

SOLICITATION FOR RESEARCH PROPOSALS

OCEAN/WIND POWER ECOLOGICAL BASELINE STUDIES

**BIDS DUE MAY 25, 2007
BY 5:00 PM**

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF SCIENCE, RESEARCH & TECHNOLOGY

APRIL 19, 2007

NJDEP Solicitation for Research Proposal

OCEAN/WIND POWER ECOLOGICAL BASELINE STUDIES **SCOPE OF WORK FOR RESEARCH SOLICITATION**

General Definitions

Addendum - Written clarification or revision to this SRP issued by the NJDEP.

Bidder – A vendor submitting a bid proposal in response to this SRP.

Contractor - The contractor is the bidder awarded a contract.

Division - The Division of Science, Research and Technology of the NJ Department of Environmental Protection.

May - Denotes that which is permissible, but not mandatory.

NJDEP – New Jersey Department of Environmental Protection

Shall or Must - Denotes that which is a mandatory requirement.

Should - Denotes that which is recommended, but not mandatory.

Solicitation for Research Proposal (SRP) - This document, which establishes the bidding and contract requirements and solicits bid proposals to meet the purchase needs of the Division.

State - State of New Jersey

Introduction

New Jersey's Blue Ribbon Panel on Development of Wind Turbine Facilities in Coastal Waters was formed by Executive Order 12 that tasked this Panel with three distinct charges:

1. Identify and weigh the costs and benefits of developing offshore wind turbine facilities, considering both economic and environmental costs and benefits;
2. Consider the need for offshore wind turbines and a comparison to other electric power sources, including fossil, nuclear and renewable fuels as part of the state's long-term electricity needs, and
3. Submit to the governor a report providing policy recommendations regarding the appropriateness of developing offshore wind turbine facilities.

The Blue Ribbon Panel's Final Report to the Governor was issued in April 2006. Recommendation 4 stated: "The state should conduct baseline studies of New Jersey's coastal waters to inform federal rules regulating use of such areas, to develop spatial and temporal information regarding ocean uses and living natural resources, and to assess tourism and related economic sectors." This recommendation was further explained in terms of ecological resources as:

"Baseline data should be collected regarding the distribution, abundance, and migratory patterns of avian species, fish, marine mammals and turtles in the offshore area where development may be feasible. These data may be gathered variously by physical counts by boat and airplane, remote sensing by radar and sonar applications, and historic record reviews. Data collection should be designed to answer fundamental questions regarding which species use what areas and

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to what degree, and collected data should be made available to inform risk assessment and cumulative impact modeling.”

The New Jersey Department of Environmental Protection (NJDEP), Division of Science, Research & Technology (DSRT) is issuing this Solicitation for Research Proposals (SRP) in order to address the ecological/natural resource portion of the Blue Ribbon Panel’s Recommendation 4, as well as to provide the information needed to assess potential environmental impacts of offshore wind turbine facilities on the natural/ecological resources of this region.

Purpose of the Study

The objective of this study is to conduct baseline studies in waters off New Jersey’s coast to determine the current distribution and usage of this area by ecological resources. For example, the waters off New Jersey’s coast serve numerous species of birds and are a critical part of the Atlantic Flyway, an important migration route for many species including Threatened, Endangered and Species of Special Concern. The goal is to provide GIS and digital spatial and temporal data on various species utilizing these offshore waters to assist in determining potential areas for offshore wind power development.

The scope of work includes the collection of data on the distribution, abundance and migratory patterns of avian, marine mammal, sea turtle and other species in the study area over an 18-month period. These data, as well as existing (historical) data, will be compiled and entered into digital format and GIS-compatible electronic files.

Study Area

The contractor shall perform work within the confines of the Study Area. The Study Area (Figure 1) is defined as the waters offshore of the coast of New Jersey starting from the shoreline and continuing out to 20 nautical miles offshore (approximate 100-foot depth contour). This zone will be surveyed from the area adjacent to Seaside Park (approximate latitude/longitude 39° 55’ 56” N, 74° 04’ 10” W) south to Stone Harbor (approximate latitude/longitude 39° 01’ 58” N, 74° 46’ 11” W) and extending 20 nautical miles perpendicular to the shoreline. This area is approximately 1,360 square nautical miles (i.e., 68 x 20 nautical miles) in size and excludes Delaware Bay and areas off the New Jersey coast with known major constraints for offshore wind power (e.g., air-restricted zones, significant water habitat, shipping lanes).

Major Data Gaps

One purpose of this contract is for the contractor to collect data that will fill various data gaps that exist within the study area for avian species, marine mammals, sea turtles, fish and shellfish. Those data gaps include:

Avian Species: Data are lacking on the abundance, distribution, and flight behavior (i.e., height and regular pathways) for bird species in the offshore waters of New Jersey. The majority of data on avian use are primarily from within one mile of the New Jersey shoreline and the use of offshore waters (>1 mile from the coast) by avian species is relatively unknown. Much of the existing data are from informal sources such as bird watchers; few systematic studies have been

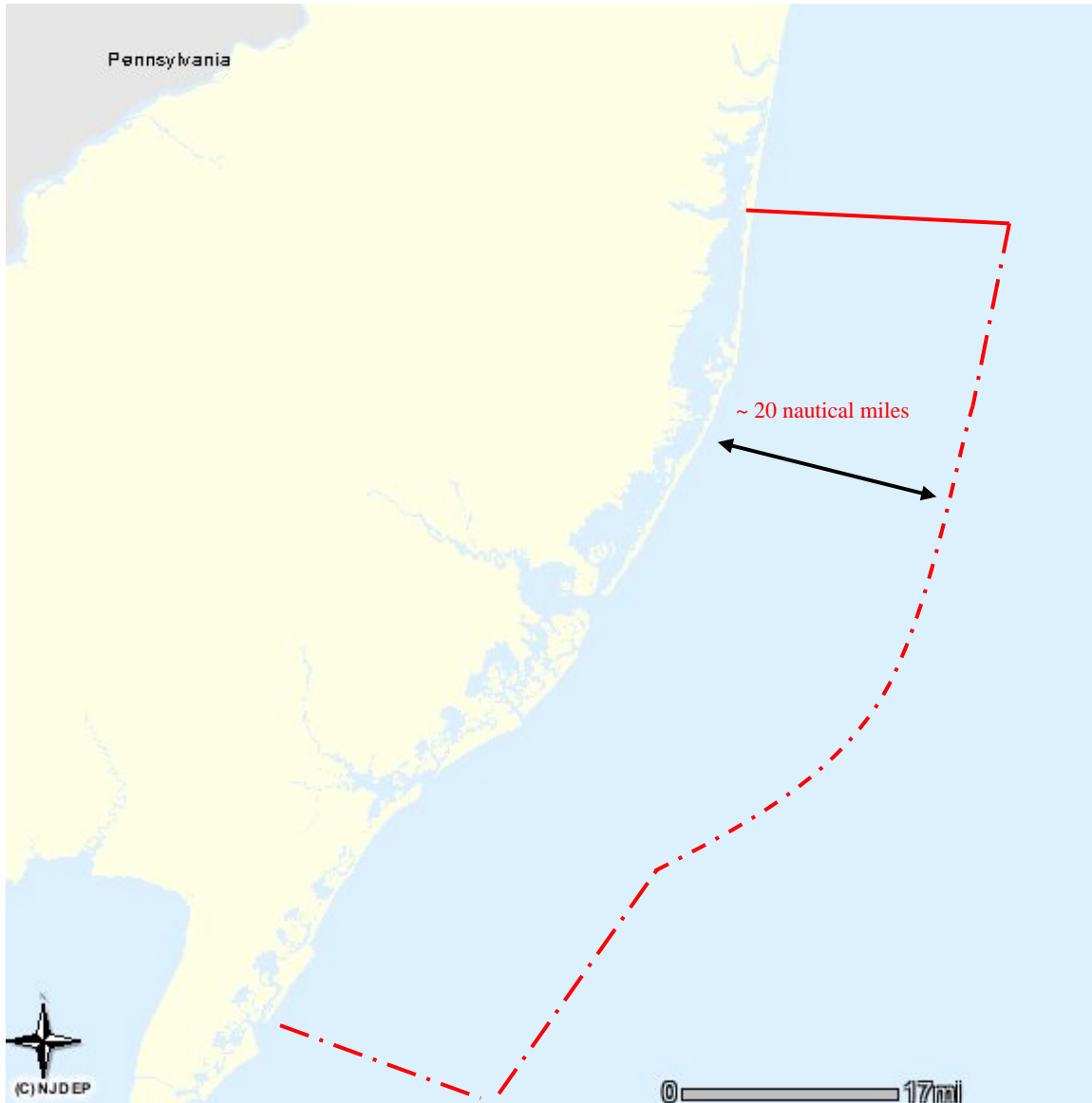


Figure 1. Study Area (approximate boundaries)

conducted. Data are also needed on the distribution, abundance and behavior of birds during conditions (e.g., fog, night, poor visibility) where wind turbines may have greater impacts.

Marine Mammals: Most data previously gathered along the New Jersey coast focused on marine mammals within one mile of shore or were from ship/aerial surveys conducted on the continental shelf. Population estimates are available but have been deemed unreliable due to spatial and temporal data variability. There is a limited data set for the Study Area (out to 20 nautical miles offshore), but standardized abundance data and information on movement pathways are lacking.

Sea Turtles: Available data indicates that most turtle sightings in waters off New Jersey's coast are made during the summer months of June through August, however, turtles can be found in New Jersey waters from May to November. Data sources include tracking devices (e.g., satellite

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tracking), bycatch, strandings, and accidental encounters. There is a very limited data set for the Study Area (out to 20 nautical miles offshore), and essentially no standardized abundance data.

Fish and Shellfish: There are numerous data in the literature on commercial and recreational landings, as well as reports on the distributions of species (e.g., NJDEP and National Marine Fisheries Service reports). Both NJDEP and Federal agencies conduct surveys of offshore waters for fish and shellfish. Therefore, existing data are available to assess the spatial and temporal distribution of most major commercial and recreational species in offshore waters. The major data gap is the lack of a recent and comprehensive compilation of spatial and temporal data on these species in a digital and GIS-compatible format.

Objectives

In collecting data for this contract, the contractor shall provide data and submit reports that will help the State answer questions regarding the potential impacts that wind power facilities in the Study Area will have on the species that are the focus of the study. This project will provide data to address the following questions:

1. What are the abundance, distribution, flight behavior (i.e., height and regular pathways), and utilization (e.g., feeding, breeding) of bird species in the Study Area?
2. What are the abundance, utilization, and distribution (e.g., feeding, breeding) of marine mammals in the Study Area?
3. What are the abundance, utilization, and distribution (e.g., feeding, breeding) of sea turtles in the Study Area?
4. What are the abundance, utilization, and distribution of other marine biota (e.g., fish, shellfish) in the Study Area?
5. What is the distribution of other existing natural resources, including, but not limited to, shoals, sand borrow areas, artificial reef sites, and other pre-existing resources in the Study Area?
6. Using predictive modeling, mapping, and environmental assessment methodologies what portions of the study area are more or less suitable for wind/alternative energy power facilities based on potential ecological impacts?

Avian Baseline Study

The contractor shall perform the data collection needed to provide an avian baseline study and shall submit the information in draft and final reports. The primary risks of wind turbines to avian species are collisions, potential exclusion to preferred habitats, disturbance, and increased risk of oil spills from ship collisions with structures. All wind power impacts data in the United States have been collected in terrestrial systems. However, considerable studies of impacts in marine systems have been conducted in Europe. As recommended by the Blue Ribbon Panel (NJ, 2006), this baseline study will be based on those methods used successfully in European studies of offshore wind power (for example Horns Rev and Nysted Wind Farms; see references).

Therefore, the contractor will assess the spatial and temporal distribution of bird populations off the coast of New Jersey, including migratory and resident species, throughout the year. In order to use baseline data in later evaluations (e.g., impact analysis), the contractor shall prepare a

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model that can predict the probability of avian usage on a spatial and temporal basis. For example, this could include the use of spatial modeling techniques that use line-transect data and additive models to construct bird density surfaces as a function of spatially explicit covariates (Hedley et al. 1999, Hedley & Buckland 2004, Clarke et al. 2004, Fox & Petersen 2006). The general survey design is to conduct the appropriate type of sampling of the study area over 18 consecutive months to maximize the power of the predictive model that will be developed. The contractor in conjunction with NJDEP will define the spatial and temporal variables of interest. These will include but not be limited to water depth, shoals, location (e.g., cell, distance from shore) and season. The contractor shall perform work such that the critical spring or fall migration periods are sampled twice. Data collected by the contractor in Year 1 of the study will be used to populate and calibrate the model, while subsequent data (i.e., months 13 to 18) will be used to populate and validate the model. The second year of sampling (e.g., second fall season) will utilize both Year 1 surveying techniques (e.g., to estimate year to year variability), as well as non-random sampling to examine variables that affect bird distribution. These variables include time of day, season, weather, and others that could aid in determining the distribution of avian species during breeding, wintering and migration. The predictive model and data collection design will include assessment of the model's power and accuracy and will be detailed in subsequent project reports.

The contractor shall propose a model and baseline study design in their proposal. Based on a thorough literature review and in consultation with NJDEP, the contractor conducting the baseline study will develop the predictive model and complete the final study design to meet the (e.g., statistical) needs of this model. For example, this design could consist of stratified random sampling within the study area (e.g., 2 x 2 nautical mile grid = 340 grid cells) during Year 1 (e.g., October to September). Subsequent sampling in Year 2 (e.g., October to March) would conduct stratified random sampling to examine data variability and additional non-random sampling to examine the variables of concern that affect bird behavior and distribution. This study will assess the spatial and temporal distribution of bird populations off the coast of New Jersey through all seasons. More frequent surveys may need to be conducted during peak migration periods.

Methods: The contractor shall collect data for the avian baseline study from aerial transect surveys, boat transect surveys, and marine radar sensing to determine the abundance, distribution, utilization, and flight behavior of birds in the Study Area. The contractor will identify all birds to as fine a scale as possible (e.g., to species or guild) given the survey methodology utilized.

Aerial transect surveys conducted by the contractor will be at defined intervals during the study period of approximately 18 months (minimum of 1 survey per month). The contractor shall provide and use a fixed high-wing, twin-engine or single-engine float-equipped aircraft with good all-around visibility (e.g., bubble windows) to fly within the Study Area according to the final design at an altitude of approximately 150 feet and speed of 100 knots. The contractor shall provide at least two experienced biologists to record all observations (including species, number, approximate altitude, behavior, sources of food, transect number, and time). The contractor shall utilize a Global Positioning System (GPS) unit to record latitude and longitude at five-second intervals. Surveys will be flown only under appropriate conditions (e.g., visibility, sea state) as defined in consultation with Federal and State representatives. Weather conditions will be recorded for all surveys (e.g., temperature, wind speed and direction, percent cloud cover,

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barometric pressure, precipitation, etc). Any substantial changes in weather just prior to surveys (e.g., 24 hrs) or during surveys will also be noted. Survey methods will generally follow U.S. Fish & Wildlife Service methods (e.g., Fisher et al., 2002) and Camphuysen et al., (2004).

The contractor shall perform boat line-transect surveys during daylight hours at defined intervals during the 18-month study period. It is estimated that 1-2 boats will be needed to assess the Study Area during each survey period (minimum of 1 survey per month). The contractor shall provide two (2) experienced biologists per boat, who will use the appropriate sized image-stabilized binoculars to enumerate, estimate flight altitude, identify bird species out to an established range, and record other observations (e.g., behavior, sources of food). Survey methods will generally follow Gould and Forsell (1989) and Camphuysen et al., (2004). The bidder shall consider the **feasibility** (e.g., in terms of survey designs, and cost efficiency) of **conducting all boat surveys concurrently** (i.e., avian, marine mammal and sea turtle).

The third technique utilized by the contractor shall involve the use of radar technology (i.e., bird detection radar systems) for observing avian usage and migration patterns (including during night migrations and periods of poor visibility). The contractor shall provide and use a radar configuration that has the ability to collect data in a vertical and horizontal direction at multiple stations within the study area. The contractor will site these stations on a stable temporary platform (e.g., spud barge) in the study area, as this configuration will allow a more comprehensive survey zone. The contractor will propose and justify a survey design that maximizes data collection in order to describe avian usage of the Study Area. This technology is currently being used in Europe for studies of wind turbines. The radar surveys can be run 24 hours a day for an extended period of time allowing for a complete assessment of avian usage of the surrounding area.

The contractor may use other appropriate survey/sensing techniques (e.g., bioacoustics), in addition to the three techniques listed, provided those proposed methods are approved by the State Contract Manager in advance. The contractor shall provide a complete written description of the alternate data collection methods, including, but not limited to, expected quality assurance, schedules and procedures related to the alternate technique.

The contractor shall collect data from scientific literature, databases (e.g., OBIS-SEAMAP) and recent/ongoing research and shall add this data to the digital database. These data will also be used by the contractor to determine the spatial and temporal distribution of avian species off the New Jersey coast.

Marine Mammal and Sea Turtle Baseline Study

The contractor shall perform a marine mammal and sea turtle baseline study concurrently with the 18-month avian baseline study.

Studies of wind turbine impacts on marine mammals have been conducted in Europe (e.g., Elsam Engineering & ENERGI E2, 2005). As recommended by the Blue Ribbon Panel (NJ, 2006), the design of this baseline study will be based on methods used in Europe as well as standard methods used in North America. The contractor shall assess the spatial and temporal distribution of marine mammals and sea turtles in waters off the New Jersey coast throughout the year.

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Marine Mammals: The contractor shall utilize three techniques to determine the spatial and temporal abundance, distribution and behavior of marine mammals in the Study Area. The contractor shall consider the use of telemetry (e.g., satellite tracking) as an additional technique and propose and justify the method should the contractor consider telemetry as a method that will provide valuable additional information. The contractor's final survey design, data recording methods, and safety guidelines shall be prepared in consultation with the NJDEP, the National Marine Fisheries Service (NMFS) Northeast Fisheries Science Center (NEFSC) personnel and other marine mammal experts identified by NJDEP. The contractor shall follow the recommendations of the NEFSC. All surveys will include recording observations on the presence of food sources of marine mammals.

The contractor shall perform aerial line-transect surveys for marine mammals in the Study Area in conjunction with the sea turtle surveys. The contractor shall conduct surveys at least monthly, and sample days will be randomly sampled during each month (e.g., 1-2 trips per month). The contractor shall provide and utilize a fixed high-wing, twin-engine aircraft with good all-around visibility (e.g., bubble windows) to fly along transect lines perpendicular to the shoreline within the Study Area (i.e., shoreline to 20 nautical miles offshore) at an altitude of approximately 500 feet and speed of 100 knots. Transect lines will be fixed and 2 miles apart for a total of 35 transects per survey. The contractor shall provide two experienced biologists to record all observations of marine mammals (including species, number, behavior, transect number, and time). The contractor shall provide a GPS unit to record latitude and longitude at five-second intervals for correlation to field observations. When feasible, digital photographs of marine mammals will be taken. Photographs of right whales will be provided to the New England Aquarium photo-identification database. Weather conditions will be recorded for all surveys (e.g., temperature, wind speed and direction, percent cloud cover, barometric pressure, precipitation, etc). Any substantial changes in weather just prior to surveys (e.g., 24 hrs) or during surveys will also be noted. In addition, the observers will note the presence of boats, other aircraft, etc. that may affect the abundance, distribution and behavior of marine mammals along each transect. Surveys will be flown only under appropriate conditions (e.g., visibility, sea state) as defined in consultation with Federal and NJDEP representatives.

The contractor shall perform boat line-transect surveys for marine mammals in the Study Area in conjunction with the sea turtle surveys. Surveys will be conducted during the day along the same 35 transects used for the aerial surveys at an interval of once per month (i.e., random days) for a total of 18 surveys. It is estimated that two boats traveling at 10 knots will require 3-4 days to complete a survey trip. However, the contractor shall provide its estimate for the time and resources needed to perform boat line-transect surveys. The contractor shall provide two (2) experienced biologists per boat that shall use the appropriate sized image-stabilized binoculars to enumerate, identify and determine the behavior of marine mammal species out to an established range.

The contractor shall use hydrophone technology for detecting marine mammals. Marine hydrophone technologies are available in many forms and can be either mobile (towed behind a boat) or sessile (anchored to a station or buoy). Acoustics from different species generate different profiles on the hydrophone allowing for species identification and location. The contractor shall use a hydrophone equipped vessel to collect data along the boat transects (e.g. during line-transect surveys). Alternatively or additionally, the hydrophone shall be set up by the contractor on a stationary platform (e.g. spud barge) or anchored (e.g. surface buoy or

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submerged) and monitored from various locations in the Study Area. The contractor shall identify which technology it will use and justify the selected method and sampling design.

The contractor shall obtain or shall assist NJDEP in obtaining (e.g. by providing all needed information) any permits (e.g., NMFS) needed to conduct surveys in waters offshore of New Jersey.

The contractor shall also use data from scientific literature, databases (e.g., OBIS-SEAMAP), sightings reports from the NJ Marine Mammal Stranding Center, and recent/ongoing research (e.g., Rutgers University, J. Toth, pers. comm.) and shall add this information to the digital database. These data will also be used to determine spatial and temporal distribution of marine mammals off the New Jersey coast.

Sea Turtles: The contractor shall utilize three (3) techniques to determine the spatial and temporal abundance, distribution and behavior of sea turtles in the Study Area. The contractor's final survey design, data recording methods, and safety guidelines shall be developed in consultation with the NJDEP and sea turtle experts (e.g., NMFS NEFSC personnel). The contractor shall follow the recommendations of the NEFSC. All surveys will note observations of sea turtle food sources (i.e., prey).

The contractor shall conduct aerial line-transect surveys in conjunction with the marine mammal surveys and shall use the same sampling periods and reporting methods as specified for the marine mammal survey. The contractor shall provide and use a fixed high-wing, twin-engine aircraft with good all-around visibility (e.g., bubble windows) to fly along transect lines perpendicular to the shoreline within the Study Area (i.e., shoreline to 20 nautical miles offshore) at an altitude of approximately 500 feet and speed of 100 knots. Transect lines will be fixed and 2 miles apart for a total of 35 transects per survey. The contractor shall provide two (2) experienced biologists to record all observations (including species, number, behavior, transect number, and time). The contractor shall provide a GPS unit to record latitude and longitude at five-second intervals for correlation to field observations. Weather conditions will be noted as detailed for the marine mammal surveys. Surveys will be flown only under appropriate conditions (e.g., visibility, sea state) as defined in consultation with Federal and NJDEP representatives. When feasible, digital photographs of sea turtles will be taken.

The contractor shall conduct boat line transect surveys for sea turtles in conjunction with the marine mammal boat surveys during the day along the same 35 transects used for the aerial surveys at an interval of once per month (i.e., random days) for a total of 18 surveys. It is estimated that two boats traveling at 10 knots will require 3-4 days to complete a survey trip of the Study Area. However, the contractor shall provide its estimate for the time and resources needed to perform boat line-transect surveys. The contractor shall provide two (2) experienced biologists per boat that shall use the appropriate sized image-stabilized binoculars to enumerate, identify and determine the behavior of sea turtle species out to an established range.

The contractor shall review and include data from databases (e.g., OBIS-SEAMAP), sightings reports, power plant impingement reports, scientific literature and data on commercial bycatch. These data will be compiled by the contractor and added to the digital database to assist in determining the spatial and temporal distribution of sea turtles off the coast of New Jersey.

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In addition to the three (3) required methods, the contractor shall consider the use of telemetry (e.g., satellite tracking) as an additional data gathering technique. If the contractor proposes use of telemetry, they shall provide a justification for this technique in the proposal.

The contractor shall obtain or shall assist NJDEP in obtaining (e.g. by providing all needed information) any permits (e.g., NMFS) needed to conduct surveys in waters offshore of New Jersey.

Aquatic Baseline Studies

The contractor shall incorporate existing Federal and State data, as well as other data sources, into the digital database. These data will be used to map the spatial and temporal distributions of major marine fish and shellfish species in the Study Area. The contractor shall prepare and submit those maps as part of the draft and final reports to be submitted for this contract. Sources to consult include the National Marine Fisheries Service (e.g., Northeast Fisheries Science Center), the Atlantic States Marine Fisheries Commission (ASMFC), the Mid-Atlantic Fisheries Management Council (MAFMC), and the New England Fisheries Management Council (NEFMC) (e.g., fisheries management plans and Essential Fish Habitat (EFH)), as well as local researchers (e.g., value of sand shoals by Rutgers University). For shellfish the maps to be prepared and submitted shall consist of GIS maps showing the latest densities and distribution of two important commercial species (i.e., surf clam and quahog). The contractor shall use NJDEP (1982) fishing grounds maps along with the most recent data available for the Study Area. These maps will be digitized and converted by the contractor into GIS format (e.g., GIS layers) so that the contractor can produce a cumulative picture of offshore distribution. The contractor shall prepare these maps on a seasonal basis.

Other Natural Resources

The contractor will compile existing data on the distribution of other natural resources including, but not limited to: shoals, sand borrow areas, artificial reef sites and other resources in the Study Area. Federal and State data, as well as other data sources will be compiled and added to the digital database and used to map in GIS the spatial distributions of these resources.

Environmental Assessment of Impacts

The Ecological Baseline data collected and reported by the contractor shall be used by the contractor to conduct an assessment of potential environmental impacts (e.g., noise, cable EMF and thermal impacts, displacement/loss of habitat) related to the construction and operation of offshore wind power facilities in the Study Area. The contractor shall submit a written environment assessment impact report and submit it to the State Contract Manager as part of the deliverables under this contract. The collection, presentation and evaluation of data provided by the contractor shall address the following issues:

- Avian utilization, abundance, and distribution
- Marine mammal utilization, abundance, and distribution
- Sea turtle utilization, abundance, and distribution
- Potential impacts to birds (including migratory routes)
- Potential impacts to marine mammals (e.g., whales, dolphins)

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- Potential impacts to sea turtles
- Federal & State threatened and endangered species
- Potential impacts to aquatic life and their habitat: fish and benthos (e.g., invertebrates, bivalves, etc) and submerged aquatic vegetation
- Lighting impacts
- Impacts to air quality
- Impacts to water quality
- Impacts to the seabed, wetlands and uplands (e.g., transmission cables)
- Noise impacts
- Cumulative impacts
- Any other important potential environmental impacts

The contractor shall consider two (2) classes of environmental impacts, including potential permanent changes connected with the construction and operation phases of a wind power facility, and potential temporary changes during the construction phase. The contractor shall incorporate all relevant available information and data into its assessment and shall build its report and assessment upon existing studies including, but not limited to, the New Jersey Offshore Wind Energy: Feasibility Study (December 2004) by Atlantic Renewable Energy Corporation (AREC) and AWS Scientific, Inc. (AWS).

Data will be compiled by the contractor and the contractor shall define and characterize the existing condition within the Study Area for all environmental topics in order to estimate the potential impacts of construction and operation of a wind turbine facility and associated infrastructure. The contractor's assessment will include a literature review of potential and known impacts, including data and information from planned and operating offshore wind facilities (e.g., those in Europe). The contractor shall review and reference the Programmatic Environmental Impact Statement (EIS) for the Outer Continental Shelf (OCS) Alternative Energy and Alternate Use (AEAU) program and associated regulations issued by the Minerals Management Service (MMS, 2007) for this task. This Environmental Assessment of Impacts shall be prepared and submitted in the Draft Final Report and Final Report.

Reporting

The contractor shall submit quarterly progress reports to the NJDEP every three months during the 18-month baseline survey period. These progress reports will identify the work completed/not completed during the preceding 3-month period for each major task, and will note any significant observations and data analysis results, as well as problems encountered by the contractor and their actual or proposed resolution. The contractor shall prepare and submit an interim report at the one-year mark of the project summarizing the data collected to date and the draft avian predictive model. The contractor shall prepare and submit a draft final report that provides a description and summary of all major tasks. The contractor shall prepare and submit twenty-five (25) copies summarizing all data approximately 3 months after completion of the baseline survey field work. This report will summarize and analyze all collected data, the results of the literature reviews, environmental assessment, field sampling including methods, modeling and GIS mapping. The draft final report will be revised within 60 days to address all NJDEP comments. The contractor shall prepare and submit a final report that addresses NJDEP comments, and 25 (twenty-five) copies shall be submitted for approval/acceptance by NJDEP.

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All reports will include the required sections and format as specified by NJDEP and will be supplied in digital format in addition to a paper/hardcopy format. Digital deliverables used in the impact analysis and the maps created for these reports will be in GIS and GIS-compatible formats. All digital data will be submitted using appropriate software, as specified by NJDEP, and in the same version of said software that is in use by the NJDEP at the time of submittal (currently Word, Access, Excel, ArcGIS).

All of the avian data and the avian predictive model will be used by the contractor to create probability maps for major bird species. Each map prepared by the contractor shall plot the spatial and temporal probability of occurrence and/or abundance of species or groups of species (i.e. guilds) in the Study Area. These contractor prepared GIS maps and GIS-layers and the model used to create the maps can later be used for the spatial and temporal assessment of the impacts of wind turbines on bird species in the Study Area (e.g., for particular locations). The contractor shall prepare GIS maps that show species abundance by month, migration routes, and flight altitude (e.g., species flying from 0 to 500 feet, 500-1,000 feet, etc. above sea level).

All available marine mammal, sea turtle, fish and shellfish species data will be used by the contractor to create, prepare and submit Density Index maps and those maps shall be included in the final report. These will be GIS maps showing the spatial and temporal densities of species in the Study Area. The contractor shall prepare GIS maps that show species abundance by month and migration routes.

All contractor generated GIS data submitted to the NJDEP shall conform to the Mapping and Digital Data Standards as established by NJDEP, Office of Information Resources Management, Bureau of Geographic Information System (<http://www.nj.gov/dep/gis/njdepstandards06.pdf>). Raw/reduced data will be provided to the State on a quarterly basis in a suitable electronic format (e.g., Microsoft Excel, Access) that is in conformance with these standards.

Project Management

The contractor shall designate a Project Manager, who shall be the one point of contact with the NJDEP. The Project Manager shall be responsible for monitoring and ensuring progress of all tasks and subtasks, managing and maintaining communication with all project and subcontract personnel including adherence to budget, and providing regular updates to the NJDEP.

Quality Assurance

The contractor shall prepare and submit a Quality Assurance Work Plan (QAWP) to cover all field sampling and data analysis activities (e.g., data quality objectives, modeling, statistical procedures, standard operating procedures, data recording, instrument calibration, etc). The QAWP will include descriptions of the sampling designs and methods, and quality control/quality assurance practices including observer efficiency (e.g., number of misidentifications/number of correct identifications). A draft of the QAWP shall be submitted to the State Contract Manager for review and comment. The contractor shall revise the QAWP in response to any NJDEP comments submitted to the contractor through the State Contract Manager.

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Schedule

The project period shall be September 1, 2007 through September 30, 2009. The field portion of the project will begin October 1, 2007 and continue until March 31, 2009. Any changes to this schedule shall be approved through a contract amendment.

Budget

This will be a fixed price contract. Contingencies (e.g., weather delays) shall be built in to the quoted price. The submitted budget will show specific staff, hours, equipment, travel and other costs for each task. The funding ceiling for this project is \$4,464,000. No contract will be awarded above the funding ceiling.

All work conducted by the contractor must be conducted within the United States of America.

Payment Schedule

Interim expenditure reports shall be submitted on a deliverable basis. Progress payments shall be made on submission of deliverables in accordance with the project specifications and requirements. Progress payments shall be made upon receipt and approval of the Quality Assurance Work Plan, Quarterly Reports, Interim Report, Draft Final Report and Final Report.

Scope of Major Work Tasks

The contractor shall perform the following work and submit deliverables related to:

- (1) **Quality Assurance Work Plan:** the contractor shall develop the QAWP and implement the approved Quality Assurance activities.
- (2) **Literature Review:** (a) the contractor shall evaluate avian distribution, abundance, and habitat use predictive/probability models; (b) the contractor shall summarize studies of the potential impacts of coastal wind power facilities completed/underway in Europe and North America.
- (3) **Digital Data Compilation:** (a) the contractor shall compile existing data on the distribution, abundance, and use by birds, marine mammals, sea turtles, fish, and shellfish in waters off the coast of New Jersey; (b) the contractor shall compile existing data on the distribution of other natural resources including, but not limited to: shoals, sand borrow areas, artificial reef sites and other resources in the Study Area.
- (4) **Avian Predictive/Probability Model:** the contractor, in consultation with the NJDEP, shall select or develop the model to be used, populate and calibrate the model using the data from Year 1 of the avian baseline survey (and additional available information as appropriate), and populate/validate the model using the data from Year 2 of the avian baseline survey.
- (5) **Baseline Surveys:** the contractor, in consultation with the NJDEP, shall develop and implement avian, marine mammal, and sea turtle baseline surveys in the Study Area over a consecutive 18 month time period.

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- (6) **Initial Assessment of Potential Environmental Impacts from Offshore Wind Power Facilities:** using the Ecological Baseline data, the contractor shall conduct an assessment of potential environmental impacts due to the construction and operation of offshore wind power facilities in the Study Area.
- (7) **Reporting:** (a) the contractor shall prepare and submit quarterly progress reports during baseline surveys; (b) the contractor shall prepare and submit an interim progress report at the one-year mark of the baseline surveys; (c) the contractor shall prepare and submit draft final and final reports; (d) the contractor shall prepare and submit an avian predictive model; (e) the contractor shall prepare and submit GIS-based maps and GIS data layers of the distribution/abundance of the species of interest in the Study Area.

PROPOSAL INSTRUCTIONS

All bidders are encouraged to notify NJDEP by May 4, 2007 of their intention to bid on this project by sending an email notification to Gwen.Haile@dep.state.nj.us. All questions (e.g., technical or administrative) should also be sent to this email address by this date. No phone inquiries will be accepted. Responses to questions will be posted on the NJDEP DSRT website (<http://www.nj.gov/dep/dsr>).

Proposal Submittal

All proposals are due by 5 PM May 25. Proposals must be submitted to the following address by the due date:

U.S. Mail: New Jersey Department of Environmental Protection
 Division of Science, Research & Technology
 P.O. Box 409
 Trenton, NJ 08625-0409
 Attn: Ms. Gwen Haile

Overnight: New Jersey Department of Environmental Protection
 Division of Science, Research & Technology
 401 East State Street, 1st Floor
 Trenton, NJ 08625-0409
 Attn: Ms. Gwen Haile

Proposals that are received by the due date will be logged in and date stamped. Proposals received after the due date will be rejected. Every proposal must include all of the required information. Proposals that do not include the required information will be rejected (e.g., no partial proposals will be allowed). Proposals will not be returned to the bidders.

Proposers must submit **fifteen (15)** copies of the complete proposal. **Proposals are limited to 25 pages in length**; qualifications and experience (e.g., résumé, CV) do not count toward the page limitation. No electronic submittals will be accepted.

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Bidders are encouraged to provide external (e.g., related Federal or private grant) or matching funds (e.g. in-kind services) to provide additional project robustness. However, this information will NOT be part of the evaluation process and should not be included in the proposal. Details (e.g., tasks, personnel, budget) on any matching or other funding must be submitted at the same time in a **separate sealed envelope** and clearly labeled “SUPPLEMENTAL FUNDING INFORMATION” with the bidders name and address.

Proposal Evaluation Criteria

All proposals submitted in response to this research solicitation will be evaluated and individually ranked in accordance with the assigned weights for the following evaluation criteria to determine whether they are responsive to the research solicitation and how well they meet the objectives of the scope of work:

- **Applicability to Project Objectives:** proposals will be evaluated on how well they will achieve the specific objectives of the various project tasks listed in the scope of work. The proposal must meet all of the project objectives to be acceptable. **Any proposal not meeting all of the objectives will be rejected, i.e., no partial proposals will be accepted.** This criterion would evaluate how well the objectives will be met, and higher ratings will be given for those achieving the objectives in an innovative or extraordinarily robust manner.
- **Technical/Scientific Merit:** this criterion assesses whether the approach is technically sound, and if the methods (including QA/QC procedures) are appropriate. The proposed sampling design, avian model design, methods, standard operating procedures, etc. will be evaluated and rated. **Bidders shall submit preliminary sampling and avian modeling designs to demonstrate their understanding of the goals and objectives of this project.**
- **Qualifications of the Potential Contractor and Subcontractors:** this criterion evaluates the education, experience (including project management), facilities, etc. of the contractor and subcontractors to determine if adequate expertise and resources are available to complete the project within the stipulated timeframe. All field biologists must be qualified to identify the species for their respective surveys (e.g., birds) and have experience conducting surveys similar to those identified in the scope of work. The bidder is strongly encouraged to assemble a highly skilled and qualified team using specialists (e.g., a multidisciplinary team of researchers, employees and subcontractors) to meet the needs of this project.
- **Project Costs:** this criterion evaluates the proposal budget to determine if it is realistic and commensurate with the project needs and timeframe.

Terms and Conditions

The winning bidder will be required to follow the New Jersey Division of Purchase and Property Waivered Services Standard Terms and Conditions (April 20, 2006). These can be found at: <http://www.state.nj.us/treasury/purchase/forms/wtermss.pdf>

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Oral Presentation and/or Clarification of Bid Proposal

After the submission of bid proposals, unless requested by the State as noted below, vendor contact with the State is still not permitted. A bidder may be required to give an oral presentation to the Evaluation Committee concerning its bid proposal. The Evaluation Committee may also require a bidder to submit written responses to questions regarding its bid proposal. The purpose of such communication with a bidder, either through an oral presentation or a letter of clarification, is to provide an opportunity for the bidder to clarify or elaborate on its bid proposal. Original bid proposals submitted, however, cannot be supplemented, changed, or corrected in any way. No comments regarding other bid proposals are permitted. Bidders may not attend presentations made by their competitors. It is within the Evaluation Committee's discretion whether to require a bidder to give an oral presentation or require a bidder to submit written responses to questions regarding its bid proposal. Action by the Evaluation Committee in this regard should not be construed to imply acceptance or rejection of a bid proposal. There will only be one point of contact regarding any request for an oral presentation or clarification.

Certifications

ALL BIDDERS MUST SUBMIT THE FOLLOWING FORM WITH THEIR PROPOSAL:

- **Source Disclosure Certification Form**

The **winning** bidder will be required to complete all forms and certifications required by the State of New Jersey. These include but may not be limited to:

- Ownership Disclosure Form PB-ODF.1
- Affirmative Action Form AA302
- MacBride Principle, Form NO.PBMACB
- Contractor Certification and Disclosure of Political Contributions

The above listed forms can be downloaded from the following site:
<http://www.state.nj.us/treasury/purchase/forms.htm>

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