spends at each location results in the SELs shown in Table 1. As the table shows, noise from poles beyond those immediately adjacent to the center would be more than 10 dB less than the central pole and would not make a significant contribution to the combined SEL.

Table 1
Distribution Line Inspection SELs at Middle Pole Base Generated from Each Location

Location	Vehicle Altitude (feet)	Horizontal Distance from Pole 2 (feet)	SEL (dBA)	
			Skydio 2	Percepto Sparrow
Pole1	35	125	73.3	74.7
	35	104	59.2	60.6
	35	83	60.9	62.3
	35	63	62.9	64.3
	35	42	65.3	66.7
	35	21	67.8	69.2
Pole2	35	0	84.7	86.1
	35	21	67.8	69.2
	35	42	65.3	66.7
	35	63	62.9	64.3
	35	83	60.9	62.3
	35	104	59.2	60.6
Pole3	35	125	73.3	74.7

Based on Table 1, the combined SEL values at the receiver would be 85.6 dBA and 87.0 dBA for the Skydio 2 and Percepto Sparrow, respectively.

5.2 Transmission Line Inspection

FPL will use the Skydio 2 and the Percepto Sparrow for transmission line inspections. Based on the available data and measurement data, the Skydio 2 and the Percepto Sparrow would generate a sound pressure level of 60.8 dBA and 62.2 dBA at 71 feet, respectively.

As depicted in Figure 4, using spherical spreading to propagate this sound level from each of the stations to the base of the middle pole and combining the sound level with the duration that the Percepto Sparrow is at each location results in the SELs shown in Table 2. As the table shows, noise from Pole 1 and Pole 3 would be approximately 9 dBA less than the SEL value at Pole 2, therefore, it would not make a significant contribution to the combined SEL.

Table 2
Transmission Line Inspection SELs at Middle Pole Base Generated from Each Location

Location	Vehicle Altitude (feet)	Horizontal Distance from Pole 2 (feet)	SEL (dBA)	
			Skydio 2	Percepto Sparrow
Pole1	75	200	69.0	70.4
	75	167	57.3	58.8
	75	133	58.9	60.3
	75	100	60.6	62.1
	75	67	62.5	64.0
	75	33	64.3	65.7
Pole2	75	0	78.1	79.5
	75	33	64.3	65.7
	75	67	62.5	64.0
	75	100	60.6	62.1
	75	133	58.9	60.3
	75	167	57.3	58.8
Pole3	75	200	69.0	70.4

Based on Table 2, the combined SEL values at the receiver would be 79.7 dBA and 81.2 dBA for the Skydio 2 and Percepto Sparrow, respectively.

5.3 Power Plant Perimeter Inspection

Based on the noise measurement data, the sound exposure level from the Percepto Sparrow flyover would be 61.1 dBA when the Percepto Sparrow flies at the speed of 46.7 knots and at the altitude of 250 feet. The hover noise level from the Percepto Sparrow would be used as a sound pressure level of 62.2 dBA at 71 feet.

SEL for a given point *i* (SEL_i) with the aircraft flying directly overhead at altitude (Alt_i) in feet and a ground speed (V_i) in knots, will be calculated based on the guidance in *14 CFR Part 36 Appendix J, Section J36.205 Detailed Data Correction Procedures*. It should be noted that the equations presented in this section are only applicable for an aircraft that is moving relative to a stationary receptor. The discussion of the variables are presented in the context of the application of this methodology.

In particular, the SEL adjustment for the altitude of a moving aircraft, is presented here as Equation (1).

$$\Delta J_1 = 12.5 \times log_{10}\left(\frac{H_A}{H_T}\right), dB \quad (1)$$

where ΔJ_1 is the quantity in decibels that must be algebraically added to the measured SEL in order to estimate the SEL for a level flight path at an altitude differing from the altitude corresponding to the measured SEL; H_A is the reference height, in feet, corresponding to the measured SEL; H_T is the altitude at which an estimate of the SEL is being made, and the constant (12.5) accounts for the effects on spherical spreading and duration from the off-reference altitude. The value of ΔJ_1 is 0 if H_T is equal to H_A and can be negative if H_T is greater than (higher altitude) than H_A.

The SEL adjustment for speed is presented here as Equation (2).

$$\Delta J_3 = 10 \times log_{10}\left(\frac{V_R}{V_{RA}}\right), dB \quad (2)$$

Where ΔJ_3 is the quantity in decibels that must be algebraically added to the measured SEL noise level to estimate the SEL of the vehicle at speed V_{RA} when the measured SEL corresponds to the vehicle traveling at a reference speed V_R. This adjustment represents the influence of the different speed on the duration of the overflight at the stationary receptor. If the vehicle is to be estimated at a speed V_{RA} that is greater than the reference speed V_R of the measured SEL, then the correction ΔJ_3 will be negative. The value of ΔJ_3 is 0 if V_R is equal to V_{RA}. Conversely, if the estimated speed is less than the reference speed, the estimated SEL will be greater than the measured SEL. This stands to reason because a slower moving aircraft will result in a greater time exposure of its emitted noise at a stationary receptor on the ground.

As described above, the SEL is 61.1 dBA when the vehicle is at 250 feet from the ground receiver and traveling at 46.7 knots; therefore, adapting that to the flyover condition when the UA is flying at an altitude of Alt_i feet AGL and ground speed of V_i knots can be made using Equation (3) to arrive at an estimate SEL for the flyover.

$$SEL = 61.1 + 12.5 \times log_{10}\left(\frac{250}{Alt_i}\right) + 10 \times log_{10}\left(\frac{46.7}{V_i}\right), dB \quad (3)$$

When the altitude Alt_i is 150 feet and the speed V_i is 17.4 knots as proposed for power plant perimeter inspection, the SEL would be 68.2 dBA.

As it is described above, the Percepto Sparrow would hover for 30 seconds as necessary during the perimeter inspection. Based on the sound pressure level of 62.2 dBA at 71 feet, the estimated SEL at 150 feet AGL would be 70.5 dBA underneath the hover location by using spherical spreading to propagate the sound level from a hover operation.

5.4 Solar Panel Inspection

Based on the noise measurement data, the sound exposure level from the Percepto Sparrow during flyover would be 61.1 dBA at the speed of 46.7 knots and at an altitude of 250 feet. The hover noise level from the Percepto Sparrow would be a sound pressure level of 62.2 dBA at 71 feet.

Figure 6 represents the maximum noise exposure condition with a receiver in the middle of the solar farm. As depicted in Figure 6, 65 rows of solar panel array were used to estimate the DNL values at the receiver. The number of rows was determined based on the 10 dB drop of SEL values from the single overflight SEL value. Beyond the 65th row of solar panels, the noise generated by Percepto Sparrow would not contribute to the receiver.

Equation (4) was used to estimate SEL values generated by overflight operations during the solar panel array inspection. The resulted SEL value would be 88.7 dBA. Using spherical spreading to propagate the sound level from the hover location and combining the sound level with the duration that the Percepto Sparrow would spend at each corner between sweeps results in an SEL of 79.8 dBA. In addition to the overflight and hover SEL values, turn around flyover SEL value, which is based on the speed of 5 mph was estimated as 75.2 dBA. Combining all three SEL values would result in 89.4 dBA.

6. Summary

Based on the SEL values determined in Section 5 for each operational configuration and summarized in Table 3, DNL at specified daily operational counts can calculated using Equation (4).

Table 3
SEL dB Values for One Operation

Distribution Line		Transmission Line		Perimeter	Solar Panel
Skydio 2	Percepto	Skydio 2	Percepto	Percepto	Percepto
85.6	87.0	79.7	81.2	72.5	89.4

$$DNL = 10 \times log_{10}\left(10^{\left(\frac{SEL}{10}\right)} \times Daily\ Operations\ / 86400\right) \quad (4)$$

Table 4 summarizes the DNL values resulting from a range of daily operation counts for each UA and mission described in Section 4. Note that use of these results for informing decision related to U.S. Federal Actions subject to review under the National Environmental Policy Act must be approved by the FAA Office of Environment and Energy – Noise Division. Approval will be granted on a case-by-case basis only as described in FAA Order 1050.1F for non-standard modeling methodologies.

Table 4
Daytime DNL dB Values by Daily Operation Count

	Distribution Line		Transmission Line		Perimeter	Solar Panel
Operations per Day	Skydio 2	Percepto	Skydio 2	Percepto	Percepto	Percepto
<1	<45	<45	<45	<45	<45	<45
1	<45	<45	<45	<45	<45	<45
2	<45	<45	<45	<45	<45	<45
3	<45	<45	<45	<45	<45	<45
4	<45	<45	<45	<45	<45	46.0
5	<45	<45	<45	<45	<45	46.9
6	<45	45.5	<45	<45	<45	47.7
7	<45	46.1	<45	<45	<45	48.4
8	45.3	46.7	<45	<45	<45	49.0
9	45.8	47.2	<45	<45	<45	49.5
10	46.3	47.7	<45	<45	<45	50.0
100	56.3	57.7	50.4	51.8	<45	60.0
200	59.3	60.7	53.4	54.8	46.1	63.0
300	61.0	62.5	55.1	56.6	47.9	64.7
400	62.3	63.7	56.4	57.8	49.1	66.0
500	63.2	64.7	57.4	58.8	50.1	66.9
1000	66.3	67.7	60.4	61.8	53.1	70.0
5000	73.2	74.7	67.4	68.8	60.1	76.9
10000	76.3	77.7	70.4	71.8	63.1	80.0
15000	78.0	79.4	72.1	73.6	64.9	81.7
20000	79.3	80.7	73.4	74.8	66.1	83.0

Notes:
Operations per day represent the daytime hours (between 7 am and 10 pm).
The equation to calculate DNL values is:
DNL value of 1 operation + $10*LOG_{10}$(Number of Operations)
If operations would occur during the nighttime hours (between 10 pm and 7 am), the equation to calculate DNL values would be:
DNL value of 1 daily operation + $10*LOG_{10}$(Number of operations in Daytime + (Number of operations in Nighttime x 10))

Federal Aviation Administration

Memorandum

Date: November 9, 2022

To: Don Scata, Noise Division Manager, Office of Environment and Energy (AEE-100)

MICHAEL JAY MILLARD Digitally signed by MICHAEL JAY MILLARD Date: 2022.11.09 07:15:52 -05'00'

From: Mike Millard, Flight Standards (AFS), General Aviation Operations Branch, AFS-830

Subject: Environmental Assessment (EA) Noise Methodology Approval Request for Issuing a Certificate of Waiver to Florida Power & Light Company for Drone Operations

FAA Office of Flight Standards (AFS) requests FAA Office of Environment and Energy, Noise Division (AEE-100) approval of the noise methodology to be used for the Environmental Assessment (EA) for Florida Power & Light (FPL) operations using the Percepto Sparrow and Skydio 2 unmanned aircraft (UA) governed by Title 14, Code of Federal Regulations (14 CFR) Part 107 as described below.

As required under the National Environmental Policy Act (NEPA), the FAA must consider the potential for environmental impacts in informing the agency's decision to approve proposed Federal actions, including the potential for noise impacts as detailed in FAA Order 1050.1F.

As the FAA does not currently have a standard approved noise model for UA, this memo serves as a request for written approval from AEE-100 to use the methodology proposed in the following sections to support the noise analysis for this EA.

Description of Aircraft and Proposed Operations

AFS is evaluating FPL's request to issue a waiver specific to 14 CFR §107.31, *Visual line of sight aircraft operation*, §107.39, *Operation over human beings*, and §107.145, *Operations over moving vehicles*, to allow drone operations beyond the visual line of site (BVLOS) of the remote pilot in command (RPIC), without a visual observer, and over people and moving vehicles. FAA's issuance of a waiver is required before these operations can occur.

FPL is proposing to operate its drone systems BVLOS of the RPIC and without a visual observer at Next-Era-owned or serviced energy facilities and infrastructure in Florida. FPL's proposal includes drone operations for distribution and transmission line inspections, power generation facility inspections, and solar facility inspections.

Federal Aviation Administration

Memorandum

Date: November 10, 2022

To: Mike Millard, Flight Standards (AFS), General Aviation Operations Branch, AFS-830

From: Don Scata, Manager, Noise Division, Office of Environment and Energy (AEE-100)

Digitally signed by DONALD S SCATA
Date: 2022.11.10 07:26:49 -05'00'

Subject: Environmental Assessment (EA) Noise Methodology Approval Request for Issuing a Certificate of Waiver to Florida Power & Light Company for Drone Operations

The Office of Environment and Energy (AEE) has reviewed the proposed non-standard noise modeling methodology to be used for Florida Power & Light Company (FPL) inspection operations using the Percepto Sparrow and Skydio 2 unmanned aircraft (UA) at Next-Era-owned or serviced energy facilities and infrastructure throughout the state of Florida. This request is in support of an Environmental Assessment (EA) for the issuance of waivers to allow FPL to operate UAs beyond the visual line of sight (BVLOS) of the remote pilot in command (RPIC), without a visual observer, and over people and moving vehicles.

The Proposed Action is to use the Percepto Sparrow to perform inspections of distribution lines, transmission lines, solar facilities, and power generation facilities, and Skydio 2 to perform inspection of distribution and transmission lines throughout the state of Florida, respectively. Typical operations of the UA include transport to an FPL inspection site by FPL prior to operating, and typical flight profiles of the UA depending on the type of inspection being conducted as detailed below:

Distribution Lines - Percepto Sparrow and Skydio 2:

- The UA climbs vertically from the launch site to an operational height 35 feet Above Ground Level (AGL)
- The UA navigates between distribution line utility poles at 125 foot intervals, hovers 60 seconds at each pole, moves to the next pole over the course of 10 seconds, and profile is repeated at each pole until inspection is complete
- The UA returns to the launch site for landing

Transmission Lines - Percepto Sparrow and Skydio 2:

- The UA climbs vertically from the launch site to an operational height 75 feet AGL
- The UA navigates between distribution line utility poles at 200 foot intervals, hovers 60 seconds at each pole, moves to the next pole over the course of 18 seconds, and profile is repeated at each pole until inspection is complete
- The UA returns to the launch site for landing

Solar Facilities - Percepto Sparrow:

- The UA climbs vertically from the launch site to an operational height 125 feet AGL
- The UA conducts a sweep pattern over solar panel arrays with a distance between sweeps of 12 feet. The UA conducts each sweep segment at a speed of 10 miles per hour (MPH), and the transition segment between sweeps at 5 mph
- The UA returns to the launch site for landing upon completion of the sweep segments

Power Generation Facilities - Percepto Sparrow:

- The UA climbs vertically from the launch site to an operational height 150 feet AGL
- The UA fly's inspections around the power generation facility at a speed of 20 MPH, but may hover for periods up to 30 seconds as needed
- The UA returns to the launch site for landing upon completion of the inspection.

FPL expects to fly approximately five flights a day from each drone system it has in the field. FPL anticipates operating a total of 650 Percepto Sparrow and approximately 20 Skydio 2 UAs in the filed within the next five years. FPL anticipates that both types of UA would fly over a given location within a facility or along an easement very infrequently. When conducting inspection flights at solar and power generation facilities, flights could occur daily; however, a different location within the facility would be flown each day until the entire facility is inspected; each inspection of a solar facility would take one week or less, depending on the size of the facility. When conducting inspection flights along distribution and transmission lines, a drone would pass by the same power pole approximately once a month. Each drone flight is approximately 30 minutes in duration. Proposed operating hours are during daytime hours from 8:00 am to 5:00 pm.

As the FAA does not currently have a standard approved noise model for assessing UA, and in accordance with FAA Order 1050.1F, all non-standard noise analysis in support of the noise impact analysis for the National Environmental Policy Act (NEPA) must be approved by AEE. This letter serves as AEE's response to the method developed in FAA Report No. DOT-FAA-AEE/2022-01 for "Noise Assessment for Florida Power and Light Inspection Operations with Skydio 2 and Percepto Sparrow Unmanned Aircraft" dated July 7, 2022.

The proposed methodology appears to be adequate for this analysis; therefore, AEE concurs with the methodology proposed for this project. Please understand that this approval is limited to this particular Environmental Review, location, vehicle, and circumstances. Any additional projects using this or other methodologies or variations in the vehicle will require separate approval.

FPL is proposing to use the Percepto Sparrow highly automated "drone-in-a-box" system and the Skydio 2 drone. The Percepto Sparrow drone system consists of two main components: the platform (drone and base) and the software. FPL stores the Percepto Sparrow at an FPL facility or transports the drone to a site when conducting inspections. The Skydio 2 drone does not include a base; FPL transports the drone to the site when conducting inspections. Tables 1 and 2 provide the specifications and flight limitations for each drone.

Table 1. Drone Specifications

Attribute	Percepto Sparrow	Skydio 2
Length (inches)	26.88	8.78
Width (inches)	42.91	10.75
Height (inches)	12.08	2.91
Weight (pounds)	22.1	1.7
Flight Time (minutes; usable battery life)	26	23
Maximum Flight Range (miles)	5.28	2
Minimum Flight Altitude (feet)	30	30
Maximum Flight Altitude (feet)	Below 400	Below 400
Maximum Cruise Speed (miles per hour)	26.8	36
Material	Carbon fiber composite	Plastic

Table 2. Flight Limitations

Attribute	Percepto Sparrow	Skydio 2
Wind (miles per hour)	Takeoff and landing: 16.7 Flight: 24.8	25
Rain (inches per hour)	0.23	Will not fly in the rain
Temperature (degrees Fahrenheit)	14 to 107.6	23 to 104
Lightning	No operations during lightning	No operations during lightning
Icing	No flight into known icing	No flight into known icing

FPL is proposing to use the Percepto Sparrow to perform inspections of distribution lines, transmission lines, solar facilities, and power generation facilities, and the Skydio 2 drone to perform inspections of distribution and transmission lines only. FPL expects to fly approximately five flights a day from each drone system it has in the field. FPL currently has six Sparrow drones in the field and plans to have a total of 650 Sparrow drones within the next five years. FPL currently has five Skydio 2 drones in the field and plans to have a total of about 20 Skydio 2 drones within the next five years. It is important to note that a drone would fly over a given location within a facility or along an easement very infrequently. When conducting inspection flights at solar and power generation facilities, flights could occur daily; however, a different location of the facility would be flown each day until the entire facility is inspected; each inspection of a solar facility would take one week or less, depending on the size of the facility. When conducting inspection flights along distribution and transmission lines, a drone would pass by the same power pole approximately once a month. Each drone flight is approximately 30 minutes in duration. Proposed operating hours are from 8:00 am to 5:00 pm. Provided below are summaries of FPL's proposed operations.

1. **Distribution Lines**:
    - Operational height is 35 feet above ground.
    - Distance between the electric poles is 125 feet.
    - A vehicle will hover 60 seconds at each pole during inspection.

- A vehicle moves between poles over the course of 10 seconds.

2. **Transmission Lines:**
    - Operational height is 75 feet above ground.
    - Distance between the electric poles is 200 feet.
    - A vehicle will hover 60 seconds at each pole during inspection.
    - A vehicle moves between poles over the course of 18 seconds.

3. **Solar facilities:**
    - Operational height is 125 feet above the ground.
    - Distance between the sweep segments is 12 feet.
    - A receiver is placed in the middle of the solar farm at 5 feet above ground level.
    - Speed on sweep segments is 10 mph.
    - Speed on turnabouts is 5 mph.

4. **Power generation facilities:**
    - Vehicle altitude is 150 feet above ground level.
    - A vehicle is assumed to hover for 30 seconds as needed.
    - A vehicle will fly at 20 miles per hour.

Noise Analysis Methodology

AFS requests the use of the noise analysis methodology described in Report No. DOT-FAA-AEE/2022-01 for “Noise Assessment for Florida Power and Light Inspection Operations with Skydio 2 and Percepto Sparrow Unmanned Aircraft” dated July 7, 2022.

Appendix D
Biological Evaluation

U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of Safety Standards

800 Independence Ave., SW.
Washington, DC 20591

3 November 2022

Jose Rivera
Supervisory Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
South Florida Ecological Field Services Office
1339 20th Street
Vero Beach, FL 32960
Submitted to: FW4FLESRegs@fws.gov

RE: Biological Evaluation/Endangered Species Act Section 7 Consultation for Proposed Florida Power and Light Company Drone Operations in the State of Florida; Project Code: 2023-0010162

Florida Power & Light Company (FPL), owned by NextEra Energy, Inc. (NextEra), has applied to the Federal Aviation Administration (FAA) for a waiver for operations specific to a small, unmanned aircraft system (commonly referred to as a drone) governed by Title 14, Code of Federal Regulations (14 CFR) Part 107. FPL is requesting a waiver specific to 14 CFR §107.31, *Visual line of sight aircraft operation*, §107.39, *Operation over people*, and §107.145, *Operation over moving vehicles*, to allow drone operations beyond the visual line of site (BVLOS) of the remote pilot in command (RPIC), without a visual observer, and over people and moving vehicles. This waiver would apply to drone operations at NextEra-owned or serviced property in the State of Florida. Attachment 1 provides additional information on the background and the purpose and need (both FAA's and FPL's) for the proposed action.

The FAA is initiating Endangered Species Act (ESA) Section 7 consultation and requesting concurrence with our assessment and determination of the potential effects on ESA-listed species for FPL's proposed drone operations.

Summary and Background of FPL's Current Drone Operations

FPL currently uses drones to inspect and assess NextEra-owned or serviced infrastructure across Florida for damage, preventative maintenance, and post-storm assessment. Serviced infrastructure includes all NextEra-owned or serviced distribution lines, transmission lines, solar facilities, and power generation facilities (see Figure 1). The NextEra-owned or serviced infrastructure in Florida currently includes 52 solar facilities and 16 power generation facilities, and approximately 45,000 miles of distribution lines and 7,000 miles of transmission lines. FPL previously received a Certificate of Waiver in early 2022 from the FAA, which authorizes nationwide drone operations (using the Percepto Sparrow drone) two miles BVLOS of the RPIC and for which a participating visual observer (whose main responsibility is to observe the airspace for intrusions) is not able to see the drone (14 CFR §§ 107.31, 107.33(b), and 107.33(c)(2)). The areas of drone operation are all privately owned facilities that are fenced and access is restricted to uninvolved bystanders (i.e., non-participants), or are located on company easements (i.e., distribution and transmission lines). Drone operations are contained to the operational boundaries of the facility or applicable easement. The width of the easement for a typical distribution or transmission line is 15 to 75 feet wide. Large transmission lines (i.e., 500 kilovolts) may have easements up to 200 feet wide.

In addition to using a drone, FPL uses helicopters, fixed-wing aircraft, and automobiles to conduct inspections. FPL uses a helicopter (Bell 206 Jet Ranger) and a fixed-wing aircraft (Piper Cub or Cessna

206) to inspect the 7,000 miles of transmission lines in Florida twice a year. FPL also uses automobiles to drive along and inspect the 45,000 miles of distribution lines in Florida every year; this amounts to approximately 10,000 person hours.

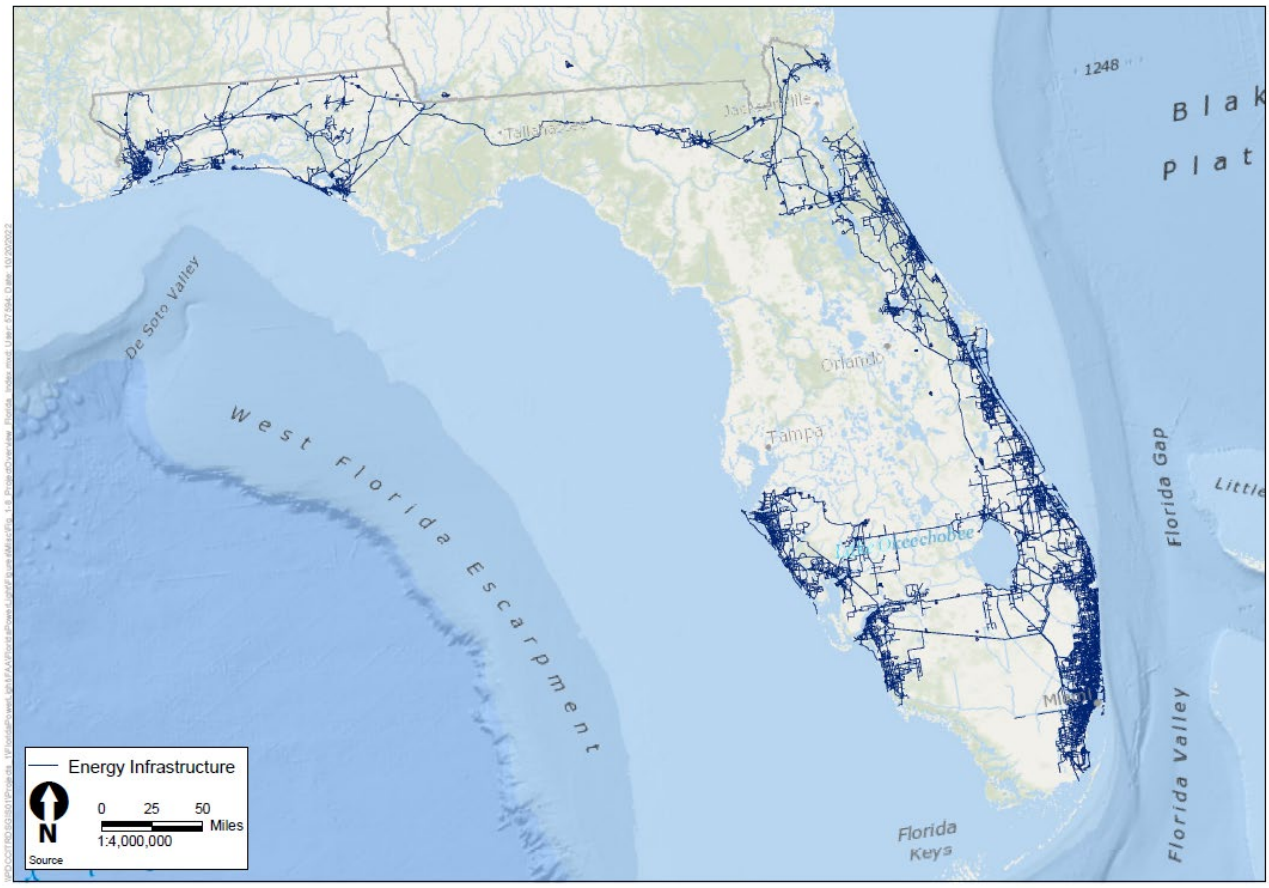

Figure 1. Existing NextEra-owned or Serviced Energy Facilities and Infrastructure in Florida

Description of the Proposed Operations under the Federal Action

The FAA's federal action is to issue a waiver to FPL for drone operations that do not comply with 14 CFR Part 107. As stated above, the regulations that would be waived under the federal action are 14 CFR §107.31, §107.39, and §107.145. This means that drone operations would be conducted where the pilot is in a remote location and there are no visual observers (i.e., BVLOS); drones would also be allowed to fly over people and moving vehicles. Drone operations would occur at the same NextEra-owned or serviced energy facilities and infrastructure in the State of Florida that FPL currently inspects (Figure 1). Each flight would occur during the day (no nighttime operations) and last a maximum of 30 minutes (flight times are limited by battery capacity). Drone operations under the waiver would also occur at any future NextEra-owned or serviced distribution lines, transmission lines, solar facilities, and power generation facilities that may be constructed in Florida and that may need to be inspected when in operation. It should be noted that under the waiver, FPL would reduce or eliminate the use of larger crewed aircraft and motor vehicles (e.g., fixed-wing aircraft, helicopters, and ground vehicles) to conduct inspections of energy infrastructure. FPL recognizes the importance of using emerging aviation technology that provides benefits to the public. The following sections describe the drone systems and proposed operations that would occur under the waiver. No construction would occur under the FAA's federal action.

Drone Systems

FPL is proposing to continue to use the Percepto Sparrow highly automated "drone-in-a-box" system to perform inspections of distribution lines, transmission lines, solar facilities, and power generation facilities. Also, FPL is proposing to use the Skydio 2 drone to perform inspections of distribution and transmission lines only (not solar or power generation facilities). FPL is requesting a waiver for §107.31, Visual line of sight aircraft operation; §107.39, Operations over human beings, and §107.145, Operations over moving vehicles for the Percepto Sparrow drone.

FPL would use the Percepto Sparrow drone to conduct preventive maintenance or problem detection inspections wherever FPL has a Sparrow drone system installed. FPL would use the Skydio 2 drone mainly for response to emergency situations (e.g., power outages). The Percepto Sparrow drone system consists of two main components: the platform and the software (see Figure 2):

- **Platform** – the platform consists of the drone and its base.

- **Drone** (1a in Figure 2) – a small quadcopter equipped with a day and thermal camera, powered by a lithium polymer battery, and controlled by onboard software. The drone is equipped with a parachute for use in emergency situations (i.e., sudden loss of altitude and attitude).

- **Base** (1b in Figure 2) – industrial-grade, weatherproof shelter and charging station with a take-off and landing zone for the drone (Figure 3). A heating, ventilation, and air conditioning unit is attached to the base, and a weather station is located nearby providing on-site weather information.

- **Software** – developed by Percepto, the software includes a cloud management system, which is the operator interface for controlling the system. A secondary communication channel is also provided for emergency situations.

Figure 2. Percepto Sparrow Drone System

Source: FPL Concept of Operations for Beyond Visual Line of Sight, December 2021.

Figure 3. Percepto Sparrow Drone and Base

Source: https://www.fpl.com/reliability/drones.html

Pictured in Figure 4, the Skydio 2 is much smaller than the Percepto Sparrow and does not include a base like the Sparrow (Figure 4). FPL would transport the Skydio 2 to each site. The Skydio 2 is powered by a lithium polymer battery and employs a proprietary flight control/autonomy system. It uses the Global Positioning System (GPS) to assist with location tracking, precision flying, hovering, and return to home commands. Skydio 2 is equipped with obstacle sensing capabilities, which are useful when flying near stationary electrical equipment. If the drone experiences a loss of one motor, it will begin to swerve and lose altitude. If this occurs, the RPIC will have reduced control. If the drone loses multiple rotors, it will be unable to maintain controlled flight. Both cases result in immediate flight termination.

Figure 4. Skydio 2 Drone

Source: FPL Concept of Operations for Beyond Visual Line of Sight, December 2021.

Tables 1 and 2 provide the specifications and flight limitations for each drone.

Table 1. Drone Specifications

Attribute	Percepto Sparrow	Skydio 2
Length (inches)	26.88	8.78
Width (inches)	42.91	10.75
Height (inches)	12.08	2.91
Weight (pounds)	22.1	1.7
Flight Time (minutes; usable battery life)	26	23
Maximum Flight Range (miles)	5.28	2
Minimum Flight Altitude (feet)	30	30
Maximum Flight Altitude (feet)	Below 400	Below 400
Maximum Cruise Speed (miles per hour)	26.8	36
Material	Carbon fiber composite	Plastic

Table 2. Flight Limitations

Attribute	Percepto Sparrow	Skydio 2
Wind (miles per hour)	Takeoff and landing: 16.7 Flight: 24.8	25
Rain (inches per hour)	0.23	Will not fly in the rain
Temperature (degrees Fahrenheit)	14 to 107.6	23 to 104
Lightning	No operations during lightning	No operations during lightning
Icing	No flight into known icing	No flight into known icing

Drone Operations

To support its commercial operations, FPL is requesting permission from FAA to operate drones BVLOS within Class G airspace[1] over NextEra-owned or serviced property, including distribution lines, transmission lines, solar facilities, and power generation facilities:

1. **Distribution lines** – Drone flights would occur for restoration, preventive maintenance, and problem detection.[2] The goal of the inspections is to inspect the structures (including substations, if present within the easement, and power poles), power lines, vegetation, and at-risk trees for potential fall-in. The drone would fly directly above the power lines or easement.

   For the purpose of predicting environmental impacts generated from drone operations during distribution line inspections, the FAA made the following assumptions based on information provided by FPL:

[1] Class G airspace (uncontrolled) is that portion of airspace that has not been designated as Class A, Class B, Class C, Class D, or Class E airspace, which is airspace within which air traffic control service is provided.

[2] Restoration refers to inspections conducted during power outages when many customers are out of power. The drone would be used to help identify the problem location and what needs to be fixed. Preventive maintenance and problem detection refer to inspections conducted to identify potential equipment issues before those issues cause a power outage.

- Operational height is 35 feet above ground level (AGL)
- Distance between the electric poles is 125 feet
- The drone will hover 60 seconds at each pole during inspection
- The drone moves between poles over the course of 10 seconds
- FPL would inspect each distribution line every 4 weeks on average; each inspection of a distribution line would take one to four weeks, depending on the length of the distribution line

2. **Transmission lines** – Flights would occur for restoration, preventive maintenance, and problem detection. The goal of the inspections is to inspect the transmission structures (including substations, if present within the easement, and power poles), power lines, vegetation, and at-risk trees for potential fall-in. The drone would fly directly above the power lines or easement.

   For the purpose of predicting environmental impacts generated from drone operations during transmission line inspections, the FAA made the following assumptions based on information provided by FPL:

   - Operational height is 75 feet AGL
   - Distance between the electric poles is 200 feet
   - The drone will hover 60 seconds at each pole during inspection
   - The drone moves between poles over the course of 18 seconds
   - FPL would inspect each transmission line every 4 weeks on average; each inspection of a transmission line would take one to four weeks, depending on the length of the distribution line

3. **Solar facilities** – Surveillance flights would occur for preventive maintenance and problem detection of solar panels located within a solar facility boundary. Flights for environmental inspections during pre- and post-construction of sites are also included. Ground access to the solar facility is controlled via fences and locked gates.

   For the purpose of predicting environmental impacts generated from drone operations during solar facility inspections, the FAA made the following assumptions based on information provided by FPL:

   - Operational height is 125 feet AGL
   - Distance between the sweep segments is 12 feet
   - Speed on sweep segments is 10 miles per hour
   - Speed on turnabouts is 5 miles per hour

- FPL would inspect each solar facility every day with flights over a different part of the solar field each day; each inspection of a solar facility would take one week or less, depending on the size of the facility

4. **Power generation facilities** – Surveillance flights would occur for preventive maintenance and problem detection. Ground access to the power generation facility is controlled via fences and locked gates.

   For the purpose of predicting environmental impacts generated from drone operations during power generation facility inspections, the FAA made the following assumptions based on information provided by FPL:

   - Operational height is 150 feet AGL
   - The drone will hover for 30 seconds, as needed
   - The drone will fly at 20 miles per hour
   - FPL would inspect each power generation facility every day with flights over a different part of the facility each day; each inspection of a power generation facility would take one week or less, depending on the size of the facility

As noted above, FPL is proposing to operate the Percepto Sparrow at all four types of facilities and Skydio 2 at distribution and transmission lines only. Also, FPL is requesting a waiver for flight over people and moving vehicles only for the Percepto Sparrow drone. This means that during Percepto Sparrow inspection flights along distribution and transmission lines, FPL would not have to stop the drone at intersections with roads and wait for vehicles to pass before proceeding along the easement. Similarly, FPL would be able to maintain its course of flight along an easement if a person was present within the easement. When operating the Skydio 2 drone along distribution and transmission lines, FPL would have to comply with the Part 107 regulations with respect to operations over people and moving vehicles.

The flight crew for the proposed drone operations would involve a single RPIC. Rather than relying on the use of a visual observer, for the Percepto Sparrow drone, the RPIC would rely upon the radar and automatic dependent surveillance-broadcast (ADS-B) capabilities of an Accipiter BVLOS Surveillance System[3] to detect aircraft entering the airspace within two miles of the drone and alert the RPIC of any intrusion. Once the intruder aircraft is detected, the RPIC would monitor the intruder aircraft and execute avoidance procedures, as necessary. For example, if needed, the RPIC could initiate a "go safe" command, which would involve one of the following:

[3] The Accipiter BVLOS Surveillance System is provided by Accipiter Radar Corporation under license from its parent Accipiter Radar Technologies Inc. Accipiter was the primary participant in U.S. Department of Defense's (DoD) Independent Validation of Avian Radar project (see: https://www.accipiterradar.com/wp-content/uploads/2017/05/IVAR_FS_v-3.pdf) and one of the key participants in the assessment of avian radar systems by the FAA's Center of Excellence for Airport Technology at civil and military airports in the United States. Accipiter is the only company whose avian radar system is fully compliant with both FAA Advisory Circular 150/5220-25 (Airport Avian Radar Systems) and DoD's Functional Requirements and Performance Specification.

- Drop altitude and hover approximately 15-20 feet above the distribution or transmission line until the intruder aircraft is more than two miles away
- Land the drone in a safe zone; FPL identifies safe zones approximately every ¼ mile along the power line
- Return the drone to the base/takeoff location

For the Skydio 2 drone, which would only fly over distribution and transmission lines, the RPIC would rely upon audio and visual aircraft monitoring. As the RPIC flies the drone from one pole to the next, the RPIC will conduct a 360-degree rotation of the drone to determine if any aircraft have entered the airspace before flying to the next pole.

The proposed drone operations would occur only at NextEra-owned or serviced facilities (solar and power generation) and easements (distribution and transmission lines). The facilities are privately owned, fenced, and access is restricted to uninvolved bystanders (i.e., non-participants). Easements are not necessarily access restricted. Except during power outages, FPL contacts all customers within the operations area ten business days prior to conducting a flight to inform them of upcoming drone operations. FPL would not fly the drone over schools or parks.

All RPICs are instructed on how to properly conduct a pre-flight site assessment, to include checks for nearby airports, prisons, schools, national parks, designated tribal lands, sensitive or protected wildlife species, etc. As part of the flight planning process, the RPIC must complete a risk calculation matrix that outlines all the critical factors for a safe flight. Flight planning and the risk calculation matrix help the RPIC identify any areas of concern before the flight. Once completed, the RPIC submits the flight plan and risk matrix to FPL's flight operations manager. The flight operations manager verifies the information. This two-factor verification is a safety measure FPL has in place to address any safety issues related to flight or personnel, as well as address any environmental concerns. Once on site, prior to conducting drone operations, FPL walks or drives the site to identify or confirm hazardous and sensitive areas to avoid (e.g., tall structures or towers, eagle nests, etc.).

FPL expects to fly approximately five flights a day from each drone system it has in the field. FPL currently has six Sparrow drones in the field and plans to have a total of 650 Sparrow drones within the next five years. FPL currently has five Skydio 2 drones in the field and plans to have a total of about 20 Skydio 2 drones within the next five years. Each drone flight is approximately 30 minutes in duration. The battery capacity limits how long, and thus how far, the drone can fly. Proposed operating hours are from 8:00 am to 5:00 pm.

It is important to note that a drone would fly over a given location within a facility or along an easement very infrequently. When conducting inspection flights at solar and power generation facilities, flights could occur daily; however, a different location of the facility would be flown each day until the entire facility is inspected. When conducting inspection flights along distribution and transmission lines, a drone would pass by the same power pole approximately once a month.

Drone Operation Environmental Protection Measures

FPL has established processes and procedures for ensuring that its drone operations do not adversely affect wildlife and protected natural areas. FPL's Environmental Services Department has developed maps that depict the location of federally threatened and endangered species nests, roosts, burrows, and critical habitat located at each NextEra-owned or serviced facility and easements to ensure drone operations remain an adequate distance from these locations. FPL maintains avoidance buffers in accordance with federal and/or state agency-issued guidance (e.g., U.S. Fish and Wildlife Service [USFWS] National Bald Eagle Management Guidelines), as well as with any facility-specific regulatory permits and agreements associated with operations. FPL regularly updates its facility maps depicting any newly identified protected species locations within the operating area.

Additionally, FPL follows several general protection measures, including facility-posted speed limit signs and driving on designated facility pathways. FPL abides by posted conservation easement, natural area, and other federally or state-designated sensitive area signage within the operating area. Drone operating hours occur outside of dawn, dusk, and nighttime hours further limiting interactions with crepuscular[4] and nocturnal wildlife species.

ESA-Listed Species and Critical Habitat in the Action Area

The action area refers to the area directly or indirectly affected by the proposed action. The action area for drone operations is the State of Florida where the drones will operate at existing NextEra-owned or serviced infrastructure and where drones could operate should new NextEra-owned or serviced infrastructure be built in the future. Because drones could be used at NextEra-owned or serviced infrastructure that could be built at some point in the future, FAA is including the full state of Florida in establishing the list of federally listed species that could be affected in the action area. The areas of operation (for existing and for any future infrastructure) are privately owned facilities that are fenced, and access is restricted to uninvolved bystanders or are located on company easements (i.e., distribution and transmission lines). Drone operations would be contained to the operational boundaries of the facility or applicable easement. **Table 1** lists the federally listed threatened, endangered, candidate, and proposed species that occur or potentially occur in the action area (see Attachment 2). The areas of operation consist of designated critical habitat for 34 federally listed species and proposed critical habitat for two federally listed species (see Attachment 2 for full list).

[4] A crepuscular animal is one that is active primarily during the twilight period.

Table 3: Federally Listed Threatened, Endangered, Candidate, and Proposed Species that Occur or Potentially Occur in the Project Action Area

Species	Endangered Status	Threatened Status	Candidate and Proposed Species
Mammals	13	3	0
Birds	5	7	0
Reptiles	3	8	4
Amphibians	1	1	0
Fish	0	2	0
Clams	8	7	0
Snails	0	1	0
Insects	5	0	1
Crustaceans	0	1	0
Flowering Plants	51	14	0
Conifers and Cycads	1	0	0
Ferns and Allies	1	0	0
Lichens	1	0	0

Source: USFWS 2022.

Potential Effects to ESA-listed Species and Critical Habitat

Terrestrial and Aerial ESA-listed Wildlife

Wildlife habitats around FPL's infrastructure vary widely from developed urban areas with little or no natural habitat to rural areas with more undisturbed natural habitats. The range of habitats include, but are not limited to, herbaceous, forest, and shrub vegetation associated with upland, wetland, and riparian areas, as well more disturbed or anthropogenic influenced habitats (e.g., agricultural areas, parks, maintained energy/transportation corridors, lawns). This range of habitat can support a wide variety of wildlife, including amphibians, reptiles, birds, insects, and mammals. However, habitats over which the drones would directly fly are already developed with existing infrastructure where habitat would range from little to no natural habitat (e.g., urban areas) to regularly maintained herbaceous and low shrub habitat (e.g., transmission line rights of way [ROW]). These areas would likely have less wildlife diversity due to the limited habitat types compared to the areas surrounding the existing energy infrastructure areas which could be more diverse in habitat and wildlife, depending on location. Despite the variety of habitats and wildlife throughout the action area, the primary wildlife that drones would pose risk to are anticipated to be avian species, primarily birds, due to the potential direct interactions with these species while in flight.

The presence of vehicles, drones, and humans can disturb nearby wildlife through visual and noise effects, resulting in potential displacement and altered behavioral responses. Displacement can affect normal foraging, migratory, and breeding behaviors, and could also reduce survival and productivity because animals might need to expend more energy to locate replacement habitat, which may have fewer resources and be of lower value. In addition, wildlife that is less familiar with new habitat areas might be more susceptible to predation, which could limit survival of offspring or adults. Increased noise levels

could result in fright responses (e.g., flushing or escaping) or increased communications, such as louder or more extended periods of birdsong or begging vocalizations from young birds. Noise could cause birds to abandon their nests with the subsequent demise of young. These potential impacts are not anticipated to have any notable effect on crepuscular and nocturnal wildlife species (e.g., bats) as operating hours occur between 8:00 am to 5:00 pm (i.e., outside of dawn, dusk, and nighttime hours).

Wildlife responses to visual and noise effects would vary depending on the species, the proximity to wildlife, drone flight patterns, and weather. Vehicles (associated with some drone operations) would likely cause the greatest visual and noise effects due to their size and/or level of noise generated compared to drones, which are small in comparison and use electric motors that are quieter than gasoline powered engines. One study found, that in most instances, drones within 4 meters of birds did not cause a behavioral response (Vas et al. 2015). In another study, drones barely elicited behavioral responses in terrestrial mammals (Mulero-Pazmany et al. 2017). Noise would be comparable to other noise levels in urban environments where wildlife would be habituated to noise, but would be more distinguishable in rural areas where less ambient noise is present. However, any visual and noise disruptions are short-term and temporary as these events are infrequent and short in duration. Flight durations are short, and vehicles and drones do not linger in a particular location for long periods of time and would move past wildlife quickly (e.g., up to 60 seconds at each pole for drones). In addition, vehicles and drones are generally restricted to existing ROW or properties that are already developed, where habitat is more limited, and where human presence occurs. Mobile species disturbed by these activities would be expected to leave the area and return once the disruption ends. Less mobile species would likely take shelter while personnel are onsite; however, only a few personnel would be with a vehicle and the duration of the disruption would be infrequent and short in duration. Given the infrequent and short duration that visual and noise disturbances would have at any given location, and no permanent displacement would occur, impacts to federally listed wildlife, would be insignificant and discountable.

Wildlife collisions could occur from the use of vehicles and drones. Terrestrial animals could be exposed to potential collisions with vehicles, but FPL vehicle speeds along transmission line and distribution line ROWs are generally limited to 25 miles per hour on dirt roads and 35 miles per hour on paved access roads. As such, mobile wildlife species would likely be able to move away from oncoming vehicles. In addition, many areas of FPL's infrastructure lack habitat of any value for sensitive species (e.g. urban areas) or has been severely degraded where wildlife diversity would be more limited (e.g., transmission line ROWs). Drones pose a collision risk to avian species, such as birds and flying insects. Collisions between birds and aircraft (e.g., planes, jets) is well documented and is an issue that airport and air transportation agencies take very seriously (due to flight safety issues); however, these collisions are estimated to account for a small percentage of all bird deaths per year (FAA 2022; USFWS undated). Drones are much smaller than aircraft, have slower speeds, and are more maneuverable, and therefore, it would be anticipated that the potential for collisions with avian species would be even less (if any) than aircraft (note that FPL currently uses fixed wing aircraft and helicopters for infrastructure inspection, but would no longer use these aircraft under the proposed action). As such, avian collisions with drones are extremely unlikely to occur. As stated previously, operations occur during daytime hours, and therefore, crepuscular and nocturnal wildlife (e.g., bats) are not anticipated to be exposed to the drone or vehicles.

Impact Reduction Measures

As part of the FPL drone pre-flight analysis, locations of known sensitive wildlife habitat (e.g., eagle nest trees, occupied bat maternity roosting trees) are reviewed and verified in the field. This information is obtained from biological surveys and information compiled as part of preconstruction siting and design of a facility location. Facilities receive additional biological surveys by an environmental consultant after the facility is constructed and operational if there is a need to perform maintenance or replacement activities that have the potential to impact sensitive wildlife or habitat. As a result, FPL environmental staff keep facility records of known sensitive wildlife and habitat fairly current and available for reference by FPL drone operators. This information is used to coordinate with FPL environmental staff to help drone operators avoid and/or minimize impacts on sensitive wildlife and habitats.

Summary

In summary, drone operations that would occur under the waiver have limited potential to affect federally listed terrestrial and aerial wildlife species. Therefore, drone operations *may affect* federally listed terrestrial wildlife because species could be affected through noise and visual effects (e.g., behavioral response) and potential collisions. However, the potential impacts on federally listed terrestrial species are anticipated to be insignificant and discountable, and therefore, *not likely to adversely affect* species, because:

- Vehicles travel slow and on already established roads
- A small number of annual operations would occur at any given site
- Drone flight times are short (approximately 30 minutes)
- There is low probability of encountering a listed species during drone flight,
- Drones generate low sound levels,
- Drones are small,
- Drones would operate during the daytime (thus avoiding effects to nocturnal species such as bats), and
- FPL would continue implementing their impact reduction measures

FAA also notes that, compared to baseline conditions (i.e., FPL's current inspection operations), impacts to federally listed species under the proposed action are anticipated to be less than those under FPL's current inspection operations because FPL would eliminate the use of helicopters and fixed-winged aircraft and replace them with the Percepto Sparrow and Skydio 2 drones. While the number of drones in operation would increase and drone flight time would increase compared to current drone use, the FAA anticipates that there would be an overall reduction in potential impacts because drones are much smaller, quieter, and travel at slower speeds compared to helicopters and fixed-wing aircraft. Therefore, using drones as the sole aerial vehicle would result in less noise, visual, and collision impacts on wildlife. The use of drones under the waiver would also substantially reduce the number of vehicle miles driven, which would reduce potential noise, visual, and collisions impacts on wildlife from vehicle use and human presence. Under the proposed action, the Percepto Sparrow and Skydio 2 drones would eventually replace 5,000/year vehicle-driven feeder assessments and 30,000/year vehicle-driven customer call tickets (ex: leaning pole, vegetation on the line or low hanging wire) with drone assessments.

ESA-listed Plants and Aquatic Species, and Designated Critical Habitat

The proposed action does not involve development or disturbance of any land or aquatic habitat, and drone overflight of land and water would not affect these resources during routine operations. The terrestrial areas of overflight are already disturbed with existing infrastructure where vegetation is either absent (e.g., highly developed urban areas) or is heavily disturbed and maintained (e.g., transmission line ROW). Drone malfunctions are extremely rare and, based on current year-to-date drone flight information for the Percepto Sparrow, FPL experienced only two drone incidents out of over 4,000 flights in Florida (a less than 0.05 percent occurrence). In both instances, the drone was retrieved in less than 30 minutes. If the drone experienced a malfunction (e.g., sudden loss in altitude): 1) for the Percepto Sparrow, the drone would deploy its parachute and provide a soft landing, thereby avoiding any significant effects to plants; or 2) for the Skydio 2, the pilot would immediately land the drone. FPL would then recover the drone on foot if the drone is in an area of undisturbed vegetation. Both drones are small and light and thus have very limited potential to affect vegetation in the unlikely event of a forced landing or malfunction in an area were vegetation occurs. In addition, in the unlikely event of a forced landing or malfunction, the chances of it occurring in the exact location where a federally listed plant occurs (or designated critical habitat) would be remote. Similarly, there is potential for an unforced drone landing or malfunction over a body of water; however, this has not occurred for any FPL drone operation to date. The chances of an unforced landing or malfunction over a body of water would be remote, and if it did occur, the chances of the drone landing in water at the same moment a federally listed aquatic species would happen to be in the same location would be even more remote. In the extremely unlikely event of an unforced landing or malfunction over a body of water, FPL would make every possible attempt to recover the drone. Overall, any landing of a drone (either purposefully or accidently) and recovery would have little, if any, impact on vegetation, aquatic habitat, or designated critical habitat due to the small size of the drone and the very low probability of such an event occurring. Because it is possible, although extremely unlikely, that a drone may be required to land or could malfunction in an area of where federally listed plants, aquatic organisms, or designated critical habitat occurs, the proposed action *may affect* these species and designated critical habitat. However, such an event is extremely likely to occur and would be considered discountable. Therefore, the proposed action would *not likely adversely affect* federally listed plants and aquatic species, or designated critical habitat.

Conclusion

Overall, any potential effects to federally listed species and designated critical habitat would be insignificant (i.e., not able to be meaningfully measured, detected, or evaluated) or discountable (i.e., extremely unlikely to occur). The FAA expects that drone operations associated with the proposed action are ***not likely to adversely affect*** federally-listed species and designated critical habitat in the action area. Should any proposed or candidate species become listed at some point in the future, FAA would make the same determinations as for the current federally listed species. The FAA seeks your concurrence on our effect determination and welcomes any additional comments. Thank you for your assistance in this matter. Please provide your response to Mike Millard of my staff at mike.millard@faa.gov.

Sincerely,

DAVID M MENZIMER Digitally signed by DAVID M MENZIMER Date: 2022.11.03 11:05:44 -07'00'

Dave Menzimer
Manager, General Aviation Operations Section
General Aviation and Commercial Division
Office of Safety Standards, Flight Standards Service

Enclosures:

Attachment 1 – Background and Purpose and Need
Attachment 2 – Official Species List

References

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Vas, E., A. Lescroel, O. Duriez, G. Boguszewski, and D. Gremillet. 2015. Approaching Birds with Drones: First Experiments and Ethical Guidelines. Biology Letters (The Royal Society). Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4360097/. Accessed: August 25, 2022.

ATTACHMENT 1
Background and Purpose and Need

Background and Location

In 2012, Congress first charged the FAA with integrating unmanned aircraft systems (i.e., drones) into the National Airspace System (NAS). The FAA has engaged in a phased, incremental approach to integrating drones into the NAS and continues to work toward full integration of drones into the NAS.

FPL uses drones to inspect and assess NextEra-owned or serviced infrastructure across Florida for damage, preventative maintenance, and post-storm assessment. FPL previously received a Certificate of Waiver in early 2022, which authorizes nationwide drone operations two miles BVLOS of the RPIC and for which a participating visual observer (whose main responsibility is to observe the airspace for intrusions) is not able to see the drone (14 CFR §§ 107.31, 107.33(b), and 107.33(c)(2)).

FPL's waiver application analyzed in this EA applies to drone operations at all NextEra-owned or serviced distribution lines, transmission lines, solar facilities, and power generation facilities in Florida. FPL will be the operator for all drone operations in Florida. The areas of operation are all privately owned facilities that are fenced and access is restricted to uninvolved bystanders (i.e., non-participants), or are located on company easements (i.e., distribution and transmission lines). Drone operations would be contained to the operational boundaries of the facility or applicable easement. The width of the easement for a typical distribution or transmission line is 15 to 75 feet wide. Large transmission lines (i.e., 500 kilovolts) may have easements up to 200 feet wide. As NextEra is the owner of all areas of operation, these facilities will be referred to as NextEra facilities.

Tables 1 and 2 provide the amount and location of existing NextEra-owned or serviced energy facilities and infrastructure in Florida.

Table 1. Amount of Existing Solar and Power Generation Facilities in Florida

Number of Facilities by Type	
Solar	**Power Generation**
52	16

Table 1. Approximate Amount of Existing Distribution and Transmission Lines in Florida

Type of Power Line	Total Length (miles)
Distribution	45,000
Transmission	7,000

Purpose and Need

As described in the FAA Order 1050.1F, the purpose and need section of an EA briefly describes the underlying purpose and need for the proposed federal action. It presents the problem being addressed and describes what the FAA is trying to achieve with the proposed action.

FAA Purpose and Need

The FAA has specific statutory and regulatory obligations related to its issuance of a Part 107 waiver that would approve operations outside the normal limitations of 14 CFR Part 107. “The [FAA] Administrator may issue a certificate of waiver authorizing a deviation from any regulation specified in §107.205 if the Administrator finds that a proposed small [unmanned aerial system] operation can safely be conducted under the terms of that certificate of waiver...[and] may prescribe additional limitations that the Administration considers necessary” (§107.200). A party that receives a waiver “(1) [m]ay deviate from the regulations of this part to the extent specified in the certificate of waiver; and (2) [m]ust comply with any conditions or limitations that are specific in the certificate of waiver” (§107.200(d)). The FAA must review FPL’s waiver application and determine whether to issue a waiver based on safety considerations.

FPL Purpose and Need

The purpose of FPL’s request is to conduct BVLOS drone operations at NextEra-owned or serviced energy infrastructure in Florida. FPL’s proposal is needed to increase NextEra-owned or serviced facility safety, efficiency, and productivity, as well as improve worker safety by reducing the need to expose workers to hazardous work tasks. FPL is required by various regulatory bodies including the Federal Energy Regulatory Commission to maintain the electric grid. Safe and reliable operation of NextEra-owned or serviced facilities are maintained through regular inspection of the equipment and vegetation. The inspections consist of ground (truck) and/or aerial (airplane/helicopter/drone) patrols. FPL inspects the facilities on a regular basis to look for problems caused by weather, vandalism, vegetation regrowth, etc. FPL’s proposal would reduce or eliminate the use of larger crewed aircraft and motor vehicles (e.g., fixed-wing aircraft, helicopters, and ground vehicles) to conduct inspections of energy infrastructure. FPL recognizes the importance of using emerging aviation technology that provides benefits to the public.

ATTACHMENT 2

Official Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Florida Ecological Services Field Office
FL
Email Address: fw4flesregs@fws.gov

In Reply Refer To:
Project Code: 2023-0010162
Project Name: FPL Drone Operations in FL

October 28, 2022

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. **Please include your Project Code, listed at the top of this letter, in all subsequent correspondence regarding this project.** Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Marine Mammals
- Coastal Barriers
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Florida Ecological Services Field Office
, FL

Project Summary

Project Code: 2023-0010162
Project Name: FPL Drone Operations in FL
Project Type: Drones - Use/Operation of Unmanned Aerial Systems
Project Description: Operate its drone systems BVLOS at NextEra-owned or serviced energy facilities and infrastructure in FL.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@27.69867915,-81.5578984806358,14z

Counties: Florida

Endangered Species Act Species

There is a total of 137 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Anastasia Island Beach Mouse *Peromyscus polionotus phasma* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5522	Endangered
Choctawhatchee Beach Mouse *Peromyscus polionotus allophrys* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3520	Endangered
Florida Bonneted Bat *Eumops floridanus* There is **proposed** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8630	Endangered
Florida Panther *Puma (=Felis) concolor coryi* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1763	Endangered
Florida Salt Marsh Vole *Microtus pennsylvanicus dukecampbelli* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6984	Endangered
Gray Bat *Myotis grisescens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6329	Endangered
Key Deer *Odocoileus virginianus clavium* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6326	Endangered
Key Largo Cotton Mouse *Peromyscus gossypinus allapaticola* There is **proposed** critical habitat for this species. Species profile: https://ecos.fws.gov/ecp/species/7246	Endangered
Key Largo Woodrat *Neotoma floridana smalli* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3921	Endangered
Lower Keys Marsh Rabbit *Sylvilagus palustris hefneri* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2658	Endangered
Perdido Key Beach Mouse *Peromyscus polionotus trissyllepsis* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7394	Endangered
Puma (=mountain Lion) *Puma (=Felis) concolor (all subsp. except coryi)* Population: FL No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6049	Similarity of Appearance (Threatened)
Silver Rice Rat *Oryzomys palustris natator* Population: lower FL Keys There is **final** critical habitat for this species. Your location overlaps the critical habitat.	Endangered

NAME	STATUS
Species profile: https://ecos.fws.gov/ecp/species/6988	
Southeastern Beach Mouse *Peromyscus polionotus niveiventris* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3951	Threatened
St. Andrew Beach Mouse *Peromyscus polionotus peninsularis* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4111	Endangered
West Indian Manatee *Trichechus manatus* There is **final** critical habitat for this species. Your location overlaps the critical habitat. ***This species is also protected by the Marine Mammal Protection Act, and may have additional consultation requirements.*** Species profile: https://ecos.fws.gov/ecp/species/4469	Threatened

Birds

NAME	STATUS
Audubon's Crested Caracara *Polyborus plancus audubonii* Population: FL pop. No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8250	Threatened
Bachman's Warbler (=wood) *Vermivora bachmanii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3232	Endangered
Cape Sable Seaside Sparrow *Ammodramus maritimus mirabilis* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6584	Endangered
Eastern Black Rail *Laterallus jamaicensis ssp. jamaicensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10477	Threatened
Everglade Snail Kite *Rostrhamus sociabilis plumbeus* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7713	Endangered
Florida Grasshopper Sparrow *Ammodramus savannarum floridanus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/32	Endangered
Florida Scrub-jay *Aphelocoma coerulescens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6174	Threatened
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot *Calidris canutus rufa* There is **proposed** critical habitat for this species. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened
Red-cockaded Woodpecker *Picoides borealis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7614	Endangered
Roseate Tern *Sterna dougallii dougallii* Population: Western Hemisphere except NE U.S. No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2083	Threatened
Wood Stork *Mycteria americana* Population: AL, FL, GA, MS, NC, SC No critical habitat has been designated for this species.	Threatened

NAME STATUS

Species profile: https://ecos.fws.gov/ecp/species/8477
General project design guidelines:
https://ipac.ecosphere.fws.gov/project/DE7VDIUZEJGXFNXKDMD7WG7QNY/documents/generated/6954.pdf

Reptiles

NAME	STATUS
American Alligator *Alligator mississippiensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/776	Similarity of Appearance (Threatened)
American Crocodile *Crocodylus acutus* Population: U.S.A. (FL) There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6604	Threatened
Atlantic Salt Marsh Snake *Nerodia clarkii taeniata* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7729	Threatened
Blue-tailed Mole Skink *Eumeces egregius lividus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2203	Threatened
Eastern Indigo Snake *Drymarchon couperi* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/646	Threatened
Florida Keys Mole Skink *Plestiodon egregius egregius* There is **proposed** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4480	Proposed Threatened
Green Sea Turtle *Chelonia mydas* Population: North Atlantic DPS There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6199	Threatened
Hawksbill Sea Turtle *Eretmochelys imbricata* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3656	Endangered
Kemp's Ridley Sea Turtle *Lepidochelys kempii* There is **proposed** critical habitat for this species. Species profile: https://ecos.fws.gov/ecp/species/5523	Endangered
Leatherback Sea Turtle *Dermochelys coriacea* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1493	Endangered
Loggerhead Sea Turtle *Caretta caretta* Population: Northwest Atlantic Ocean DPS There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1110	Threatened
Sand Skink *Neoseps reynoldsi* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4094	Threatened

NAME	STATUS
Suwannee Alligator Snapping Turtle *Macrochelys suwanniensis* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10891	Proposed Threatened

Amphibians

NAME	STATUS
Frosted Flatwoods Salamander *Ambystoma cingulatum* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4981	Threatened
Reticulated Flatwoods Salamander *Ambystoma bishopi* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8939	Endangered

Fishes

NAME	STATUS
Gulf Sturgeon *Acipenser oxyrinchus (=oxyrhynchus) desotoi* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/651	Threatened
Okaloosa Darter *Etheostoma okaloosae* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/914	Threatened

Clams

NAME	STATUS
Chipola Slabshell *Elliptio chipolaensis* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1775	Threatened
Choctaw Bean *Obovaria choctawensis* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5038	Endangered
Fat Threeridge (mussel) *Amblema neislerii* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2574	Endangered
Fuzzy Pigtoe *Pleurobema strodeanum* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3417	Threatened
Gulf Moccasinshell *Medionidus penicillatus* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7663	Endangered
Narrow Pigtoe *Fusconaia escambia* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5040	Threatened
Ochlockonee Moccasinshell *Medionidus simpsonianus* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8083	Endangered
Oval Pigtoe *Pleurobema pyriforme* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4132	Endangered
Purple Bankclimber (mussel) *Elliptoideus sloatianus* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7660	Threatened
Round Ebonyshell *Reginaia rotulata* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3039	Endangered
Shinyrayed Pocketbook *Hamiota subangulata* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6517	Endangered
Southern Kidneyshell *Ptychobranchus jonesi* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7539	Endangered
Southern Sandshell *Hamiota australis* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2551	Threatened

NAME	STATUS
Suwannee Moccasinshell *Medionidus walkeri* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/533	Threatened
Tapered Pigtoe *Fusconaia burkei* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5046	Threatened

Snails

NAME	STATUS
Stock Island Tree Snail *Orthalicus reses (not incl. nesodryas)* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/466	Threatened

Insects

NAME	STATUS
Bartram's Hairstreak Butterfly *Strymon acis bartrami* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4837	Endangered
Florida Leafwing Butterfly *Anaea troglodyta floridalis* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6652	Endangered
Miami Blue Butterfly *Cyclargus (=Hemiargus) thomasi bethunebakeri* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3797	Endangered
Miami Tiger Beetle *Cicindelidia floridana* There is **proposed** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9965	Endangered
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate
Schaus Swallowtail Butterfly *Heraclides aristodemus ponceanus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1951	Endangered

Crustaceans

NAME	STATUS
Panama City Crayfish *Procambarus econfinae* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8915	Threatened
Squirrel Chimney Cave Shrimp *Palaemonetes cummingi* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1551	Threatened

Flowering Plants

NAME	STATUS
Aboriginal Prickly-apple *Harrisia (=Cereus) aboriginum (=gracilis)* Population: There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2833	Endangered
American Chaffseed *Schwalbea americana* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1286	Endangered
Apalachicola Rosemary *Conradina glabra* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6389	Endangered
Avon Park Harebells *Crotalaria avonensis* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7093	Endangered
Beach Jacquemontia *Jacquemontia reclinata* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1277	Endangered
Beautiful Pawpaw *Deeringothamnus pulchellus* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4069	Endangered
Big Pine Partridge Pea *Chamaecrista lineata keyensis* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8416	Endangered
Blodgett's Silverbush *Argythamnia blodgettii* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6823	Threatened
Britton's Beargrass *Nolina brittoniana* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4460	Endangered
Brooksville Bellflower *Campanula robinsiae* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5809	Endangered
Cape Sable Thoroughwort *Chromolaena frustrata* Population:	Endangered

NAME	STATUS
There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4733	
Carter's Mustard *Warea carteri* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5583	Endangered
Carter's Small-flowered Flax *Linum carteri carteri* Population: There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7208	Endangered
Chapman Rhododendron *Rhododendron chapmanii* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3168	Endangered
Cooley's Meadowrue *Thalictrum cooleyi* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3281	Endangered
Cooley's Water-willow *Justicia cooleyi* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4653	Endangered
Crenulate Lead-plant *Amorpha crenulata* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6470	Endangered
Deltoid Spurge *Chamaesyce deltoidea ssp. deltoidea* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/199	Endangered
Etonia Rosemary *Conradina etonia* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5841	Endangered
Everglades Bully *Sideroxylon reclinatum ssp. austrofloridense* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4735	Threatened
Florida Bonamia *Bonamia grandiflora* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2230	Threatened
Florida Brickell-bush *Brickellia mosieri*	Endangered

NAME	STATUS
Population: There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/956	
Florida Golden Aster *Chrysopsis floridana* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5352	Endangered
Florida Pineland Crabgrass *Digitaria pauciflora* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3728	Threatened
Florida Prairie-clover *Dalea carthagenensis floridana* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2300	Endangered
Florida Semaphore Cactus *Consolea corallicola* Population: There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4356	Endangered
Florida Skullcap *Scutellaria floridana* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2240	Threatened
Florida Ziziphus *Ziziphus celata* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2950	Endangered
Four-petal Pawpaw *Asimina tetramera* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3461	Endangered
Fragrant Prickly-apple *Cereus eriophorus var. fragrans* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/982	Endangered
Fringed Campion *Silene polypetala* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3738	Endangered
Garber's Spurge *Chamaesyce garberi* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8229	Threatened

NAME	STATUS
Garrett's Mint *Dicerandra christmanii* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8333	Endangered
Gentian Pinkroot *Spigelia gentianoides* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4583	Endangered
Godfrey's Butterwort *Pinguicula ionantha* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6805	Threatened
Golden Sedge *Carex lutea* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6025	Endangered
Harper's Beauty *Harperocallis flava* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3735	Endangered
Highlands Scrub Hypericum *Hypericum cumulicola* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2940	Endangered
Key Tree Cactus *Pilosocereus robinii* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2520	Endangered
Lakela's Mint *Dicerandra immaculata* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6390	Endangered
Lewton's Polygala *Polygala lewtonii* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6688	Endangered
Longspurred Mint *Dicerandra cornutissima* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1660	Endangered
Miccosukee Gooseberry *Ribes echinellum* Population: No critical habitat has been designated for this species.	Threatened

NAME	STATUS
Species profile: https://ecos.fws.gov/ecp/species/3580	
Okeechobee Gourd *Cucurbita okeechobeensis ssp. okeechobeensis* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5999	Endangered
Papery Whitlow-wort *Paronychia chartacea* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1465	Threatened
Pigeon Wings *Clitoria fragrans* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/991	Threatened
Pineland Sandmat *Chamaesyce deltoidea pinetorum* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1914	Threatened
Pygmy Fringe-tree *Chionanthus pygmaeus* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1084	Endangered
Rugel's Pawpaw *Deeringothamnus rugelii* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5355	Endangered
Sand Flax *Linum arenicola* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4313	Endangered
Sandlace *Polygonella myriophylla* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5745	Endangered
Scrub Blazingstar *Liatris ohlingerae* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/864	Endangered
Scrub Buckwheat *Eriogonum longifolium var. gnaphalifolium* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5940	Threatened
Scrub Lupine *Lupinus aridorum*	Endangered

NAME	STATUS
Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/736	
Scrub Mint *Dicerandra frutescens* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/799	Endangered
Scrub Plum *Prunus geniculata* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2238	Endangered
Short-leaved Rosemary *Conradina brevifolia* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2929	Endangered
Small's Milkpea *Galactia smallii* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3360	Endangered
Snakeroot *Eryngium cuneifolium* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7487	Endangered
Telephus Spurge *Euphorbia telephioides* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5499	Threatened
Tiny Polygala *Polygala smallii* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/996	Endangered
Wedge Spurge *Chamaesyce deltoidea serpyllum* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/949	Endangered
White Birds-in-a-nest *Macbridea alba* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6291	Threatened
Wide-leaf Warea *Warea amplexifolia* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/412	Endangered

NAME	STATUS
Wireweed *Polygonella basiramia* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1718	Endangered

Conifers and Cycads

NAME	STATUS
Florida Torreya *Torreya taxifolia* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5391	Endangered

Ferns and Allies

NAME	STATUS
Florida Bristle Fern *Trichomanes punctatum ssp. floridanum* Population: There is **proposed** critical habitat for this species. Species profile: https://ecos.fws.gov/ecp/species/8739	Endangered

Lichens

NAME	STATUS
Florida Perforate Cladonia *Cladonia perforata* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7516	Endangered

Critical habitats

There are 39 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Aboriginal Prickly-apple *Harrisia (=Cereus) aboriginum (=gracilis)* https://ecos.fws.gov/ecp/species/2833#crithab	Final
American Crocodile *Crocodylus acutus* https://ecos.fws.gov/ecp/species/6604#crithab	Final
Bartram's Hairstreak Butterfly *Strymon acis bartrami* https://ecos.fws.gov/ecp/species/4837#crithab	Final
Cape Sable Seaside Sparrow *Ammodramus maritimus mirabilis* https://ecos.fws.gov/ecp/species/6584#crithab	Final
Cape Sable Thoroughwort *Chromolaena frustrata* https://ecos.fws.gov/ecp/species/4733#crithab	Final

NAME	STATUS
Carter's Small-flowered Flax *Linum carteri carteri* https://ecos.fws.gov/ecp/species/7208#crithab	Final
Chipola Slabshell *Elliptio chipolaensis* https://ecos.fws.gov/ecp/species/1775#crithab	Final
Choctaw Bean *Obovaria choctawensis* https://ecos.fws.gov/ecp/species/5038#crithab	Final
Choctawhatchee Beach Mouse *Peromyscus polionotus allophrys* https://ecos.fws.gov/ecp/species/3520#crithab	Final
Everglade Snail Kite *Rostrhamus sociabilis plumbeus* https://ecos.fws.gov/ecp/species/7713#crithab	Final
Fat Threeridge (mussel) *Amblema neislerii* https://ecos.fws.gov/ecp/species/2574#crithab	Final
Florida Bonneted Bat *Eumops floridanus* https://ecos.fws.gov/ecp/species/8630#crithab	Proposed
Florida Brickell-bush *Brickellia mosieri* https://ecos.fws.gov/ecp/species/956#crithab	Final
Florida Keys Mole Skink *Plestiodon egregius egregius* https://ecos.fws.gov/ecp/species/4480#crithab	Proposed
Florida Leafwing Butterfly *Anaea troglodyta floridalis* https://ecos.fws.gov/ecp/species/6652#crithab	Final
Florida Semaphore Cactus *Consolea corallicola* https://ecos.fws.gov/ecp/species/4356#crithab	Final
Frosted Flatwoods Salamander *Ambystoma cingulatum* https://ecos.fws.gov/ecp/species/4981#crithab	Final
Fuzzy Pigtoe *Pleurobema strodeanum* https://ecos.fws.gov/ecp/species/3417#crithab	Final
Gulf Moccasinshell *Medionidus penicillatus* https://ecos.fws.gov/ecp/species/7663#crithab	Final
Gulf Sturgeon *Acipenser oxyrinchus (=oxyrhynchus) desotoi* https://ecos.fws.gov/ecp/species/651#crithab	Final
Loggerhead Sea Turtle *Caretta caretta* https://ecos.fws.gov/ecp/species/1110#crithab	Final
Miami Tiger Beetle *Cicindelidia floridana* https://ecos.fws.gov/ecp/species/9965#crithab	Proposed
Narrow Pigtoe *Fusconaia escambia* https://ecos.fws.gov/ecp/species/5040#crithab	Final

NAME	STATUS
Ochlockonee Moccasinshell *Medionidus simpsonianus* https://ecos.fws.gov/ecp/species/8083#crithab	Final
Oval Pigtoe *Pleurobema pyriforme* https://ecos.fws.gov/ecp/species/4132#crithab	Final
Panama City Crayfish *Procambarus econfinae* https://ecos.fws.gov/ecp/species/8915#crithab	Final
Perdido Key Beach Mouse *Peromyscus polionotus trissyllepsis* https://ecos.fws.gov/ecp/species/7394#crithab	Final
Piping Plover *Charadrius melodus* https://ecos.fws.gov/ecp/species/6039#crithab	Final
Purple Bankclimber (mussel) *Elliptoideus sloatianus* https://ecos.fws.gov/ecp/species/7660#crithab	Final
Reticulated Flatwoods Salamander *Ambystoma bishopi* https://ecos.fws.gov/ecp/species/8939#crithab	Final
Round Ebonyshell *Reginaia rotulata* https://ecos.fws.gov/ecp/species/3039#crithab	Final
Shinyrayed Pocketbook *Hamiota subangulata* https://ecos.fws.gov/ecp/species/6517#crithab	Final
Silver Rice Rat *Oryzomys palustris natator* https://ecos.fws.gov/ecp/species/6988#crithab	Final
Southern Kidneyshell *Ptychobranchus jonesi* https://ecos.fws.gov/ecp/species/7539#crithab	Final
Southern Sandshell *Hamiota australis* https://ecos.fws.gov/ecp/species/2551#crithab	Final
St. Andrew Beach Mouse *Peromyscus polionotus peninsularis* https://ecos.fws.gov/ecp/species/4111#crithab	Final
Suwannee Moccasinshell *Medionidus walkeri* https://ecos.fws.gov/ecp/species/533#crithab	Final
Tapered Pigtoe *Fusconaia burkei* https://ecos.fws.gov/ecp/species/5046#crithab	Final
West Indian Manatee *Trichechus manatus* https://ecos.fws.gov/ecp/species/4469#crithab	Final

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

The following FWS National Wildlife Refuge Lands and Fish Hatcheries lie fully or partially within your project area:

FACILITY NAME	ACRES
ARCHIE CARR NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41575	260.311
ARTHUR R. MARSHALL LOXAHATCHEE NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41560	147,386.153
CALOOSAHATCHEE NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41546	18.49
CEDAR KEYS NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41511	933.092
CHASSAHOWITZKA NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41510	28,461.274
CROCODILE LAKE NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41581	6,877.585
CRYSTAL RIVER NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41516	150.831
EGMONT KEY NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41562	334.737
EVERGLADES HEADWATERS NATIONAL WILDLIFE REFUGE AND CONSERVATION AREA https://www.fws.gov/refuges/profiles/index.cfm?id=41571	12,234.193
FARM SERVICE AGENCY INTEREST OF FL https://www.fws.gov/refuges/profiles/index.cfm?id=41650	12,358.019
FARM SERVICE AGENCY INTEREST OF FL https://www.fws.gov/refuges/profiles/index.cfm?id=41550	22,346.987
FARM SERVICE AGENCY INTEREST OF FL https://www.fws.gov/refuges/profiles/index.cfm?id=41645	904.287
FARM SERVICE AGENCY INTEREST OF FL https://www.fws.gov/refuges/profiles/index.cfm?id=41685	80.065

FACILITY NAME	ACRES
FLORIDA PANTHER NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41545	26,861.402
GREAT WHITE HERON NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41582	138,494.175
HOBE SOUND NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41561	1,091.724
ISLAND BAY NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41547	28.545
J. N. DING DARLING NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41540	6,682.833
KEY WEST NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41583	215,784.191
LAKE WALES RIDGE NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41577	1,919.691
LOWER SUWANNEE NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41515	52,295.298
MATLACHA PASS NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41548	539.88
MERRITT ISLAND NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41570	130,210.139
NATIONAL KEY DEER REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41580	83,069.629
OKEFENOKEE NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41590	398,907.438
PASSAGE KEY NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41563	63.728
PELICAN ISLAND NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41572	5,523.546
PINE ISLAND NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41549	639.524
PINELLAS NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41564	396.047
ST. JOHNS NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41573	6,479.421
ST. MARKS NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41640	89,287.687

FACILITY NAME	ACRES
TEN THOUSAND ISLANDS NATIONAL WILDLIFE REFUGE https://www.fws.gov/refuges/profiles/index.cfm?id=41555	34,537.866

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

MIGRATORY BIRD INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED. PLEASE CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list

of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical

Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Coastal Barriers

Projects within the John H. Chafee Coastal Barrier Resources System (CBRS) may be subject to the restrictions on federal expenditures and financial assistance and the consultation requirements of the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.). For more information, please contact the local Ecological Services Field Office or visit the CBRA Consultations website. The CBRA website provides tools such as a flow chart to help determine whether consultation is required and a template to facilitate the consultation process.

System Unit (SU)

Most new federal expenditures and financial assistance, including federal flood insurance, are prohibited within System Units. ***Federally-funded projects within System Units require consultation with the Service.*** *Consultation is not required for projects using private, state, or local funds.*

Otherwise Protected Area (OPA)

OPAs are denoted with a "P" at the end of the unit number. The only prohibition within OPAs is on federal flood insurance. ***CBRA consultation is not required for projects within OPAs.*** *However, agencies providing disaster assistance that is contingent upon a requirement to purchase flood insurance after the fact are advised to disclose the OPA designation and information on the restrictions on Federal flood insurance to the recipient prior to the commitments of funds.*

UNIT	NAME	TYPE	SYSTEM UNIT ESTABLISHMENT DATE	FLOOD INSURANCE PROHIBITION DATE
FL-01	Fort Clinch	SU	12/21/2018	12/21/2018
FL-01	Fort Clinch	SU	12/21/2018	11/16/1991
FL-100	Town Point	SU	11/16/1990	11/16/1990
FL-101	Garcon Point	SU	11/16/1990	11/16/1990
FL-101	Garcon Point	SU	2/24/1997	2/24/1997
FL-102	Basin Bayou	SU	11/16/1990	11/16/1990
FL-15	Blowing Rocks	SU	11/16/1990	11/16/1990
FL-15	Blowing Rocks	SU	12/21/2018	12/21/2018
FL-34	Biscayne Bay	SU	11/16/1990	11/16/1990
FL-35	North Key Largo	SU	11/16/1990	11/16/1990
FL-35	North Key Largo	SU	11/15/1993	11/15/1993
FL-35	North Key Largo	SU	10/21/1998	10/21/1998

UNIT	NAME	TYPE	SYSTEM UNIT ESTABLISHMENT DATE	FLOOD INSURANCE PROHIBITION DATE
FL-37	Rodriquez Key	SU	11/16/1990	11/16/1990
FL-37	Rodriquez Key	SU	11/15/1993	11/15/1993
FL-39	Tavernier Key	SU	11/16/1990	11/16/1990
FL-39	Tavernier Key	SU	11/15/1993	11/15/1993
FL-39	Tavernier Key	SU	12/21/2018	12/21/2018
FL-40	Snake Creek	SU	11/16/1990	11/16/1990
FL-40	Snake Creek	SU	12/21/2018	12/21/2018
FL-43	Channel Key	SU	11/16/1990	11/16/1990
FL-44	Toms Harbor Keys	SU	11/16/1990	11/16/1990
FL-44	Toms Harbor Keys	SU	12/21/2018	12/21/2018
FL-45	Deer/Long Point Keys	SU	11/16/1990	11/16/1990
FL-45	Deer/Long Point Keys	SU	12/21/2018	12/21/2018
FL-46	Boot Key	SU	11/16/1990	11/16/1990
FL-46	Boot Key	SU	12/21/2018	12/21/2018
FL-50	No Name Key	SU	11/16/1990	11/16/1990
FL-51	Newfound Harbor Keys	SU	11/16/1990	11/16/1990
FL-52	Little Knockemdown/Torch Keys	SU	11/16/1990	11/16/1990
FL-53	Budd Keys	SU	11/16/1990	11/16/1990
FL-54	Sugarloaf Sound	SU	11/16/1990	11/16/1990
FL-55	Saddlebunch Keys	SU	11/16/1990	11/16/1990
FL-57	Cow Key	SU	11/16/1990	11/16/1990
FL-67	Bunche Beach	SU	11/16/1990	11/16/1990
FL-67	Bunche Beach	SU	12/21/2018	12/21/2018
FL-70	Gasparilla Island	SU	12/18/2014	12/18/2014
FL-78	Rattlesnake Key	SU	11/16/1990	11/16/1990
FL-78	Rattlesnake Key	SU	12/21/2018	11/16/1991
FL-78	Rattlesnake Key	SU	12/21/2018	12/21/2018
FL-81	Egmont Key	SU	11/16/1990	11/16/1990

UNIT	NAME	TYPE	SYSTEM UNIT ESTABLISHMENT DATE	FLOOD INSURANCE PROHIBITION DATE
FL-81	Egmont Key	SU	11/16/1990	11/16/1990
FL-81	Egmont Key	SU	11/16/1990	11/16/1990
FL-81	Egmont Key	SU	12/21/2018	11/16/1991
FL-82	Bishop Harbor	SU	11/16/1990	11/16/1990
FL-82	Bishop Harbor	SU	12/21/2018	12/21/2018
FL-83	Cockroach Bay	SU	11/16/1990	11/16/1990
FL-83	Cockroach Bay	SU	12/21/2018	12/21/2018
FL-89	Peninsula Point	SU	11/16/1990	11/16/1990
FL-89	Peninsula Point	SU	2/24/1997	2/24/1997
FL-89	Peninsula Point	SU	12/21/2018	12/21/2018
FL-90	St. George Island	SU	11/16/1990	11/16/1990
FL-92	Indian Peninsula	SU	11/16/1990	11/16/1990
FL-93	Phillips Inlet	SU	12/21/2018	11/16/1991
FL-93	Phillips Inlet	SU	12/21/2018	12/21/2018
FL-94	Deer Lake Complex	SU	11/16/1990	11/16/1990
FL-94	Deer Lake Complex	SU	12/21/2018	12/21/2018
FL-96	Draper Lake	SU	11/16/1990	11/16/1990
FL-97	Navarre Beach	SU	11/16/1990	11/16/1990
FL-98	Santa Rosa Island	SU	11/16/1990	11/16/1990
FL-99	Tom King	SU	11/16/1990	11/16/1990
FL-99	Tom King	SU	2/24/1997	2/24/1997
P02	Talbot Islands	SU	10/18/1982	10/1/1983
P04A	Usina Beach	SU	10/18/1982	10/1/1983
P04A	Usina Beach	SU	11/16/1990	11/16/1990
P04A	Usina Beach	SU	12/21/2018	12/21/2018
P05	Conch Island	SU	10/18/1982	10/1/1983
P05	Conch Island	SU	11/16/1990	11/16/1990
P05	Conch Island	SU	12/21/2018	12/21/2018

UNIT	NAME	TYPE	SYSTEM UNIT ESTABLISHMENT DATE	FLOOD INSURANCE PROHIBITION DATE
P05A	Matanzas River	SU	10/18/1982	10/1/1983
P05A	Matanzas River	SU	11/16/1990	11/16/1990
P07	Ormond-by-the-Sea	SU	10/18/1982	10/1/1983
P07	Ormond-by-the-Sea	SU	11/16/1990	11/16/1990
P08	Ponce Inlet	SU	10/18/1982	10/1/1983
P08	Ponce Inlet	SU	11/16/1990	11/16/1990
P08	Ponce Inlet	SU	12/21/2018	12/21/2018
P09A	Coconut Point	SU	10/18/1982	10/1/1983
P09A	Coconut Point	SU	11/16/1990	11/16/1990
P09A	Coconut Point	SU	12/21/2018	12/21/2018
P10	Vero Beach	SU	10/18/1982	10/1/1983
P10	Vero Beach	SU	11/16/1990	11/16/1990
P10A	Blue Hole	SU	10/18/1982	10/1/1983
P10A	Blue Hole	SU	11/16/1990	11/16/1990
P10A	Blue Hole	SU	12/21/2018	11/16/1991
P10A	Blue Hole	SU	12/21/2018	12/21/2018
P11	Hutchinson Island	SU	10/18/1982	10/1/1983
P11	Hutchinson Island	SU	11/16/1990	11/16/1990
P11	Hutchinson Island	SU	12/21/2018	12/21/2018
P11A	Frank B. McGilvrey	SU	11/16/1990	11/16/1990
P12	Hobe Sound	SU	10/18/1982	10/1/1983
P14A	North Beach	SU	10/18/1982	10/1/1983
P14A	North Beach	SU	12/21/2018	12/21/2018
P15	Cape Romano	SU	10/18/1982	10/1/1983
P15	Cape Romano	SU	11/16/1990	11/16/1990
P15	Cape Romano	SU	2/29/2016	2/29/2016
P16	Keewaydin Island	SU	10/18/1982	10/1/1983
P16	Keewaydin Island	SU	11/16/1990	11/16/1990

UNIT	NAME	TYPE	SYSTEM UNIT ESTABLISHMENT DATE	FLOOD INSURANCE PROHIBITION DATE
P16	Keewaydin Island	SU	11/15/1993	11/16/1991
P16	Keewaydin Island	SU	2/24/1997	2/24/1997
P16	Keewaydin Island	SU	2/29/2016	2/29/2016
P17	Lovers Key	SU	10/18/1982	10/1/1983
P17	Lovers Key	SU	11/16/1990	11/16/1990
P17	Lovers Key	SU	2/24/1997	2/24/1997
P17A	Bowditch Point	SU	10/18/1982	10/1/1983
P17A	Bowditch Point	SU	12/21/2018	12/21/2018
P18	Sanibel Island	SU	10/18/1982	10/1/1983
P19	North Captiva Island	SU	10/18/1982	10/1/1983
P19	North Captiva Island	SU	11/16/1990	11/16/1990
P19	North Captiva Island	SU	11/2/1994	11/2/1994
P19	North Captiva Island	SU	10/27/2000	11/16/1991
P20	Cayo Costa	SU	10/18/1982	10/1/1983
P20	Cayo Costa	SU	11/16/1990	11/16/1990
P21	Bocilla Island	SU	10/18/1982	10/1/1983
P21	Bocilla Island	SU	11/16/1990	11/16/1990
P21	Bocilla Island	SU	12/21/2018	12/21/2018
P21	Bocilla Island	SU	12/21/2018	11/16/1991
P21A	Manasota Key	SU	10/18/1982	10/1/1983
P21A	Manasota Key	SU	11/16/1990	11/16/1990
P22	Casey Key	SU	10/18/1982	10/1/1983
P22	Casey Key	SU	11/16/1990	11/16/1990
P22	Casey Key	SU	12/21/2018	12/21/2018
P23	Longboat Key	SU	10/18/1982	10/1/1983
P23	Longboat Key	SU	11/16/1990	11/16/1990
P24	The Reefs	SU	10/18/1982	10/1/1983
P24	The Reefs	SU	11/16/1990	11/16/1990

UNIT	NAME	TYPE	SYSTEM UNIT ESTABLISHMENT DATE	FLOOD INSURANCE PROHIBITION DATE
P24A	Mandalay Point	SU	10/18/1982	10/1/1983
P24A	Mandalay Point	SU	11/16/1990	11/16/1990
P25	Cedar Keys	SU	10/18/1982	10/1/1983
P25	Cedar Keys	SU	11/16/1990	11/16/1990
P26	Pepperfish Keys	SU	10/18/1982	10/1/1983
P26	Pepperfish Keys	SU	12/21/2018	12/21/2018
P27A	Ochlockonee	SU	10/18/1982	10/1/1983
P27A	Ochlockonee	SU	11/16/1990	11/16/1990
P28	Dog Island	SU	10/18/1982	10/1/1983
P28	Dog Island	SU	11/16/1990	11/16/1990
P30	Cape San Blas	SU	10/18/1982	10/1/1983
P30	Cape San Blas	SU	11/16/1990	11/16/1990
P30	Cape San Blas	SU	3/12/2019	11/16/1991
P30	Cape San Blas	SU	3/12/2019	3/12/2019
P31	St. Andrew Complex	SU	10/18/1982	10/1/1983
P31	St. Andrew Complex	SU	11/16/1990	11/16/1990
P31	St. Andrew Complex	SU	12/21/2018	12/21/2018
P31	St. Andrew Complex	SU	12/21/2018	11/16/1991
P31A	Four Mile Village	SU	10/18/1982	10/1/1983
P31A	Four Mile Village	SU	11/16/1990	11/16/1990
P32	Moreno Point	SU	10/18/1982	10/1/1983
P32	Moreno Point	SU	10/21/1998	10/21/1998
FL-01P	Fort Clinch	OPA	N/A	11/16/1991
FL-01P	Fort Clinch	OPA	N/A	12/21/2018
FL-03P	Guana River	OPA	N/A	11/16/1991
FL-06P	Washington Oaks	OPA	N/A	11/16/1991
FL-07P	Canaveral	OPA	N/A	11/16/1991
FL-103P	Perdido Key	OPA	N/A	11/16/1991

UNIT	NAME	TYPE	SYSTEM UNIT ESTABLISHMENT DATE	FLOOD INSURANCE PROHIBITION DATE
FL-13P	Spessard Holland Park	OPA	N/A	11/16/1991
FL-13P	Spessard Holland Park	OPA	N/A	12/21/2018
FL-14P	Pepper Beach	OPA	N/A	11/16/1991
FL-14P	Pepper Beach	OPA	N/A	12/21/2018
FL-16P	Jupiter Beach	OPA	N/A	11/16/1991
FL-16P	Jupiter Beach	OPA	N/A	12/21/2018
FL-17P	Carlin	OPA	N/A	11/16/1991
FL-17P	Carlin	OPA	N/A	12/21/2018
FL-18P	MacArthur Beach	OPA	N/A	11/16/1991
FL-18P	MacArthur Beach	OPA	N/A	12/21/2018
FL-19P	Birch Park	OPA	N/A	11/16/1991
FL-19P	Birch Park	OPA	N/A	12/21/2018
FL-20P	Lloyd Beach	OPA	N/A	11/16/1991
FL-20P	Lloyd Beach	OPA	N/A	12/21/2018
FL-21P	Haulover Beach	OPA	N/A	11/16/1991
FL-22P	Virginia Beach/Crandon Park	OPA	N/A	11/16/1991
FL-23P	Cape Florida	OPA	N/A	11/16/1991
FL-34P	Biscayne Bay	OPA	N/A	11/16/1991
FL-35P	North Key Largo	OPA	N/A	11/16/1991
FL-36P	El Radabob Key	OPA	N/A	11/16/1991
FL-41P	Lignumvitae/Shell Keys	OPA	N/A	11/16/1991
FL-42P	Long Key	OPA	N/A	11/16/1991
FL-47P	Key Deer/White Heron	OPA	N/A	11/16/1991
FL-48P	Bahia Honda Key	OPA	N/A	11/16/1991
FL-59P	Fort Taylor	OPA	N/A	11/16/1991
FL-60P	Key West NWR	OPA	N/A	11/16/1991
FL-61P	Tortugas	OPA	N/A	11/16/1991
FL-63P	Tigertail	OPA	N/A	11/16/1991

UNIT	NAME	TYPE	SYSTEM UNIT ESTABLISHMENT DATE	FLOOD INSURANCE PROHIBITION DATE
FL-64P	Clam Pass	OPA	N/A	11/16/1991
FL-64P	Clam Pass	OPA	N/A	10/15/2008
FL-65P	Wiggins Pass	OPA	N/A	11/16/1991
FL-67P	Bunche Beach	OPA	N/A	12/21/2018
FL-70P	Gasparilla Island	OPA	N/A	11/16/1991
FL-70P	Gasparilla Island	OPA	N/A	12/18/2014
FL-71P	Venice Inlet	OPA	N/A	11/16/1991
FL-72P	Lido Key	OPA	N/A	11/16/1991
FL-72P	Lido Key	OPA	N/A	12/21/2018
FL-73P	De Soto	OPA	N/A	11/16/1991
FL-73P	De Soto	OPA	N/A	12/21/2018
FL-80P	Passage Key	OPA	N/A	11/16/1991
FL-81P	Egmont Key	OPA	N/A	11/16/1990
FL-81P	Egmont Key	OPA	N/A	11/16/1991
FL-81P	Egmont Key	OPA	N/A	12/21/2018
FL-85P	Sand Key	OPA	N/A	11/16/1991
FL-85P	Sand Key	OPA	N/A	12/21/2018
FL-86P	Caladesi/Honeymoon Islands	OPA	N/A	11/16/1991
FL-87P	Anclote Key	OPA	N/A	11/16/1991
FL-90P	St. George Island	OPA	N/A	11/16/1991
FL-91P	St. Vincent Island	OPA	N/A	11/16/1991
FL-93P	Phillips Inlet	OPA	N/A	11/16/1991
FL-93P	Phillips Inlet	OPA	N/A	12/21/2018
FL-95P	Grayton Beach	OPA	N/A	11/16/1991
FL-95P	Grayton Beach	OPA	N/A	10/16/2006
FL-98P	Santa Rosa Island	OPA	N/A	11/16/1991
P02P	Talbot Islands	OPA	N/A	11/16/1991
P05AP	Matanzas River	OPA	N/A	11/16/1991

UNIT	NAME	TYPE	SYSTEM UNIT ESTABLISHMENT DATE	FLOOD INSURANCE PROHIBITION DATE
P05P	Conch Island	OPA	N/A	10/1/1983
P05P	Conch Island	OPA	N/A	11/16/1991
P07P	Ormond-by-the-Sea	OPA	N/A	11/16/1991
P08P	Ponce Inlet	OPA	N/A	10/1/1983
P08P	Ponce Inlet	OPA	N/A	12/21/2018
P09AP	Coconut Point	OPA	N/A	11/16/1990
P09AP	Coconut Point	OPA	N/A	12/21/2018
P10P	Vero Beach	OPA	N/A	10/1/1983
P10P	Vero Beach	OPA	N/A	11/16/1991
P11AP	Joes Point	OPA	N/A	11/16/1991
P11P	Hutchinson Island	OPA	N/A	10/1/1983
P12P	Hobe Sound	OPA	N/A	11/16/1991
P15P	Cape Romano	OPA	N/A	2/29/2016
P16P	Keewaydin Island	OPA	N/A	2/29/2016
P17P	Lovers Key	OPA	N/A	11/16/1991
P18P	Sanibel Island	OPA	N/A	11/16/1991
P19P	North Captiva Island	OPA	N/A	10/1/1983
P19P	North Captiva Island	OPA	N/A	11/16/1991
P20P	Cayo Costa	OPA	N/A	11/16/1991
P21AP	Manasota Key	OPA	N/A	11/16/1991
P21P	Bocilla Island	OPA	N/A	11/16/1991
P21P	Bocilla Island	OPA	N/A	12/21/2018
P23P	Longboat Key	OPA	N/A	11/16/1991
P24P	The Reefs	OPA	N/A	11/16/1991
P25P	Cedar Keys	OPA	N/A	11/16/1991
P30P	Cape San Blas	OPA	N/A	10/1/1983
P30P	Cape San Blas	OPA	N/A	11/16/1991
P30P	Cape San Blas	OPA	N/A	3/12/2019

UNIT	NAME	TYPE	SYSTEM UNIT ESTABLISHMENT DATE	FLOOD INSURANCE PROHIBITION DATE
P31P	St. Andrew Complex	OPA	N/A	10/1/1983
P31P	St. Andrew Complex	OPA	N/A	10/1/1983
P31P	St. Andrew Complex	OPA	N/A	10/1/1983
P31P	St. Andrew Complex	OPA	N/A	11/16/1991
P31P	St. Andrew Complex	OPA	N/A	12/21/2018
P32P	Moreno Point	OPA	N/A	10/1/1983
P32P	Moreno Point	OPA	N/A	10/21/1998

Marine Mammals

Marine mammals are protected under the Marine Mammal Protection Act. Some are also protected under the Endangered Species Act[1] and the Convention on International Trade in Endangered Species of Wild Fauna and Flora[2].

The responsibilities for the protection, conservation, and management of marine mammals are shared by the U.S. Fish and Wildlife Service [responsible for otters, walruses, polar bears, manatees, and dugongs] and NOAA Fisheries[3] [responsible for seals, sea lions, whales, dolphins, and porpoises]. Marine mammals under the responsibility of NOAA Fisheries are **not** shown on this list; for additional information on those species please visit the Marine Mammals page of the NOAA Fisheries website.

The Marine Mammal Protection Act prohibits the take of marine mammals and further coordination may be necessary for project evaluation. Please contact the U.S. Fish and Wildlife Service Field Office shown.

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1. The Endangered Species Act (ESA) of 1973.
2. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is a treaty to ensure that international trade in plants and animals does not threaten their survival in the wild.
3. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

NAME

West Indian Manatee *Trichechus manatus*

Species profile: https://ecos.fws.gov/ecp/species/4469

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

WETLAND INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED. PLEASE VISIT HTTPS://WWW.FWS.GOV/WETLANDS/DATA/MAPPER.HTML OR CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

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Appendix E

Additional FL Infrastructure Maps

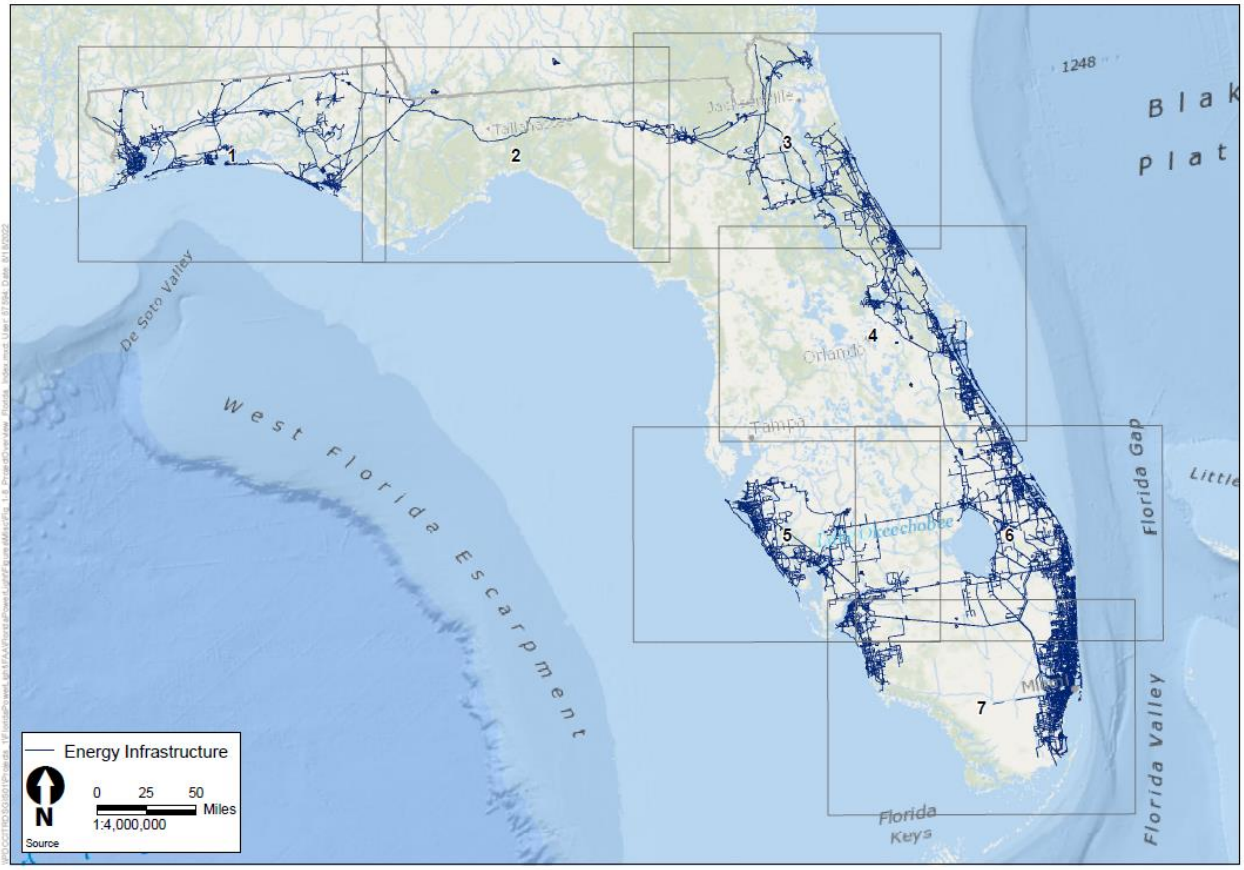

Figure E-0
Florida Power and Light - Florida Overview Index

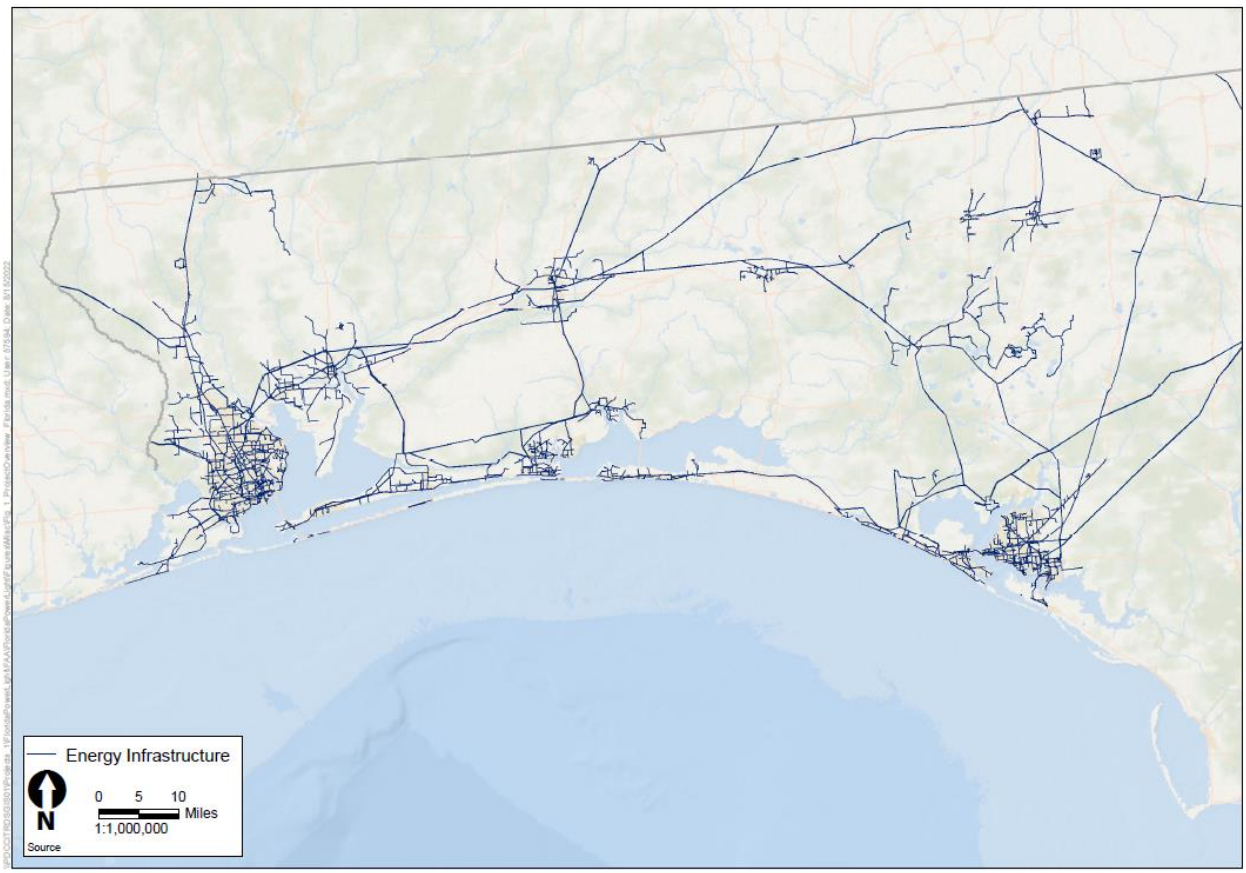

Figure E-1 of 7
Florida Power and Light - Florida Overview

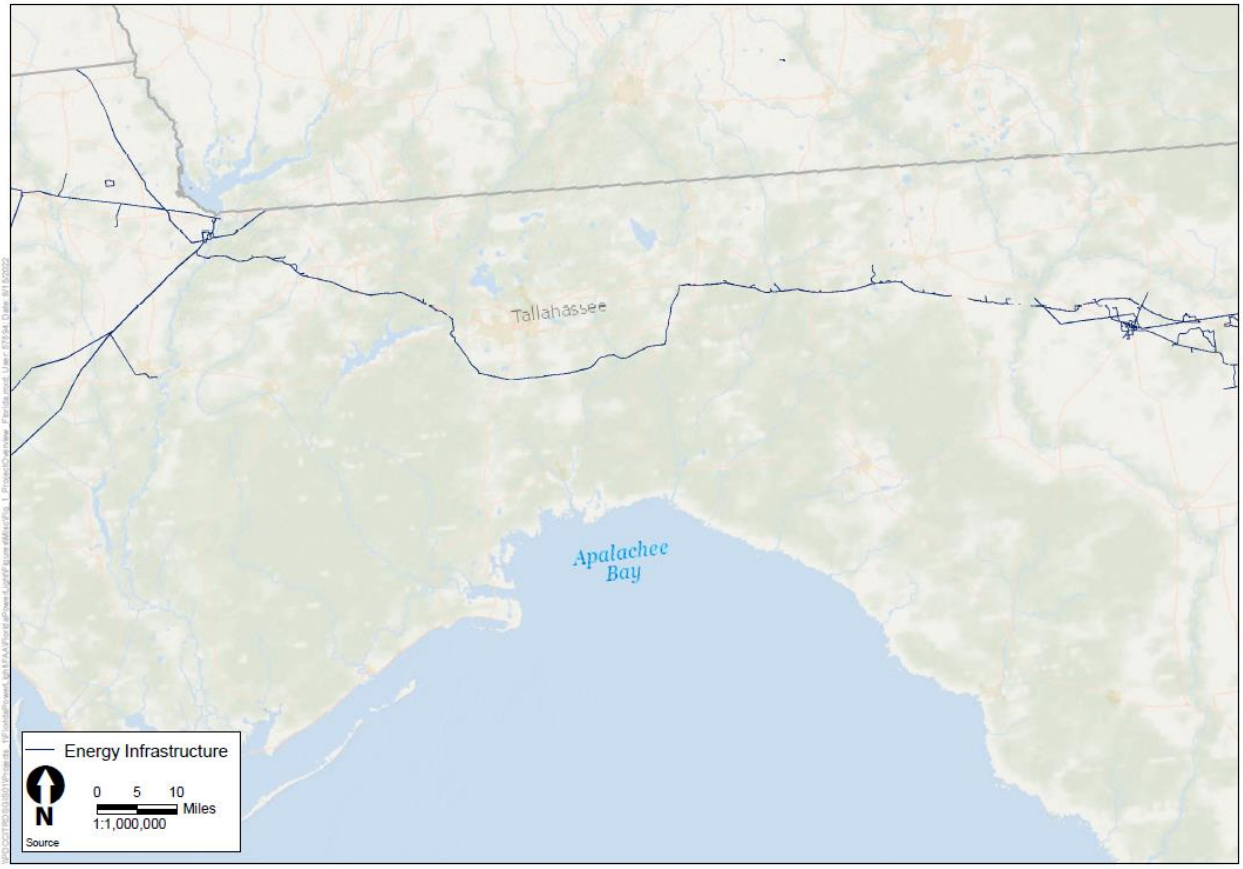

Figure E-2 of 7
Florida Power and Light - Florida Overview

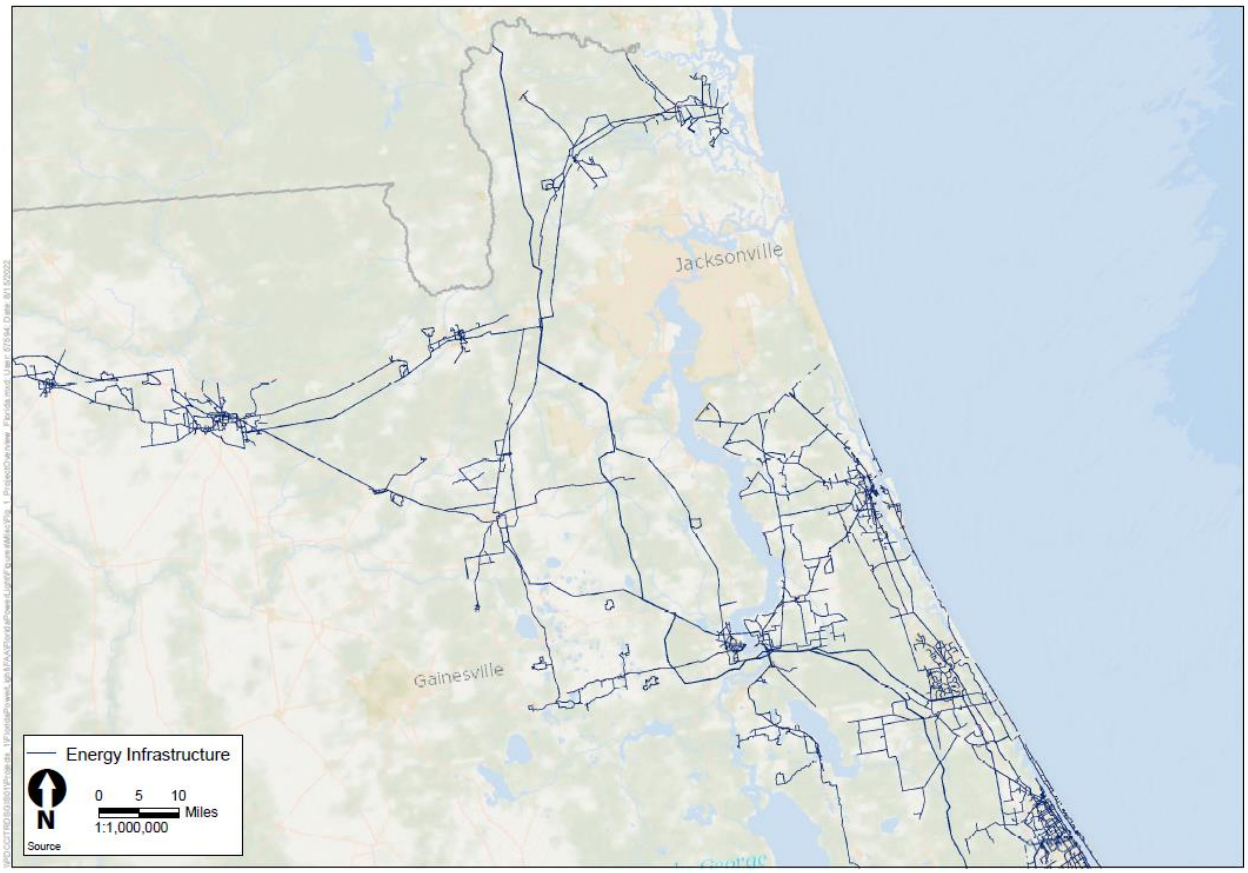

Figure E-3 of 7
Florida Power and Light - Florida Overview

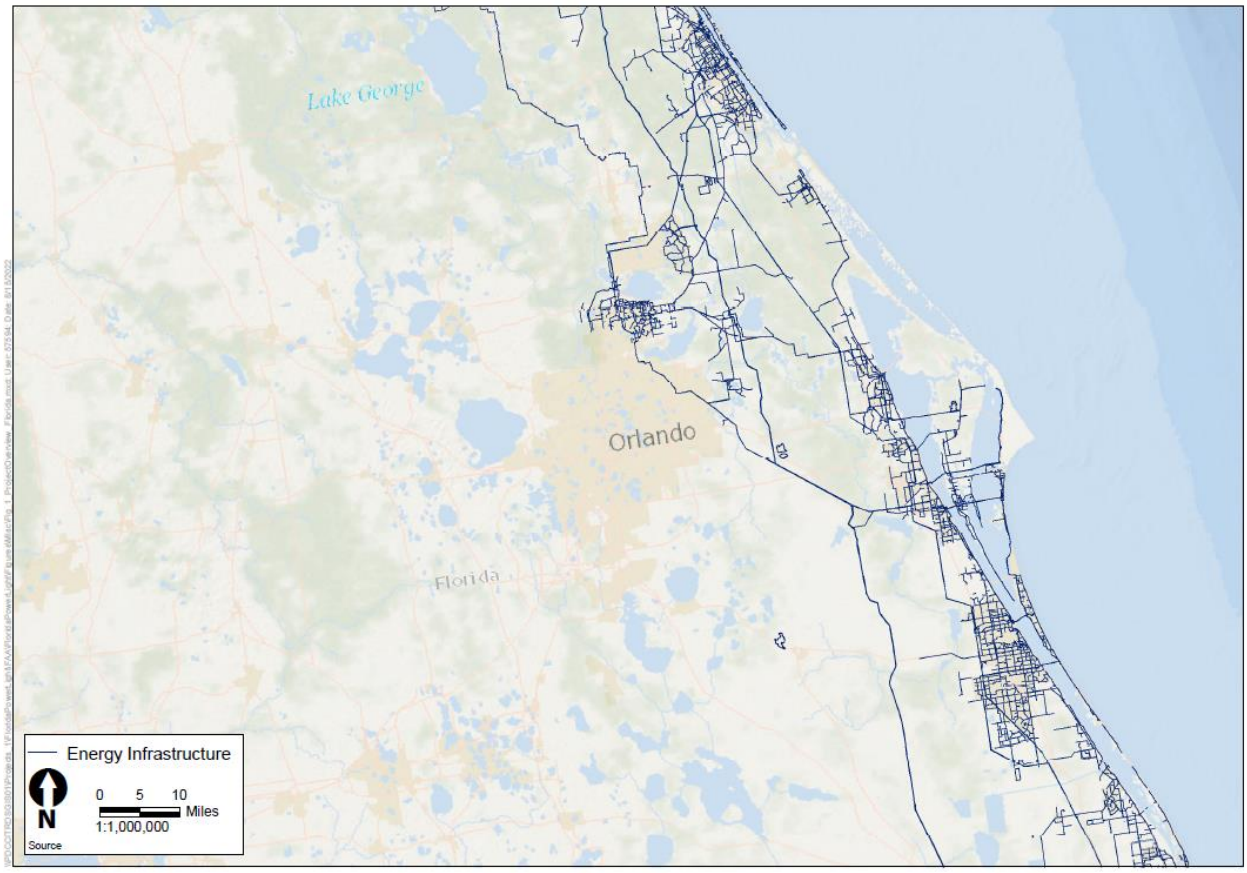

Figure E-4 of 7
Florida Power and Light - Florida Overview

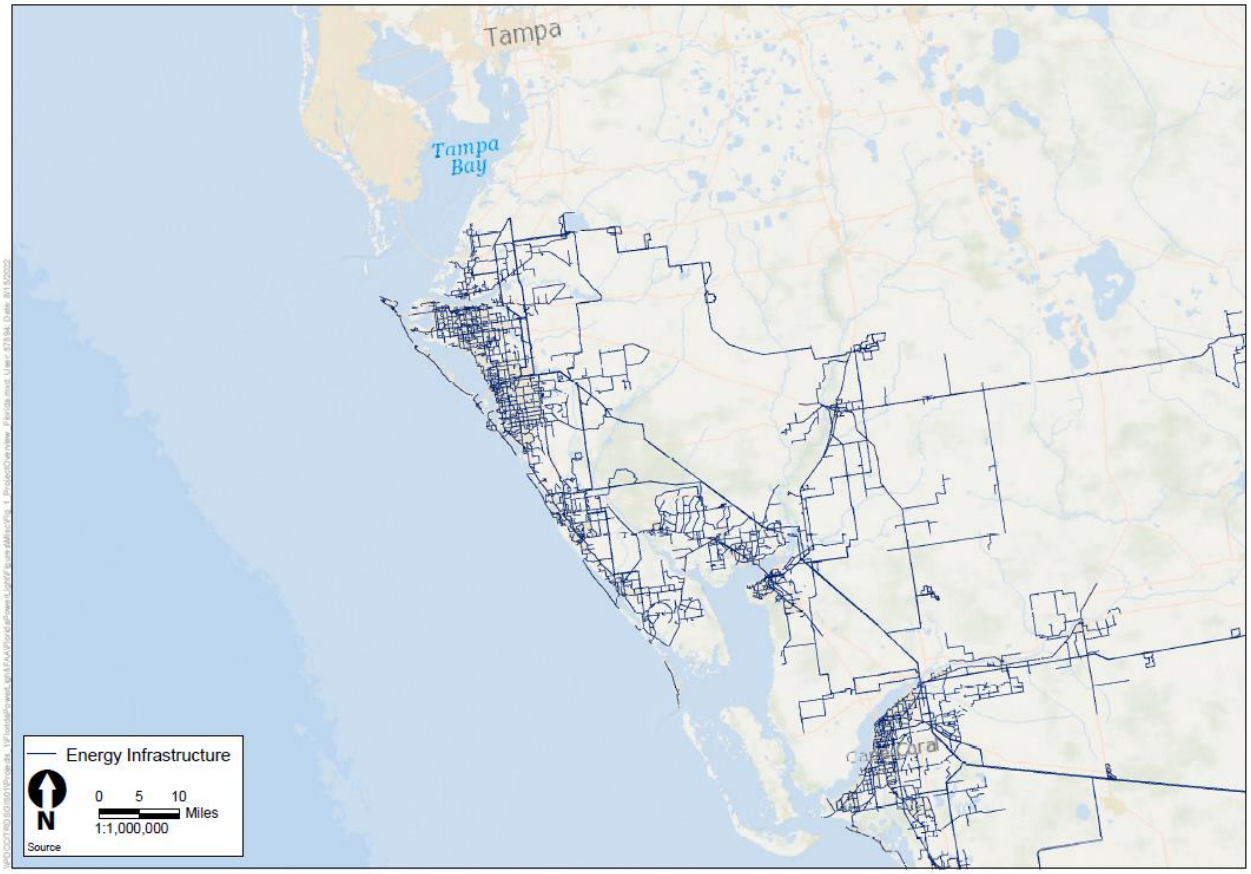

Figure E-5 of 7
Florida Power and Light - Florida Overview

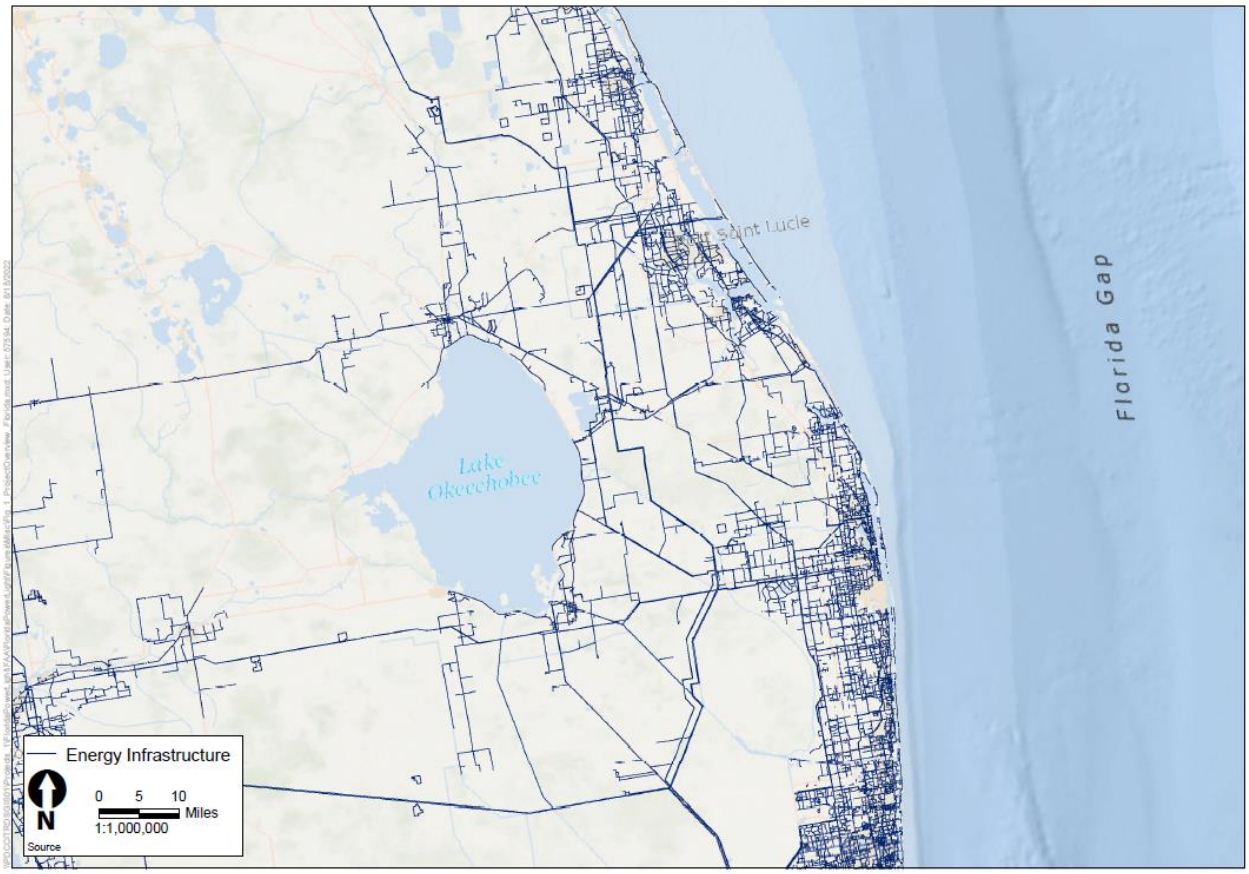

Figure E-6 of 7
Florida Power and Light - Florida Overview

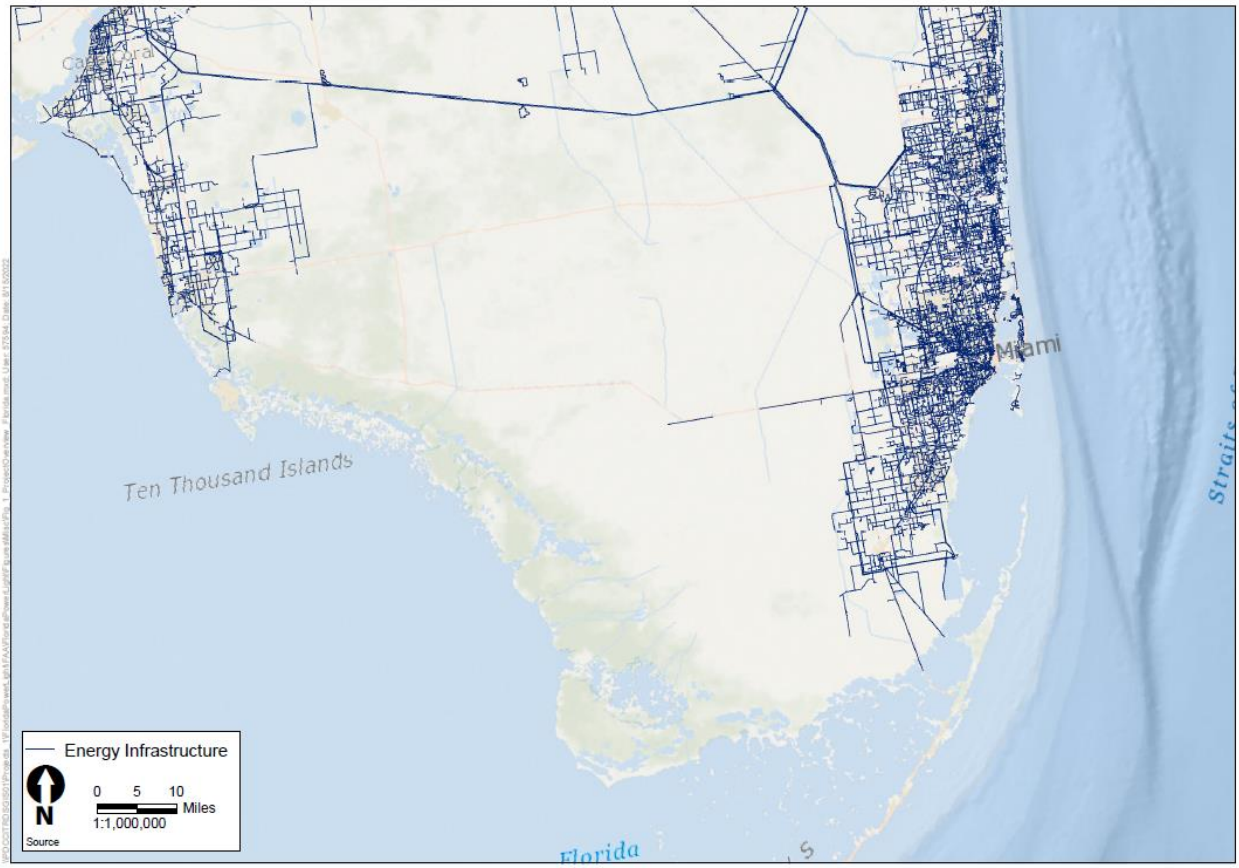

Figure E-7 of 7
Florida Power and Light - Florida Overview