1.0 PROJECT DESCRIPTION

1.1 PROJECT SUMMARY

Blue Sky West, LLC and Blue Sky West II, LLC (Applicants), wholly owned subsidiaries of First Wind Energy, LLC, have proposed construction of the Bingham Wind Project (project), a utility-scale wind energy facility in Bingham, Moscow, Mayfield Township, Kingsbury Plantation, Abbot, and Parkman, in Somerset and Piscataquis Counties, Maine (Figure 1). The project includes 62 turbines (63 potential turbine locations are being permitted) in Bingham, Kingsbury Plantation, and Mayfield Township capable of generating up to 191 megawatts (MW) of electricity. Other project features include: upgrades to existing roads, and new roads, to access the turbines and crane paths; up to 5 permanent and up to 5 temporary meteorological (met) towers; an Operations and Maintenance (O&M) building in Mayfield Township; above and below ground 34.5 kilovolt (kV) electrical collector lines among the turbines (the majority of which will be buried alongside project roads) and connecting to a new collector substation in Mayfield Township; and an approximately 17-mile 115-kV generator lead connecting to an existing Central Maine Power Company (CMP) substation in Parkman, Maine. It is anticipated that a dynamic reactive device (DRD), such as a synchronous condenser, will be required at the project collector substation to meet the interconnection requirements of ISO NE and CMP. Blue Sky West, LLC is the applicant entity responsible for permitting, constructing, and operating the following project elements: wind turbines; associated collector lines; project collector substation and DRD; access roads; crane paths; permanent and temporary meteorological towers; and the Operations and maintenance building. Blue Sky West II, LLC is the applicant entity responsible for permitting, construction, and operating the generator lead.

The project will be constructed on ridges and hills in the vicinity of Route 16, including Johnson Mountain and unnamed hills north and northeast of Johnson Mountain, and an unnamed ridge north of Route 16 (Figure 1-2). Existing roads will provide construction and maintenance access from Route 16 to the project area; new and existing access roads and crane paths will connect turbine locations. Road construction will include improvements to 5.3 miles of existing 24-foot access roads, as well as building 17 miles of crane path, all of which will be maintained by the Applicants. The electrical collector runs between each turbine location and the majority will run underground adjacent to project roads. The collector will be located aboveground in two locations where project roads are not proposed to be built. The electrical connector will connect to a proposed project substation located in Mayfield, near the center of the northern turbine strings. The collector system will include an approximately 4-mile long aboveground segment that will run parallel to the north side of Route 16 before heading north into the project area. As noted above, construction of a DRD facility is anticipated to be adjacent to the new collector substation. The 115-kV generator lead will run from the new substation to an existing CMP substation.

The turbines will be constructed in three towns: 11 turbines (12 potential turbine locations are being permitted) in Bingham, 29 turbines in Mayfield, and 22 turbines in Kingsbury. Two turbine

models are being evaluated for the civil and electrical design described in this permit application, including Siemens turbines, assuming up to 62 SWT-3.0-113 turbines, with a maximum height of 149 meters (489 feet), and Vestas turbines, assuming up to 62 V112-3.0 turbines, with a maximum height of 150 meters (492 feet). This permit application provides an analysis of the tallest turbines (Vestas) for visual, shadow flicker, wildlife, and public safety analyses, as well as the largest turbine pad footprint for civil design. The sound assessment analyzes the sound impacts of both Vestas and Siemens turbines.

The 34.5-kV electrical collector line will collect power from each turbine along the ridgeline and will connect with a proposed project substation located in Mayfield (Figure 1-2). The substation will "step up" the power to 115 kV, and transmit the power on the generator lead for approximately 17 miles to CMP's Guilford substation in Parkman, where it would tie into the existing CMP electric system.

The O&M building will be up to 5,880 square feet (70' x 84'), located off Route 16 in Bingham near the center of the project (Figure 1-2).

The project will also include up to five permanent met towers with a maximum height of 104 meters, although all five may not be built. The design depicts five locations for permanent met towers and includes the clearing impacts associated with all five locations. In addition, up to five temporary met towers with a maximum height of 104 meters may be placed at turbine pad locations before the turbines are erected. These temporary towers will be removed prior to the completion of construction.

A synchronous condenser is a type of DRD used to support the voltage along the generator lead line and improve the short circuit ratio within the project collector circuits. The majority of the components for the DRD will be housed in a wood frame, steel clad structure.

1.2 PROJECT PURPOSE AND CONTEXT

The purpose of the project is to create a commercially viable, low-impact wind energy project in Maine. The project is located in an area identified as appropriate for grid-scale wind energy development as defined under 35-A M.R.S.A. §3451-3458 and is sited to maximize energy generation while minimizing impacts to ecological and environmental resources. The demand for regional facilities that generate clean, renewable energy is increasing each year and the need for such is clear: greenhouse gases from fossil fuel emissions are affecting the environment, the climate, and the health of Maine citizens. A wind power project such as the Bingham Wind Project helps to address each of these concerns, and will bring clean, renewable wind power to the New England energy market.

1.3 ENVIRONMENTAL STUDIES

From 2009 to 2013, a variety of site-specific surveys were conducted to assess the natural resources present in the vicinity of the project. The site specific assessments were augmented through consultation with state and federal agencies and review of available databases and published information. Environmental field studies conducted for the project include:

- acoustic bat surveys in the spring, summer, and fall (2010);
- nocturnal radar migration surveys in the spring (2010) and fall (2010, 2011);
- diurnal raptor migration surveys in the spring and fall (2010);
- aerial flight surveys for bald eagle (*Haliaeetus leucocephalus*) nests, osprey (*Pandion haliaetus*) nests, and great blue heron (*Ardea herodias*) nests in the fall (2009) and spring (2010, 2011);
- breeding bird surveys in the spring (2010);
- Canada lynx habitat assessment, winter tracking, and camera surveys in the winter (2011, 2013);
- Deer wintering area surveys (2013);
- targeted Roaring Brook mayfly (*Epeorus frisoni*), northern bog lemming (*Synaptomys borealis*), and northern spring salamander (*Gyrinophilus porphyriticus*) surveys in the fall (2010) and summer/fall (2011);
- wetland delineations (2010, 2011, 2012, 2013);
- vernal pool surveys in spring (2010, 2011); and
- soils surveys.

Other reports and surveys include an analysis of historic architecture; Euro-American and Pre-Contact archaeology; a visual impact assessment; as well as a shadow flicker analysis and sound analysis.

1.4 ENVIRONMENTAL CONSIDERATIONS

The project layout and footprint was designed to optimize engineering and wind resource conditions. The net result is that the construction and operation of the project will minimize environmental impacts to the maximum possible extent (Table 1.1).

Table 1.1. Summary of Environmental Impacts from Bingham Wind Project	
Environmental Resource	**Project Impact**
Vegetation and Habitat	No RTE plant species identified. The project area is dominated by Beech-Birch-Maple Forest and Spruce-Northern Hardwoods Forest in various stages of regeneration following timber harvesting.
Wetlands	58,508.63 square feet (1.34 acres) of permanent wetland fill, 275,446.62 square feet (6.32 acres) of temporary wetland fill, and 34.35 acres of permanent cover type conversion.
Vernal Pools	No direct impacts to natural vernal pools. Clearing within the significant vernal pool habitat of four Significant Vernal Pools (SVPs). Total clearing (existing plus proposed) less than 25% of the SVP habitat. SVP_07AL_N: 24.3% SVP_50KN_and SVP_108SK_N: 23.97% SVP_53KN_N: 24.91%
Bald Eagle	The nearest active bald eagle nest is approximately 4.95 miles from the nearest proposed turbine location.
Canada lynx	The project is located outside of the designated critical habitat for Canada lynx. Track of a single, apparently transient, male observed approximately 1.4 to 1.7 miles from the nearest components of the proposed project.
Atlantic salmon	Much of the project is located within designated critical habitat for Atlantic salmon. No direct in-stream work is proposed within the project area. Clearing will occur within the vegetated stream buffers of 34 perennial streams.
Mapped Deer Wintering Areas (DWA)	Clearing and wetland fill within four mapped DWAs for electrical generator lead and access roads: Clearing / Fill DWA #080604: 0.93 acres / 0 acres DWA #084029: 1.26 acres / 0.12 acres DWA #084031: 6.5 acres / 0.52 acres DWA #084033: 12.84 acres / 0.14 acres

Table 1.1. Summary of Environmental Impacts from Bingham Wind Project	
Mapped Inland Waterfowl and Wading Bird Habitat (IWWH)	Clearing of 3.13 acres of IWWH #203972 habitat buffer for generator lead (clearing area overlaps with clearing within DWA #084031).
Northern Spring Salamander Habitat	No direct stream impact, but clearing within the associated stream buffer of 24 streams that provided potential habitat for northern spring salamanders.
Bog Lemming Habitat	No direct impact the habitat where the bog lemming activity was observed, but a portion of the aboveground electrical collector line will be located approximately 600 feet to the south. Clearing is not expected to impact the hydrology of the habitat.
Birds	Passage rates for raptor migration and nocturnal migrants are consistent with other projects in the region.
Bats	Rates are consistent with other Maine sites. Turbines will be curtailed during certain periods of increased risk of collision.

1.5 CONSTRUCTION PLAN

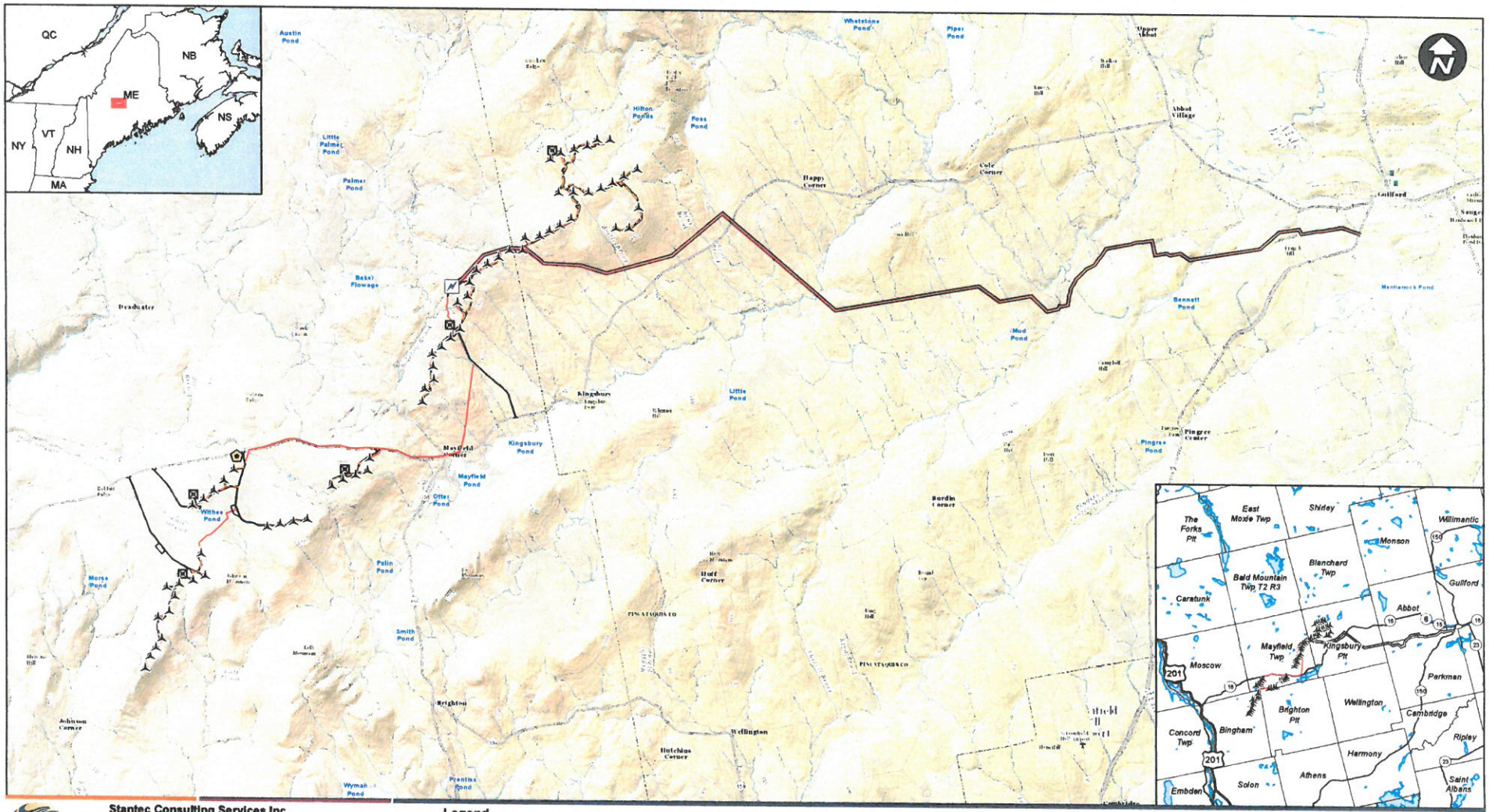
First Wind has amassed extensive experience constructing wind power projects in Maine, with five projects currently operating. These construction successes reflect the company's commitment to minimize impacts and comply with all terms and conditions of its regulatory approvals. Working with its engineering teams, in consultation with the State's Soil Scientist and regulators, First Wind has consistently worked to fine tune its construction techniques to avoid erosion and stormwater impacts.

Construction is expected to begin in 2014. Construction of the project will generally follow the sequence of events detailed below, but may be adjusted based on seasonality and weather conditions.

Construction Schedule	
Task	**Duration**
Preliminary layout and staking of new road segments, turbine clearings, generator lead, and laydown areas	Weeks 1 - 22
Installation of erosion control measures in areas to be disturbed	Weeks 6 - 22
Clearing for roads, collection system, turbines, and laydown areas	Weeks 6 - 35
Grubbing and initial grading for roads, turbine, and laydown areas	Weeks 6 - 74
Underground trench/conduit work	Weeks 14 - 74
Blasting as necessary and on-site stockpiling of reusable blasted bedrock	Weeks 6 - 74
Hauling and stockpiling of aggregate from local borrow pits	Weeks 6 - 74
Final grading for roads and turbine areas	Weeks 19 - 74
Construction of turbine foundations and substation transformer pad	Weeks 10 - 70
Construction of generator lead	Weeks 6 - 70
Turbine delivery, assembly of rotors, tower erection, lifting of nacelles and rotor assemblies, construction of aboveground and underground collection system, permanent met towers	Weeks 14 - 74
Installation of substation	Weeks 58 - 74
Commissioning and testing of wind turbine generators and electrical interconnections	Weeks 71 - 87
Removal of temporary erosion and sedimentation control materials upon final site stabilization and reseeding.	Weeks 70 - 87
Start of commercial operations	Week 87

Figure 1

Bingham Wind Project Location Map



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Legend

- Turbine Location
- Permanent MET Tower
- O&M Building
- Substation
- Edge of Gravel
- Electrical Generator Lead
- Overhead Collector
- Underground Collector

0 8,000
Feet

Client/Project
Bingham Wind Project

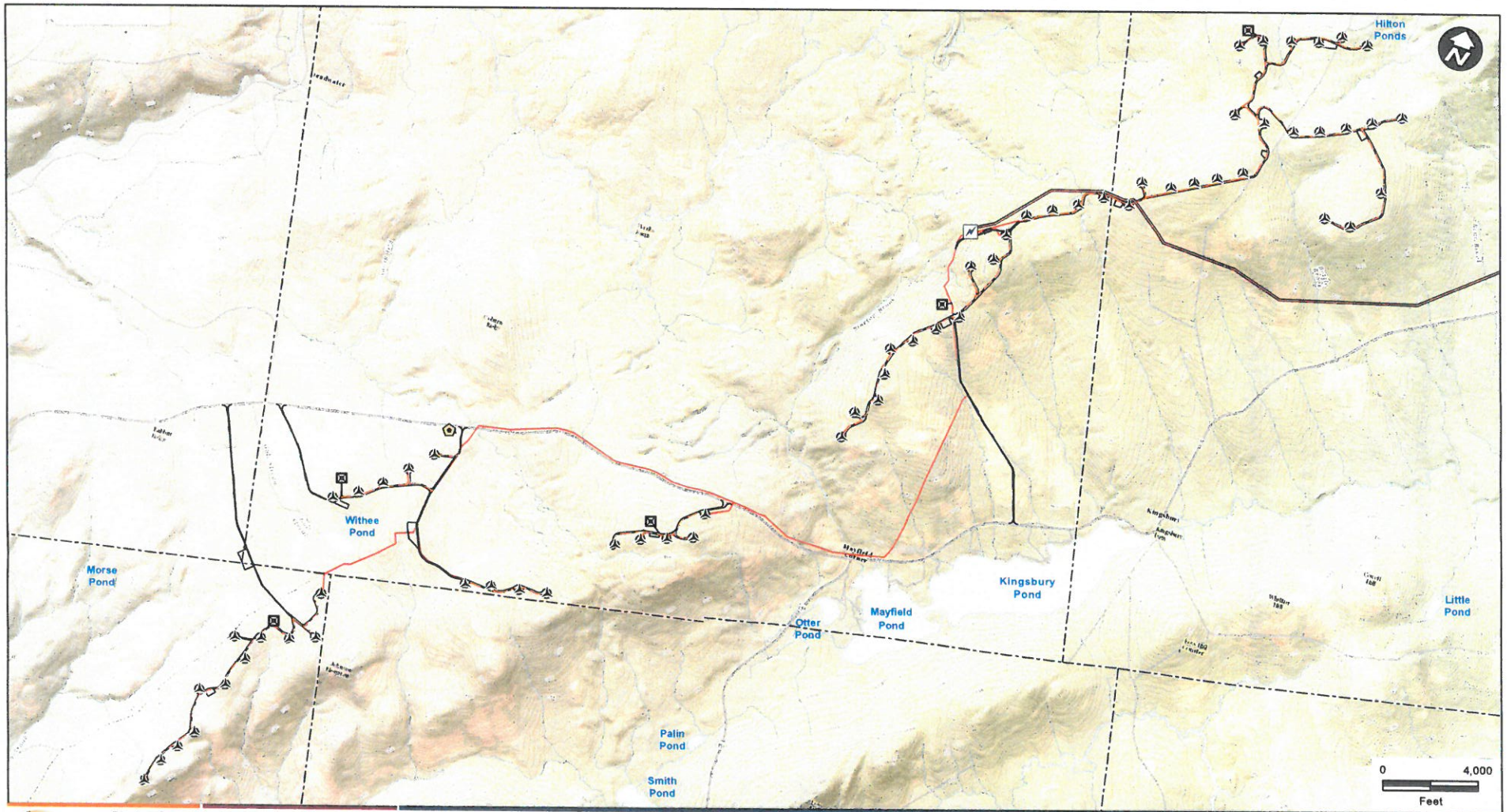
195600539

Figure No.
1

Title
Bingham Wind Project Location
4/16/2013

Figure 1-2

Bingham Wind Project Ridgeline Map



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Legend

- Turbine Layout
- Permanent MET Tower
- O&M Building
- Substation
- Edge of Gravel
- Electrical Generator Lead
- Underground Collector
- Overhead Collector
- Plisga & Day Surveyed Township Boundary
- USGS Township Boundary

Client/Project 195600539
Bingham Wind Project

Figure No.
1-2

Title
Bingham Wind Project Ridgeline Map
4/16/2013