The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC UTILITIES

July 14, 2008

D.P.U. 07-80

Petition of Massachusetts Electric Company, New England Power Company and PPM Energy, Inc. for a determination by the Department of Public Utilities under the provisions of G.L. c. 164, § 72 that construction and operation of an approximately 6.1 mile 34.5 kV tie line in the Towns of Florida and Monroe is necessary, will serve the public convenience and is consistent with the public interest.

APPEARANCES:

Paige Graening, Esq.
Brooke E. Skulley
NATIONAL GRID
25 Research Drive
Westborough, MA 01582

And

Robert L. Dewees, Jr.
NIXON PEABODY LLP
100 Summer Street
Boston, MA 02110
FOR: MASSACHUSETTS ELECTRIC COMPANY
NEW ENGLAND POWER COMPANY
Petitioner

Jay Wickersham
NOBLE & WICKERSHAM LLP
1280 Massachusetts Avenue
Cambridge, MA 02138
FOR: PPM ENERGY, INC.
Petitioner

I. INTRODUCTION

A. Project Overview

Massachusetts Electric Company ("MECO"), New England Power Company ("NEP") (both MECO and NEP, d/b/a National Grid) and PPM Energy, Inc.[1] ("PPM") (together, the "Petitioners") propose to construct a new overhead 34.5 kilovolt ("kV") tie line (the "proposed project" or "proposed tie line") to connect the planned Hoosac Wind Project, a 30 MW project using 20 commercial scale wind turbines, with the New England Power Company transmission system (Exh. MECO/PPM-1, at 3). The proposed tie line would begin at PPM's planned Hoosac Wind project on Tilda Hill Road in Florida (at the point where cables from the planned Hoosac Wind project intersect with Tilda Hill Road) and continue along the existing rights of way ("ROWs") in Florida for approximately 0.44 miles (Exh. MECO/PPM-2, at 2). At the Florida/Monroe town line, Tilda Hill Road becomes Main Road and the line would follow Main Road, Kingsley Hill Road and River Road in Monroe for approximately 5.6 miles to a new substation to be located off River Road in Monroe Bridge Village in Monroe (id. at 3). At the new substation the proposed line would interconnect to the adjacent New England Independent System Operator ("ISO-NE") transmission grid through tap lines from the new substation to the existing NEP 69 kV transmission line adjacent to the new substation (id.). The total length of the

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[1] PPM Energy, Inc. ("PPM") is a developer of wind energy projects in the United States that acquired the interests of enXco, the initial developer of the Hoosac Wind Project, in February 2006 (MECO/PPM-2, at 5). PPM itself was acquired in April 2007 by Iberdrola, a Spanish utility (id. at 2). PPM plans to construct the Transmission Line, substation and tap line at its expense, and, when construction is complete, turn over ownership of the Transmission Line to MECO and the ownership of the substation and tap line to NEP (id.).

tie line would be approximately 6.1 miles (Exh. MECO/PPM-3, at 4). Neither the Hoosac Wind Project nor the new substation are the subject of the petition (Exh. MECO/PPM-2, at 3).

B. Procedural History

On September 28, 2007 the Petitioners filed a petition with the Department of Public Utilities ("Department") pursuant to G.L. c. 164, § 72, seeking authority from the Department to construct, maintain and operate the proposed tie line. The Petitioners seek a determination by the Department that the proposed electric transmission line is necessary and will serve the public convenience and be consistent with the public interest (id.). The petition was docketed by the Department as DPU 07-80.

On November 28, 2007, after notice duly issued, the Department conducted a public hearing in Florida, Massachusetts. The Department received no petitions to intervene. The Department held an evidentiary hearing on March 7, 2008 at the Department's Boston offices. In support of its petition, the Petitioners sponsored the testimony of seven witnesses: Thoms R. Shields, II; Robert A. Sproesser; Jason A. Krzanowski; Randall P. Christensen; Daniel L. Mahoney; Peter A. Valberg; and David C. Klinch. The Department moved 19 exhibits (including 15 information requests and pre-filed testimony of four Company witnesses) into the record. On April 2, 2008 the Petitioners filed a brief.

The Petitioners explained that because the design, construction, operation and maintenance of the proposed interconnection facilities require the cooperation and joint effort of MECO, NEP and PPM, all three parties filed a joint petition with the Department. However, the Petitioners further explained that only MECO and NEP are each an "electric company" subject to

G.L. c. 164, § 72 (Petitioners' Brief at 3). The Petitioners stated that, therefore, any order issued by the Department should only apply to MECO with respect to the 34.5 kV tie line and to NEP with respect to the 69 kV tap lines, as MECO and NEP will ultimately own, operate and maintain the 34.5 kV tie line and 69 kV tap lines (id.). The Petitioners stated that PPM would be acting as an agent of MECO and NEP for the design and construction of only the 34.5 kV tie line and the transmission line-related substation equipment (id.).

II. STANDARD OF REVIEW

General Laws c. 164, § 72, requires, in relevant part, that an electric company seeking approval to construct a transmission line must file with the Department a petition for:

> authority to construct and use … a line for the transmission of electricity for distribution in some definite area or for supplying electricity to itself or to another electric company or to a municipal lighting plant for distribution and sale … and shall represent that such line will or does serve the public convenience and is consistent with the public interest .... The [D]epartment, after notice and a public hearing in one or more of the towns affected, may determine that said line is necessary for the purpose alleged, and will serve the public convenience and is consistent with the public interest.[2]

The Department, in making a determination under G.L. c. 164, § 72, is to consider all aspects of the public interest. Boston Edison Company v. Town of Sudbury, 356 Mass. 406, 419 (1969). Section 72, for example, permits the Department to prescribe reasonable conditions for the protection of the public safety. Id. at 419-420. All factors affecting any phase of the public interest and public convenience must be weighed fairly by the Department in a determination

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[2] Pursuant to G.L. c. 164, § 72, the electric company must file with its petition a general description of the transmission line, a map or plan showing its general location, an estimate showing in reasonable detail the cost of the line, and such additional maps and information as the Department requires.

under G.L. c. 164, § 72. Town of Sudbury v. Department of Public Utilities, 343 Mass. 428, 430 (1962).

In evaluating petitions filed under G.L. c. 164, § 72, the Department examines: (1) the need for, or public benefits of, the present or proposed use; (2) the environmental impacts or any other impacts of the present or proposed use; and (3) the present or proposed use and any alternatives identified. New England Power Company d/b/a/ National Grid, D.T.E. 06-37, at 2-3 (2007); Boston Edison Company d/b/a NSTAR Electric, D.T.E. 04-71, at 2-4 (2005); Commonwealth Electric Company d/b/a NSTAR Electric, D.T.E. 05-1, at 2-3 (2005); Massachusetts Electric Company, D.T.E. 03-130, at 2-3 (2004). The Department then balances the interests of the general public against the local interests and determines whether the line is necessary for the purpose alleged and will serve the public convenience and is consistent with the public interest.[3]

III. DESCRIPTION

A. Project Overview

The Petitioners propose to construct, operate and maintain a 6.1 mile overhead 34.5 kV tie line connecting the Hoosac Wind Project located off Tilda Hill Road in Florida, MA to the ISO-

[3] In addition, the Massachusetts Environmental Policy Act ("MEPA") provides that "[a]ny determination made by an agency of the commonwealth shall include a finding describing the environmental impact, if any, of the project and a finding that all feasible measures have been taken to avoid or minimize said impact" ("Section 61 findings"). G.L. c. 30, § 61. Pursuant to 301 CMR 11.12(5), these findings are required if the Secretary of Environmental Affairs has required an Environmental Impact Report ("EIR") for the project. The Company informed the Department that no EIR is required for the proposed project (Tr. 1, at 122-123). Accordingly, Section 61 findings are not necessary in this case.

NE bulk transmission system at a new substation to be located off River Road in Monroe Bridge Village in Monroe, MA (Petition at 2).

The Petitioners stated that the Hoosac Wind Project turbines would be located on Bakke Mountain (on the west side of Tilda Hill Road) and Crum Hill (on the east side of Tilda Hill Road) (Exh. MECO/PPM-1, at 5). The Petitioners described that power from up to eleven turbines on Bakke Mountain and up to nine turbines on Crum Hill would be transmitted by 34.5 kV above-ground cables from the ridgelines down to Tilda Hill Road where they would connect with the proposed project that is the subject of this proceeding (id. at 3).

The Petitioners stated that the new 34.5 kV tie line would be constructed within right-of-ways ("ROWs") of existing public roadways in the towns of Florida and Monroe (Exh. MECO/PPM-3, at 3). They further described that, beginning at a point on Tilda Hill Road which is 0.44 miles south of the Florida/Monroe town line, the proposed tie line would proceed northeasterly to the Florida/Monroe town line where the road name changes to Main Road (Exh. MECO/PPM-2, at 3). The Petitioners stated that the proposed tie line would follow Main Road for approximately 4 miles to the intersection of Main Road and Kingsley Hill Road and then follow Kingsley Hill Road south about one mile to the intersection of River Road in Monroe Bridge Village (Tr. at 23-25). The Petitioners further stated that at the intersection of River Road the tie line would proceed westward on River Road for approximately 0.5 miles to the proposed location of a new substation (Tr. at 24-25). The Petitioners stated that at the new substation, the tie line would connect to a 69 kV transmission line owned by NEP (Pre-filed testimony of Jason Krzanowski, at 4). The new substation, like the wind farm itself, is not part of the subject of this

petition.

The Petitioners stated that at a point along Main Road 2.14 miles from beginning of the proposed tie line, the route of the tie line would join with an existing MECO 2.4 kV distribution line for the remaining four miles to a new substation in Monroe Bridge Village (Exh. MECO/PPM-2, at 3). The Petitioners stated that for the section of the tie line route which overlaps the existing MECO distribution line, the existing MECO distribution line would be relocated onto the poles for the new tie line (Exh. MECO/PPM-2, at 3). According to the Petitioners, the existing distribution line would be placed on the new poles in a position below the tie line, and the existing MECO poles would be removed (Exh. MECO/PPM-2, at 3). The Petitioners stated that when the MECO distribution line is relocated from its existing poles to the proposed tie line's poles, MECO would upgrade the distribution line to an 8.0 kV line (Tr. at 25-26). The Petitioners stated that new tie line poles, like the current poles, would be made of wood (or in a few instances, wood composites) (id. at 22 and 40), but would be approximately 15 feet taller than the current ones (that is 58 to 63 feet above ground compared with 43 to 48 feet above ground currently) (id. at 20).

The Petitioners indicated that, beginning at a point 0.4 miles east of the Florida/Monroe town line on Main Road and continuing the rest of the proposed route, there are also existing telephone lines on separate poles (Exh. MECO/PPM-3, at 4). The Petitioners stated that negotiations are currently underway with the telephone company aimed at relocating the telephone lines onto the new tie line's poles so that the existing telephone poles can be removed (Exh. MECO/PPM-3, at 4; Tr. at 22).

The Petitioners estimated that the cost of the proposed tie line would be $3,169,083, including the costs of installing the new poles, relocating the MECO distribution lines, and removing the existing MECO poles (Exh. MECO/PPM-2, Attachment RS-4).

B. Need for the Proposed Project

The Petitioners stated that the Project is required to transmit power from the planned Hoosac Wind Project, located in the towns of Florida and Monroe, to a proposed tie-in at Monroe Bridge Village with the ISO-NE bulk transmission system (Exh. MECO/PPM-1, at 5-6). The Petitioners stated that the tie-in would be at a 69kV line owned by NEP. The Petitioners explained that without the tie line, PPM/Hoosac Wind could not supply power generated by Hoosac Wind Project to consumers (id.). The Petitioners explained that the capacity of the Hoosac Wind Project would exceed the capacity of MECO's existing distribution lines (which operate at 4.16 to 13.8 kV) and substations (Exh. DPU-A-1). The Petitioners stated that to tie into the local distribution system operated by MECO would require significant and costly upgrades of MECO's distribution and substation equipment (id.).

The Petitioners stated that MECO and NEP, as local electric distribution and transmission providers respectively, have an obligation to interconnect with electric generators in the region they serve. The Petitioners stated that to provide transmission for the planned Hoosac Wind Project, New England Wind, LLC[4] had executed a Related Facilities Agreement with MECO and a Large Generator Interconnection Agreement with ISO-NE and NEP (id. at 6). The Petitioners stated the

[4] New England Wind, LLC is a wholly-owned subsidary of PPM which was created for the purpose of developing the Hoosac Wind Project.

these agreements were submitted to the Federal Energy Regulatory Commission ("FERC") for approval and that FERC granted approval of both agreements on January 24, 2008 (12 FERC ¶ 61, 054, Docket No. ER 06-269-000) (Brief at 11(see footnote 8)). The Petitioners stated that the Hoosac Wind Project has obtained all major state and local permits (id.) and that PPM intends to start construction in 2008 (id. at 4 and Tr. at 5).

The Petitioners stated that the planned Hoosac Wind Project would consist of twenty 1.5 MW turbines with a combined capacity of 30 MW (Exh. MECO/PPM-1, at 3). The Petitioners stated that with favorable wind direction and speed the Hoosac Wind Project could produce 30,000 kilowatts per hour (Tr. at 17-18). However, the Petitioners estimated that on an average annual basis the Hoosac Wind Project would operate at 36 percent of capacity and produce a total of approximately 94.6 million kilowatthours ("kWh") of electricity per year or 7.9 million kWh per month (Tr. at 17-18).

C. The Proposed Project and Alternatives

The Petitioners stated that in the 2002 to 2003 time period, in conjunction with their consultants (Hill-Engineers, Architects, Planners, Inc. and E-Pro, Inc.) the Petitioners surveyed the area surrounding the planned Hoosac Wind project site for potential grid connections (Exh. DPU-A-1). The Petitioners stated that based on this survey, they identified the currently proposed route and new substation near Monroe Bridge Village and ten alternatives each involving a specified geographical route and interconnection point[5] . Table 1 below identifies the alternatives initially considered (id.).

[5] In the cases of alternatives explored involving interconnection with E-113, I9 and J10, the Petitioners identified several potential points of interconnection with each line. If each geographic interconnection point to the same transmission line were considered a separate option, the total number of options initially identified would be sixteen rather than eleven.

Table 1

Initially Identified Alternatives for Hoosac Wind Grid Interconnection

Point of Interconnection	kV of Connection	Length (miles)	Miles of New ROW	Impacts of Note
(1) Tie in to E131 at Adams Substation in Zylonite, MA	115	8.2	Short distance along Tilda Hill Road	>1 mile in state forest
(2) Bear Swamp Substation	115	6.8	~3.5	Travers Mohawk Trail state forest + land with conservation restrictions
(3)Tie in to either I9 of J10 at Deerfield No. 5 Substation, Monroe, MA	69	5.9	3.7	Traverses Monroe and Mohawk Trail state forests + land with conservation restrictions
(4) Harriman Substation, Readsboro, VT	115	8.8	<1 along Shippee Rd.	Requires approval of MA & VT
(5) Yankee Atomic Electric Substation, Rowe, MA	115	6.3	Unlikely	
(6) Sherman No. 7 Substation, Rowe, MA	115	6.3	Unlikely	
(7) Tie in to E-131 with new substation options at (A) Gore Road or (B) Shaft Road	115	2.0 to 4.5	Depending on route may need as much as 2 miles	For some versions would require new ROW in Monroe State Forest
(8) Tie in to Q-117 at Walker Substation in Clarksburg, MA	115	2.8	Largely new ROW	Cross-country down Hoosac Range
(9) Tie in to Line I9 at new substation at either Shaft Rd. or Raycroft Rd., Florida, MA	69	2.0 (Crum Hill) to 4.7	2.0 (Crum Hill) to 4.7	Crum Hill Route requires new ROW through Monroe State Forest
(10) Tie into Line J10 at new substation at either Shaft Rd. or Raycroft Rd., Florida, MA	69	2.0 (Crum Hill) to 4.7	2.0 (Crum Hill) to 4.7	Crum Hill Route requires new ROW through Monroe State Forest
(11) Tie in to Line Y25S at a new substation off Kingsley Hill Rd. near Monroe Bridge Village	69	5.7		

The Petitioners identified eleven basic interconnection options and screened these options based on criteria of environmental and land-use impacts, development and construction costs, likelihood of obtaining permits and technical feasibility (id.). The Petitioners eliminated six of the interconnection options based on one or more of the above criteria as follows:

- Option 1 (Adams Substation, Zylonite, MA) was eliminated due to excessive length and associated cost (id.);
- Option 2 (Bear Swamp Substation in Monroe, MA) was eliminated because of land-use and environmental impacts associated with required new ROW through Monroe State Forest and existing conservation restrictions (id.);
- Option 3 (Deerfield Substation, Monroe, MA) was eliminated because of land-use and environmental impacts associated with required new ROW through Monroe and Mohawk State Forests and existing conservation restrictions (id.);
- Option 4 (interconnection at Harriman Substation in Vermont) was eliminated based on the length of the route (8.8 miles), cost to construct, and expense and delays associated with obtaining permits in both Massachusetts and Vermont (id.);
- Option 6 (Sherman No. 7 Substation, Monroe, MA) was eliminated because of higher construction costs associated with longer length (id.);
- Option 8 (Walker Street Substation, Clarksburg, MA) was eliminated due to land-use incompatibility and environmental impacts associated with required new cross-country ROW down west side of Hoosac Range, visual impact on Walker Street residences and opposition of Clarksburg residents.

The Petitioners stated that the remaining five alternatives (Options 5, 7 (A), 7 (B), 9,10 in Table 1 above) and the proposed interconnection route with a new substation in Monroe Bridge Village (a variation on Option 11)[6] were further studied by E-Pro, Inc. to produce comparative estimates of line construction costs (Exh. DPU-A-2).

[6] The proposed alternative is a variation of Option 11 in which the substation is moved within the Village of Monroe Bridge from a site off Kingsley Hill Road where Line Y25S crosses that road to a site on the western edge of Monroe Bridge Village off River Road (Brief at 14).

Table 2

Option No.	Description	Miles	$ (Millions)[7]
5	Yankee Atomic Electric/Sherman No. 7 Substation	6.7	$2.9
7A	Tie in to E-131 with new substation at Gore Road	4.5	$4.1
7B	Tie in to E-131 with new substation at Central Shaft Rd.	4.2	$4.0
9/10	Tie in to I-9 or J-10 with new substation at C.Shaft Rd.	4.4	$2.4
11	Tie in to Y-25S with new substation on River Road[6]	5.7[8]	$2.7[9]

Based on comparison of projected costs and distances in Table 2,eliminated three options (Options 5, 7A, and 7B) (Exh. DPU-A-2). The Petitioners asserted that the significantly higher costs projected for the two alternatives involving a connection to Line E-131(a 115 kV circuit) via a new substation at either Gore or Central Shaft Roads caused them to eliminate further consider of Options 7A and 7B (id.). The Petitioners explained that the higher projected cost for Options 7A and 7B was

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7 The Petitioners explained that the cost estimates for the proposed project and the remaining four alternatives were prepared in the period 2002 to 2003 time frame (Exh. DPU-A-1). More recent detailed cost estimates were prepared in 2007 for the proposed Transmission Line route and substation and they indicated a projected cost of nearly $3.2 million (Exh. MECo/PPM-2, Exh. RS-4). The Petitioners stated that they would expect that the same rate of escalation in costs would apply to the other alternatives (Tr. at 27).

8 The Petitioners described the proposed transmission line in their petition as being 0.44 miles along Tilda Hill Road to the Florida/Monroe town line plus 5.6 miles from the Florida/Monroe townline to the substation on River Road for a total of 6.1 miles (Exh. MECo/PPM-2, at 3). At the time that this comparative information was developed, it was anticipated that the new substation would be built in the Monroe Bridge Village off Kingsley Hill Road, which would have made the total mileage only 5.7 (Brief at 14). However, it was subsequently decided to site the substation off River Road in Monroe Bridge Village (id.).

9 The Petitioners stated that these estimates were made by E-Pro, Inc. in the 2002 to 2003 time period and, thus, are not in current year dollars (Exh. DPU-A-1; Tr. at 26). In their pre-filed testimony submitted September 28, 2007 the Petitioners estimated the cost of Option 11 (with substation off River Road) at $3.2 million (Exh. MECo/PPM-2, Exh. RS-4).

due to the assessment by E-Pro, Inc. that interconnection to a 115 kV circuit would require a more complex substation and more sophisticated protection measures in order to assure the continued reliability of the major 115 kV transmission line (id.). The Petitioners eliminated the alternative involving interconnection at Yankee Atomic Electric/Sherman No. 7 substation (Option 5) on the basis that its estimated cost was the next highest after Options 7A and 7B and its route was the longest (id.).

The Petitioners stated that the critical factor in selecting among the remaining two options (Option 4 [interconnection to either Line I-9 or J-10] and Option 11 [interconnection to Line Y-25S with a substation in Monroe Bridge]) was the availability of a suitable substation location (id.). The Petitioners hired consultant Hill to assess potential substation locations along side Lines I-9, J-10, and Y-25S focusing on locations where the transmission lines crossed public ROWs, and considering topography, impacts on wetlands resources, existing land-use patterns, visual impacts, residence proximity, tree clearing and other factors (id.). The Petitioners stated that using these criteria Mr. Hill reviewed potential substation locations on Main Road, on Kingsley Hill Road, west of River Road, west of Readsboro Road, Greer Land, Gore Road, Thayer Road, Raycroft Road, Monroe Road, Whitcomb Hill Road, Route 2 (Mohawk Trail), and Central Shaft Road (id.).

The Petitioners stated that through this process of reviewing potential substation sites, identified the proposed substation site along side River Road in Monroe Bridge Village (id.). The Petitioners described that the site, which is immediately adjacent to NEP's Line Y-25S (69 kV) but outside of the transmission line easements, was a cleared parcel capable of being developed, unencumbered by conservation restrictions, devoid of hazardous materials issues and having sufficient space to locate the substation away from wetland resources (id.). In addition, the Petitioners noted that the site was owned by a willing landowner and in a community supportive of the wind farm

project (id.).

D. Impacts of Proposed Project

1. Land Use and Visual Impacts

The Petitioners stated that the proposed tie line would be located almost entirely within existing public ROWs (Exh. MECO/PPM-3, at 3). The Petitioners further stated that for the approximately four miles nearest its end point in Monroe Bridge, the proposed route parallels the route of an existing MECO distribution line (id. at 4). The Petitioners explained that for the coincident portion of the route the existing MECO distribution line would be relocated onto the new poles below the tie line and then the existing MECO poles would be removed (id.). Similarly, the Petitioners stated that they would try to relocate onto the new poles the existing telephone lines along the proposed route (id.). The Petitioners explained at the evidentiary hearing that negotiations were on-going with the telephone company to secure agreement to relocate the telephone lines onto the new poles for the tie line beginning on Main Road about 0.4 miles from the Florida/Monroe town line (Tr. at 22-23).

The Petitioners stated that the proposed tie line would be constructed using a Hendrix spacer cable system on wooden poles[10] with a typical height of 43 to 48 feet above ground or about 15 feet higher than the existing MECO wooden poles (Exh. MECO/PPM-2, at 4; Tr. at 20). The Petitioners explained that the Hendrix spacer, which would be suspended from a davit arm extension out over the road side of the ROW of the existing roadways, would eliminate the need for cross-arms by bundling lines into a relatively small packet on one side of the poles (Tr. at 31-32, 38-39). The Petitioners

[10] The Petitioners stated that in a few instances where conditions do not permit adequate guying, the poles may be made of a laminated wood product, which provides sufficient strength that so that the poles could be self-supporting (Tr. at 40).

further explained that by cantilevering the lines out away from the pole towards the road, the design would reduce the required amount of tree clearing and trimming on the side of the poles away from the road (Tr. at 31-32). The Petitioners asserted that the reduced breadth of clearing would serve to minimize the visual impact of the tie line, and also, in cases where poles would be sited near vegetative wetlands, would serve to minimize the impact on those resources (Tr. at 32). Similarly, the Petitioners assert that the added height of the new poles would not increase the amount of tree trimming or clearing, because the tree breath is smaller within the zone of the added height (Tr. at 39).

2. Water Resources

The Petitioners stated that they hired the environmental consulting firm of Stantec to delineate the Bordering Vegetated Wetland ("BVW"), Inland Banks, Land Under Water Bodies and Waterways ("LUWW") and perennial streams along the public ROWs and on abutting properties within 100 feet of the public ROW (200 feet for perennial streams) (Exh. MECO/PPM-4, at 3-4). The Petitioners stated that Stantec found that the regulated resource areas within the public ROWs along Tilda Hill Road, Main Road, and Kingsley Hill Road were typically associated with maintained road-side drainage ditches, and consisted of narrow linear bands of BVWs, Inland Bank and LUWW associated with intermittent streams in the drainage ditches (id. at 4-5). The Petitioners also reported that Stantec identified BVW, Inland Bank, and LUWW associated with other intermittent and perennial streams that cross under the roadways via culverts and bridges (id. at 5).

The Petitioners stated that it was Stantec's opinion that the use of existing public ROWs would significantly reduce potential impacts to regulated resource areas, because most of the tree-canopy and tall shrub layer would have already been cleared as part of the routine maintenance of the road ROW and existing utilities (id. at 5). The Petitioners stated that the tie line had been designed to limit impacts on wetland resources by locating poles and guy wires in areas that were already cleared,

altering span widths, crossing to the opposite side of the road and, in a few instances, using un-guyed, self-supporting poles (id.). The Petitioners further noted that for poles which would be located within a buffer zone of a BVW or in a Riverfront area, best management practices would be utilized to control erosion and manage storm water (including stabilizing and re-seeding exposed soils, and use of erosion control or approved "bio-fence" sediment barriers) (id. at 7).

The Petitioners stated that PPM planned to submit Notices of Intent ("NOIs") to the Florida and Monroe Conservation Commissions in March, 2008 and expected to receive Wetlands Orders of approval by July, 2008 (Exh. DPU-G-2). The Petitioners also described that PPM had filed an Environmental Notification Form with the Massachusetts Environmental Policy Act Office ("MEPA") in November, 2003 for both the Hoosac Wind Farm and the tie line and had received a MEPA certificate December 2003 with a finding that no further MEPA review was required (Exh. MECO/PPM-3, at 7).

3. Electromagnetic Fields

The Petitioners stated that they hired Gradient Corporation of Cambridge, MA ("Gradient") to calculate the maximum electric and magnetic field ("EMF") impacts of the proposed tie line (Exh. DPU-EMF-1). The Petitioners described that Gradient calculated the maximum EMF impacts both for the existing MECO distribution line alone and for the MECO distribution line together with the proposed tie line at points along the tie line route where the electric current in the line is expected to be highest (id.). The Petitioners stated that the highest EMF levels would be expected to be associated with the points of maximum "sag" at the midpoint of a span and, hence, the Petitioners reported the EMF levels for these points (id.).

The Petitioners stated that Gradient's calculations, shown in Table 3 below, indicated that while the peak electric field strength would either decrease very slightly (where the tie line is to be

added above the 13.8 kV MECO line along River Road in Monroe Bridge Village) or remain the same (where the tie line is added above the new 8.0 kV MECO line along Main Road and Kingsley Hill Road) (id.). The Petitioners reported that Gradient's calculations of magnetic field strength showed that peak magnetic field strength would decrease significantly where the proposed tie line is combined with the new 8.0 kV MECO distribution line along Main Road and Kingsley Hill Road, and would increase slightly where the tie line is paired with the existing MECO 13.8 kV line along River Road in Monroe Bridge Village (id.).

Table 3

Before/After Configuration	Maximum Current (amps)	Peak Magnetic Field (milligauss)	Peak Electric Field (kilovolts per meter)
BEFORE: River Rd.: 13.8 kV MECO Distribution Line Alone	15	1.1	0.07
AFTER: River Rd.: 13.8 kV + 34.5 kV Tie Line	15.558	3.1	0.06
BEFORE: Main & Kingsley Hill Rd.: 2.4 kV MECO Distribution Line Alone	51	28	0.07
AFTER: Main & Kingsley Hill Rd.: 8.0 kV MECO Distribution Line + 34.5 kV Tie Line	15.4558	6.3	0.07
34.5 kV Tie Line Alone	558	2.7	0.03

The Petitioners emphasized that even at the points of maximum predicted EMF impact the levels in both "before" and "after" configurations are below "applicable health-based EMF exposure

guidelines and below EMF levels previously accepted by the Massachusetts Energy Facilities Siting Board ("EFSB") (id.).

4. Other Impacts

The Petitioners described that construction of the tie line was expected to begin in 2008 and to take approximately 16 weeks to complete, with work anticipated to take place between 7:00 AM and 5:00 PM Monday through Friday (Exh. MECO/PPM-2, at 5; Exh. DPU-A-7). The Petitioners asserted that construction activities would have a minimal impact on traffic and would not impact any municipal services (Exh. MECO/PPM-3, at 6). The Petitioners stated that the volume of traffic generated during construction was not expected to significantly affect the typically low traffic flow on public roads (id.). The Petitioners pledged to coordinate construction activity with local police and other town officials as necessary to ensure public safety through advance warning signage, modified traffic patterns, and police details (id.). The Petitioners stated that the towns of Florida and Monroe have requested a pre-construction road assessment and traffic management plan (id.). The Petitioners further stated that construction materials and equipment would be stored in a suitable location away from the ROW overnight (Exh. MECO/PPM-3, Attachment JK-6, at 1).

The Petitioners stated that a Project Notification Form for the Hoosac Wind Project, including a description of the proposed tie line, was filed with the Massachusetts Historical Commission ("MHC") (Exh.MECO/PPM-3, at 7). The Petitioners stated that, at the request of the MHC, it hired the Environmental Institute of the University of Massachusetts at Amherst to prepare an Archaeological Reconnaissance and Intensive (Locational) Survey for the Hoosac Wind Project and submitted the survey to the MHC (id.). The Petitioners reported that in January 2004, MHC issued a letter to the Petitioners stating that no further review was required (id.).

The Petitioners described their actions to comply with the Massachusetts Natural Heritage and

Endangered Species Program ("NHESP") (Exh. MECO/PPM-4, at 7). The Petitioners stated that they hired Stantec to obtain information on the location of Priority and Estimated habitats of state-listed species within the vicinity of the proposed tie line and that, based on this information and guidance from NHESP, Stantec designed a survey to determine whether rare plant species were present in the vicinity of the proposed tie line (id.). The Petitioners further described that NHESP-approved botanists from Stantec conducted a thorough rare plant survey in the identified Priority Habits during the summer of 2007 and found no rare plants (id.). The Petitioners stated that, based on the recommendations of NHESP, Stantec did not perform any surveys for state-listed animal species (id. at 7-8). The Petitioners explained that NHESP did not anticipate any significant impacts to rare species or their habitat because the route of the tie line was largely limited to ROWs of existing roadways and had been designed to minimize wetlands impacts and tree trimming (id.). The Petitioners stated that after the final plans for the proposed tie line have been completed, a MESA Project Review Checklist application will be prepared and submitted to NHESP, along with copies of Notices of Intent (id.).

With respect to local and state required filings, the record indicates that the Petitioners have filed for and received a MEPA ENF certificate, Monroe Zoning Board of Appeals Zoning Special Permit, and a Florida Board of Selectmen Zoning Special Permit (Exh. DPU-G-2). The record states that the Petitioners plan to file Notices of Intent with the Florida and Monroe Conservation Commissions, submit applications for Grant of Pole Locations and permission to construct and operate, and maintain a 34.5 kV tie line within the public ROWs with the Florida and Monroe Boards of Selectmen, and submit an application with the Division of Fisheries and Wildlife under the Massachusetts Endangered Species Act (id.; Exh. DPU-W-2).

IV. ANALYSIS AND FINDINGS

Both MECO and NEP (both d/b/a National Grid) are electric companies authorized to transmit, purchase, sell and distribute electricity as defined by G.L. c. 164, § 1. Commonwealth Electric Company d/b/a NSTAR Electric, D.T.E. 03-7, at 5 (2003). Accordingly, MECO and NEP are authorized to petition the Department for a determination under G.L. c. 164, § 72[11] that the proposed tie line is necessary for the purpose alleged, will serve the public convenience, and is consistent with the public interest. As discussed in Section II, above, the Department, in making this determination, first examines the need for or public benefits of the proposed use. The Department next examines the project and identified alternatives, and the environmental impacts of the project. Finally, the Department balances the interests of the general public with any identified local interests.

As an initial matter, the Department finds that MECO and NEP, in their filing under G.L. c. 164, § 72, have complied with the requirement of § 72 that they describe the proposed transmission line, provide diagrams showing its general location, and estimate its cost in reasonable detail.

A. Need for the Proposed Project

The record shows that there is a need for the proposed tie line, because the planned Hoosac Wind Project site is not located immediately adjacent to any element of the transmission grid operated by ISO-New England. The record indicates that it is not feasible for the Hoosac Wind Project to tap directly into the local MECO distribution lines without substantial upgrades of MECO's distribution and substation equipment to accommodate the increased current and voltage necessary to deliver 30 megawatts of power through the existing distribution system without compromising the reliability of the MECO's local distribution. Without the tie line there would be no way for the electricity

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[11] PPM is a wholesale generator and, as such, is not subject to G.L. c. 164, § 72.

generated by the Hoosac Wind Project to be transmitted to the regional power grid.

In addition, the record shows that MECO and NEP, as the local distribution and transmission providers, respectively, in the area of the planned Hoosac Wind Project, each have an obligation to interconnect with the Hoosac Wind Project The record shows all major state and local permits for the Hoosac Wind Project have been obtained or are in the process of being obtained (id. at 3), and that there has been substantial support for the Hoosac Wind Project from the communities of Florida and Monroe in which the tie line, as well as the wind farm, would be located (id. at 8-9).

The Department finds that the proposed tie line would serve a need to interconnect the planned Hoosac Wind Project to the ISO-NE bulk power system.

B. The Proposed Project and Alternatives

Given the inadequacy of the local MECO distribution system to accommodate the power that would be generated by the planned Hoosac Wind Project, the Petitioners surveyed the region for potential points of interconnection to the ISO-NE grid. The Petitioners describe that they initially identified eleven different interconnection options. Of these eleven options, six were considered infeasible after consideration of environmental and land use impacts, development and construction costs, permittability and technical feasibility (Exh. DPU-A-1). Specifically, routes which were cross-country or excessively long were rejected due to cost, magnitude of land clearing and/or environmental impact. Other routes were rejected due to visual impacts, land use incompatibility, permitting considerations and/or the need for extensive tree clearing. The impact on Monroe State forest land was also considered.

The remaining five identified alternatives, including a variant of the proposed tie line route,[12]

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[12] At the time the alternative routes were evaluated PPM assumed that the substation for the proposed route would be located adjacent to the 69 kV Line I9/J10 along Kingsley Hill

underwent additional evaluation to determine the relative costs and, secondarily, length (Exh. DPU-A-2). One major driver of costs was found to be the requirement to install extra protective equipment at connection points in cases where the tie line would be connecting with a 115 kV transmission line rather than a 69 kV line, in order to better assure the reliability of the 115 kV line. Three of the remaining five identified alternatives were eliminated based on the high cost of substation equipment required to assure the reliability of the 115 kV grid. Among the final two alternatives, the selection of the proposed tie into NEP's 69 kV line in Monroe Village was made on the basis of the availability of an undeveloped, cleared lot adjacent to NEP's I9/J10 115 kV line, the lack of local opposition to the substation, and the second lowest estimated construction cost. The Monroe Bridge substation alternative was estimated at the time of the comparative route analysis (circa 2003) to cost $2.7 million,[13] second only to the $2.4 million cost of the alternative involving the construction of a new substation on Central Shaft Road.

The Department finds that the Petitioners' decision to pursue the proposed route, rather than one of the other identified alternatives would be advantageous and would result in less impact.

C. Impacts of the Proposed Project

In accordance with its responsibility to undertake a broad and balanced consideration of all aspects of the general public interest and welfare, the Department examines the impacts associated with the proposed project to identify any significant impacts that might occur during the construction

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Road rather than on River Road in Monroe Bridge. Subsequently, the Petitioners elected to propose siting the substation less than a mile away on available undeveloped, cleared land adjacent to 69 kV Line I9/J10 off River Road in Monroe Bridge Village.

[13] More recently prepared detailed cost estimates indicate that the proposed alternative would cost approximately $3.2 million. The Petitioners stated that the time-related escalation in costs for the proposed alternative reasonably would be expected to be similar for the other four alternatives.

and operation of the project.

With respect to land use and visual impacts, the record shows that the proposed project would be located within existing public ROWs and, for two-thirds of the route, would be co-located on new poles with an existing MECO distribution line and possibly a telephone lin Thus, for most of its route the proposed tie line would be consistent with current land use and would not increase the number or appearance of utility poles (and could actually decrease the number of poles if telephone lines were attached to the tie line poles). The selection of existing public ROWs and the co-location with the MECO distribution lines would minimize the visual impact by limiting the amount of new area to be cleared or trimmed (Tr. at 31-32). The new poles would primarily be wooden, as are the existing poles, but would be approximately 15 feet taller than the existing poles in order to accommodate both the tie line and the distribution line with appropriate separation. The Petitioners do not expect the additional height of the poles to substantially increase the amount of trimming or clearing, as the circumferences of the trees tends to decrease with height (Tr. at 3-4). Furthermore, the Petitioners plan to make use of the Hendrix spacer cable system in which the wires are bundled together and suspended off a single arm on the road side of the pole. Compared with a traditional cross arm design, the Hendrix spacer cable system reduces the amount of clearing that is required on the non-road side of the pole. The Department finds that by using existing public ROWs, replacing existing wooden utility poles with similar poles and by using the Hendrix spacer system, the Petitioners have designed a system which would minimize the visual impacts of the proposed tieline.

With respect to impact on wetland resource areas, the record shows that the Petitioners surveyed the route of the proposed tieline to delineate any wetland resource areas. Once these wetland resources were identified, the record indicates that the Petitioners undertook a number of measures in the design of the tieline that would serve to minimize the impact of the proposed tieline

on wetland resource areas. These measures include:

- location of poles within existing public ROWs which are already cleared (Exh. MECo/PPM-4, at 5);
- suspension of the tieline over the roadway by means of a davit arm and Hendrix spacer cable system to reduce the required amount of clearing on the non-road side (id. at 6) ;
- adjustment of pole spacing and placement, and guy wire placement, to avoid wetland impacts as needed (id.);
- the potential limited use of self-supporting wood laminate poles in areas where, due to the location of the existing roadway or a water resource area, it is not feasible to use customary tie-backs or guys (id.); and
- cross-over of lines to the opposite side of the roadways as needed to minimize the location of poles in wetland resource areas (id.).

The record indicates that for poles which would be located within a buffer zone of a BVW or in a Riverfront Area, best management practices would be used to control erosion and manage storm water, including stabilizing and re-seeding exposed soils, and use of erosion control or approved "bio-fence" sediment barriers.

Based on the Petitioners' delineation of wetland resources, proposed use of existing public ROWs, and proposed use of the measures to limit impact of the pole placement described above, the Department finds that the Petitioners would use reasonable measures to limit the impact of the proposed tieline construction and operation on wetland resources.

With respect to EMF, the record indicates that peak electric field strengths would remain the same or decrease very slightly when the proposed tieline is combined with the local MECO distribution lines (Exh. DPU-EMF-1). The record also indicates that peak magnetic field strengths would increase slightly when the proposed tieline is combined with the 13.8 kV MECO distribution line along River Road in Monroe Bridge Village, but decrease significantly when the tieline is combined with the 2.4 kV MECO distribution line (id.).

With respect to endangered species, the record indicates that a rare plant species survey was

conducted in the vicinity of the proposed tieline based on recommendations from the NHESP. The record further indicates thatno rare plant species were documented within the vicinity of the proposed tieline. The Petitioners stated that NHESP did not require a survey for state-listed animal species.

With respect to sites of potential historical or archaeological interest, the record shows that after the Petitioners' consultants completed their archeological reconnaissance survey of the wind project site as well as the proposed route of the tieline, the MHC issued a letter on January 7, 2004 stating that no further review was required.

With respect to construction impacts, the record indicates that during the estimated 16- week construction period for the tieline, work would be confined to the hours between 7 a.m. and 5 p.m., and that the Petitioners would work with local authorities to minimize the impacts of construction on local traffic. The Petitioners have received or are in the process of receiving all necessary state and local permits.

Based on the above, the Department concludes that the proposed tieline would result in minimal adverse local impacts.

D. Conclusion

The Department has found, above, that the proposed Transmission Line would serve a need to interconnect the planned Hoosac Wind Project to the bulk power grid operated by ISO-NE. The Department also has found that the Petitioners' decision to pursue the proposed route, rather than one of the other identified alternatives, would be advantageous and result in less impact. The Department found, above, that the proposed Transmission Line would result in minimal adverse local impacts.

Based on its analysis in Section IV. C. above, the Department finds that the public interest in the construction of the proposed project would outweigh the adverse environmental impacts of the project. Consequently, pursuant to G.L. c. 164, § 72, the Department finds that the proposed 34.5 kV

and 69 kV transmission tap lines are necessary for the purpose alleged, will serve the public convenience, and are consistent with the public interest.[14]

V. ORDER

Accordingly, after due notice, hearing and consideration, it is hereby

ORDERED: That the proposed Massachusetts Electric Company 34.5 kV Transmission Line through the Towns of Florida and Monroe, together with the proposed New England Power Company 69 kV tap lines that will together connect the Hoosac Wind Project to the transmission system operated by ISO-NE, as described in the petition and exhibits of the Petitioners, are necessary for the purpose alleged, and will serve the public convenience and are consistent with the public interest pursuant to G.L. c. 164, § 72; and it is

FURTHERED ORDERED: That the Petitioners work cooperatively with municipal and state officials and affected property owners in Florida and Monroe, to minimize any traffic other local impacts associated with the proposed Transmission Line; and it is

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[14] The Department notes that the Hoosac Wind Project and the proposed Transmission Line to interconnect it with the ISO-NE bulk power system would further several Massachusetts and New England energy and environmental policy goals including: (i) meeting the goals of the State and Regional Renewable Energy Portfolio programs; (ii) achieving the carbon dioxide reduction objectives of the Regional Greenhouse Gas Initiative; (iii) reducing our reliance on fossil fuels; and (iv) diversifying the types of generating capacity.

FURTHER ORDERED: That the Petitioners shall obtain all governmental approvals necessary for this proposed Transmission Line project before construction commences.

By Order of the Department:

/s/
Paul J. Hibbard, Chairman

/s/
W. Robert Keating, Commissioner

/s/
Tim Woolf, Commissioner