The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC UTILITIES

D.P.U. 09-27/09-28

March 26, 2010

Petition of New England Power Company d/b/a National Grid pursuant to G.L. c. 164, § 72, for approval to construct and operate a 115 kV transmission line in the Towns of Groveland, West Newbury, Merrimac and Amesbury and Petition pursuant to G.L. c. 40A, § 3 for exemption from the Zoning By-Laws of Groveland, West Newbury, Merrimac and Amesbury to construct a 115 kV transmission line project.

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I. INTRODUCTION

A. Description of Proposed Project

On March 20, 2009, the Petitioner, New England Power Company d/b/a National Grid ("National Grid" or the "Company"), filed a petition with the Department of Public Utilities ("Department") pursuant to G.L. c. 164, § 72 seeking approval to construct and operate a 7.2 mile, overhead 115 kilovolt ("kV") electric transmission line within an existing right-of-way ("ROW") in the towns of Groveland, West Newbury, Merrimac and Amesbury ("Section 72 Petition"). On March 20, 2009, National Grid also filed with the Department a related petition pursuant to G.L. c. 40A, § 3 requesting both individual zoning exemptions as well as comprehensive zoning exemptions from the zoning by-laws of the Towns of Groveland, West Newbury, Merrimac and Amesbury ("Zoning Exemption Petition").[1]

The proposed transmission line, to be known as the K-163 line, would extend from the King Street Substation in Groveland to the new West Amesbury Substation presently under construction ("K-163 line" or the "project")(Exh. NG-1, at ¶ 6). The K-163 line would be constructed in an existing ROW which is currently occupied by two distribution lines and one transmission line: (1) the 23 kV 2396 line, located on the northwesterly side of the ROW ("2396 line"), (2) the 23 kV 2377 line, located near the middle of the ROW ("2377 line"), and (3) the 345kV 394 line, which is located on the southeasterly side of the ROW ("394 line"). The K-163 line would be constructed in the place of the existing 2377 line, which would be

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[1] On June 19, 2009, the Chairman of the Department issued an Order consolidating the Department's review of the two Petitions.

dismantled as part of the project (Exh. NG-1, at ¶ 7). The Company asserts that the K-163 line is needed as a second source of transmission supply to the new West Amesbury #275 Substation ("West Amesbury Substation") in the event of an extended outage of the Substation's 345 kV/115 kV transformer (Exh. NG-1, at ¶ 6).

B. Procedural History

On April 17, 2009, the Department issued a Notice of Filing and Public Hearing that established June 8, 2009 as the deadline for petitions to intervene or for limited participant status. A site visit and the public hearing were conducted on May 27, 2009.

In support of its petition, the Company presented the pre-filed testimony of the following witnesses: (1) Robert Andrew Schneller, Project Manager in the Transmission Investment Management Department for National Grid, addressing project need, scope, permitting, public outreach, schedule and budget; (2) Brian V. Hayduk, Manager of the Asset Planning Department for National Grid, addressing the project need from a distribution planning perspective; (3) Gabriel Gabremicael, Manager of Transmission Planning for National Grid, addressing the findings of the 2003 Transmission System Study and the 2006 Merrimack Valley/North Shore Area Reliability Study as they relate to the proposed K-163 line; (4) Lisa Sasur, Senior Engineer in the Transmission Line Engineering Department for National Grid, addressing the engineering and design of the Company's project; (5) Frederick Paul Richards, Senior Environmental Consultant for Mason & Associates, addressing the environmental resource-related permitting related to the project; (6) Peter A. Valberg, Ph.D., Principal, Gradient Corporation, addressing electric and magnetic field ("EMF") impacts;

(7) Liana P. Moore, Esquire, Partner, at Bowditch & Dewey LLP, addressing the zoning requirements for the proposed project in the towns of Groveland, West Newbury, Merrimac and Amesbury; and (8) Diedre Matthews, Director of Siting and Permitting for National Grid overseeing the implementation of National Grid's siting policies.

On June 5, 2009, a petition to intervene and/or to participate ("Petition") was filed on behalf of Merrimac Municipal Light Department ("MMLD"). National Grid is MMLD's transmission service provider. MMLD asserted that it has experienced numerous problems with transmission service from National Grid (MMLD Petition at 2). National Grid did not oppose the Petition and on June 26, 2009, the Department granted intervenor status to MMLD. MMLD issued two sets of information requests to the Company and cross-examined National Grid witnesses at the evidentiary hearing held on October 14, 2009 (MMLD Brief at 2). Over the course of this proceeding, MMLD and National Grid engaged in discussions to resolve their issues, including reliability of service (id.). On December 7, 2009, MMLD and National Grid executed a Settlement Agreement which, among other things, contemplates the construction of a second interconnection to MMLD at MMLD's cost as a means to improve reliability of electric transmission service to MMLD and its customers (id.). Accordingly, MMLD now supports the proposed K-163 project and all relief sought by National Grid in this proceeding (id.).

On October 14, 2009 and October 20, 2009, the Department conducted evidentiary hearings. The evidentiary record consists of approximately 200 exhibits, including the

Company's Petitions and responses to information requests. The Company and MMLD filed their briefs on December 9, 2009.

II. REQUESTS FOR INDIVIDUAL ZONING EXEMPTIONS

A. Standard of Review

G.L. c. 40A, § 3 provides, in relevant part, that:

> Land or structures used, or to be used by a public service corporation may be exempted in particular respects from the operation of a zoning ordinance or by-law if, upon petition of the corporation, the [Department] shall, after notice given pursuant to section eleven and public hearing in the town or city, determine the exemptions required and find that the present or proposed use of the land or structure is reasonably necessary for the convenience or welfare of the public . . .

Thus, a petitioner seeking exemption from a local zoning by-law under G.L. c. 40A, § 3 must meet three criteria. First, the petitioner must qualify as a public service corporation. Save the Bay, Inc. v. Department of Public Utilities, 366 Mass. 667 (1975) ("Save the Bay"). Second, the petitioner must establish that it requires exemption from the zoning ordinance or by-law. Boston Gas Company, D.T.E. 00-24, at 3 (2001). Finally, the petitioner must demonstrate that its present or proposed use of the land or structure is reasonably necessary for the convenience or welfare of the public. Massachusetts Electric Company, D.T.E. 01-77, at 4 (2002); Tennessee Gas Pipeline Company, D.T.E. 01-57, at 3-4 (2002).

1. Public Service Corporation

In determining whether a petitioner qualifies as a "public service corporation" ("PSC") for the purposes of G.L. c. 40A, § 3, the Massachusetts Supreme Judicial Court has stated:

> among the pertinent considerations are whether the corporation is organized pursuant to an appropriate franchise from the State to provide for a necessity or convenience to the general public which could not be furnished through the

> ordinary channels of private business; whether the corporation is subject to the requisite degree of governmental control and regulation; and the nature of the public benefit to be derived from the service provided.

Save the Bay at 680. See also, D.T.E. 00-24, at 3-4; Berkshire Power Development, Inc., D.P.U. 96-104, at 26-36 (1997).

The Department interprets this list not as a test, but rather as guidance to ensure that the intent of G.L. c. 40A, § 3 will be realized, i.e., that a present or proposed use of land or structure that is determined by the Department to be "reasonably necessary for the convenience or welfare of the public" not be foreclosed due to local opposition. See D.P.U. 96-104, at 30; Save the Bay at 685-686; Town of Truro v. Department of Public Utilities, 365 Mass. 407, at 410 (1974). The Department has interpreted the "pertinent considerations" as a "flexible set of criteria which allow the Department to respond to changes in the environment in which the industries it regulates operate and still provide for the public welfare." D.P.U. 96-104, at 30; See also Dispatch Communications of New England d/b/a Nextel Communications, Inc., D.P.U./D.T.E. 95-59-B/95-80/95-112/96-113, at 6 (1998). The Department has determined that it is not necessary for a petitioner to demonstrate the existence of "an appropriate franchise" in order to establish PSC status. D.P.U. 96-104, at 31.

2. Public Convenience or Welfare

In determining whether the present or proposed use is reasonably necessary for the public convenience or welfare, the Department must balance the interests of the general public against the local interest. Save the Bay, 366 Mass. at 680; Town of Truro, 365 Mass. at 410. Specifically, the Department is empowered and required to undertake "a broad and balanced

consideration of all aspects of the general public interest and welfare and not merely [make an] examination of the local and individual interests which might be affected." New York Central Railroad v. Department of Public Utilities, 347 Mass. 586, 592 (1964). When reviewing a petition for a zoning exemption under G.L. c. 40A, § 3, the Department is empowered and required to consider the public effects of the requested exemption in the State as a whole and upon the territory served by the applicant. Save the Bay, 366 Mass. at 685; New York Central Railroad, 347 Mass. at 592.

With respect to the particular site chosen by a petitioner, G.L. c. 40A, § 3 does not require the petitioner to demonstrate that its primary site is the best possible alternative, nor does the statute require the Department to consider and reject every possible alternative site presented. Rather, the availability of alternative sites, the efforts necessary to secure them, and the relative advantages and disadvantages of those sites are matters of fact bearing solely upon the main issue of whether the primary site is reasonably necessary for the convenience or welfare of the public. Martarano v. Department of Public Utilities, 401 Mass. 257, 265 (1987); New York Central Railroad, 347 Mass. at 591.

Therefore, when making a determination as to whether a petitioner's present or proposed use is reasonably necessary for the public convenience or welfare, the Department examines: (1) the present or proposed use and any alternatives or alternative sites identified; (2) the need for, or public benefits of, the present or proposed use; and (3) the environmental impacts or any other impacts of the present or proposed use. The Department then balances the interests of the general public against the local interest, and determines whether the present

or proposed use of the land or structures is reasonably necessary for the convenience or welfare of the public. D.T.E. 00-24, at 2-6; D.T.E. 01-77, at 5-6; D.T.E. 01-57, at 5-6; Tennessee Gas Company, D.T.E. 98-33, at 4-5 (1998).

3. Exemption Required

In determining whether exemption from a particular provision of a zoning by-law is "required" for purposes of G.L. c. 40A, § 3, the Department makes a determination whether the exemption is necessary to allow construction or operation of the petitioner's proposed project. See D.T.E. 01-77, at 4-5; D.T.E. 01-57, at 5; Western Massachusetts Electric Company, D.P.U./D.T.E. 99-35, at 4, 6-8 (1999); Tennessee Gas Company, D.P.U. 92-261, at 20-21 (1993). It is a petitioner's burden to identify the individual zoning provisions applicable to the proposed project and then to establish on the record that exemption from each of those provisions is required:

> The Company is both in a better position to identify its needs, and has the responsibility to fully plead its own case . . . The Department fully expects that, henceforth, all public service corporations seeking exemptions under c. 40A, § 3 will identify fully and in a timely manner all exemptions that are necessary for the corporation to proceed with its proposed activities, so that the Department is provided ample opportunity to investigate the need for the required exemptions.

New York Cellular Geographic Service Area, Inc., D.P.U. 94-44, at 18 (1995).[2]

B. Public Service Corporation Status

National Grid is an electric company as defined by G.L. c. 164, § 1 and as such, qualifies as a public service corporation for purposes of G.L. c. 40A, § 3. See New England

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[2] See also Footnote 15 below.

Power Company, D.P.U. 92-79/92-80, at 6 (1992); New England Power Company, D.T.E. 03-128, at 7 (2005) NSTAR Electric, D.T.E./D.P.U. 07-09/10, at 8 (2007); Boston Edison Company d/b/a NSTAR Electric, EFSB 04-1; D.T.E. 04-5/04-7, at 150 (2005).

C. Public Convenience or Welfare

1. Need for or Public Benefit of Use

a. Company Position

The Company explains that it is undertaking a series of projects to improve its distribution and transmission systems to address existing supply and reliability issues in the Merrimack Valley area (Exh. NG-1, at ¶ 2). As a component of that overall upgrade, the Company is presently constructing the West Amesbury Substation to transfer approximately 65 MW of load currently supplied by the King Street Substation in Groveland (Exh. DPU-G-1). According to the Company, this transfer of load is necessary to ensure that peak loads served from the King Street Substation remain within the King Street Substation's firm rating and to avoid potential thermal overloads and low voltage conditions under certain contingencies (Exhs. DPU-RR-1; NG-BVH at 4).[3]

[3] Regarding peak loads, the Company notes that in 2006 load reached 220 MW, approaching the 225 MW firm rating of the King Street Substation (Exh. NG-BVH at 4). However, peak loads since 2006 have been lower and are now forecasted to gradually approach, but not exceed, the Substation's 225 MW rating over the next eight years (reaching 222 MW by 2018) (Exh. DPU-N-12). Regarding the voltage requirements, however, the Company indicates that both existing and forecasted peak load for the King Street area clearly exceed the 175 MW level at which unacceptable voltage occurs under a contingency of an outage of certain 23 kV lines (2377 or 2396) emanating from the King Street Substation (Exh. NG-BVH at 4; DPU-RR-1).

The Company states that the primary purpose of the proposed K-163 line is to provide backup supply for the West Amesbury Substation which is needed to mitigate the potential for long duration outages in the event of a transmission failure (Exh. NG-BVH at 3, 7).[4] The Company states that the primary transmission source for the West Amesbury Substation is the existing 394 line (id.). The West Amesbury Substation was constructed to tap power off that line and step it down to 115 kV through a 345/115 kV transformer (id.).[5]

The proposed K-163 line be energized and carrying load connecting the West Amesbury Substation to the 115 kV transmission network under normal operations (Exh. DPU-EMF-6). According to the Company, the need for the proposed line is to provide a backup transmission source to maintain reliability in the event of an extended outage of the 345/115

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4 The need for the proposed project has been addressed in three studies: (1) The King Street Area Subtransmission Study (September 2003), prepared by Brian Hayduk (Exh. NG-BVH-1); (2) The King Street Area System Impact Study (September 2003), prepared by Gabriel Gabremichael (Exh. NG-GG-1); and (3) The Merrimack Valley North Shore Transmission Reliability Study (March 2006), prepared by ABB, Gabriel Gabremichael and John Martin (Exh. NG-DPU-G-7).

5 The West Amesbury Substation includes the following transformers: a 345/115 kV transformer, two 115/23 kV transformers and a 115/13 kV transformer as well as a backup 23/13 kV transformer (Exhs. DPU-G-1; NG-GG at 4; Company Brief at 17). Construction of the 345/115 kV and 115/23 kV portions of the substation commenced in July 2008 and were slated for completion in December 30, 2009 (id). The 115/23 kV portion of the substation is intended to tie into and reinforce the existing Massachusetts Electric Company 23 kV system serving Newbury, Amesbury and Salisbury (Exhs. DPU-G-1). Construction of the 115/13 kV portion of the West Amesbury Substation is slated for completion in June 2010 (Exh. DPU-G-1). The 115/13 kV portion of the substation is intended to supply additional distribution feeders in the Amesbury/Salisbury area and thereby relieve the 23 kV system so it can better supply and backup other sub-23 kV lines in Newbury and Newburyport (Exhs. DPU-G-1; NG-BVH at 5-6; Company Brief at 17, 18).

kV transformer (Exh. NG-GG at 4). The Company states that based on its past experience, if the 345/115 kV transformer at the West Amesbury Substation fails, it would take approximately one month for the Company to remove the failed transformer, move a new 345 kV transformer into place from another location, and install and test the new transformer (Exh. DPU-G-2, Company Brief at 15).

The Company explains that if the 345 kV transmission supply to the West Amesbury Substation is lost and a backup transmission source is not available, the entire 65 MW of load supplied by the West Amesbury Substation (including load in Amesbury, Merrimac, Salisbury, West Newbury and small portions of Haverhill and Newburyport) would have to be served from the King Street Substation via the 2377 and the 2396 lines (the existing 23 kV lines in the ROW) (Exh. NG-BVH at 8). If one of the 23 kV lines then trips, the remaining 23 kV line would be required to carry its load plus the load from the interrupted line; if load is heavy, the Company asserts the remaining line voltage would sag to unacceptable levels and result in interrupted or unreliable service (id.).[6] These problems would persist until the 345/115 kV transformer could be replaced (up to one month) (id.). National Grid points out that as load increases over time, the ability of these two 23 kV lines to adequately backup the West Amesbury Substation load decreases (id.).

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[6] The Company indicated unacceptable voltage conditions will occur when the area load exceeds 175 MW (Exh. DPU-RR-1). The Company states that an extended outage of the 345/115 kV transformer could also lead to interrupted or unreliable service if combined with a subsequent outage of any of various other 115 kV or 23 kV elements serving the area, including: (1) the incoming 115 kV B-154 line of the King Street Substation; (2) the King Street 23 kV bus #1; or (3) the backup 23/13 kV transformer at the West Amesbury Substation (Exh. NG-GG at 4).

The Company also notes that the proposed project, as a second transmission supply to the West Amesbury Substation, would provide better capability to schedule equipment outages for the purposes of performing maintenance activities without interrupting service to customers (Exh. NG-BVH at 8).

b. Analysis and Findings

The record shows the West Amesbury Substation is being constructed for the purpose of alleviating load at the existing King Street Substation and to reinforce the existing 23 kV system (Exhs. DPU-G-1; NG-1, at ¶ 4). The record further demonstrates that the proposed K-163 line is necessary to serve as a backup transmission source for the West Amesbury Substation and would be energized and carrying load as a part of the 115 kV transmission network under normal operations (Exhs. NG-1, at 3; DPU-EMF 6). The evidence further shows that as a backup transmission source, the K-163 line will ensure reliability during an extended outage of the West Amesbury Substation's 345/115 kV transformer as well as provide better capability to schedule equipment outages to perform maintenance activities without interrupting service to customers (Exhs. NG-GG at 4; NG-BVH at 8).

Accordingly, the Department finds that there is a need for, and that public benefits would result from, the construction and operation of the proposed project.

2. Alternatives Explored

The Company considered alternatives to the proposed project and a number of possible routing alternatives and determined that the proposed project meets the identified need, at the least cost and with the least environmental impact (Exh. NG-1, at ¶ 18). The Company asserts

that the proposed project is superior to the alternative approaches in terms of cost, ability to meet the need, minimization of environmental impacts and earliest required in-service date (id. at ¶¶ 18, 19; Exh. NG-GG at 3).

a. Proposed Project

Section I.A. on page 1 provides a physical description of the proposed project. The K-163 line would contain three electric power conductors generally arranged in a delta configuration to be supported by single-shaft steel pole structures (Exh. NG-LGS at 3). With respect to cost, the Company states that the proposed project will cost approximately $12.3 million (Exh. NG-RAS at 6). National Grid considers the K-163 line to be pool transmission facilities under the ISO-NE transmission tariff and the costs to construct the project would be regionalized (Tr. 2, at 246).

b. New ROW Alternative

The Company considered the alternative of an overhead line located in a new ROW. The Company asserts that eastern Massachusetts is densely developed and while there may be large isolated parcels of land on the market, the likelihood of being able to acquire seven miles of contiguous land, approximately 80 feet wide, would not be promising (Exh. DPU-W-5(i) at 21; Tr. 2, at 196, 197). The Company argues that another challenge is to make the route as straight as possible because at locations where the ROW is not straight, an angle structure of much larger size with a concrete foundation would be required (id.). The Company asserts that it could take years to identify and negotiate property interests in land, if such land existed (id.). The Company states that when the potential for a new overhead ROW was examined,

there were no obvious utility or rail ROW's in which to collocate (Tr. 2, at 197). A new ROW would require obtaining interests in the land via easements or purchase/fee lands (Exh. DPU-W-5(i) at 22).

The Company indicates that another challenge would be the route's deviation from the portion of the existing ROW that passes through the Crane Pond Wildlife Management Area (id.). Finding another ROW through this area would require conversion of Article 97 lands, which the Company argues can be a lengthy and highly uncertain process (id.). Therefore, the project team concluded that a new ROW was not readily available in the area and that creating a new ROW would increase the project's environmental impacts and costs and would significantly delay the delivery of the project (Exh. NG-RAS at 4). As such, the Company states that it did not explore this option in further detail (id. at 5).

c. ROW Underground Alternative

The Company considered the alternative of an underground cable option within the existing ROW between the King Street Substation and West Amesbury Substation which is approximately 7.2 miles long (Exhs. NG-RAS at 5; NG-RAS-3, at 1).

The Company concluded that there are a number of disadvantages with the use of the existing overhead ROW corridor for an underground transmission line, including (1) the existing ROW crosses the Crane Pond Wildlife Management Area, and (2) a significant portion of the existing ROW is within wetlands or wetland buffer zones (Exh. NG-RAS-3, at 1). The Company explains that in the case of overhead transmission construction, excavation primarily occurs at the tower locations and it is possible in many cases to span wetlands and other

sensitive areas (id. at 1,2). For underground construction, however, it is necessary to trench the entire route, or to use trenchless techniques such as directional drilling, which the Company asserts would entail additional design and construction complexity as well as increased costs (id. at 2). In addition, the Company states that it would be necessary to construct an extensive and permanent access road along the ROW for an underground line which would not be required for an overhead line (id.).

The Company also points out that there would be crossings at the Merrimack River and numerous other streams along the existing ROW (Exh. NG-RAS-3, at 3). An underground crossing of the Merrimack River would require horizontal directional drilling or an underwater open trench technique (id.). The Company estimates that a directional drilling operation would require a staging area of at least 100 feet by 200 feet on both sides of the river (Exh. DPU-A-3). On one side of the river, 1,500 to 2,000 linear feet would be required to assemble and lay out the conduit to be installed beneath the river (id.).

National Grid noted that it does not necessarily have the rights to install underground lines in areas where the ROW is not owned in fee (Exh. NG-RAS-3, at 2). The Company also asserts that constructing an underground line across the Crane Pond Wildlife Management Area may require Article 97 approval (id.).

The Company concluded that underground construction techniques for the ROW underground alternative would cause an increase in short and long term impacts to the Crane Pond Wildlife Management Area and the wetland resources along the route (Exh. NG.RAS-3, at 2). The project team ruled out an underground cable option in the existing ROW because of

the environmental, technical, and permitting difficulties as well as increased costs (Exh. NG-RAS at 5).

d. Street Underground Alternative

The Company considered the alternative of an underground cable option located within public streets (Exh. NG-RAS-3, at 2). The Company selected a roadway network for this analysis that was a reasonably direct route between the substation locations, approximately 8.9 miles in length with a preliminary cost estimate of $77.5 million (id., Exh. NG-RAS at 5).[7]

The Company determined that there are a number of disadvantages associated with the underground alternative within public streets. The public roadway network route would require a crossing of the Merrimack River, either via horizontal directional drilling or by an open trench technique (id. at 3). The Company states that both techniques would require a significant amount of land on both river banks for staging and construction (id. at 5). The Company indicates that due to the residential development and topography of the area, additional investigation would be required to locate a suitable area for the crossing (id.). The Company states that there are also several smaller stream crossings along the route and excavation in wetland buffer zones may require specialized construction techniques (id. at 3). The National Grid project team ruled out an underground cable option in public streets based

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[7] Exiting the King Street Substation, north on King Street, the route would follow King Street and Center Street, in Groveland; then Middle Street, Georgetown Road, up Meetinghouse Hill Road, Sawmill Brook Road, Stewart Street, Route 113, Coffin Street and River Street in West Newbury and after crossing the Merrimack River, traverse the intersection of Pleasant Valley Road and follow Skunk Road to Middle Road in Merrimac and follow Middle Road in Amesbury to the West Amesbury Substation site (Exh. NG-RAS-3, at 2).

on significant temporary effects on traffic during conduit and cable installation, specialized construction techniques for crossing the Merrimack River and significantly higher cost (Exhs. NG-RAS at 5; NG-RAS 3, at 5).

e. Analysis and Findings

The record shows that the Company considered the proposed project along with three alternatives. The Company's analysis of a new ROW alternative demonstrates likely difficulties in obtaining property rights, including identifying and negotiating property interests in land for seven miles of contiguous parcels and approval to convert to utility use Article 97 lands through the Crane Pond Wildlife Management Area (Exhs. DPU-N-5(i); DPU-W-5(i) at 22). The record shows the Company rejected the new ROW alternative given a corridor was not readily available in the area and creating a new ROW would increase the project's environmental impacts and costs as well as delay the delivery of the project (Exh. NG-RAS at 4).

The Company's analysis reveals that the ROW underground alternative would require excavation to install the line, including crossing the Crane Pond Wildlife Management Area, significant portions of wetlands or wetlands buffer zones and the Merrimack River via horizontal directional drilling or by underwater open trench techniques (Exh. NG-RAS-3, at 1). This option also poses uncertainties as to the sufficiency of the Company's rights to install an underground line where the ROW is not owned in fee (Exh. NG-RAS-3, at 2). The record shows that the Company ruled out the underground cable option in the existing ROW because

of environmental, technical and permitting difficulties in addition to higher cost (Exhs. NG-RAS at 5; DPU-A-1).

The street alternative would also necessitate crossing the Merrimack River via horizontal directional drilling or by underwater open trench techniques as well as possible use of specialized construction for several smaller stream crossings and excavation in wetland buffer zones (Exh. NG-RAS at 5). Additionally, there would be increased traffic and noise impacts from in-street construction, including conduit and cable installation, along with increased costs (id.). The record shows the Company rejected the street underground alternative based on its estimated cost of $77.5 million, over 6 times the cost of the proposed project.

The Company concluded that the proposed project, an overhead line that extends 7.2 miles within the existing ROW, would meet the need for a second transmission source to the West Amesbury Substation, with the least environmental impacts, without any need for obtaining property interests in land for a new ROW, and with the least cost. The record shows that the Company chose the route and configuration which represents the most feasible and prudent design with respect to environmental impacts, earliest delivery date and cost (Exh. DPU-W-5(a) at 33).

Accordingly, the Department finds National Grid's decision to pursue the proposed project, rather than pursuing the other alternatives, was reasonable.

3. Impacts of the Proposed Use

a. The Company's Position

i. Land Use and Visual Impacts

The existing ROW contains mainly undeveloped areas including an easement through the Crane Pond Wildlife Management Area in Groveland and West Newbury and also extends through rural residential areas (Exh. NG-FPR-3, at 5). The Company proposes to construct the K-163 line near the middle of the ROW using approximately 70 new weathering steel pole structures, which would stand 85 feet above grade (Exhs. NG-1, at ¶ 8; NG-LGS at 3). Two existing steel poles on either side of the Merrimack River crossing would be reused (id.). Although the height of the existing structures for the 2377 line is 35 feet and the structures for the proposed K-163 would be 85 feet, the project includes removing approximately 173 wood poles that carry the existing 2377 line and installing 70 new steel poles to carry the K-163 line, which would result in a 40 percent reduction in the number of structures (Exhs. NG-FPR-3, at 28; NG-LGS at 3; LGS-6).

The Company asserts that the K-163 line primarily would be single circuit. However, in two separate locations, the ROW is not wide enough to allow adequate electric line separation distances to be maintained between the proposed K-163 line and the 2396 line (Exh. NG-1, at 3). To resolve this problem, the Company proposes to relocate the 2396 line from

the existing wood poles onto new steel double circuited structures to be shared with the K-163 line (Exhs. NG-1, at ¶ 8; DPU-W-5(i) at 13).[8]

The Company indicates that it has conducted mowing, hand cutting, and herbicide application along the existing ROW consistent with the Company's ROW vegetation maintenance program (Exh. NG-LGS at 6). The Company states that there would be no herbicide use during the construction phase of the proposed project (Exh. NG-FPR at 5). The Company asserts that the proposed project would not necessitate additional clearing along the edges of the ROW nor would trees be removed along the edge of the ROW for this project (Exh. NG-LGS at 6). However, the Company states that three trees along the north side of Ash Street in West Newbury and three trees along the north side of Stewart Street in West Newbury may need to be removed to facilitate construction and ensure continuous safe operation of the line (Exh. DPU-V-1).

In addition, the Company anticipates that approximately 30-50 Christmas trees would be removed at a Christmas Tree Farm in West Newbury due to the need to install 3,500-5,000 square feet of construction matting to stabilize the construction area (Exh. DPU-RR-3). The Company has agreed to work closely with the landowner to ensure that appropriate compensation and/or replanting is provided to mitigate the impacts (id.).

The Company further states that it may need to cut approximately 6.7 acres of undergrowth vegetation to facilitate construction of the proposed structures (id.).

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[8] The K-163 line and the 2396 line would share three common structures in each location, one extending approximately 1,800 feet from the King Street Substation in Groveland and the second extending for an approximate distance of 1,300 feet near Bachelor Street in West Amesbury (Exh. NG-LGS at 4-6)

Furthermore, the Company states that it may clear approximately 12.6 acres of scrub-shrub vegetation for the utilization of the existing and proposed access roads (id.). The Company asserts that the vegetation would be cleared via brush hog mower and/or chainsaw (Exhs. DPU-V-2; NG-FPR at 7).[9] The Company would not replant the undergrowth or scrub-shrub vegetation although it currently proposes replanting in wetland replication areas and would install supplemental plantings if required by any of the Towns' Conservation Commissions upon final site inspections for certificates of compliance (Exh. DPU-V-1).

ii. Wetlands, Endangered Species, Historical and Archeological Resources

The Company retained wetland and rare species scientists to delineate the wetland boundaries and assess rare species' habitats along the entire ROW (Exh. NG-FPR at 5). In addition, in 2008 the Louis Berger Group, Inc. ("Berger") conducted an archaeological reconnaissance and intensive locational survey (Permit Number 3070) for the proposed K-163 line (Exh. DPU-HA-1, at 91). According to the Company, the plans were reviewed by a team consisting of wetlands and rare species scientists, transmission line engineering staff and transmission line construction staff to develop plans that best coordinated environmental, engineering and construction requirements (id.). The Company states that environmental

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[9] National Grid asserts that its construction staff, environmental staff and construction contractors are governed by a document entitled *ROW Access Maintenance and Construction Best Management Practices* (EG 303)(DPU-LU-2). The document details a broad range of best management practices, such as provisions for erosion and sediment controls, site grading, swamp mats, material storage, staging areas and minimization of soil and vegetation disturbance (id.). The Company states that for the proposed project, the construction crew would use swamp mats and various erosion and sedimentation control devices (Exh. DPU-W-6).

factors such as rare species habitat, and wetlands/streams as well as transmission design factors such as structure types, span lengths, horizontal sway, summer sag, access, constructability, and safety clearances all factored into the proposed project design (id. at 5,6).

(A) Wetland Impacts

The Company indicates that the project would result in the removal of approximately 61 existing 23 kV structures currently located in wetlands and construction of 13 new steel 115 kV structures and four new wood 23 kV structures in wetlands (id. at 6). Thus, there would be 44 fewer structures located in wetlands, a reduction of 72 percent (Exhs. NG-FPR at 5; DPU-W-5(i) at 36). The Company states that limitations on electrical conductor span length preclude removing all structures from wetlands (Exh. DPU-W-5(i) at 13).

At the time of the Company's Petition, National Grid's environmental consultant indicated there would be 1,645 square feet of permanent wetland alterations (Exh. NG-FPR at 6). However, at the request of the West Newbury Conservation Commission, the Company now proposes to provide new permanent access across wetland resources, via culverts adjacent to Sawmill Brook Road and Ash Street, in order to limit impacts to wetland resources during future electrical maintenance activities (Exh. DPU-W-5(i) at 34). The Company indicates the total amount of additional fill required for the placement of the culverts would be approximately 170 square feet, increasing the proposed permanent wetlands alterations to 1,815 square feet (Tr. 2, at 193).

The Company proposes that permanent fill alteration of 1,815 square feet would be mitigated by the creation of five replicated wetlands consisting of a total 3,290 square feet

(Exhs. DPU-W-5(i) at 36; DPU-W-3). The Company asserts that the areas selected for replication were as close as practical to the permanent fill areas while still being on the Company's fee lands (Exh. DPU-W-3). The Company would not locate replicated wetlands on easement lands because creating wetlands encumbers a piece of land by making it jurisdictional under various wetland regulations (id.).

The proposed wetland replication areas are scrub-shrub and emergent type wetlands with indigenous shrub species typically observed within wetland areas in the vicinity of the ROW (DPU-W-4). The wetland replication areas would be seeded and planted with shrub species similar to those species in areas altered in an effort to replicate the wetland functions and values (id.). Additionally, it is anticipated that "volunteer" species will re-colonize the area from the surrounding wetlands (id.). The anticipated estimated cost for the wetland replication areas is between $30,000 and $50,000 (id.).

The Company indicates that replication areas will be inspected annually for a period of two full growing seasons to ensure compliance with the performance standards for Bordering Vegetated Wetlands ("BVW") (Exh. DPW-W-5(a) at 47). Corrective actions would be undertaken as necessary to ensure that within two growing seasons there will be a 75 percent vegetative cover of indigenous wetland plant species (Exh. DPU-W-5(a) at 48)

With respect to temporary wetland impacts, National Grid indicated its environmental consultant initially estimated that the proposed project would involve approximately 149,882 square feet of temporary disturbance impacts to wetlands associated with the placement of swamp mats (Exh. NG-FPR at 6). However, as a result of conversations between the

Company and the Groveland and West Newbury Conservation Commissions, the Company has decreased the number of, and shifted the placement of, the swamp mats and estimates temporary impacts would now affect 138,911 square feet of wetlands (Tr. 2, at 193). In Groveland, the Company removed 2,000 square feet of proposed matting near two existing 23 kV poles that were in a certified vernal pool by agreeing to do the work in the winter when the mats would not be required (Tr. 2, at 194). The Company also decreased the number of swamp mats being proposed in West Newbury (id.).

As proposed by the Company, swamp mats would be utilized in numerous instances for construction tasks related to both the removal of poles and the erection of proposed structures (Exh. DPU-W-5(i) at 17). The Company indicates that soil borings must also be conducted prior to the construction of the dead-end structures (id.). The Company states that once structures are installed, wire pull areas consisting of larger areas of swamp mats would be positioned throughout sections of the ROW where some dead-end structures are located (id.). The Company states that swamp mat arrangements approximately 200 feet in length would be used to facilitate the stringing of the new conductor wire onto the new structures (id.). The Company indicates that the matting would be used to provide a stable, safe platform from which to string and tension the new electric line (id.). The Company asserts that use of swamp mats will not result in the permanent alteration of BVW or cause long-term change to the environment (Exh. NG-FPR at 6).

National Grid indicates that it proposes placement of new structures outside wetlands wherever possible (id.). The Company developed plans for siting structures to avoid wetland

crossings where possible and to keep crossing distances as short as practical (id.). The Company asserts that swamp mats would be used, as needed, to mitigate construction access in wetland areas (Exh. NG-FPR at 5). To minimize use of matting, whenever possible, the Company proposes routing access from perpendicular upland areas or old pole locations and positioning mats to maximize new structure construction as well as old pole removal from the same set of mats (id. at 6).

National Grid indicates that when the existing 23 kV poles are removed, temporary wetland disturbance may occur in two ways (Exh. DPU-W-2). First, if it is necessary to use swamp mats to access the poles, woody shrubs would be cut, leaving the root system intact (id.). Mats would be temporarily laid over the cut vegetation to provide a safe working surface as well as to minimize wetland disturbance by spreading the weight of the construction vehicle that would be removing the wood poles (id.). Mats would be used for access in herbaceous wetlands, as well, but in those areas there is usually no need for cutting (id.). Second, when the wood poles are pulled out of the ground a backhoe may be used to loosen the pole prior to its removal (id.). After the pole is removed, wetland soil surrounding the pole would be pushed back into the remnant hole (id.).

It has been the Company's experience that natural revegetation precludes the need for supplemental plantings for the restoration of wetlands (Exh. DPU-W-2). The Company states that in isolated instances, it may be warranted to apply mulch or hydroseed for initial stabilization (id.). The Company asserts that this is done on a limited, case-by-case basis and usually only if revegetation is unlikely to occur in a timely fashion (id.). The Company states

that all such work would be performed in accordance with best management practices and consistent with the respective Orders of Conditions from each of the four municipal conservation commissions (id.).[10]

(B) Endangered Species Impacts

The ROW intersects portions of the Natural Heritage and Endangered Species Program ("NHESP") areas of mapped Priority Habitat for rare species (Exh. NG-FPR at 7). The following State-listed species are within the project area:

Table 1 State-listed species within the proposed project area

Common Name	Binomial Nomenclature	Taxonomic Group	State Status
Bald Eagle	*Haliaeetus leucocephalus*	Bird	Endangered
Blanding's Turtle	*Emydoidea blandingii*	Reptile	Threatened
Wood Turtle	*Glyptemys insculpta*	Reptile	Special Concern
Shortnose Sturgeon	*Acipenser brevirostrum*	Fish	Endangered
Blue-spotted Salamander	*Ambystoma laterale x jeffersonianum*	Amphibian	Special Concern
Coppery Emerald Dragonfly	*Somatochlora georgiana*	Insect	Endangered

Sources: Exhs. DPU-E-1(a); DPU-W-5(a) at 89-90

In 2008, the Company retained Oxbow Associates to perform detailed studies and wildlife habitat evaluations at various locations within the ROW (id.). There are three areas that represent Estimated and Priority Habitats within the 7.2 mile ROW, including (1) an area closely associated with the Crane Pond Wildlife Management Area that includes the Blue-spotted Salamander, Blanding's Turtle and Wood Turtle; (2) a small area associated with the

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[10] The proposed project has received Orders of Conditions from the Conservation Commissions in Merrimac, Amesbury, and Groveland (Exh. DPU-W-5(i) at 13). The Company is awaiting issuance of the Order of Conditions from the West Newbury Conservation Commission (id.).

Indian River in West Newbury that includes the Coppery Emerald Dragonfly; and (3) an area limited to the Merrimack River with the Shortnose Sturgeon and Bald Eagle as the associated rare species (Exh. DPU-W-5(a) at 89, 90).

The Company underwent a Massachusetts Endangered Species Act, M.G.L. c. 131A, ("MESA") review (NHESP File No. 06-20334) (Exh. DPU-W-5(a) at 87). The NHESP MESA Review letter dated February 4, 2009 states that the NHESP determined that this project, as currently proposed, would not adversely affect the actual Resource Area Habitat of state-protected rare wildlife species pursuant to 310 CMR 10.18 and would not result in a prohibited "take" of state-listed species provided that the Company implement its January 6, 2009 Rare Species Mortality Avoidance Plan (id.). The Rare Species Mortality Avoidance Plan includes conditions regarding the avoidance of work within potential breeding areas, timing restrictions, placement of barriers to prevent movement of wildlife into the work zone, and searches by a qualified biologist to remove any state-listed species from the work zone (Exh. DPU-W-5(a), at 42, 43, 89-92). Presently, the NHESP does not anticipate any impacts to state-listed birds and with the implementation of proper erosion controls, impacts to state-listed fish would be avoided as well (Exh. DPU-W-5(a) at 43).

Oxbow Associates would be training contractors early in the project, which would include providing contractors with species lists, photographs, preferred habitats and guidance about what to do when the state-listed species are encountered (Tr. 2, at 231). The Company states that Oxbow Associates would perform weekly inspections to monitor construction work within rare species habitat (Exh. DPU-W-5(i) at 42).

(C) Historical and Archeological Resources

In 2008, Berger completed an archaeological reconnaissance and intensive locational survey (Permit Number 3070) for the K-163 line in response to a request by the Massachusetts Historical Commission ("MHC") on February 29, 2008 (Exh. DPU-HA-1, at 91).

In total, Berger performed 161 shovel tests at proposed structure locations and laydown areas for the archaeological survey (Exh. DPU-HA-1, at 3, 91). A single above-ground historic foundation in West Newbury was designated as the Bachelor Street-01 Site in the "area of potential effects" and shovel tests excavated west of the structure contained five isolated fragments (Exh. DPU-HA-1, at 91). Berger and MHC concluded that the stone foundation is not eligible for inclusion on the National Register. It is however, being logged into the MHC database as site WNB.HA.02 (Exh. DPU-HA-2; Company Brief at 29). The locational survey also revealed isolated fragments (e.g., ceramics, nails and brick) at several locations (Exh. DPU-HA-2). Berger and MHC did not deem them significant, however because the fragments were found in plowed soils or in soils subject to grading, filling or other modifications (Exh. DPU-HA-2). The fragments first will be offered to the landowner, alternatively, they will be professionally curated at the Connecticut Archaeology Center at Storrs, a federally approved repository (id.). The MHC reviewed Berger's survey and findings and issued a letter requiring no further study (Exhs. DPU-HA-3; DPU-HA-3 (a) and (b); Company Brief at 30).

Berger recommends that a buffer be established around the site and that it be clearly marked with highly visible barrier tape in the field during construction from the eastern edge of the ROW to 148 feet to the west and 72 feet south of Bachelor Street (Exh. DPU-HA-1, at

70). Berger further recommends that this area be recorded on all project plans as an area to be avoided by construction crews (id.). Pursuant to Berger's recommendation, the Company confirmed that the site would be depicted on the plans and will establish a 3-4 foot buffer around the site during construction with snow fencing up to 3.5 feet high (Tr. 2, at 235-237).

iii. Electromagnetic Fields

The Company indicates that, while proposed as a backup for contingency outage of the 345 kV supply, the proposed K-163 line would be energized and carrying load as part of the 115 kV transmission network under normal operations (Exh. DPU-EMF-6). The Company indicates that the direction and amount of power flow in the line would depend on transmission system conditions and general dispatch (Exh. DPU-EMF-6). The Company states that typically, summer peak load flow would be approximately 160 MVA and off-peak load flow would be approximately 130 MVA, flowing in the direction from West Amesbury to the King Street Substation (id.).

The K-163 line phasing arrangement on segments where it would be on single circuit structures is C-A-B top to bottom (Exh. DPU-EMF-4). According to the Company-commissioned study *Proposed K163 Transmission Line Project, Electric and Magnetic Field Assessment*, the C-A-B top to bottom phasing arrangement would produce the lowest calculated magnetic fields at both ROW edges (id.). The Company provided calculations of electric and magnetic fields for the proposed project, reflecting removal of the 2377 line and installation of the proposed K-163 line (Exh. NG-PAV-1). The Company's analysis included projections for the predominant configuration along the route, in which the proposed K-163 line is in

approximately the same alignment as the removed 2377 line between the existing 2396 line and 394 line (Exh. NG-PAV at 4; DPU-EMF-2).

According to the Company's expert, Dr. Valberg, the existing configuration of lines in the ROW produces magnetic fields of 33.7 milligauss ("mG") for the 2007 spring peak loading and 31.9 mG for the 2007 summer peak loading at the ROW edge closest to the 2396 circuit, and 56.5 mG for the 2007 spring peak loading and 71.1 mG for the 2007 summer peak loading at the ROW edge closest to the 394 circuit (Exh. NG-PAV at 4). Dr. Valberg points out that these levels fall below the Massachusetts Energy Facilities Siting Board guidelines of 85 mG at the ROW edges (id.). For the 2012 summer peak loading with the C-A-B top to bottom phasing arrangement, a magnetic field on the 23 kV edge of the ROW would be 30.4 mG and a magnetic field on the 345 kV edge of the ROW would be 60.9 mG (id.). The Company's expert testified that with the proposed C-A-B top to bottom phasing of the K-163 line, magnetic fields would decrease slightly compared to the existing conditions (Tr. 2, at 255).

For the existing ROW configuration, the calculated electric field is about 0.069 kV/m at the edge of the ROW closest to the 23 kV circuit and about 1.166 kV/m at the edge of the ROW closest to the 345 kV circuit (Exh. NG-PAV-3, at 9). With the proposed project, the calculated electric field ranges from 0.133 to 0.137 closest to the 23 kV circuit and about 1.179 at the edge of the ROW closest to the 345 kV circuit (Exh. NG-PAV-3, at B-9, B-13, B-15 and B-19).[11] According to the Company's expert, the best phasing arrangement for electric

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[11] There is a range for electric fields at the ROW closest to the 23 kV circuit because two segments have conductors with slightly different diameters, which causes a different rate of electric drop off with distance (Tr. at 251, 252).

fields of the K-163 line would be the C-B-A top to bottom, but the reduction compared to the C-A-B phasing arrangement is minimal (id.).

In the two sections where the K-163 line would be co-located on shared structures with the 2396 line, the proposed phasing arrangements would be B-C-A top to bottom for the 2396 line and C-A-B top to bottom for the K-163 line (Exh. DPU-EMF-2). The Company's expert indicates that the power flow for both lines is predominately in the same direction, and use of different top-to-bottom phasing in the respective lines serves to provide cancellation effects (id.). The proposed phasing arrangements would, on balance, be optimum for producing the lowest electric and magnetic fields along the edges of the ROW (id.).

iv. Construction Related Impacts

Project construction is anticipated to occur in four phases with an total estimated duration of approximately 46 weeks beginning in the Summer 2010 (Exh. DPU-N-4). The Company states normal work days would be Monday through Saturday 7:00 a.m. to 5:00 p.m. (Exh. DPU-NS-2). Work outside these hours is generally not expected, however, if unseen conditions significantly delay the construction schedule, the Company may need to work extended hours or on Sundays to maintain the schedule (id.). If deemed necessary to work outside the specified hours, the Company will seek permission from the relevant municipal authority (id.).

The first construction phase is the preparation of the ROW planned for one, ten-person crew, expected to last for approximately six weeks, which would include the delivery of materials, equipment, and swamp mats as well as the removal of the 2377 line (Exh. DPU-N-

4). The second construction phase, foundation installation, expected to last approximately 20 weeks would require one ten-person crew working five ten-hour days per week and would overlap with the ROW preparation phase (id.). The third phase of construction, structure installation, expected to last approximately 18 weeks would require one, ten-person crew and would overlap with the foundation installation phase (id.). The last construction phase, wire pulling, is expected to last approximately eight weeks and would consist of two, ten-person crews (id.). The Company asserts that construction of the proposed K-163 line and removal of the existing 2377 line would have minimal impact outside of the ROW (Exh. NG-LGS at 7).[12]

The Company has characterized land use abutting the ROW as open space and rural residential, with approximately 150 residences within 300 feet of the ROW based on a review of the 300-foot abutters list and aerial photographs (Exhs. DPU-LU-1; DPU-LU-3). National Grid asserts that due to the geographical area and rural nature of the proposed project, the impact on individual abutters would be intermittent (Exh. DPU-G-11).

National Grid states that two to three weeks prior to the commencement of construction, a mailing concerning the construction schedule, construction activities and company liaison details for concerned residents to ask questions or express concerns will be sent to abutters and municipal officials (Exh. DPU-G-11; Tr. 2, at 243). National Grid indicates that special construction plans, such as utilization of helicopters to string wires would also be pre-coordinated with the appropriate municipal officials and then announced to affected

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12 See Footnote 9.

abutters on a real-time basis through collaboration with the field construction supervisors and the outreach coordinator (Exh. DPU-G-11). As the project plans evolve regarding staging, parking and access to the ROW, the Company will coordinate these issues with affected abutters using field construction managers and/or land management personnel (id.).

(A) Noise and Air Impacts

The Company asserts that the proposed project would generate typical sound levels from construction equipment including bucket trucks, cement trucks, excavators, bulldozers and digging equipment (Exh. DPU-NS-1). The Company states an additional source of noise may be chainsaws used to remove the 2377 line (id.). Additionally, if rock is encountered during the excavation for the K-163 line structure foundations, rock coring equipment may be used (id.). The Company has not performed any soil borings to date and does not know exactly where rock quarrying would be needed (Tr. 2, at 240-241). However, the Company does not anticipate that rock quarrying would be extensively required (id.). If rock quarrying is needed, the Company estimates that it probably would last approximately a day, with sound levels similar to a jack hammer (Tr. 2, at 241). The Company also states that helicopters may be used to string the wires in order to be efficient and cost-effective while reducing wetlands impacts (Exh. DPU-NS-1). The Company would utilize helicopters to bring in the initial pull ropes for each structure site which the Company estimates would take approximately a week to complete (Tr. 2, at 242).

The Company asserts that necessary equipment would comply with all relevant local noise requirements (Exh. DPU-NS-4). According to the Company, the Towns of Groveland

and Merrimac do not have general noise by-laws (Exh. DPU-NS-3). The Town of West Newbury has a noise by-law, effective during the hours of 8:00 p.m. and 7:00 a.m., which does not allow noise to exceed specified sound pressure levels ranging from 33-74 dB, based on sound frequency bands (Exh. DPU-NS-3(a)).

In addition, the Town of Amesbury has a noise by-law effective between the hours of 10:00 p.m. and 7:00 a.m. (Exh. DPU-NS-3(b)). The Town of Amesbury sets maximum permissible sound pressure levels, ranging from 28-65 dB, based on sound frequency bands (id.). The Amesbury by-law goes on to state that if the sound is not smooth and continuous, one of the following corrections may be added to each of the allowable decibel levels: (a) +5 daytime operation only; or (b) +5 noise source operations less than 20 percent of any hour period (Exh. DPU-NS-3(b)).

Overall, the Company does not expect that its construction activities are likely to produce significant sound levels during nighttime hours (Exh. DPU-RR-4). The Company asserts that nighttime construction would be an exception and would be limited to activities that do not generate appreciable levels of noise (id.). National Grid indicates that should work be necessary outside of specified hours, it would seek permission from the relevant municipal authority (Exh. DPU-NS-2). The Company states that it would perform work safely and with respect for the needs of neighbors and abutters in accordance with Company policy and would seek to address any specific noise concerns of residential abutters should they arise (id.).

With respect to construction-related air impacts, the Company plans to use Company crews and vehicles (Exh. DPU-G-9). The Company will use ultra low sulfur diesel fuel in

trucks and off-road heavy equipment during construction (id.). National Grid also states that vehicles and equipment used during construction would be in compliance with applicable DOT regulations (id.).

(B) Traffic Impacts and Public Safety

The Company anticipates that traffic generated during construction would not be voluminous enough to significantly affect traffic flow on public roadways in the area (Exh. NG-LGS at 7). The Company asserts that it would address construction traffic impacts directly with each affected Town's DPW and police department prior to construction (id.). The Company will develop a construction management plan prior to construction according to National Grid standards and Town construction by-laws and would address the following topics:

- Work hours
- Work days
- Crew sizes
- Type and number of vehicles
- Delivery of materials
- Location of material and crews
- Schedule for planned construction activities, including removal of the existing 2377 line and installation of the proposed K-163 line

(Exh. DPU-T-1).

National Grid indicates that its typical community outreach includes a review of local by-laws as well as meeting with the local building inspectors to review the project (Exh. DPU-T-2). The Company also will notify the police departments of working hours and request police details on a case-by-case basis when traffic needs to be diverted because of construction (id.). The Company anticipates that traffic control may be necessary during the delivery of

swamp mats and, possibly, construction equipment (Exh. DPU-T-5). Furthermore, the Company states that the steel poles would be shipped in sections on a standard tractor trailer truck (id.). For the proposed project, National Grid's construction supervisor would arrange with the local or state police department for a detail to safely direct traffic during the period of unloading (id.). This and other major material would be delivered to and stored at the two substation laydown and staging areas (id.).

The Company expects to use approximately 27 laydown and staging areas throughout the ROW as well as the West Amesbury Substation and King Street Substation (Exhs. DPU-T-1; DPU-T-4). According to the Company, crews would access the ROW via public roads (Exh. DPU-T-1). The Company states that there would be no lateral access from private property to the ROW (Tr. 2, at 239). National Grid indicates that the crews' personal vehicles would be parked at the staging and laydown areas (Exh. DPU-T-3). Additionally, equipment used during the day-to-day operations would be left overnight at the staging and laydown areas and in some cases on the ROW (id.).

b. Analysis and Findings

The proposed transmission line would be located near the middle of an existing ROW with another line of comparable or larger size (the 394 line) as well as a smaller co-located distribution line (2396 line) (Exh. NG-RAS at 3). Further, the 7.2-mile route consists of undeveloped areas including the existing crossing of easement through the Crane Pond Wildlife Management Area in Groveland and West Newbury as well as rural residential areas (Exhs. DPU-LU-1; DPU-LU-3; NG-FPR-3, at 5). Because the project is proposed to be in an

existing ROW, the project impacts generally would be minimal, and some impacts of the proposed overhead transmission line actually would be less than those with the existing ROW configuration.

The proposed project is estimated to result in approximately 1,815 square feet of permanent wetland impacts, but mitigation proposed by the Company will include the replication of five wetlands totaling 3,290 square feet (Tr. 2, at 193; Exhs. DPU-W-5(i) at 36; DPU-W-3). The project is estimated to require 138,911 square feet of temporary disturbance impacts associated with the placement of swamp mats (Exh. NG-FPR at 6). The record shows the Company collaborated with the Groveland and West Newbury Conservation Commissions to reduce the extent of temporary impacts to wetlands by nearly 11,000 square feet (Tr. 2, at 193). Furthermore, by removing the 2377 line in conjunction with constructing the K-163 line there would be a net reduction of 72 percent in the number of structures located within wetlands (Exh. NG-FPR at 5; DPU-W-5(i) at 36). The Department concludes that potential temporary and permanent impacts to wetlands from the construction and operation of the proposed project would be minimal and the Company's plan will minimize any adverse impacts.

With respect to endangered species, the Company has committed to implementing a Rare Species Mortality Avoidance Plan, which includes conditions such as avoidance of work within potential breeding areas, timing restrictions, placement of barriers to prevent movement of wildlife into the work zone and searches by a qualified biologist to remove any state-listed species from the work site (Exh. DPU-W-5(a), at 42, 43, 89-92). The Company's

environmental consultant will train the construction workers regarding the procedures to be followed should they encounter a state listed species and will perform the required monitoring of construction activities within the rare species habitat (Tr. 2, at 231; Exh. DPU-W-5(i) at 42).

Furthermore, in terms of historical and archeological resources, the single above-ground historic foundation within the "area of potential effects" will be recorded on all construction plans and its integrity preserved by creating a 3-4 foot buffer and, during construction, clearly marked with highly visible construction fencing up to 3.5 feet high (Tr. 2, at 235-237). The Department concludes that potential endangered species and historical and archaeological impacts from the construction and operation of the proposed project would be minimal and the Company's plan will minimize any adverse impacts.

With respect to electric and magnetic fields, the record shows that the proposed C-A-B top to bottom phasing of the K-163 line would result in a slight reduction in magnetic fields compared with existing conditions (Tr. 2, at 255). The record further shows that in the two sections where the K-163 line and the 2396 line are on shared structures, the power in both lines would flow predominantly in the same direction and the proposed phasing for both lines would, on balance, be optimum for producing the lowest electric and magnetic fields along the edges of the ROW (Exh. DPU-EMF-2). The record shows that the magnetic field levels produced by the relocated transmission lines would be below the EFSB guideline of 85 mG at the ROW edges (Exh. NG-PAV at 4). The Department concludes that potential EMF impacts

from the construction and operation of the proposed project would be minimal and the Company's plan will minimize any adverse impacts.

With respect to construction impacts, the Company estimates that project construction consisting of four phases would last for approximately one year (Exh. DPU-W-5(i) at 18). The Company states that construction would primarily occur Monday through Saturday between 7:00 a.m. and 5:00 p.m. (Exh. DPU-NS-2). If circumstances necessitate construction activities outside these hours, the Company would seek prior permission from the relevant authority (id.). The Company will send abutters' notices which will set forth the construction schedule, proposed construction activities and contact information for the Company liaison (Exh. DPU-G-11). The Company will prepare a Construction Management Plan prior to construction in accordance with Company standards and municipal construction by-laws (Exh. DPU-T-1). The Company will meet with the local building inspectors to review the project prior to commencement of project construction (Exh. DPU-T-2). Additionally, the Company will notify the police departments and request police details on a case-by-case basis (id.). The Department concludes that the construction impacts from the project construction would be minimal and the Company's plan will minimize any adverse impacts.

With respect to noise impacts, the proposed project will generate typical sound levels from construction equipment including bucket trucks, cement trucks, excavators, bulldozers and digging equipment (Exh. DPU-NS-1). Additional sources of noise may include chainsaws to remove the 2377 line, rock coring equipment, and helicopters to string the wires (Exh. DPU-NS-1). Necessary equipment will comply with all relevant local noise requirements

(Exh. DPU-NS-4). Nighttime construction would be an exception and require the permission of the relevant municipal authority (Exh. DPU-RR-4). Nighttime construction would be limited to activities that do not generate appreciable levels of noise (id.). The Department concludes that the noise impacts from the project construction would minimal and the Company's plan will minimize any adverse impacts.

With respect to air impacts, they will be limited to temporary construction impacts and will be mitigated by Company crews using low sulfur diesel fuel in trucks and off-road heavy equipment (Exh. DPU-G-9). The Department concludes that the temporary air impacts from the project construction would be minimal and the Company's plan will minimize any adverse impacts.

With respect to traffic impacts generated during construction, the record shows that it will not be voluminous enough to significantly affect traffic flow on public roadways (Exh. NG-LGS at 7). The Company will develop a construction management plan in consultation with each affected Town's DPW and police department prior to the commencement of construction (id.). The Department concludes that the traffic impacts from the project construction would be minimal and the Company's plan will minimize any adverse impacts.

The Department concludes that the proposed project would include use of feasible measures to avoid or minimize environmental impacts with respect to the construction of the K-163 line within the existing ROW. The Department finds, based on the location of the proposed project along an existing ROW and the mitigation proposed, environmental impacts of the proposed project generally would be minimal.

4. Conclusion

Based on the foregoing analysis of: (i) need or public benefit of use; (ii) alternatives explored; and (iii) impacts of the proposed use, the Department finds that the benefits of the proposed project exceed the local impacts, and thus, the proposed use is reasonably necessary for the public convenience or welfare.

D. Exemptions Required

1. Introduction

National Grid seeks both individual zoning exemptions as well as comprehensive exemptions from the zoning by-laws of the Towns of Groveland, West Newbury, Merrimac and Amesbury (Exh. NG-2, at 1). In support of this request, the Company asserts that, "the Project cannot be constructed without substantial zoning relief from the zoning by-laws of" the above-referenced Towns (id. ¶ 21).

The Company states that it has engaged in extensive outreach to the affected communities (Exhs. NG-RAS, at 7; DPU-G-5; DPU-Z-14). It documented several meetings between Company representatives and town officials in confirmatory letters which recapitulate the substance of the discussions at those meetings (Exhs. DPU-Z-14(a); DPU-Z-14(b); DPU-Z-14(c); DPU-Z-14(d); DPU-Z-14(e)). None of these communities intervened in the proceeding.

2. List of Individual Exemptions Sought

The Company seeks the following individual exemptions from the operation of the zoning by-laws of the Towns of Groveland, West Newbury, Merrimac and Amesbury.[13]

Table 2 Town Zoning By-Law Provisions for which the Company Seeks Exemptions

Town	Description	Provision
Groveland	Flood Plain District	Section 1100 et seq.
	Height	Section 906
West Newbury	Flood Plain District	Section 5.D
	Site Plan Approval	Section 8.B
	Height and Setback	Section 6.A
Merrimac	Site Plan Review	Article 19
	Height	Article 6, § 6.6 and Article 23, § 23.6
	Earth Removal	Article 23, § 23.7 et seq.

[13] The Company asserts that while the zoning by-laws of the Towns of Groveland, West Newbury and Merrimac do not allow utility uses as of right in the applicable zoning districts, prior zoning exemptions granted by the Department exempt the Company from operation of these by-laws' provisions restricting allowable use (Exh. NG-2, Zoning Petition, at 8; NG-LPM at 10; DPU-RR-2, fn. 1). Specifically, in its Zoning Exemption Petition, the Company asserts that since the K-163 line will not change the use of the ROW, the Department's prior zoning exemption orders allow construction of the project without further zoning relief (Exh. NG-2, Zoning Petition, at 8). Thus, in its Zoning Exemption Petition, the Company does not ask the Department to exempt the Company from any of the by-laws' use provisions. Consistent therewith, in its Brief, the Company does not include any use provisions in its lists of requested exemptions. However, the Company also requests that the Department grant such relief if the Department "believes that [the prior zoning exemption orders] do not provide the Company with a complete use exemption applicable to the K-163 line in Groveland, West Newbury and Merrimac zoning by-laws" (Exh. DPU-RR-2 fn. 1; Company Brief at 55). Because the Department grants in Section III.C below, comprehensive exemptions with respect to the applicable Towns' by-laws, there is no need for the Department to opine on the scope of the prior zoning exemption orders.

Amesbury	Site Plan Review	Section V.D

Sources: Exhs. LPM-1, LPM-2, LPM-3, LPM-4

3. Company Position

a. General Reasons Why Individual Exemptions Are Required

National Grid sets forth several general reasons why companies building transmission lines require zoning exemptions from the DPU, some of which are:

- The applicability of zoning provisions to linear transmission lines is difficult to determine. Using local processes to obtain a determination of applicability can result in an appealable decision; appeals can be time-consuming and costly (Exhs. NG-LPM, at 16; MMLD-1-17; Tr. 1 at 172-73).

- Because zoning provisions are designed to regulate single parcel projects, it is difficult for zoning authorities to apply such provisions to linear transmission projects (Exhs. DPU-Z-10; DPU-Z-16).

- Because a transmission line traverses multiple municipalities, permitting delays in one town can affect permitting and construction timetables in another town (Exhs. DPU-Z-2; DPU-Z-7; MMLD-1-19; Tr. 1, at 173-74).

- Design options for transmission lines are limited given existing rights-of-way, state and industry standards and engineering requirements (Exhs. DPU-Z-10; DPU-Z-16).

- Site conditions and ownership structures vary along the length of a transmission line making it more difficult to anticipate the need for future design changes (Exh. DPU-Z-23).

- Conditions imposed by one municipality may conflict with conditions imposed by another (DPU-Z-2; DPU-Z-7).

b. Specific Reasons Why Exemptions Are Required Here

In addition to relying on the above-listed general reasons, the Company sets forth specific reasons why each individual zoning exemption is required in order for the Company to

construct and operate the project as proposed. These specific reasons are summarized in Tables 3 through 6 below.

Table 3 Company Position - Groveland Zoning By-Law

Individual Zoning Exemptions Requested	Available Relief from the Town	Why Project Cannot Comply: Company Position
Flood Plain District Section 1100 et seq.	**Special Permit** (Exh. NG-2, at 10).	Project structures 16 and 20 will be constructed within the Flood Plain District (Exh. NG-2, Zoning Petition, at 2). Construction within the 100-year floodplain of any structure not used for sustained human occupancy requires a special permit (id.). Special permits are discretionary and can result in burdensome or restrictive conditions that could impede the Company from ensuring consistency in the line's location and design and compliance with state and industry standards (Exh. NG-2, Zoning Petition at 9, 10).
Height Regulations Section 906 (Industrial District)	**Variance** (Tr. 1, at 135)	A small portion of the project is located in the Industrial District (Exh. DPU-RR-2). Project structures will exceed the 35 feet height restriction in this district (id.). Variances are disfavored and susceptible to appeal (id.).

Table 4 Company Position – West Newbury Zoning By-Law

Individual Zoning Exemptions Requested	Available Relief from the Town	Why Project Cannot Comply: Company Position
Floodplain District Section 5.D	**Special Permit from Planning Board** (Exhs. NG-2 at 12; NG-LPM-2 at 22)	Project structures 34 and 35 will be constructed within a Floodplain District (Exh. NG-2, Zoning Petition, at 12). Construction within Floodplain District is either prohibited or allowed only by special permit (id.). Special permits are discretionary and can result in burdensome or restrictive conditions that could impede the Company from ensuring consistency in the line's location and design and compliance with state and industry standards (Exh. NG-2, Zoning Petition at 13).
Site Plan Approval	**Site Plan Approval from Planning Board**	Site Plan approval is required for commercial and industrial construction and uses requiring a special permit (Exh. NG-2,

Section 8.B	(Exhs. NG-LPM at 7; NG-LPM-2 at 53-55)	Zoning Petition, at 13). Site Plan approval is discretionary and can result in burdensome or restrictive conditions that could impede the Company from ensuring compliance with state and industry standards (id.).
Height Regulation Section 6.A and Table of Dimensional Control	**Variance** (Exhs. NG-LPM at 11, 12; NG-LPM-2 at 50)	The project structures will exceed the maximum height of 35 feet in the relevant districts (NG-2, Zoning Petition, at 14). Variances are disfavored and susceptible to appeal (id.).
Setbacks Section 6.A and Table of Dimensional Control	**Variance** (Exhs. NG-LPM at 11, 12; NG-LPM-2 at 50)	Several project structures will be located within the setbacks (Exhs. NG-2, Zoning Petition, at 15, DPU-Z-15). Variances are disfavored and susceptible to appeal (NG-2, Zoning Petition, at 15).

Table 5 Company Position – Merrimac Zoning By-Law

Individual Zoning Exemptions Requested	Available Relief from the Town	Why Project Cannot Comply: Company Position
Site Plan Approval Article 19	**Site Plan Approval from Site Plan Review Committee** (Exh. NG-LPM-3 at 108-114).	It is unclear whether the project would be subject to Site Plan review (Exh. NG-2, Zoning Petition, at 16). If Site Plan approval is required, it is discretionary and can result in burdensome or restrictive conditions that could impede the Company from ensuring compliance with state and industry standards (id.).
Height Restriction Article 6, § 6.6, and Article 23, § 23.6	**Variance** (Exh. LPM-3 at 133)	The project structures will exceed the maximum height of 35 feet in the relevant districts (NG-2, Zoning Petition, at 17). Variances are disfavored and susceptible to appeal (id.).
Earth Removal Article 23, § 23.7	**Special Permit from Planning Board** (Exh. DPU-RR-2)	It is unclear whether the provision applies to the project and if it does, it is impractical to apply it (Exh. DPU-RR-2). Special permits are discretionary and can result in burdensome or restrictive conditions that could impede the Company from ensuring consistency in the line's location and design and compliance with state and industry standards (id.).

Table 6 Company Position – Amesbury Zoning By-Law

Individual Zoning Exemptions Requested	Available Relief from the Town	Why Project Cannot Comply: Company Position
Site Plan Approval Section V.D "Table of Use Regulations"	**Site Plan Approval from the Planning Board** (Exh. LPM-4 at Section XI.C page 1)	Project is a permitted use requiring Site Plan Approval (Exh. NG-2, Zoning Petition, at 18). Site Plan approval is discretionary and can result in burdensome or restrictive conditions that could impede the Company from ensuring compliance with state and industry standards (id.).

4. Analysis and Findings

a. Height and Setback Variances

The Company has established that project structures will exceed the height restrictions of the Towns of West Newbury, Groveland and Merrimac and will be located within setbacks in West Newbury (Exh. NG-2, at 14, 15, 17). Thus, in order to construct the project as proposed the Company would be required to obtain variances from these Towns' dimensional requirements (id.). While variances for height and setbacks are not prohibited under the applicable zoning by-laws, the Department is persuaded by the Company's argument that the disfavored status of variances and the difficulty in meeting the applicable legal standard represents a real risk that the Company will be unable to obtain the variances or withstand a court challenge if they are obtained (Exh. NG-2, at 14, 15, 17, 18).[14] In addition, any appeal of a variance approval stays the issuance of the variance during the pendency of the appeal.

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[14] See Guiragossian v. Bd. of Appeals of Watertown, 21 Mass.App.Ct. 111, 115 (1985), rev. denied 396 Mass. 1105 (1986) ("No person has a legal right to a variance and they are to be granted sparingly").

See G.L. c. 40A, §§ 11, 17.[15] In light of these factors, the Department finds that to avoid undue delays and uncertainty the Company requires exemptions from the height requirements of the Towns of West Newbury, Groveland and Merrimac and the setback requirements of West Newbury.

b. Flood Plain and Earth Removal Special Permits

The Company has established that it would require special permits from the Towns of Groveland, West Newbury, and Merrimac in order to construct the project in a flood plain district (Groveland and West Newbury) and with regard to earth removal (Merrimac) (Exhs. NG-2 at 2, 12, 13; DPU-RR-2). The Department acknowledges that these provisions on their face may not prevent the development of the proposed project. However, we agree with the Company that given the discretionary nature of the special permit process and the uncertainty of applying standards typically used for single site projects to linear transmission lines, exemption from the flood plain district and earth removal provisions are required under G.L. c. 40A, § 3 because there is some likelihood that these provisions would result in one or more of the following: an adverse outcome, a burdensome requirement, or an unnecessary delay.

c. Site Plan Approval

We also find that the Company has established that it would require Site Plan Approval from the Planning Boards of West Newbury and Amesbury and may require review by the Site Plan Review Committee of Merrimac in order to construct the project (Exh. NG-2 at 13, 16,

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[15] The Department agrees with the Company that, given this linear transmission facility will traverse four towns, the risks that one or more of the necessary variances might be denied, or that the granting of such a variance might be appealed, in a particular town, might also create permit lapsing issues in other towns (Exhs. DPU-RR-2).

18). The Department acknowledges that these provisions on their face may not prevent the development of the proposed project. However, we agree with the Company that given the discretionary nature of the site plan review process and the uncertainty of applying standards that typically apply to site specific projects to linear transmission lines, exemption from the site plan review provisions is required under G.L. c. 40A, § 3 because there is sufficient likelihood that these provisions would result in one or more of the following: an adverse outcome, a burdensome requirement, or an unnecessary delay.[16]

E. Conclusion on Request for Individual Zoning Exemptions

As described above, we have determined that: (i) National Grid is a public service corporation; (ii) the proposed use is reasonably necessary for the public convenience or welfare; and (iii) the specifically named zoning exemptions, as identified by National Grid, are

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[16] The Company filed its Zoning Exemption before the issuance of Russell Biomass, LLC, EFSB 07-4/D.P.U. 07-35/07-36 ("EFSB 07-4"). See NSTAR Electric Company, D.P.U. 08-1, at 34-35 (2009); Western Massachusetts Electric Company, D.P.U. 09-24/09-25, at 33 fn. 15 (2010). The Department notes that the Company's actions in this case with respect to the Towns are consistent with the spirit and intent of EFSB 07-4 regarding communications with municipalities before filing zoning exemption petitions with the Department. For instance, the Company states that prior to filing the Zoning Exemption Petition, it consulted extensively with employees or officials from zoning boards of appeals, the building departments, and/or planning boards of the Towns of Groveland, West Newbury, Merrimac and Amesbury regarding the zoning exemptions that would be needed in order to construct the proposed project (Exh. DPU-Z-14). The Company reports that none of the municipal officials expressed any objection to the Company seeking zoning relief from the Department in the form of exemptions pursuant to G.L. c. 40A, § 3 (Company Brief at 40). The Department also notes that none of the Towns sought to intervene or participate in this proceeding and that the one intervenor in the case, MMLD, now supports the project (MMLD Brief at 2).

required for purposes of G.L. c. 40A, § 3. Accordingly, we grant the Company's request for the individual zoning exemptions listed above in Table 2.

III. REQUEST FOR COMPREHENSIVE ZONING EXEMPTIONS

A. Standard of Review

The Department has granted requests for a comprehensive zoning exemption on a case-by-case basis. NSTAR Electric Company, D.P.U. 07-60/07-61, at 50-51 (2008), citing Princeton Municipal Light Department, D.T.E./D.P.U. 06-11, at 37 (2007); NSTAR Electric Company, D.T.E./D.P.U. 07-9/07-10, at 37 (2007). The Department will not consider the number of exemptions required as a sole basis for granting a comprehensive exemption. Princeton Municipal Light Department, D.T.E./D.P.U. 06-11, at 37 (2007). Rather, the Department will consider a request for comprehensive zoning relief only when construction of a proposed facility would avoid substantial public harm. Id.; See also NSTAR Electric Company, D.P.U. 07-60/07-61, at 51-52 (2008).

B. Company Position

In addition to the individual exemptions stated above, National Grid requests comprehensive zoning exemptions from the zoning by-laws of Groveland, West Newbury,

Merrimac and Amesbury (Exh. NG-2, at 19- 21).[17] The Company asserts that there is an immediate need for this project and that substantial harm could result from any project delay (Company Brief at 56). According to the Company, the project is necessary in order to provide a second source of transmission to the West Amesbury Substation, the construction of which is either complete or nearly complete (id.). The Company argues that with the Substation in operation, there is an immediate need for the project to serve as a backup transmission source in order to mitigate the potential for loss of service in the event that the West Amesbury Substation's 345/115 kV transformer is lost (id.). Without the proposed project, the entire 65 MW to be supplied by the West Amesbury Substation, serving Amesbury, Merrimac, Salisbury, West Newbury and small portions of Haverhill and Newburyport, would have to be served via the 2377 and 2396 lines (Exh. NG-BVH at 8). If one of the 23 kV lines then trips, the remaining 23 kV line would be required to carry its load plus the load from the interrupted line, which during heavy load periods, the Company asserts, would cause the remaining line voltage to sag to unacceptable levels resulting in interrupted or

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[17] Both West Newbury and Amesbury have environmental performance standards in their zoning by-laws. Section 7.A of the West Newbury Zoning by-law articulates environmental performance standards which include provisions relating to building codes, air pollutants, noise, heat, glare, vibration and radiation, odor, exterior lighting, storage, waste disposal, water supply, water quality, erosion control, dish antennae, electrical interference, access, and landscaping (Exh. NG-LPM-2 at 44-47). The Company represents that its construction activities will comply with the provisions of Section 7.A relating to noise (Exhs. DPU-NS-3; DPU-NS-4). The Company has not requested a specific exemption from any of the West Newbury performance standards (Exhs. NG-LPM, at 11-13; NG-2, at 12-15). Similarly, Section XI.G of the Amesbury Zoning by-law also articulates environmental performance standards (Exh. DPU-NS-3, Attachment (b)). The Company has not requested a specific exemption from any of the Amesbury environmental performance standards (Exhs. NG-LPM, at 11-13; NG-2, at 17-19).

unreliable service (id.). According to the Company, these problems would persist until the 345/115 kV transformer could be replaced (up to one month) (id.). In addition, over time, as load increases, the ability of these two 23 kV lines to adequately back-up the load to be served by the West Amesbury Substation decreases (id.).

The Company also argues that the sequence of construction creates an additional justification for a comprehensive exemption (Company Brief at 57). Specifically, the Company explains that before it can construct the K-163 line, the 2377 line must be de-energized and removed (id.). This leaves the remaining 23 kV line (2396) as the only backup to the West Amesbury Substation load, during the K-163 line construction, in the event the 345/115 kV transformer is lost (id.). The Company maintains that the K-163 line construction must proceed without delay in order to minimize the time when the 2396 line serves as the sole backup for possible outage of the 345/115 kV transformer (id.).

Thus, the Company argues that comprehensive exemptions are necessary to ensure both that construction on the K–163 line begins promptly and that, once begun, the construction is not derailed (Company Brief at 57-58). According to the Company, the construction could become derailed in several ways: (1) unanticipated disputes over the application of local zoning by-laws and associated appeals; (2) unanticipated changes to local zoning by-laws that affect the project; or (3) design changes encountered during construction (Exh. NG-LPM at 15-20; Company Brief at 57). The Company argues that without comprehensive exemptions any dispute regarding application of the zoning by-laws or enactment of new zoning requirements or design changes during construction could result in significant project delays (id.).

C. Analysis and Findings

The record shows that the proposed project is needed for reliability reasons. Specifically, the Company has presented evidence that under current system operation at existing load levels, the project is needed to provide backup supply for the West Amesbury Substation to maintain reliability in the event of an extended outage of the Substation's 345/115 kV transformer (Exh. NG-GG at 4). Given that the West Amesbury Substation is either operating or soon to be operating, the reliability need for a backup supply for the West Amesbury Substation is immediate, reflecting system operation at existing load levels.

The record also shows that once started, there is a reliability need to proceed expediously with project construction. Specifically, given the required initial decommissioning and dismantling of the 2377 line as part of the project construction, an outage of the 345 kV transformer at the West Amesbury Substation could result in overloading the only remaining backup line, the 2396 line, which could result in power outages (Exhs. DPU-N-1, DPU-N-2, DPU-N-15). Therefore, in order to minimize this exposure, the construction period for the project should be as short as possible (Exh. DPU-N-17). The immediate reliability need to proceed with project construction without interruption, supports the issuance of comprehensive exemptions. Either a delay in commencement of construction or in project completion could result in substantial public harm in the form of loss of electric service to customers in Amesbury, Salisbury, Merrimac, West Newbury and portions of Newburyport and Haverhill (Exhs. DPU-N-1, DPU-N-2, DPU-N-15, DPU-N-17).

The Department also notes that none of the affected Towns sought to intervene or participate in this proceeding and that the one intervenor in the case, MMLD, now supports the project and, specifically, the Company's request for comprehensive zoning exemptions (Brief of MMLD). The Company reports that it engaged in extensive community outreach in each affected Town regarding the project and that no municipal official expressed any objection to the Company seeking zoning relief from the Department (Company Brief at 40).

Based on the above case-specific circumstances, and the minimal adverse impacts of the proposed project on the local community, the Department finds that moving this reliability-based project forward without delay could avoid substantial public harm and is in the public interest. As noted above, however, the environmental performance standards of the West Newbury zoning by-law, Section 7.A, and the Amesbury by-law, Section XI.G, would regulate not only the nature and characteristics of any transmission line to be constructed, but also the on-going operation of the proposed transmission line. Were the Department to grant an exemption from the West Newbury zoning by-law, Section 7.A, and the Amesbury by-law, Section XI.G, then the Towns of Amesbury and West Newbury could not exercise local zoning control over the on-going operation of the proposed transmission line with respect to the environmental considerations listed in Section 7.A and Section XI.G (See Braintree Electric Light Department, 16 DOMSB at 186-187 (2008)). The Company has testified that its construction activities will comply with the noise restrictions included in Section 7.A of the West Newbury zoning by-law (Exhs. DPU-NS-3; DPU-NS-4). Consequently, to the extent that the environmental performance standards as set forth in Section 7.A of the West Newbury

zoning by-law and Section XI.G of the Amesbury zoning by-law apply to this linear transmission project, the Department hereby excludes the provisions of West Newbury zoning by-law Section 7.A and the Amesbury zoning by-law Section XI.G from the comprehensive zoning exemptions it grants to the Company in this Order. Therefore, the comprehensive zoning exemptions do not apply to the provisions of West Newbury zoning by-law Section 7.A or to the provisions of Amesbury zoning by-law XI.G and, to the extent applicable, the Company must comply with the environmental performance provisions.

Accordingly, the Department grants National Grid's request for comprehensive exemptions from the zoning by-laws of Groveland, West Newbury, Merrimac and Amesbury for the proposed project, with the exception noted above. These comprehensive exemptions shall apply to the construction and operation of the proposed facility as described herein, to the extent applicable. See Planning Bd. of Braintree v. Dep't of Public Utilities, 420 Mass. 22 (1995).

IV. SECTION 61 FINDINGS

A. Company Actions to Mitigate Environmental Impacts

On November 14, 2008, the Secretary of the Office of Energy and Environmental Affairs ("EOEEA") issued a Certificate on the Company's Single Environmental Impact Report (Exh. NG-FPR-4). The Secretary found that the Single Environmental Impact Report

adequately and properly complies with MEPA (G.L. c. 30, §61-62I) and with its implementing regulations (301 CMR 11.00).[18]

The Company presented evidence that it has received approvals of the proposed project from other federal, state and local authorities concerning environmental impacts. The proposed project has received Orders of Conditions from the Conservation Commissions in Merrimac, Amesbury, and Groveland (Exh. DPU-W-5(i) at 13). The Company is awaiting issuance of the Order of Conditions from the West Newbury Conservation Commission (id.). The U.S. Army Corps of Engineers authorized this project as a Category 2 Permit in March 2009 (id.). On September 25, 2009, the Massachusetts Department of Environmental Protection issued a Water Quality Certificate for the proposed project (Exh. DPU-G-8 Supp.).

The Company underwent a MESA review (NHESP File No. 06-20334) (Exh. DPU-W-5(a) at 87). The NHESP MESA Review letter dated February 4, 2009 states that the NHESP determined that this project, as currently proposed, would not adversely affect the actual Resource Area Habitat of state-protected rare wildlife species pursuant to 310 CMR 10.18 and would not result in a prohibited "take" of state-listed species provided that the proposed Rare Species Mortality Avoidance Plan is implemented (id.).

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[18] The Department notes the requirements set forth in G.L. c. 30A, § 61 effective November 5, 2008 regarding findings related to climate change impacts. The Single Environmental Impact Report issued in this case was filed prior to the effective date and the MEPA Certificate does not specifically address this statutory provision. The Department notes, however, that this project will have minimal or no greenhouse gas emissions as it is a transmission line that will be built in an existing ROW. As such, the project will not have direct emissions from a stationary source or indirect emissions from energy consumption and will have minimal indirect emissions from transportation sources limited to occasional repair or maintenance activities.

In 2008, Berger completed an archaeological reconnaissance and intensive locational survey (Permit Number 3070) for the K-163 line in response to a request by the MHC on February 29, 2008, (Exh. DPU-HA-1, at 91). MHC reviewed Berger's report dated February of 2009 and recommended that no further study would be necessary (Exh. DPU-HA-3).

B. Analysis and Findings

The Department determines that in making a Section 61 finding in this case, it would examine the same environmental issues that were comprehensively examined by the EOEEA. Since the EOEEA's decision has been incorporated into the record of this case, the Department incorporates the Company's analysis of environmental impacts in its Single Environmental Impact Report as the principal basis for Section 61 review in this case (Exhs. NG-FPR-3; NG-FPR-4).

The Department's review of environmental impacts as proposed incorporates the conclusions in Sections II.C and II.E above. Based upon the record in this case and the Company's compliance with the federal, state and local authorities noted above, the Department finds that the Company has taken all feasible measures to avoid or minimize the environmental impacts of the proposed project.

V. REQUEST FOR AUTHORITY TO CONSTRUCT AND USE A TRANSMISSION LINE PURSUANT TO G.L. c. 164, SECTION 72

A. 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.[19]

The Department, in making a determination under G.L. c. 164, § 72, considers all aspects of the public interest. Boston Edison Company v. Town of Sudbury, 356 Mass. 406, 419 (1969). Among other things, Section 72 permits the Department to prescribe reasonable conditions for the protection of the public safety. 356 Mass. at 419-420.

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.

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[19] 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, and estimate showing in reasonable detail the cost of the line, and such additional maps and information as the Department requires.

B. Analysis and Findings

In evaluating petitions filed pursuant to G.L. c. 164, § 72, the Department relies on the standard of review established for G.L. c. 40A, § 3 for determining whether the proposed project is reasonably necessary for the convenience or welfare of the public. Based on the record in this proceeding and the above analysis in Sections II and III, the Department finds pursuant to G.L. c. 164, § 72, that the proposed transmission line is necessary for the purpose alleged, will serve the public convenience, and are consistent with the public interest.

VI. ORDER

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

ORDERED: That the petition of New England Power Company d/b/a National Grid seeking the specific exemptions set forth in Table 2 above from the operation of the zoning by-laws of the Towns of Groveland, West Newbury, Merrimac and Amesbury set forth pursuant to G.L. c. 40A, § 3, is allowed; and it is

FURTHER ORDERED: That the petition of New England Power Company d/b/a National Grid seeking comprehensive exemptions from the operation of the zoning by-laws of the Towns of Groveland, West Newbury, Merrimac and Amesbury is allowed with the exceptions related to the enforcement of Section 7A of the West Newbury by-law and Section XI.G of the Amesbury zoning by-law; and it is

FURTHER ORDERED: That the petition of New England Power Company d/b/a National Grid seeking approval to construct and operate a transmission line pursuant to G.L. c. 164, § 72 is allowed; and it is

FURTHER ORDERED: That New England Power Company d/b/a National Grid work cooperatively with municipal and state officials and affected property owners in the Towns of Groveland, West Newbury, Merrimac and Amesbury to minimize any traffic, noise, construction and other local impacts associated with the proposed project; and it is

FURTHER ORDERED: That New England Power Company d/b/a National Grid collaborate closely with the owner of the Christmas Tree Farm that abuts Ash Street in West Newbury regarding the impacts of the proposed project on trees in the farm in terms of compensation and/or replanting; and it is

FURTHER ORDERED: That New England Power Company d/b/a National Grid and its contractors and subcontractors shall comply with all applicable state and local regulations, for which the Company has not received an exemption, including those pertaining to noise, emissions, blasting, herbicides and hazard materials; and it is

FURTHER ORDERED: That New England Power Company d/b/a National Grid shall obtain all other governmental approvals necessary for this proposed transmission project; and it is

FURTHER ORDERED: That New England Power Company d/b/a National Grid shall construct and operate the project in accordance with this Order and shall notify the Department of any significant changes in the planned timing, design, or environmental impacts of the proposed project; and it is

FURTHER ORDERED: That the Secretary of the Department shall transmit a copy of this Order and the Section 61 findings contained herein to the Secretary of the Executive Office of Energy and Environmental Affairs and shall transmit a certified copy of this Order to the towns of Groveland, West Newbury, Merrimac and Amesbury and that New England Power Company d/b/a National Grid shall serve a copy of this Order on the Town Councils for the towns of Groveland, West Newbury, Merrimac and Amesbury and the Zoning Board of Appeals for the towns of Groveland, West Newbury, Merrimac and Amesbury within five business days of its issuance and shall certify to the Secretary of the Department within ten business days of its issuance that such service has been accomplished.

By Order of the Department:

Paul J. Hibbard, Chairman

Tim Woolf, Commissioner

Jolette A. Westbrook, Commissioner

An appeal as to matters of law from any final decision, order or ruling of the Commission may be taken to the Supreme Judicial Court by an aggrieved party in interest by the filing of a written petition praying that the Order of the Commission be modified or set aside in whole or in part. Such petition for appeal shall be filed with the Secretary of the Commission within twenty days after the date of service of the decision, order or ruling of the Commission, or within such further time as the Commission may allow upon request filed prior to the expiration of the twenty days after the date of service of said decision, order or ruling. Within ten days after such petition has been filed, the appealing party shall enter the appeal in the Supreme Judicial Court sitting in Suffolk County by filing a copy thereof with the Clerk of said Court. G.L. c. 25, § 5.