United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, New York 13045

October 27, 2005

Mr. Louis Coakley
Florida Power and Light JES/JB
PO Box 14000
700 Universe Blvd.
Juno Beach, FL 33408-0420

Dear Mr. Coakley:

The U.S. Fish and Wildlife Service (Service) has reviewed the revised *Protocol for Marine Radar Surveys of Birds* dated October 13, 2005, for the Long Island Offshore Wind Park. The project sponsors, the Long Island Power Authority (LIPA) and Florida Power and Light Energy (FPLE), propose to monitor avian movements over the Atlantic Ocean, Great South Bay, and along the south shore of Long Island by the use of two mobile radar units. These studies are part of an effort to construct an offshore wind energy generating facility approximately 3.6 miles south of Jones Beach Island in West Gilgo, Town of Babylon, Suffolk County, and West Amityville and East Massapequa, Town of Oyster Bay, Nassau County, New York.

As part of the public review process, the Service and the Department of the Interior previously submitted comments to the U.S. Army Corps of Engineers (Corps) under River and Harbor Act Section 10 Permit Application Number 2005-00365-L4. Our previous comments, dated August 11, 2005, were submitted pursuant to, and in accordance with, provisions of the Fish and Wildlife Coordination Act (48 Stat, 401, as amended; 16 U.S.C. 661 et seq.), the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321 et seq.), the Clean Water Act (33 U.S.C. 1344), and the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712). Comments in this letter are considered technical assistance and do not prelude additional Service comments.

Project description

This project consists of constructing 40 wind turbine generators on individual steel tower monopoles with interconnecting submarine electric cables, an offshore electric substation platform, and a submarine electric transmission cable leading from the offshore substation to the existing onshore Sterling electric substation located in West Amityville. Each proposed 3.6 Megawatt (Mw) turbine would rise approximately 261 feet above Mean Low Water Level (MLWL). Three rotor blades, each measuring 182 feet in length, would rise 443 feet above the MLWL at the peak and be approximately 78 feet above MLWL at the bottom blade. These blades would turn at a rate of 8 to 16 revolutions per minute depending on wind speed. Turbine spacing would average approximately 2,155 feet apart in the 8 square mile project area. The total project area is estimated at 5,230 acres.

The proposed project is located within and adjacent to significant coastal natural resources. Great South Bay is part of the South Shore Estuary Reserve designated by the New York State Legislature and considered to be a highly productive habitat. Formed by barriers islands, the estuary provides significant cultural, economic, and natural values. Tidal wetlands in the area are home to a high diversity of plant and animal life.

These wetlands are a priority habitat for bird conservation along the Southern New England/Mid Atlantic Coast. Priority habitats are either in need of critical conservation measures or are critical for long-term planning to conserve regionally important bird populations. The maritime beach and dune communities have been identified as the highest priority habitat in the Southern New England/Mid Atlantic Coast Region (American Bird Conservancy and U.S. Fish and Wildlife Service 2000). Further, the U.S. Shorebird Conservation Plan indicates that significant areas for shorebirds in New York include the Long Island Atlantic Coast (and Jamaica Bay), Atlantic Coastal Salt Marshes, and Atlantic Coastal Beaches (Clark and Niles 2000). High energy beach fronts are used for foraging and breeding; sandy flats (including inlet interfaces at low tide) are used for foraging; and rock jetties and groins are used for foraging and loafing.

A wide variety of avian species can be found on the south shore of Long Island at all times of the year. Pelagic avian species such as alcids, shearwaters, and petrels have been observed off of the south shore of Long Island, but information is lacking on most species distribution (Bull 1974). Shorebirds commonly observed include black-bellied plover (*Pluvialis squatarola*), piping plover (*Charadrius melodus*), roseate tern (*Sterna dougallii dougallii*), greater and lesser yellowlegs (*Tringa melanoleuca* and *T. flavipes*), willet (*Catoptrophorus semipalmatus*), short-billed dowitcher (*Limnodromus griseus*), sanderling (*Calidris alba*), semipalmated sandpiper (*Calidris pusilla*), western sandpiper (*Calidris mauri*), least sandpiper (*Calidris minutilla*), and pectoral sandpiper (*Calidris melanotos*). Examples of other avian species found in the project area include great egrets (*Ardea alba*), snowy egrets (*Egretta thula*), black crowned night herons (*Nycticorax nycticorax*), little blue herons (*Egretta caerulea*), tri-colored herons (*Egretta tricolor*), glossy ibis (*Plegadis falcinellus*), greater black-backed gulls (*Larus marinus*), clapper rails (*Rallus longirostris*), saltmarsh sharp-tailed sparrows (*Ammospiza caudacuta*), and American oystercatcher (*Haemotopus palliatus*). The last two species are also included in the Service's 2002 Bird of Conservation Concern list for the Mid-Atlantic/New England Coast area.

At least 210 species of special emphasis, including 43 species of fish and 101 species of birds, have been found in the Great South Bay complex *Significant Habitats and Habitat Complexes of the New York Bight Watershed* (USFWS 1996). Areas along the south shore and within Great South Bay are of regional importance to wildlife and provide important economic benefits as well. Based on records of mid-winter waterfowl counts conducted every January from 1973 to 2004, the area off of the Long Island coast contains as much as 40 percent of all wintering waterfowl observed within the State during these surveys (New York State Department of Environmental Conservation [NYSDEC] 2005).

Radar protocol comments

Several meetings have been conducted between the resource agencies and the project sponsors to discuss avian monitoring protocols, beginning in the spring of 2004. Staff from the NYSDEC and the Service took part in these meetings and provided input on study methodology. The agencies recommended that surveys document the temporal and spatial distribution of wildlife in

the project airspace at all times of the day and night and over all seasons. Further, it was recommended that in addition to the aerial and boat surveys, other survey techniques be employed which document the movements of flying animals at night and during inclement weather conditions. Specifically, it was recommended that radar technology be used to determine migration characteristics such as flight directions, migration passage rates, and flight altitudes. Critically important information such as the relative proportions of birds flying through the proposed altitude of the turbine rotor swept area was requested. This information was requested for a multiple year period to account for among-year variability in migration patterns and weather conditions.

From a scientific and regulatory perspective, the 3-year period is sufficiently long enough that year-to-year variability should be sampled in a reasonably adequate fashion by the radar, acoustic, predator-prey, weather-related, and visual study protocols. The data should be sufficient to characterize the spatial and temporal uses of avian resources within the project area except for unusual or periodic events that did not occur during the sampling period. We would expect this data to be adequate to make siting decisions on a macro scale, and our hope is that it would be adequate for micro scale (individual tower) siting decisions.

While the sponsors chose to conduct aerial and boat-based avian surveys, the Service recommended on several occasions, including in meetings on April 19, 2004, December 20, 2004, and January 10, 2005, that using radar technology was an effective means of documenting wildlife distribution and abundance in the project area, especially for nocturnal migrants. This technology has been used to monitor birds on other offshore wind energy projects in the United States and Europe.

We disclosed the fact that, for the proposed Cape Wind project in Nantucket Sound, Massachusetts, radar equipment was able to detect greater than 600 times more targets than visual observations and in a shorter time period (COE 2004). The decision was made after being informed of the much more complete data set being collected by radar equipment on the Cape Wind offshore energy project. It was conveyed to FPLE that the Cape Wind project aerial and boat surveys resulted in the observation of approximately 210 birds flying at turbine height while the radar surveys conducted for the same project resulted in the tabulation of over 127,697 targets within the proposed rotor swept zone. This difference in data reflects the superior utility of radar equipment to determine avian abundance, location (including altitude), and direction of flight within the project airspace and potential impact zone.

In January 2005, FPLE proposed to conduct marine radar surveys from land to predict wildlife use of the project site and adjacent areas. However, given the distance of the radar unit from the project site, these land-based surveys would only detect larger birds (duck or goose sized targets) and not small or medium sized birds (such as passerines or bats). Further, the onshore radar equipment would not provide altitude data for targets above the project site and within the proposed rotor swept zone of the turbines. At that time, the Service recommended the use of a jack-up barge or offshore platform to facilitate the operation of a radar unit within the project site to adequately document bird and bat use, particularly within the height of the turbine blades. In February 2005, FPLE decided to cancel the radar study due to a lack of funding. In July 2005, FPLE reconsidered implementing the radar study and proposed to place an onshore unit at Tobay State Park. In addition, FPLE proposed to collect data from a radar unit mounted on a boat anchored within the project site.

We commend FPLE for the proposal to collect radar data for this project. A land-based radar unit will collect data on targets flying along the coast. It will also detect the location of duck and goose sized targets within the project area but, unfortunately, not accurately predict the altitude of those targets. It will also not detect small or medium sized birds or bats. In addition, the distance of the land-based radar unit to the project site may result in a target being counted as one animal but in reality may be a flock of small individuals, therefore, there is a potential to under estimate the number of targets.

As we expressed during our previous meetings, we do have concerns over the use of a boat mounted radar unit to collect data where it is needed the most, that is in the airspace above the project site. We previously, and continue to, recommended a barge or platform mounted radar unit located within the project area be used to gather adequate data on flying animals. A stable platform will allow accurate data to be gathered in both the horizontal and vertical modes within the project area. There should be more confidence in the data and the risk predictions as well.

Several radar experts recently discussed the use of a boat based radar unit at a meeting in our Hadley, Massachusetts, office. A panel of four experts provided information on radar applications and three of the four indicated that it would be very difficult to position, calibrate, and collect data from a moving vessel. Wind and wave chop were cited as potential problems because the radar unit must be kept level in order to collect accurate data on target altitude above the project airspace. Admittedly, page 5 of the protocol document states that "boat movement due to wind and wave action during radar operation has the potential to greatly confound interpretation of radar data." Also, the protocol indicates that acceptable conditions for boat based surveys may only occur 30 to 50 percent of the time.

Despite the potential problems, FPLE decided to pursue the boat based radar surveys instead of using a stable platform from which to operate the radar unit. A meeting was held on October 14, 2005, to discuss the radar surveys, problems associated with the work, and preliminary results. As of that date, less than 6 hours of radar data were recorded during two boat surveys due to rough water conditions. This data was collected primarily in the horizontal mode. The FPLE has proposed weekly searches using boat based radar equipment, but this schedule could miss peak migration days. As we have stated previously, this will provide insufficient data to characterize wildlife use of the project site. We recommend the radar unit be operating continuously in order to gather sufficient data. Marine radar data should be "ground-truthed" using portable thermal imagery, acoustic, or other monitoring equipment to confirm radar counts. We suggest the applicants consider using a combination of these technologies. Due to the wide range of unknown avian information, 3 years of pre-construction monitoring should provide meaningful data on species presence and uses of the habitat.

No information was gathered regarding target altitudes in the vertical mode. Unfortunately, if rough sea conditions persist during surveys with a boat based radar unit, insufficient data will be gathered on bird and bat distribution and abundance within the turbine locations and no information will be available to determine target altitudes within the site. Therefore, there will be no basis for an analysis of risk to flying animals from the proposed project.

Winter surveys from the land based and boat based radar units are proposed in the radar protocols. It is indicated in the protocol that the survey would encompass March 1 to March 14, 2006. We find that this time period is inadequate to characterize the avian use of the

project site during the winter period. We recommend that the survey be extended from November until March to capture wintering birds as well as late fall or early spring migrants.

Of concern are impacts to waterbirds which fly at varying heights above mean water levels. Will the lowest point of the rotor swept area, 78 feet above MLWL, be sufficient? Will plunge divers like northern gannets strike blades while feeding on fish? Will the wind facility disturb them, causing site abandonment? These and other questions should be answered.

As we indicated during our most recent meeting and in previous discussions, wintering waterfowl are found in large numbers off of the south shore of Long Island. Distribution of these birds may be correlated with food resources and weather conditions. In fact, a winter boat survey conducted on January 4, 2005, documented the second largest number of birds of any survey. According to Important Bird Areas of New York (Audubon 2005), surveys of wintering waterfowl indicate large numbers of birds use the Great South Bay. Approximately 25 percent of the State's American black ducks (*Anas rubripes*) and 22 percent of wintering scaup (*Aythya* spp.) are found in the waters off of the south shore. Therefore, it is important to understand the distribution and movements of these birds relative to the location of the proposed project facilities.

Also important in understanding wildlife use of the project site, but not included in the radar protocols, is the collection and analysis of weather data during the radar surveys. This information could correlate wildlife movement and distribution patterns with weather events and assist with a risk analysis. While FPLE has stated that weather information will be collected, it is not clear what data will be collected. It should be explained in the document what data will be recorded. It is our understanding that weather radar (NEXRAD 88) data will be reviewed but found no discussion of this information in the protocol.

Additional study needs

Federally-listed species found in the project which are under the jurisdiction of the Service include piping plover, roseate tern, and seabeach amaranth (*Amaranthus pumilus*). Preliminarily, the Corps has indicated these species may be affected by the proposed activity. We refer you to our August 11, 2005, letter to the Corps regarding the River and Harbor Act Section 10 permit application for this project. In our letter, we requested additional information on piping plover and roseate tern movements in and through the project area at all times of the year. This information is necessary to determine the project's potential effects on these species. Both the piping plover and roseate tern may be affected by collision hazards posed by the offshore turbines. We do not currently have data on how far offshore, or at what elevation, the piping plover or roseate tern migrates in this area; thus, we cannot predict what hazards wind turbines might present to these migrating birds. Additionally, more detailed project information is needed to determine potential impacts to nesting plovers and terns as well. In addition, we also requested information on construction areas to determine if the project will affect seabeach amaranth. We will be consulting, under Section 7 of the ESA, with the Corps and/or the Mineral Management Service regarding Federally-listed species and this project.

Some of the questions posed to the Corps regarding listed species and the proposed project include:

- Are migration routes along the coast or offshore? At what distance? At what altitudes?

- Do the migrating piping plovers and migrating, breeding, and/or staging roseate terns fly during the day, night, or both?

- If either of the species fly at night, are they affected by (attracted to, disoriented by) aviation warning lights?

- In addition to collision dangers, could the presence of wind turbines deter migrating plovers and terns from using important stopover sites?

- Are the species' migration patterns the same in the spring and fall?

We urge you to consider these questions and the information required to answer them as it relates to the current radar study protocol. If radar studies can, individually or in combination with other sampling techniques, obtain the information required to answer these questions, we recommend that the methods be implemented.

Summary

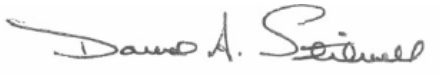
For this project, the Service recommends that 3 years of preconstruction studies be completed using a combination of radar (horizontal and vertical), acoustic, thermal imaging, direct field sampling, and visual (boat, barge, and aircraft) observation. The remote sensing techniques (such as radar and acoustic) should be operated continuously 365 days per year using a combination of land-based and ocean-based facilities. The visual observations should be conducted when the radar is being operated on a jack-up barge or other platform. The additional observations would be those necessary or advisable for the purpose of ground-truthing the remote sensing data, to assist other study elements such as weather-related effects, and to identify birds during periods of major movement or migration. Ideally, the study protocol will evaluate the response of avian use to weather events. This should include avian response prior to and after storm events, inclement weather such as rain, drizzle, and fog, and response of migrants to storms, frontal movements, and inclement weather.

Currently, the land based radar unit combined with unreliable or infrequent boat based radar data, falls short of providing sufficient information. If adequate data cannot be collected by a boat based radar unit, then insufficient information will be available to document wildlife use of the project airspace. This will result in an inadequate data set from which project-related risk can be accurately predicted.

Thank you for the opportunity to comment on the radar study protocols. We are available to meet with the project sponsors and the NYSDEC for additional discussions regarding avian studies, and it is our goal to develop adequate protocols to collect sufficient project data.

Please contact Timothy R. Sullivan at 607-753-9334 if there are any questions regarding this letter.

Sincerely,



David A. Stilwell
Field Supervisor

cc: West, Inc., Cheyenne, WY (D. Strickland)
ENSR, Inc., Westford, MA (P. Fleischauer)
NYSDEC, Albany, NY (Env. Permits)
NYSDEC, Stony Brook, NY (Env. Permit)
NYCOE, New York, NY (M. Miller)
EPA, New York, NY (L. Knutson)
NMFS, Milford, CT (D. Rusanowsky)
FWS, Hadley, MA (A. Hoar)
FWS, Wash. D.C. (A. Manville)
FWS, Islip, NY (R. Gnam)

Literature Cited:

American Bird Conservancy and U.S. Fish and Wildlife Service. 2000. Partners in Flight: Landbird Conservation Plan: Physiographic Region 9: Southern New England. Draft Report. 51 pp.

Audubon Society. 2005. Important bird areas of New York. Second edition. BookMasters, Inc. 352 pp.

Bull, J. 1974. Birds of New York State. Doubleday/Natural History Press. Garden City, NY. 655 pp.

Clark, Kathleen E., and L.J. Niles. 2000. U.S. Shorebird Conservation Plan. Prepared by Endangered and Nongame Species Program, NJ Division of Fish and Wildlife, 2201 Route 631, Woodbine, NJ 08270 and Members of the Northern Atlantic Shorebird Habitat Working Group. 26 pp.

New York State Department of Environmental Conservation. 2005. Internet site: http://www.nybirds.org/ProjWaterfowl.htm

U.S. Army Corps of Engineers. 2004. Cape Wind Energy Project Draft Environmental Impact Statement. 3800 pp.

U.S. Fish and Wildlife Service. 2002. Birds of Conservation Concern 2002. Division of Migratory Bird Management, Arlington, VA. 99 pp. Internet site: http://migratorybirds.fws.gov/reports/bcc2002.pdf

U.S. Fish and Wildlife Service. 1996. Significant Habitats and Habitat Complexes of the New York Bight Watershed. Southern New England-New York Bight Coastal Ecosystems Program. Charlestown, RI. 1025 pp.