

**COMMONWEALTH OF MASSACHUSETTS
ENERGY FACILITIES SITING BOARD**

Petition of NSTAR Electric Company d/b/a)
Eversource Energy for Approval to Construct a New)
Overhead/Underground 115 kV Transmission Line) EFSB 16-02
in Boston, Dedham, and Needham, Massachusetts)
Pursuant to G.L. c. 164, § 69J)
_____)

Petition of NSTAR Electric Company d/b/a)
Eversource Energy for Approval to Construct and Use a)
Overhead/Underground 115 kV Transmission Line) D.P.U. 16-77
New in Boston, Dedham, and Needham, Massachusetts)
Pursuant to G.L. c. 164, § 72)
_____)

FINAL DECISION

M. Kathryn Sedor, Esq.
Presiding Officer
May 18, 2018

On the Decision:
Ashley Ferrer
Enid Kumin
Barbara Shapiro
John Young

APPEARANCES: David S. Rosenzweig, Esq.
Erika J. Hafner, Esq.
Keegan Werlin LLP
99 High Street Suite 2900
Boston, MA 02110
FOR: NSTAR Electric Company d/b/a
Eversource Energy
Petitioner

Richard A. Kanoff, Esq.
Burns & Levinson LLP
125 Summer Street
Boston, MA 02110
FOR: Karen Noymer
Intervenor

David S. Tobin, Esq.
Tobin & Grunebaum
Attorneys at Law
60 Dedham Avenue
Needham, MA 02492
FOR: Town of Needham
Intervenor

J. Raymond Miyares, Esq.
Eric B. Reustle, Esq.
Miyares and Harrington LLP
40 Grove Street
Suite 190
Wellesley, MA 02482
FOR: Town of Needham
Intervenor

Allison M. McCarthy, Esq.
Alexander D. Jones, Esq.
114 Harris Avenue
Needham, MA 02492
FOR: McCarthy/Jones Family
Intervenor

Claire Fialkov
216 Warren Street
Needham, MA 02492
FOR: Warren Street/Grant Street
Residents
Limited Participants

Christopher Reece and John Curtis, Trustees,
Greendale Village Condominium Trust
900 Greendale Avenue, Unit 19
Needham, MA 02492

FOR: Greendale Village
Condominium Trust;
Christopher Reese and John
Curtis, Individually
Limited Participants

John Bergeron and Sally Theran
121 Grant Street
Needham, MA 02492

FOR: John Bergeron and Sally
Theran
Limited Participants

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ABBREVIATIONS

BLSF	Bordering Land Subject to Flooding
BMP	best management practices
BVW	Bordering Vegetated Wetlands
CELT	Capacity, Energy, Loads, and Transmission (report)
CMR	Code of Massachusetts Regulations
Company	NSTAR Electric Company d/b/a Eversource Energy
dBA	A-weighted decibels
Department	Massachusetts Department of Public Utilities
DCT	double circuit tower
DOMSB	Decisions and Orders of Massachusetts Energy Facilities Siting Board
DR	demand response
<u>East Eagle</u>	<u>NSTAR Electric Company d/b/a Eversource Energy, EFSB 14-04/ D.P.U. 14-153/14-154 (2017)</u>
EE	energy efficiency
EFSB	Massachusetts Energy Facilities Siting Board
EJ	environmental justice
EMF	electric and magnetic fields
Eversource	NSTAR Electric Company d/b/a Eversource Energy
GHG	greenhouse gas
GIS	geographic information systems
<u>GSRP</u>	<u>NSTAR Electric Company d/b/a Eversource Energy, EFSB 10-2/ D.P.U. 10-31/10-132 (2012)</u>

<u>Hampden County</u>	<u>New England Power Company d/b/a National Grid and Western Massachusetts Electric Company, 18 DOMSB 323, EFSB 10-1/D.P.U. 10-107/10-108 (2012)</u>
HCA	host community agreement
HPFF-PTC	high-pressure fluid-filled pipe-type cable
HVDC	high voltage direct current
HVED	high-voltage extruded dielectric (cable)
ISO-NE	ISO New England, Inc.
IVM	integrated vegetation management
kV	kilovolts
LEI	London Economics International LLC
LTE	long-time emergency rating
MassDCR	Massachusetts Department of Conservation and Recreation
MassDEP	Massachusetts Department of Environmental Protection
MassDOT	Massachusetts Department of Transportation
MBTA	Massachusetts Bay Transportation Authority
MCP	Massachusetts Contingency Plan
MEPA	Massachusetts Environmental Policy Act
<u>MVRP</u>	<u>New England Power Company, D.P.U. 15-44/15-45 (2016)</u>
<u>Mystic-Woburn</u>	<u>NSTAR Electric Company, EFSB 15-03/ D.P.U. 15-64/15-65 (2017)</u>
mG	milligauss
MW	megawatts
NERC	North American Electric Reliability Corporation

New Line	Proposed transmission line between Baker Street Substation and Needham Substation
NHESP	National Heritage and Endangered Species Program
NPCC	Northeast Power Coordinating Council
NTA	non-transmission alternative
Project	West Roxbury to Needham Reliability Project
PV	photovoltaic
ROW	right-of-way
<u>Russell Biomass/WMECO</u>	<u>Russell Biomass LLC/Western Massachusetts Electric Company</u> , 17 DOMSB 1, EFSB 07-4/D.P.U. 07-35/07-36 (2009)
<u>Salem Cables</u>	<u>New England Power Company d/b/a National Grid</u> , 20 DOMSB 129, EFSB 13-2/D.P.U. 13-151/13-152 (2014)
Section 72 Petition	NSTAR Electric Company d/b/a Eversource Energy petition pursuant to G.L. c. 164, § 72
SF ₆	sulfur hexafluoride
Siting Board	Massachusetts Energy Facilities Siting Board
STE	short-time emergency rating
<u>Stoughton-Boston</u>	<u>Boston Edison Company d/b/a NSTAR Electric Company</u> , 14 DOMSB 233, EFSB 04-1/ D.T.E. 04-5/04-7 (2005)
SWPP	Stormwater Pollution Prevention Plan
TMP	traffic management plan
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VMP	vegetation management plan

<u>Walpole-Holbrook</u>	<u>NSTAR Electric Company d/b/a Eversource Energy and New England Power Company d/b/a National Grid,</u> EFSB 14-2/D.P.U. 14-73/14-74 (2017)
WHO	World Health Organization
<u>Woburn Substation</u>	<u>NSTAR Electric Company d/b/a Eversource Energy,</u> D.P.U. 15-85 (2016)
<u>Woburn-Wakefield</u>	<u>NSTAR Electric Company d/b/a Eversource Energy,</u> EFSB 15-04/D.P.U. 15-140/15-141 (2018)
XLPE	cross-linked polyethylene-insulated (cable)

Pursuant to G.L. c. 164, § 69J, the Massachusetts Energy Facilities Siting Board (“Siting Board” or “Board”) hereby approves, subject to the conditions set forth below, the Petition (“Petition to Construct”) of NSTAR Electric Company d/b/a Eversource Energy (“Company” or “Eversource”) to construct an approximately 4.5-mile, combination overhead and underground, 115 kilovolt (“kV”) transmission line in the West Roxbury section of the City of Boston, and the Towns of Dedham and Needham, Massachusetts. Pursuant to G.L. c. 164, § 72, the Siting Board hereby approves, subject to the conditions set forth below, the Petition of Eversource for a determination that the proposed 115 kV transmission line is necessary, serves the public convenience, and is consistent with the public interest (“Section 72 Petition,” and together, the “Petitions”).

I. INTRODUCTION

A. Summary of the Proposed Transmission Project

Eversource seeks approval from the Siting Board to construct a new 115 kV overhead and underground transmission line that would run from the Company’s existing Baker Street Substation in West Roxbury to the Company’s existing Needham Substation in Needham (“New Line” or “Project”) (Exh. EV-2, at 1-1).¹ The Company proposes to construct the New Line using the route originally identified in the Petitions as the Noticed Alternative Route (“Noticed Alternative Route”) (Exh. EV-20, at 5-25(S); Tr. 3, at 402; Company Brief at 9).² The Project

¹ The Project also includes minor modifications to the Baker Street and Needham Substations to accommodate the new transmission line (Exh. EV-2, at 1-10; Company Brief at 1).

² Initially, Eversource sought approval to construct the Project using the route identified in its Petitions as its “Preferred Route,” with its underground portion using Grosvenor Road in Needham (Exh. EV-2, at 1-6). Avoiding a Town of Needham-owned gravel pit would require the use of a noticed variation using Valley Road (“Valley Road Variation”) (*id.* at 1-6, 1-7). During evidentiary hearings in June 2017, the Company switched its routing preference for the Project based on its asserted inability to acquire certain property rights necessary to construct on the original Preferred Route. *See, e.g.*, Tr. 3, at 402. Eversource now seeks approval to construct the Project on the route identified in the Petitions as the “Noticed Alternative Route.” This Decision retains “Noticed Alternative Route” as the name for the route on which the Company now seeks to construct the

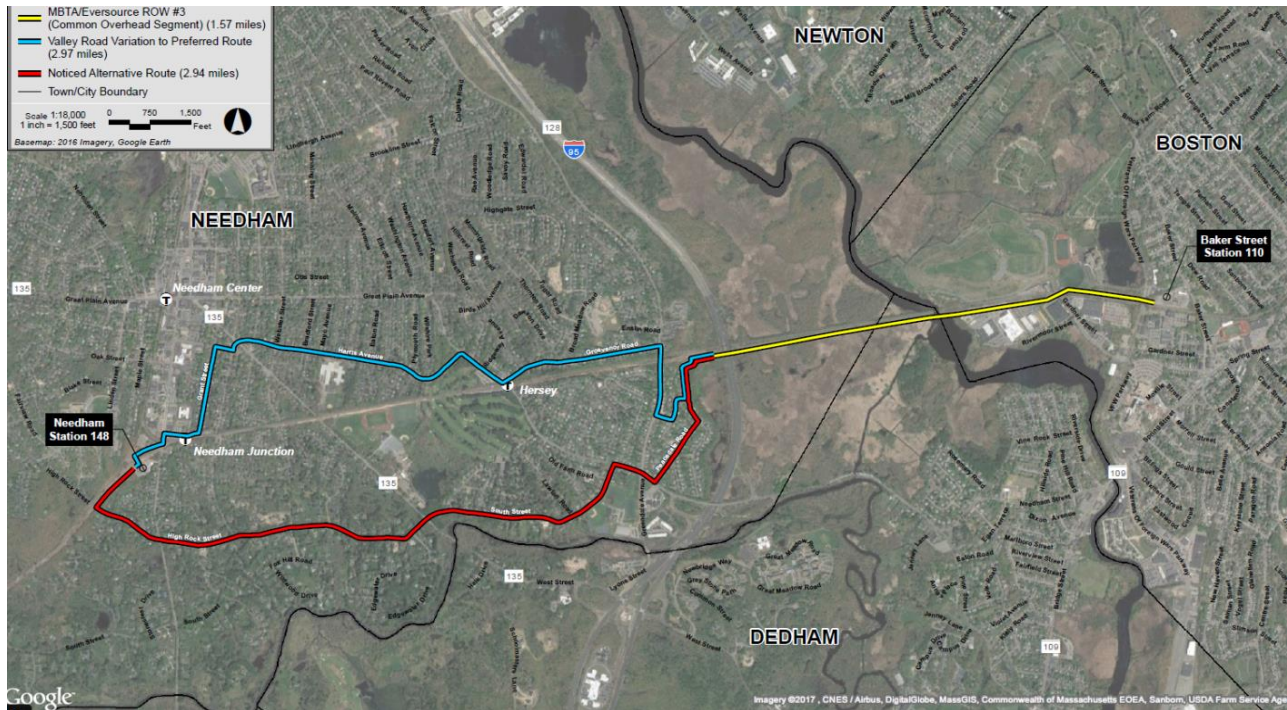
would replace one of the two existing overhead transmission lines that currently run between the Baker Street and Needham Substations on a line of double circuit towers (“DCT”) (Exh. EV-1, at 1-4). The replacement 115 kV line would be installed on a combination of new overhead structures and underground (*id.* at 1-6). The Project, separating the lines on the existing DCT, is designed to improve system reliability in the event of contingencies including disruption to the existing DCT (*id.* at 1-4).

The total length of the proposed New Line using the Noticed Alternative Route would be approximately 4.5 miles (*id.* at 1-7). Approximately 1.6 miles of the line would travel overhead from the Baker Street Substation, through West Roxbury and a small portion of Dedham, crossing the Charles River and Interstate 95 (I-95), to 15 Valley Road, where the overhead line would transition underground and continue to the Needham Substation (*id.* at 1-7, fig. 1-2). The overhead portion of the New Line would be located within an existing Eversource right-of-way (ROW No. 3), parallel to adjacent MBTA commuter rail tracks (*id.*).³ The underground portion of the line would travel approximately 2.9 miles from the Valley Road transition point to the Needham Substation (Exh. EV-20, at 5-3(S)). The underground portion of the New Line would be constructed of high-voltage extruded dielectric cable (“HVED”) (also referred to by the insulating material, cross-linked polyethylene (or “XLPE”)), would be entirely within Needham, and would be located primarily in public roads (Exh. EV-2, at 1-5, 1-8).

Figure 1, below, shows the Noticed Alternative Route for the proposed New Line, the route on which the Company now seeks approval to construct the Project, as well as the Grosvenor/Valley Road Route, which is analyzed as an alternative to the Noticed Alternative Route in the following sections of the Decision.

Project. The route initially filed as the Preferred Route, inclusive of the Valley Road Variation, is referred to hereafter as the “Grosvenor/Valley Road Route.” See Section VI.

³ The route for the 1.6 miles of overhead line is common to both routes (Exh. EV-2, at 1-7).

Figure 1. Map of the Noticed Alternative Route and the Grosvenor/Valley Road Route

Source: Exh. EV-20, at 17. Note that the blue line represents the underground portion of the Grosvenor/Valley Road Route.

The Company stated that the proposed New Line is intended to address a reliability need throughout the greater Boston Area, specifically in the area served by the Baker Street and Hyde Park Substations in Boston, and the Newton Highlands Substation (Exh. EV-2, at 1-4, 2-2, 2-9). The Company estimated that completion of Project construction would require approximately 18 months (*id.* at 1-10). Eversource estimated the planning grade cost (-25%/+25%) of the Project at approximately \$40.2 million (Exhs. EFSB-C-2; EV-20, at 5-25; RR-EFSB-18(S1)).

B. Procedural History

On June 15, 2016, Eversource filed the Petition to Construct, docketed as EFSB 16-02, pursuant to G.L. c. 164, § 69J and the Section 72 Petition, docketed as D.P.U. 16-77, pursuant to G.L. c. 164, § 72.⁴

Also on June 15, 2016, the Company filed a motion to consolidate the Petitions for review and decision by the Siting Board. Pursuant to G.L. c. 164, § 69H(2), the Chairman of the Department, on August 12, 2016, issued a Referral and Consolidation Order referring the Section 72 Petition to the Siting Board for review and decision with the Petition to Construct. The Siting Board accordingly conducted a single adjudicatory proceeding and developed a single evidentiary record with respect to the Petitions.

The Siting Board conducted a public comment hearing at the Needham Town Hall on September 27, 2016, to receive public comments on the Project.⁵ As instructed by the Presiding Officer, the Company published the Notice of Public Comment Hearing/Notice of Adjudication (“Notice”) for the public comment hearing for two consecutive weeks in the Boston Globe, the Needham Times, and the West Roxbury Transcript. The Company served a copy of the Notice by U.S. mail on abutters to the proposed New Line. In addition, the Company mailed a copy of the Notice to the Planning Boards of Needham and Dedham, and the Boston Redevelopment Authority. The Company placed copies of the Notice and the Petitions in the Needham,

⁴ See Petition to Construct, Exhibit EV-1, and Appendices, identified as Exhibits EV-2, EV-3, and EV-4, respectively.

⁵ Fourteen Needham residents asked questions of the Company and provided comments on the Project at the public comment hearing. A primary concern raised was the proposed use of the original Preferred Route. As noted above, this route is no longer under consideration for the Project. Other concerns included the need for the Project, location of construction equipment, construction schedule, traffic impacts, and magnetic field levels.

Dedham, and Boston Town and City Clerks' offices, and in public libraries in Needham, Dedham and West Roxbury.⁶

On December 8, 2016, the Presiding Officer issued a ruling granting intervenor status to the Town of Needham (the "Town" or "Needham") and Needham residents Karen Noymer ("Noymer"), and Allison McCarthy and Alexander D. Jones ("McCarthy/Jones"). The ruling also granted limited participant status to three sets of Needham residents: John Curtis and Christopher Reece, as individuals and in their capacity as Trustees of Greendale Village Condominium Trust; Claire Fialkov, on behalf of herself and a group of six other residents of Warren Street and Grant Street in Needham; and John Bergeron and Sally Theran.

The Siting Board staff issued three sets of discovery to the Company and one set to McCarthy/Jones. McCarthy/Jones and Noymer each issued one set of discovery to the Company, and Needham issued two sets of discovery to the Company. The Siting Board conducted five days of evidentiary hearings. The Company presented the testimony of a total of twelve witnesses in support of its Petitions. Eversource presented nine Company witnesses: Domenic J. Nicotera, Lead Project Manager, Transmission Electric System Construction; John P. McLaughlin, Senior Planning Engineer, System Planning Department; John M. Zicko, Director of Substation Engineering; Demetrios Sakalleris, Lead Engineer, Transmission Engineering and Project Estimating; Theresa M. Feuersanger, Supervisor, Transmission and Distribution Rights and Survey; Michael J. Zylick, Senior Environmental Engineer and Licensed Site Professional; Kevin F. McCune, Supervisor, Environmental Licensing and Permitting; Christopher P. Soderman, Lead Engineer, Transmission Line Engineering; and William N. Hayes, Jr., Senior Arborist. The Company presented the testimony of three consultant witnesses: Michael D. Howard, Principal and Manager of the Ecological Services Group at Epsilon Associates, Inc.; Dr. Christopher M. Long, Principal Scientist, Gradient; and Judith A. Bartos, Senior GIS

⁶ Siting Board review of the Project was not subject to either the enhanced public participation or enhanced analysis provisions of the Commonwealth's Environmental Justice ("EJ") Policy. See also Section VII.B., below.

Analyst/Senior Scientist at TRC. McCarthy/Jones presented one witness, the limited participant John Bergeron.⁷

As noted above, during evidentiary hearings in June 2017, Eversource informed the Siting Board and the parties to the proceeding that the Company no longer would be seeking approval to construct the New Line using the route identified as its “Preferred Route” and would instead be seeking approval to construct the Project using the “Noticed Alternative Route.” Because it had not initially proposed to construct the Project on the Noticed Alternative Route, the Company had not, as of that time, produced engineering design plans for the underground portion of this route (“Needham Underground Segment”).⁸ Consequently, the Presiding Officer directed the Company to produce, and submit into evidence, a series of three post-hearing sets of design plans for the Needham Underground Segment. In accordance with this directive, Eversource filed 30 percent design plans for the Needham Underground Segment on August 31, 2017; 75 percent plans on November 20, 2017; and 100 percent design plans on December 28, 2017.⁹

⁷ The Town submitted the written prefiled direct testimony of a consultant, James R. Fink, P.E., on the subject of electric and magnetic fields (“EMF”) on March 17, 2017. The Town reported on May 31, 2017 that, due to his untimely death, Mr. Fink’s testimony would remain in the record but would not be supported by a new witness. Mr. Fink’s testimony accordingly is part of the evidentiary record in the case, but the weight given to the testimony reflects the absence of an opportunity for the Siting Board or the parties to cross-examine the witness.

⁸ As noted above, the overhead portion of the proposed New Line is identical on either route.

⁹ The record shows that, since the conclusion of evidentiary hearings in this case in June 2017, the Town and the Company have been engaged in post-hearing discussions regarding possible changes to the alignment of the underground portion of the transmission line. On January 11, 2018, the Town filed a motion seeking to re-open hearings to further engage with the Company on this subject. In a ruling issued on April 13, 2018, the Town’s motion was denied.

The Company and the Town each filed an Initial Brief on September 21, 2017, and each filed a Reply Brief on October 5, 2017.¹⁰

Siting Board staff prepared a Tentative Decision and distributed it to the Siting Board members and all parties for review and comment on May 4, 2018. The parties were given until May 11, 2018 to file written comments. The Siting Board received timely written comments from Eversource and Needham. The Board conducted a public meeting to consider the Tentative Decision on May 17, 2018. After deliberation, the Board directed staff to prepare a Final Decision approving the Petitions, subject to conditions, as set forth below.

II. JURISDICTION AND STANDARD OF REVIEW UNDER G.L. c. 164 § 69J

G.L. c. 164, § 69J provides that the Siting Board should approve a petition to construct if the Siting Board determines that the petition meets certain requirements, including that the plans for the construction of the applicant's facilities are consistent with the policies stated in G.L. c. 164, § 69H to provide a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost. Pursuant to G.L. c. 164, § 69J, a project applicant must obtain Siting Board approval for the construction of proposed energy facilities before a construction permit may be issued by another state agency.

G.L. c. 164, § 69G defines a "facility" to include "a new electric transmission line having a design rating of 115 kilovolts or more which is ten miles or more in length on an existing transmission corridor, except [for] reconductoring or rebuilding of transmission lines at the same voltage" or "a new electric transmission line having a design rating of 69 kilovolts or more and which is one mile or more in length on a new transmission corridor." A Section 69G transmission facility also includes "an ancillary structure which is an integral part of the

¹⁰ On August 14, 2017, the limited participants John F. Curtis and Christopher Reese, on behalf of the Greendale Village Condominium Trust, submitted comments reiterating their opposition to the original Preferred Route, which would have been located behind Greendale Village. As noted above, the original Preferred Route is no longer under consideration in this proceeding. Although the Grosvenor/Valley Road Route includes much of the original Preferred Route, it does not include the area adjacent to the Greendale Village condominium.

operation of any transmission line which is a facility.” The proposed 115 kV New Line in this case would be approximately 4.5 miles long and would run along a new transmission corridor. Therefore, the Project is clearly a “facility” that is subject to Siting Board review with respect to Section 69J.

The Siting Board requires that an applicant demonstrate that its proposal meets the following requirements: (1) that additional energy resources are needed (see Section III, below); (2) that, on balance, the proposed project is superior to alternative approaches in terms of reliability, cost, and environmental impact, and in its ability to address the identified need (see Section IV, below); (3) that the applicant has considered a reasonable range of practical facility siting alternatives and that the proposed facilities are sited in locations that minimize costs and environmental impacts (see Section V below); (4) that environmental impacts of the project are minimized and the project achieves an appropriate balance among conflicting environmental concerns as well as among environmental impacts, cost, and reliability (see Section VI, below); and (5) that plans for construction of the proposed facilities are consistent with the current health, environmental protection and resource use and development policies of the Commonwealth (see Section VII, below).

III. NEED FOR THE PROPOSED PROJECT

A. Standard of Review

The Siting Board reviews the need for proposed transmission facilities to meet reliability, economic efficiency, or environmental objectives. G.L. c. 164, §§ 69H, 69J. When demonstrating the need for a proposed transmission facility based on reliability considerations, a petitioner applies its established planning criteria for construction, operation, and maintenance of its transmission and distribution system. Compliance with the applicable planning criteria can demonstrate a “reliable” system. NSTAR Electric Company and New England Power Company, EFSB 15-04/D.P.U.15-140/15-141, at 8-9 (2018) (“Woburn-Wakefield”); NSTAR Electric Company, EFSB 14-04/D.P.U. 14-153/14-154, at 8- 9 (2017) (“East Eagle”); New England Power Company and Western Massachusetts Electric Company, EFSB 10-1/D.P.U. 10-107/10-108, at 5 (2012) (“Hampden County”).

Accordingly, to determine whether system improvements are needed, the Siting Board:

- (1) examines the reasonableness of the petitioner's system reliability planning criteria;
- (2) determines whether the petitioner uses reviewable and appropriate methods for assessing system reliability over time based on system modeling analyses or other valid reliability indicators; and
- (3) determines whether the relevant transmission and distribution system meets these reliability criteria over time under normal conditions and under certain contingencies, given existing and projected loads. Woburn-Wakefield at 8-9; East Eagle at 8-9; Hampden County at 5.

When a petitioner's assessment of system reliability and facility requirements is, in whole or in part, driven by load projections, the Siting Board reviews the underlying load forecast. The Siting Board requires that forecasts be based on substantially accurate historical information and reasonable statistical projection methods that include an adequate consideration of conservation and load management. See G.L. c. 164, § 69J. To ensure that this standard has been met, the Siting Board requires that forecasts be reviewable, appropriate, and reliable. A forecast is reviewable if it contains enough information to allow a full understanding of the forecast method. A forecast is appropriate if the method used to produce the forecast is technically suitable to the size and nature of the company to which it applies. A forecast is considered reliable if its data, assumptions, and judgments provide a measure of confidence in what is most likely to occur. Woburn-Wakefield at 8-9; East Eagle at 8-9; Hampden County at 6.

B. Description of the Company's Demonstration of Need

In January 2015, ISO-NE issued its Greater Boston Area Updated Transmission Needs Assessment ("2015 Needs Assessment") (Exh. EV-3, app. 2-1).¹¹ This assessment evaluated the reliability performance of the transmission system serving the Greater Boston Area under 2018 and 2023 projected conditions, and assessed the system for compliance with planning standards

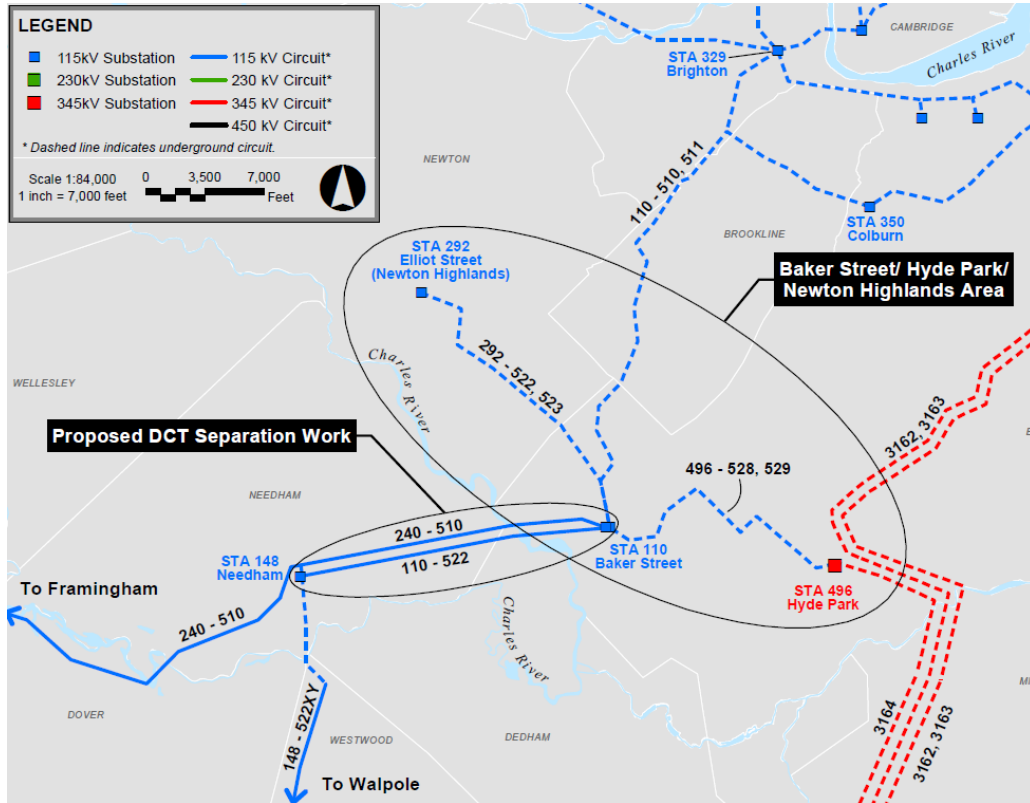
¹¹ The development of the 2015 Needs Assessment, including attributes of the assessed base cases and components of the load forecast, are described in NSTAR Electric Company, EFSB 15-03/ D.P.U. 15-64/15-65, at 7-12 (2017) ("Mystic-Woburn"), and New England Power Company, D.P.U. 15-44/15-45, at 8-10 (2016) ("MVRP").

and criteria established by the North American Energy Reliability Corporation (“NERC”), the Northeast Power Coordinating Council (“NPCC”), and ISO-NE (Exh. EV-2, at 1-4). These reliability criteria require that transmission system thermal and voltage levels remain within applicable limits following certain representative contingencies (*id.* at 2-5).¹² The 2015 Needs Assessment identified numerous reliability concerns throughout the Greater Boston Area, including a post-contingency thermal overload in the Baker Street/Hyde Park/Newton Highlands Area (the “load pocket”) (*id.* at 2-2, 2-9; Exh. EV-3, app. 2-1, at 3).¹³ Under ISO-NE’s forecasted peak load conditions, the Company projected that demand in this area would be 416 MW in 2018, representing 65,000 customers, growing to 418 MW in 2023 (Exh. EV-2, at 2-11; EFSB-N-30; Tr. 2, at 173; RR-EFSB-4). The load pocket and the proposed Project are shown in Figure 1, below.

¹² For the transmission system to meet the established reliability criteria, there cannot be any instances of equipment exceeding an applicable Long-Time Emergency (“LTE”) or Short-Time Emergency (“STE”) rating, or unacceptably high or low voltages following an N-1 contingency (loss of a single transmission element) or N-1-1 contingency (loss of a subsequent non-related transmission element following an initial N-1 event) (Exhs. EV-2, at 2-4 to 2-5; EFSB-N-15).

¹³ The Baker Street and Hyde Park Substations are located in the City of Boston, and the Newton Highlands Substation is located in the City of Newton (Exh. EV-2, at 2-2 to 2-3). Together, the Baker Street, Hyde Park, and Newton Highlands Substations supply power to customers in Newton, Dedham, Milton, the Boston neighborhoods of Hyde Park, Jamaica Plain, Mattapan, Roslindale, and West Roxbury, as well as portions of Canton, Needham, Westwood, and Wellesley (RR-EFSB-2).

Figure 1. Baker Street/Hyde Park/Newton Highlands Area and the Project



Source: Exh. EV-2, at 2-3.

The 2015 Needs Assessment relied on ISO-NE’s 2016 Capacity, Energy, Loads, and Transmission (“CELT”) report load forecast to project five-year (2018) and ten-year (2023) load levels for the Greater Boston Area (Exhs. EV-2, at 2-7; EV-3, app. 2-1, at 3). The CELT report, a ten-year econometric forecast of loads and resources for the New England region, is the source of many assumptions used in the region’s electric power planning and reliability studies, and results from a rigorous stakeholder process that aims to produce a consistent load forecast for ISO-NE’s system assessments (Exhs. EFSB-N-15).¹⁴

¹⁴ The Company responded to requests from staff regarding system load changes (e.g., forecasted load levels, forecasted energy efficiency (“EE”), additions of demand response (“DR”), and additions of generation resources) that have occurred since the 2013 CELT report, when ISO-NE performed its initial Greater Boston Area Needs Assessment (Exhs. EFSB-N-8; EFSB-N-9; EFSB-N-14). Eversource asserted that the

The Company stated that the Project would ensure reliable electric service within the existing 115 kV transmission system in the load pocket by addressing a specific N-1-1 contingency involving the loss of the 115 kV DCT (Lines 240-510 and 110-522) running between the Baker Street and Needham Substations (Exhs. EV-2, at 2-11; EFSB-N-30). Given the occurrence of this contingency, two other 115 kV circuits (Lines 110-510 and 110-511) would serve as the sole transmission supply to the load pocket (Exhs. EV-2, at 2-11; EFSB-N-30). Under peak load conditions, Lines 110-510 and 110-511 would experience thermal overloads, and the supply of power to portions of the load pocket would be interrupted to protect the transmission equipment (Exhs. EV-2, at 2-11; EFSB-N-30; Tr. 2, at 171-173; RR-EFSB-4).¹⁵ The Company stated that separating Lines 240-510 and 110-522 would provide an independent transmission circuit into the area, eliminating the potential loss of both lines under an N-1-1 contingency and therefore avoiding potential load loss (Exhs. EV-2, at 2-1 to 2-2; EFSB-N-30). The Company stated that the post-contingency thermal overloads could occur at 2013 summer peak conditions or earlier and, therefore, there is an immediate need for the Project that is not dependent on load growth (Exhs. EV-2, at 2-11; EFSB-N-19).

C. Position of the Parties

Needham takes no position on the Company's demonstration of need for the Project (Needham Brief at 3). No other parties provided comments on the identified need for the Project.

differences in forecasted system load are not significant and do not impact the need for the Project, especially since the Company has identified the need as pre-existing (Exh. EFSB-N-14).

¹⁵ The Company indicated that, in order to avoid the post-contingency thermal overloads on Lines 110-510 and 110-511 and loss of the entire load in the area, it may need to shed at least 116 MW in 2018, equivalent to approximately 26,500 customers, under contingency conditions (Exh. EFSB-N-40; Tr. 2, at 173, 179; RR-EFSB-3; RR-EFSB-4). Further, Eversource stated that the forecasted load loss would increase to 118 MW by 2023 due to load growth (Exh. EFSB-N-40; RR-EFSB-4).

D. Analysis and Findings on Need

The 2015 Needs Assessment relied on the summer peak load forecast from the 2013 CELT report. The Siting Board has relied on the CELT report and its modeling in past transmission project proceedings, and considers it to be suitable for assessing the reliability needs of electric utilities on a consistent basis across New England. The Company provided sufficient information regarding its load forecasting methodology and conclusions. The Siting Board finds Eversource's load forecast is reviewable, appropriate, and reliable for use in this proceeding to evaluate the Company's assertion of need.

In the 2015 Needs Assessment, ISO-NE's Working Group identified numerous reliability needs within the Greater Boston Area, including deficiencies in the load pocket. The 2015 Needs Assessment demonstrates that the existing transmission system would be insufficient to reliably supply customers in the area under pre-existing and forecasted summer peak load conditions following an N-1-1 contingency that includes the loss of the DCT lines between the Baker Street and Needham Substations. The Siting Board recognizes the responsibilities and expertise of ISO-NE, and accords considerable weight to the 2015 Needs Assessment and its findings. National and regional reliability standards require the Company to eliminate the identified criteria violations in order to provide a reliable supply of electricity to its customers. The Siting Board finds that the Company's use of an N-1-1 planning criterion is reasonable, and the methods used to assess system reliability are reviewable and appropriate, and that Eversource's existing transmission system does not currently meet these reliability criteria.

For these reasons, the Siting Board finds that additional energy resources are needed to maintain a reliable supply of electricity to the Baker Street/Hyde Park/Newton Highlands Area.

IV. ALTERNATIVE APPROACHES TO MEETING THE IDENTIFIED NEED

A. Standard of Review

G.L. c. 164, § 69J requires a project proponent to present alternatives to the proposed facility, which may include: (1) other methods of transmitting or storing energy; (2) other sources of electrical power; or (3) a reduction of requirements through load management. In implementing its statutory mandate, the Siting Board requires a petitioner to show that, on balance, its proposed project is superior to such alternative approaches in terms of cost,

environmental impact, and ability to meet the identified need. In addition, the Siting Board requires a petitioner to consider reliability of supply as part of its showing that the proposed project is superior to alternative project approaches. Woburn-Wakefield at 18-19; East Eagle at 29; NSTAR Electric Company, EFSB 10-2/D.P.U. 10-131/10-132, at 29 (2012) (Greater Springfield Reliability Project, or “GSRP”).

B. Identification of Alternative Approaches for Analysis

On August 12, 2015, ISO-NE issued the Final Solutions Study for the Greater Boston Area, outlining the recommended transmission investments for addressing the reliability needs identified in the 2015 Needs Assessment (Exh. EV-3, app. 2-2). The separation of the series of DCTs supporting the existing Lines 240-510 and 110-522 between the Baker Street and Needham Substations was one of the recommended projects (Exhs. EV-2, at 2-2; EV-3, app. 2-2, at 12).

The Company stated that it evaluated a series of project alternatives to determine the approach that best balances environmental impacts, reliability, and cost (Exh. EV-2, at 1-4). In assessing alternative solutions to meet the identified need, Eversource explored non-transmission alternatives (“NTAs”) including new generation, EE, DR, and energy storage, as well as alternative transmission and substation facilities (id. at 3-1 to 3-7).¹⁶

1. Non-Transmission Alternatives

Eversource engaged London Economics, Inc. (“LEI”) to assess the cost and feasibility of using NTA resources to meet the identified need (Exhs. EV-2, at 3-1; EV-3, app. 3-1). The Company stated that, to mitigate post-contingency thermal overloads, the following injection amounts would be required at the following substations: 21 MW at Baker Street, 55 MW at Newton Highlands, and 44 MW at Hyde Park (Exhs. EV-2, at 3-2; EFSB-PA-12).

¹⁶ Eversource also explored a no-build approach. However, this approach did not address the identified reliability need (Exh. EV-2, at 3-1).

LEI identified a broad range of potential demand side and supply side NTA resources for the required injections and analyzed whether each technology would be technically feasible (Exhs. EV-2, at 3-2; EV-3, app. 3-1, at 4).¹⁷ LEI defined a technically feasible NTA resource as a technology that could be implemented based on the reliability needs of the Project, system planning criteria, and technology-specific operating characteristics (ignoring cost and necessary supporting physical infrastructure) (Exh. EV-3, app. 3-1, at 3, 21-24).^{18, 19} Following the identification of technically feasible NTAs for each substation, LEI developed a least-cost set of NTA solutions based on the gross and net levelized cost of entry (“LCOE”) for each technology (id. app. 3-1, at 9-10, 24).²⁰

LEI stated that installation of a total of 141 MW of natural gas simple-cycle peaking generation capacity (to yield 120 MW) at three different substations would address need, and that based on what it considers the most likely circumstances, this NTA would have a direct cost to ratepayers of \$21 million per year (Exh. EV-3, app. 3-1, at 11-12, 30). Accordingly, the Company argued that an NTA solution would be more than four times the cost to ratepayers

¹⁷ These resources included natural gas generation (both combined-cycle and simple-cycle peaking units), utility-scale and distributed renewable generation with on-site energy storage, and active and passive demand response (Exh. EV-3, app. 3-1, at 8, 14-15).

¹⁸ Operational characteristics considered included the ability of an NTA resource to respond within 30 minutes of an N-1-1 contingency and continuously operate for at least twelve hours following a contingency (Exh. EV-3, app. 3-1, at 23-25).

¹⁹ LEI stated several NTA technologies – including passive demand response (*i.e.*, energy efficiency), distributed solar generation, and fast-discharge energy storage – were not technically feasible based on one, or both, of the following: (1) inability to meet capacity requirements at each substation; and (2) inability to meet post-contingency operating characteristics (Exh. EV-3, app. 3-1, at 6-7).

²⁰ LEI stated that the gross LCOE is a dollars-per-kilowatt-year (\$/kW-year) value that includes all investment and operating costs, and that net LCOE is derived by deducting any potential revenue streams (*e.g.*, energy sales, capacity market revenues) from the gross LCOE (Exh. EV-3, app. 3-1, at 9). The Company stated that because future market revenues are uncertain, LEI calculated the net LCOE under four scenarios with varying assumptions for revenues from the capacity market and solar renewable energy certificates (Exh. EV-3, app. 3-1, at 10-11).

compared to the annual revenue requirement of the Project, which it estimated at approximately \$5 million (Exhs. EV-2, at 3-2; EV-3, app. 3-1, at 11-12).²¹ The Company also noted significant barriers to an NTA solution of this scale; including land availability, permitting, and implementation time (Exhs. EV-3, app. 3-1, at 12, 34-35; EFSB-PA-26). The Company argued that an NTA solution would be inferior to the Project in addressing the identified need (Exh. EV-2, at 3-2; Company Brief at 43).

2. Transmission and Substation Alternatives

a. Transmission Alternative 1 (the Proposed Project)

The Company evaluated a transmission project that would separate two existing 115 kV transmission lines that are currently supported by a series of DCTs (Exh. EV-2, at 1-4). Eversource stated this alternative would be a combination overhead and underground design between four and six miles in length, depending on the final route selection (“Transmission Alternative 1”) (*id.* at 3-3). The Noticed Alternative Route (the Company’s eventual preferred route for Transmission Alternative 1) would be a new, 4.5 mile-long transmission line consisting of 2.9 miles of underground lines and 1.6 miles of overhead lines (*id.* at 1-7). Eversource would install the underground portion of the line utilizing an HVED cable, consisting of conductor within an extruded plastic material (XLPE), installed in concrete duct banks (*id.* at 1-5, 4-14).²² The overhead portion of the transmission line would be installed on 22 steel monopoles

²¹ The Company stated that the \$5 million revenue requirement it presented during the proceeding is based on the projected cost of the original Preferred Route (\$37.6 million) (Exh. EFSB-PA-38). However, it may be noted that the revenue requirement would likely increase due to the higher cost of the Noticed Alternative Route (\$40.2 million) relative to the original Preferred Route (RR-EFSB-18(S1); Company Brief at 49, n.42).

²² The Company stated that it evaluated two types of underground cable systems for the 115 kV circuit: (1) the HVED system proposed, and (2) a high-pressure fluid-filled pipe-type (“HPFF-PTC”) system (Exhs. EV-2, at 1-5; EFSB-PA-1). Eversource stated that an HVED cable system would be less complex, less costly, and easier to maintain than an HPFF-PTC system and, therefore, an HVED cable system would be the preferred technology for the underground transmission component of the Project (Exhs. EV-2, at 1-5, 3-6; EFSB-PA-1; Tr. 2, at 244-251).

(id. at 1-10). As noted above, the cost of the Noticed Alternative is \$40.2 million (RR-EFSB-18(S1)).

b. Transmission Alternative 2

The Company evaluated a transmission alternative that would upgrade existing elements to eliminate the identified post-contingency thermal overloads; these would consist of: reconductoring existing 115 kV underground transmission lines, replacing phase-angle regulators (“PARs”), and transferring distribution load (together, “Transmission Alternative 2”) (Exh. EV-2, at 3-3). Transmission Alternative 2 would reconductor eleven total miles of circuit, specifically 5.5 miles of Lines 110-510 and 110-511 between the Baker Street Substation and the Washington Street Tap located in Brighton (Exhs. EFSB-N-28(1); EFSB-PA-44; Tr. 2, at 228). Due to the increased capacity of the underground 115 kV lines, the Company stated it would need to install higher-capacity, and physically larger, PARs (i.e., phase shifters) at the Corey Street Substation in West Roxbury (Exhs. EV-2, at 3-4 to 3-5; EFSB-PA-6; Tr. 2, at 223-225).²³ Additionally, Transmission Alternative 2 would consist of new 13.8 kV overhead and underground distribution infrastructure to transfer 15 MW of load from Eversource’s Canton Substation to Norwood Municipal Light Department’s Ellis Avenue Substation (Exhs. EX-2, at 3-5; EFSB-PA-6).²⁴ The Company stated that its cost estimate for Transmission Alternative 2, based on a target accuracy of -25%/+50%, is \$67.3 million (Exh. EFSB-PA-7).²⁵

²³ In addition, the Company would remove two existing PARs at the Baker Street Substation (Exh. EV-2, at 3-4). The Company stated that the Baker Street Substation is space constrained, and that it can reduce line outage time during Project construction by installing the new PARs at the Corey Street Substation (Exhs. EFSB PA-5; EFSB-PA-32; Tr. 2, at 238). To construct the larger PARs at the Baker Street Substation, Eversource would need to remove the existing PARs, demolish existing foundations, construct new foundations, and then install larger PARs (Exh. EFSB-PA-5).

²⁴ The Company specified that upgrades to the distribution system would be required at two distinct locations: (1) 3.7 miles of overhead lines beginning at the border of Norwood and Westwood, traveling north through Westwood and into Dedham; and (2) 10.8 miles (4.4 miles overhead and 6.4 miles underground) between the Canton Street Substation and the Hyde Park Substation (Exhs. EFSB-PA-6; EFSB-PA-9; Tr. 2, at 240-241). All overhead distribution work would consist of installing a new 13.8 kV line on existing

c. Company's Comparison of the Transmission Alternatives

The Company compared Transmission Alternative 1 and Transmission Alternative 2 on the basis of reliability, environmental impacts, and cost (Exhs. EV-2, at 3-5 to 3-7; EFSB-PA-6).²⁶ With respect to reliability, Eversource stated that Transmission Alternative 1 would provide a transmission capacity of 630 MW, while Transmission Alternative 2 would provide a transmission capacity of 445 MW (Exhs. EV-2, at 3-5; EFSB-N-40). Since both projects would provide a sufficient capacity increase to meet forecast demand, the Company concluded that the two alternatives are comparable with respect to reliability (Exh. EV-2, at 3-5).

The Company anticipates no impacts to the natural environment at the Baker Street and Needham Substations because Transmission Alternative 1 would not include expansion of either substation (Exhs. EV-2, at 3-6; EFSB-PA-6). The overhead transmission line would be constructed within an existing ROW, and the underground transmission line would be constructed within public roads (Exhs. EV-2, at 3-6; EFSB-PA-6). Eversource stated that the majority of the environmental impacts associated with the transmission line component of Transmission Alternative 1 involve the proximity of construction activities to wetlands and floodplains (Exh. EFSB-PA-6). The Company stated that the types of activities it would perform within the existing ROWs are limited in extent, manageable, and consistent with Eversource's typical practices (Exh. EFSB-PA-6; Tr. 2, at 243).

distribution line poles (Exh. EFSB-PA-6). The 6.4 miles of underground work would consist of constructing new underground distribution circuits within roads, including crossing I-93, MBTA rail tracks, and the Neponset River (Exh. EFSB-PA-6).

²⁵ The Company stated that the cost of each component of Transmission Alternative 2 would be: \$36.8 million for the reconductoring of Lines 510-110 and 510-111, \$28.8 million for PAR replacement, and \$1.7 million for distribution line construction (Exhs. EFSB-PA-7; EFSB-PA-34).

²⁶ The Company's original filing compares the environmental impacts of the two transmission alternatives generically (*i.e.*, without specifying a route for Transmission Alternative 1). This section uses this approach.

With respect to Transmission Alternative 2, Eversource stated that the Corey Street Substation would need to be expanded by approximately three-quarters of an acre into an area with steep grades, which would entail removal of existing tree buffer (Exhs. EFSB-PA-6; EFSB-PA-9; Tr. 2, at 243).²⁷ The reconductoring of Lines 110-510 and 110-511 would be confined to existing manholes and duct banks, requiring only the replacement of a higher-capacity pipe of the same cable technology (Exh. EFSB-PA-6).²⁸ The 8.1 miles of overhead distribution work would be limited to new wires on existing poles and bridges (Exh. EFSB-PA-6). The 6.4 miles of underground distribution work would require construction activities such as open cut trenching and backfilling that would lead to noise and traffic impacts; however, since construction would be within existing roads, the Company stated that the overall environmental impacts would be minimal (Exhs. EV-2, at 3-5; EFSB-PA-6).

The Company concluded that overall, the environmental impacts of Transmission Alternative 2 would be slightly less than the Transmission Alternative 1, but that the environmental impacts of Transmission Alternative 1 would be minimal and manageable, as they are confined to streets and an existing overhead ROW (Exhs. EV-2, at 3-5 to 3-6; EFSB-PA-6). The Company stated that the Noticed Alternative Route (its preferred route for Transmission Alternative 1) would cost approximately \$40.2 million, and Transmission Alternative 2 would cost approximately \$67.3 million – approximately \$27 million more (Exhs. RR-EFSB-18(S1); EFSB-PA-7). On the basis of reliability, cost, and environmental impacts, Eversource considered Transmission Alternative 1 to be the preferred transmission alternative (Exhs. EV-2, at 3-6; EFSB-PA-6; Company Brief at 56).

²⁷ The Company stated that no impacts to the natural environment would be associated with work at the Canton Street Substation (Exh. EFSB-PA-6).

²⁸ The Company stated that it would install a HPFF-PTC system for Transmission Alternative 2 because the existing lines utilize the HPFF-PTC technology and reconductoring with the same cable technology would have significant cost savings (Tr. 2, at 283-284).

C. Position of the Parties

Needham took no position on topic of Project Approach (Needham Brief at 3).²⁹ No other parties provided comments on the Company's identification of alternative approaches to meet the identified need.

D. Analysis and Findings on Alternative Approaches

The evidence described above shows that the most feasible NTA approach (simple-cycle gas-fired generation at the Baker Street, Needham Junction, and Hyde Park Substations) would cost significantly more than Transmission Alternative 1 and that, given the scale of the required resource additions, would likely encounter significant implementation obstacles such as finding available land, permitting, and long construction times.³⁰ With respect to the transmission alternatives, the record shows that while both alternatives would provide a sufficient capacity increase to meet the identified need and would provide reliable service, Transmission Alternative 1 would provide an additional 185 MW of capacity and therefore would be a more robust solution. The Siting Board finds that Transmission Alternative 1 is somewhat preferable to

²⁹ In its briefs, the Town stated that the Company had failed to provide evidence supporting its choice of an HVED cable technology for the Project (Needham Brief at 7-8; Needham Reply Brief at 2). Needham expressed concerns with the relatively new application of this technology in residential areas and trade-offs between cost and environmental impacts, specifically magnetic field impacts (Needham Reply Brief at 2). Needham did not introduce evidence on the topic. The Company noted that the electric transmission industry has shifted towards adoption of HVED cable technology in high voltage applications and that it is a reliable technology (Exh. EV-2, at 4-15; Tr. 2, at 291; Company Reply Brief at 10-12). The Siting Board notes that HVED technology will be used in the recently approved Woburn-Wakefield and East Eagle transmission line projects. See East Eagle at 81; Woburn-Wakefield at 33-34. In Woburn-Wakefield, the Siting Board found no significant differences in the reliability between the HVED and HPPF-PTC technologies and that use of HVED technology was appropriate. See Woburn-Wakefield at 33-34.

³⁰ The Siting Board continues to expect that Eversource will strongly encourage its customers, both existing and new, to take full advantage of EE programs. Eversource should also continue to explore creative ways to use NTAs (individually or in combination) to avoid or delay the need for new transmission infrastructure.

Transmission Alternative 2 with respect to reliability. Transmission Alternative 1 would result in greater environmental impacts, but the majority of these impacts is confined to approximately two miles along an existing, active, overhead transmission line ROW and would be appropriately mitigated.³¹ Given the nature of work within existing corridors, environmental impacts would be limited for either alternative. Finally, Transmission Alternative 2 would have a significantly higher cost compared to Transmission Alternative 1. Therefore, the Siting Board finds that, on balance, Transmission Alternative 1 is superior to the other alternatives identified with respect to meeting the identified need and providing a reliable energy supply for the Commonwealth with minimum impact on the environment at the lowest possible cost.

V. THE COMPANY'S ROUTE SELECTION PROCESS

A. Standard of Review

G.L. c. 164, § 69J requires a petition to construct to include a description of alternatives to the facility, including "other site locations." Thus, the Siting Board requires an applicant to demonstrate that it has considered a reasonable range of practical siting alternatives and that its proposed facilities are sited in locations that minimize cost and environmental impacts while ensuring a reliable supply. To do so, an applicant must meet a two-pronged test. First, the applicant must establish that it developed and applied a reasonable set of criteria for identifying and evaluating alternative routes in a manner that ensures that it has not overlooked or eliminated any routes that, on balance, are clearly superior to the proposed route. Second, the applicant generally must establish that it identified at least two noticed sites or routes with some measure of geographic diversity. Woburn-Wakefield at 34-35; East Eagle at 63; Boston Edison Company, EFSB 04-1/D.T.E. 04-5/D.T.E. 04-7, at 32-33 (2005) ("Stoughton-Boston"). But see Colonial Gas Company, EFSB 16-01, at 28 (2016), where the Siting Board found the company's decision not to notice an alternative route to be reasonable.

³¹ See Sections VI.C.1, VI.C.3, and VI.C.4 for discussion of impacts related to Land Use, Traffic, and Noise proposed mitigation measures.

B. Initial Selection of Two Candidate Routes

Eversource characterized route selection as an iterative process involving ongoing consultations with state and municipal officials and including the following steps: developing a geographic study area (the “Study Area”); identifying routing opportunities and constraints; identifying and screening routes and route variations through engineering review and municipal consultation; scoring potential routes based on environmental and constructability criteria; and selecting two candidate routes based on considerations of cost, reliability, environmental impacts, and community impacts (Exh. EV-2, at 4-1).

The Company’s Study Area encompassed potential routes for an overhead or underground transmission line between two Company substations, Baker Street Substation in West Roxbury and Needham Substation in Needham, which are approximately 3.6 miles apart (Exh. EV-2, at 4-1, 4-3, fig. 4-1). In selecting its study area, the Company included those routing opportunities within a reasonable distance of the substations to ensure that it had not overlooked potentially superior routing opportunities (*id.* at 4-3). The Company used United States Geological Survey (“USGS”) maps, Massachusetts Geographic Information System (“MassGIS”) data, aerial photography, and field reconnaissance to identify existing linear corridors that would allow routing the Project between the two substations (*id.* at 4-4).

Eversource stated that, to help identify potential routes within the Study Area, it relied on a set of route selection guidelines that emphasized use of direct routes over more circuitous routes, use of established ROWs (including roadways) where feasible, avoidance of private property to the maximum extent practicable, and avoidance of routes with complex engineering and construction characteristics in order to minimize Project costs (Exhs. EV-2, at 4-1, 4-6 to 4-7; EFSB-RS-9). In addition, the Company attempted to avoid sharp bends, construction in town centers and busy commercial areas, and complicated bridge and MBTA railroad track crossings, wherever possible (Exh. EFSB-RS-1). The Company met with the U.S. Army Corps of Engineers (“USACE”), state regulatory agencies, municipal representatives,³² and other

³² The Company met with Needham representatives including staff of the Engineering, Planning, Public Works, Parks and Recreation, and Conservation Departments, as well as the Town Manager, Assistant Town Manager, and the Vice Chair of the Board of

stakeholders to obtain input on proposed routes (Exh. EV-2, at 1-14 to 1-18, 4-7). In parallel with these consultations, the Company reviewed possible environmental and human impacts of potential routes, assessed constructability, and developed and evaluated routing variations (id. at 4-4 to 4-7).

The Company explained that it divided routes into Eastern and Western Zones for evaluation to reflect distinct constraints of the Study Area, with the Eastern Zone beginning at the Baker Street Substation and extending to Valley Road in Needham, and the Western Zone extending from Valley Road to the Needham Substation (Exh. EV-2, at 4-8). The Company characterized the Eastern Zone as an area of primarily commercial/ industrial nature in West Roxbury, marked elsewhere by a large wetland system adjoining the Charles River through Cutler Park Reservation, a Massachusetts DCR property (Exh. EV-2, at 4-8). The Company indicated that the Eastern Zone includes a crossing of I-95 (id.).

The Company's consideration of routing options for the Eastern Zone of the Project reflected engineering constraints, potential environmental impacts, and costs associated with traversing I-95 and the Cutler Park Reservation wetlands (Exh. EV-2, at 4-8 to 4-20). The Company identified its existing overhead transmission corridor, ROW No. 3, which includes Lines 110-522 and 240-510 collocated with an active MBTA railroad ROW, as the only potentially viable route and, therefore, the Company's preferred option for the Eastern Zone of the Project (id. at 1-4, 4-18 to 4-20; Exh. EFSB-RS-9; Company Brief at 62).³³ The Company subsequently selected an overhead transmission line along its ROW in the Eastern Zone as a common route segment for all route alternatives in the Study Area ("Common Segment") (Exh. EV-2, at 4-20).

Selectmen (Exh. EV-2, at 1-14 to 1-18). The Company also met with City of Boston representatives, and with representatives of the Town of Dedham (id.).

³³ The Company indicated that the presence of the Charles River and associated wetlands within and adjacent to the Cutler Park Reservation restricted: (1) east-west corridors throughout the Eastern Zone and, in turn; (2) potential alternatives to use of the Company's existing transmission line ROW (Exh. EV-2, at 4-10).

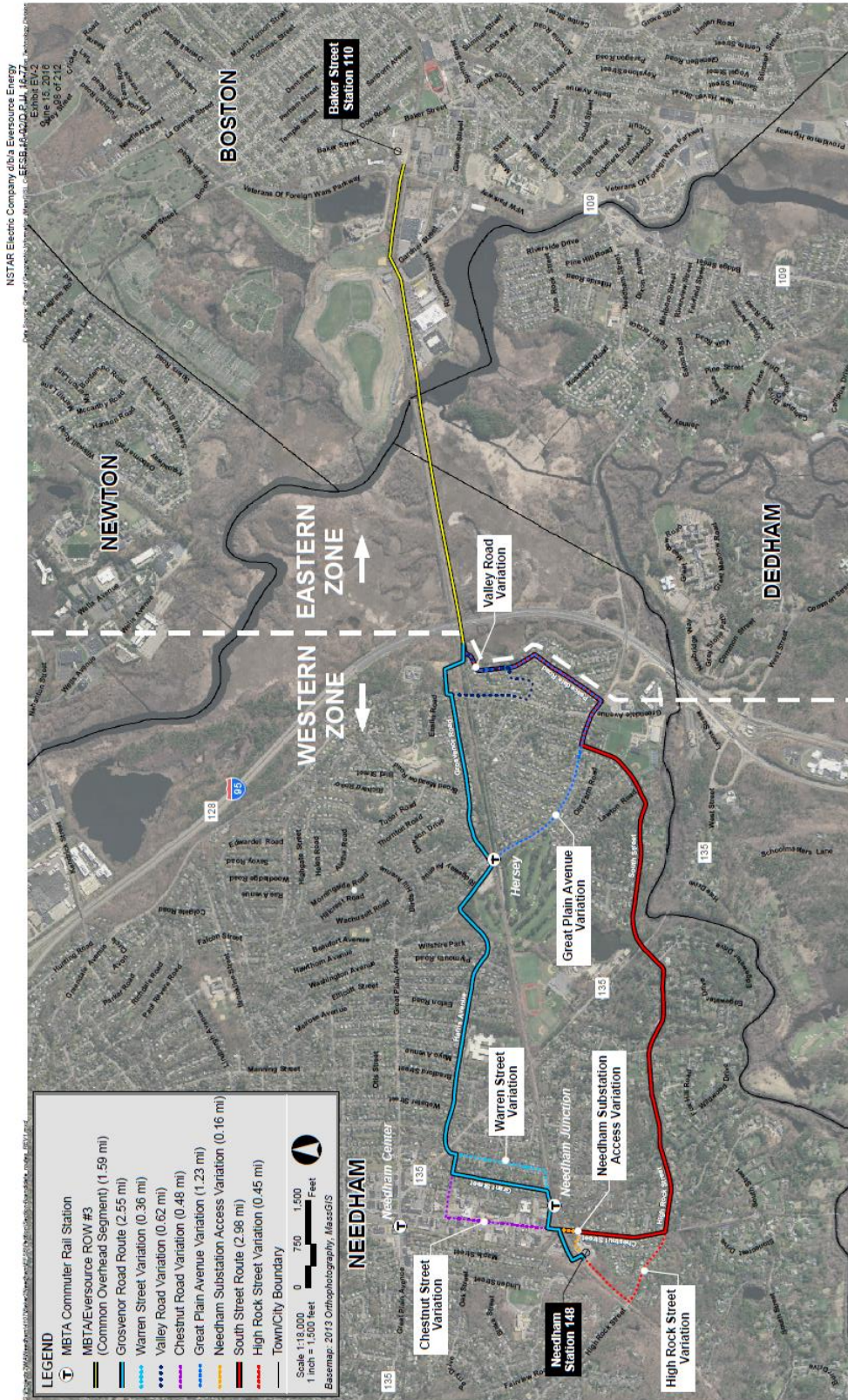


Figure 4-3
Candidate Routes

POTENTIAL ROUTES
 Showing Eastern and Western Zones

Source: Exh. EV-2, at 4-43.

Based on a preliminary review of routing options in the Western Zone, the Company identified 20 potential routes and route variations for more detailed analysis (Exhs. EV-2, at 4-7 to 4-8; McCarthy/Jones-1-28).³⁴ To score and evaluate the identified Western Zone options for the Project, the Company applied weighted route evaluation criteria for the categories of (1) human environment (eight criteria), (2) natural environment (three criteria), and (3) ease of construction (five criteria) (Exhs. EV-2, at 4-68 to 4-69; EFSB-RS-9). Within the human environment category, the criteria included: impacts to residential, commercial, or industrial structures; sensitive receptors; public transit facilities; historic resources; Article 97 lands; the number of high impact crossings; and traffic congestion (Exh. EV-2, at 4-68 to 4-69). Criteria in the natural environment category included: public shade trees; wetland resource areas and buffer zone crossings; and subsurface contamination (*id.*). The ease of construction category criteria included route length, existing utility density, route bends (greater than 30 degree road turns and intersections), street width (less than 22 feet), and trenchless crossings (*id.*).

The Company developed an impact evaluation scoring technique for each of the 16 route selection factors, assigning a value of “1” for the selection factor to the route with the highest potential for the corresponding impact; other routes received a ratio score between “0” and “1” indicating their relative potential impact for the particular selection factor (Exhs. EV-2, at 4-61; TON-2-5; TON-2-6).³⁵ The Company added scores for each criterion together to get a raw

³⁴ The Company evaluated, but ultimately chose not to pursue, MBTA/Eversource ROW No. 3 as a potential underground or overhead transmission line route in the Western Zone (Exh. EV-2, at 4-21). This route section is shorter than the other alternatives (*id.*). However, the Company voiced concern about the likely need to renegotiate easement agreements with landowners along the ROW, and the difficulty of working in an active and narrow MBTA corridor (*id.* at 4-22; Tr. 1, at 58-60). Further, the Company stated that Needham officials opposed use of the ROW in the Western Zone because of the potential impacts on residential neighborhoods, including removal of vegetative screening buffers and location of additional steel monopole structures close to residences (Exh. EV-2, at 4-21 to 4-24).

³⁵ For example, if a hypothetical Route X with ten proximate residential structures has the highest potential residential unit impact, then the residential unit impact score of Route X is 10 structures/10 structures or “1” (Exhs. EV-2, at 4-61; TON-2-6). A hypothetical

score for each potential route (Exh. EV-2, at 4-61). For a more refined evaluation, the Company also selected weights (1, 2, or 3) for each scoring criterion, intended to reflect the relative importance of the various criteria (id. at 4-61, 4-69; EFSB-RS-5). The Company assigned a triple weight to residential structures, commercial and industrial structures, traffic congestion, high impact crossings, and Article 97 lands; a double weight for sensitive receptors, existing utility density, and street width; and a single weight to the other eight criteria (Exhs. EV-2, at 4-68 to 4-69; TON-2-6). The Company multiplied raw ratio scores for each criterion per potential route by the assigned weight factor for each criterion to provide weighted scores, which it then added for each route to yield a total weighted ratio score (Exh. EV-2, at 4-61, 4-69 to 4-76).

Table 1, below, provides a scoring summary of Western Zone routes. Included in the table are weighted ratio scores and weighted ratio rankings as well as cost estimates and cost rankings (Exh. EV-2, at 4-78 to 4-79; RR-TON-4(1)).³⁶ The Company compared the potential routes as a whole, based on environmental scoring and cost, with a qualitative consideration of reliability issues (Exh. EV-2, at 4-78). Given its summary scoring of Western Zone routes, the Company initially identified the 2.55-mile-long Grosvenor Road Route, in combination with the 1.6-mile-long Common Segment, as the Preferred Route for the Project (id. at 4-81).

For the Western Zone of the Project, the Company also noticed the Grosvenor Road with Valley Road Variation (i.e., the Grosvenor/Valley Road Route), the Grosvenor Road with Warren Street Variation (“Warren Street Variation”), and the Grosvenor Road with Needham Substation Access Variation (“Needham Substation Access Variation”) (Exh. EV-2, at 4-81).³⁷

Route Y with five proximate residential structures has a residential structure impact score of 5 structures/10 structures or “0.5” (Exhs. EV-2, at 4-61; TON-2-6).

³⁶ The Company developed high-level comparative cost estimates using cost per-mile estimates for general in-street construction supplemented with generic costs for high impact crossings (Exh. EV-2, at 4-73). The costs did not include overhead costs, environmental mitigation or temporary or permanent easements (id.).

³⁷ The Valley Road Variation would add 0.62 miles; the Warren Street Variation would add 0.36 miles; the Needham Substation Access would add 0.16 miles (Exh. EV-2, at 5-2).

On a preliminary basis, the Company anticipated that any of these variations in the Western Zone, if built with the Common Segment in the Eastern Zone, would facilitate Project construction (id.). In addition, because of its favorable weighted ratio score and ranking – and to provide a measure of geographic diversity – the Company selected the 2.9-mile-long South Street Route with High Rock Street Variation in combination with the Common Segment as the Noticed Alternative Route (id. at 4-81, 5-2).

Table 1. Summary Scoring, Western Zone Potential Routes

Potential Routes (Western Zone)	Weighted Ratio Score	Weighted Ratio Ranking	Cost Estimate ³⁸ (Millions \$) (+/- 25%)	Cost Ranking
Original Preferred Route with Variations				
Grosvenor Road Route	14.0	2	27.3	4
Grosvenor Rd with Valley Rd Variation	18.9	11	31.2	15
Grosvenor Rd with Valley Rd & Warren St Variations	18.3	10	31.2	15
Grosvenor Rd with Valley Rd, Warren St & Needham Substation Access Variations	18.1	8	30.3	8
Grosvenor Rd with Valley Rd & Chestnut St Variations	22.0	13	31.4	16
Grosvenor Road with Valley Rd, Chestnut St & Needham Substation Access Variations	21.8	12	30.5	10
Grosvenor Rd with Valley Rd & Needham Substation Access Variations	18.0	7	30.4	9
Grosvenor Rd with Warren St Variation	14.1	3	27.4	5
Grosvenor Rd with Warren St & Needham Substation Access Variations	14.0	2	26.6	1
Grosvenor Rd with Great Plain Ave Variation	18.2	9	31.5	17
Grosvenor Rd with Great Plain Ave & Warren St Variations	18.3	10	31.5	17
Grosvenor Rd with Great Plain Ave, Warren St & Needham Substation Access Variations	18.1	8	30.6	11
Grosvenor Rd Route with Great Plain Ave & Chestnut St Variations	22.1	14	31.7	18
Grosvenor Rd with Great Plain Ave, Chestnut St & Needham Substation Access Variations	21.8	12	30.8	13
Grosvenor Rd Route with Great Plain Ave and Needham Substation Access Variations	17.9	6	30.7	12
Grosvenor Rd Route with Chestnut Street Variation	18.0	7	27.7	6
Grosvenor Rd Route with Chestnut St & Needham Substation Access Variations	17.8	5	26.8	3
Grosvenor Rd Route with Needham Substation Access Variation	13.8	1	26.7	2
Noticed Alternative Route with Variations				
South Street Route	15.2	4	30.9	14
South St Route with High Rock St Variation	14.1	3	30.0	7

Sources: Exhs. EV-2, at 4-73 to 4-76, 4-78 to 4-79; EFSB-C-2; RR-TON-4(1).

³⁸

The \$10.3 million cost estimate for the overhead segment in the Eastern Zone is common to all routes and is not included in cost estimates here (Exh. EV-2, at 4-78, n.18).

C. Revised Selection of Two Candidate Routes

In June 2017, the Company indicated that it had reevaluated its route preferences because the Needham Board of Selectmen no longer supported authorization of an easement required by the Company for the Grosvenor Road Route (Exhs. Noymer-1-6(S): EV-8, Sect. 8, BOS-1; TON-2).³⁹ According to the Company, Needham had previously supported Project construction along the Grosvenor Road Route and its variations (Exh. EV-8, Sect. 8, BOS-1). The Company subsequently indicated, and Needham confirmed, that the Board of Selectmen would not pursue Town Meeting approval for the conveyance of any required easement over Town property, and would not call a Special Town meeting for this purpose and would not sponsor an article for this purpose on the warrant of any future or Annual or Special Town Meeting (Exh. TON-2, at 1).

The Company stated that since the Grosvenor Road Route was no longer feasible, it would be unable to construct and operate the Project along its originally identified Preferred Route (Exh. EV-20, at 5-25(S)). With the Grosvenor Road Route eliminated and the South Street Route with High Rock Street Variation selected as one route for further analysis, the Company selected the Grosvenor/Valley Road Route as the second route for further analysis. The Company asserted that the Noticed Alternative Route (i.e., the South Street Route with High Rock Street Variation)⁴⁰ best balanced cost, reliability, and environmental impacts in accordance with Siting Board standards, and emerged as the clearly superior route for the Project (Tr. 1, at 44-45; Company Brief at 77).

D. Geographic Diversity

The Company stated that it had considered a variety of routes within its Study Area

³⁹ The Company explained it requires an easement to cross a Needham-owned municipal gravel pit along the Grosvenor Road Route (Exh. EV-2, at 1-7).

⁴⁰ The Company's route selection process considered and scored South Street routes both with and without the High Rock Street Variation. The Noticed Alternative Route as evaluated in Section V.I, below, is the version of the South Street Route that incorporates and travels on High Rock Street. This route is identified in the comparative analysis as the Noticed Alternative Route.

between the Needham and Baker Street Substations (Exh. EV-2, at 4-1). The Company indicated that, from the universe of Project routes, it had selected two candidate routes both in its initial and revised route selection analysis; the selected routes were located in the southern and central portions of the Study Area, respectively (Exhs. EV-2, at 4-81 to 4-82, fig. 4-3; EV-20; Tr. 1, at 44-45; RR-TON-4(1)). The Company maintains that its two selected routes provide an adequate and appropriate measure of geographic diversity (Exhs. EV-2, at 4-81 to 4-82; EV-20; Tr. 1, at 44-45; Company Brief at 69).

E. Analysis and Findings on Route Selection Process

The Siting Board requires that applicants consider a reasonable range of practical siting alternatives and that proposed facilities are sited in locations that minimize cost and environmental impacts. In past decisions, the Siting Board has found various criteria, including, but not limited to, natural resources, land use, community impact, cost, and reliability criteria, to be appropriate for identifying and evaluating route options for transmission lines and related facilities. Wakefield-Woburn at 65; East Eagle at 74; Stoughton-Boston at 43-44. The Siting Board has also found the specific design of scoring and weighting methods for chosen criteria to be an important part of an appropriate site selection process. Wakefield-Woburn at 69; East Eagle at 74; Boston Edison Company, EFSC 89-12A, at 34-38 (1989).

Here, the Company has developed a range of screening criteria to evaluate its routing options given the limitations imposed by an interconnection between the Baker Street and Needham Substations. The Siting Board has previously found these types of criteria to be acceptable for route selection. The Company has also developed a quantitative system for ranking routes based on the compilation of weighted scores across all criteria, a type of evaluation approach the Siting Board has also previously found to be acceptable. See Woburn-Wakefield at 69; East Eagle at 74.

As discussed in Section V.B.1, above, despite a systematic search, the Company identified no practical alternative to the overhead transmission line ROW in the Eastern Zone; it is accordingly reasonable to conclude that no superior route was overlooked in the Eastern Zone. In the Western Zone, the Siting Board's review shows that easement acquisition challenges and

potential impacts to residential neighborhoods along the MBTA railroad ROW make the ROW an undesirable choice. The Siting Board notes that, given Needham's decision to deny the Company an easement through the Town gravel pit parcel, this route element is not feasible.

The Company subsequently identified the South Street Route with High Rock Street Variation (the Noticed Alternative Route) as its new preferred route for its Project and the Grosvenor/Valley Road Route as the alternative route for further analysis. The South Street (High Rock) Route scored best for both environmental impacts and cost for all routes that do not include the gravel pit. The Siting Board observes that these two routes are generally geographically distinct and that the Company has, therefore, established two routes for the Project with some measure of geographic diversity.

Based on the route selection process described above, the Siting Board finds that the Company has: (1) developed and applied a reasonable set of criteria for identifying and evaluating alternative routes in a manner that ensures that they have not overlooked or eliminated any routes that are clearly superior to the Noticed Alternative Route (i.e., the proposed Project); and (2) identified a range of practical transmission line routes with some measure of geographic diversity. Therefore, the Siting Board finds that the Company has demonstrated that it examined a reasonable range of practical siting alternatives while seeking to minimize cost and environmental impacts.

VI. ANALYSIS OF TWO CANDIDATE ROUTES

In this section, the Siting Board compares the Noticed Alternative Route and the Grosvenor/Valley Road Route, based on environmental impacts, cost, and reliability. Based on the evidence and findings presented below, the Siting Board concludes that the Noticed Alternative Route is superior to the Grosvenor/Valley Road Route with respect to providing a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.

A. Standard of Review

In implementing its statutory mandate under G.L. c. 164, §§ 69H, 69J, the Siting Board requires a petitioner to show that its proposed facility is sited at a location that minimizes costs and environmental impacts while ensuring a reliable energy supply. To determine whether such a showing is made, the Siting Board requires a petitioner to demonstrate that the proposed route for the facility is superior to the alternative route on the basis of balancing environmental impact, cost, and reliability of supply. Woburn-Wakefield at 71; East Eagle at 76-77; Stoughton/Boston at 32-33.

The Siting Board first determines whether the petitioner has provided sufficient information regarding environmental impacts and potential mitigation measures to enable the Siting Board to make such a determination. The Siting Board then examines the environmental impacts of the proposed facilities and determines: (1) whether environmental impacts would be minimized; and (2) whether an appropriate balance would be achieved among conflicting environmental impacts as well as among environmental impacts, cost, and reliability. Finally, the Siting Board compares the routes to determine which is superior with respect to providing a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.

B. Description of the Noticed Alternative and Grosvenor/Valley Road Routes

As indicated in Section I.A, above, the Company proposes construction of a new 115 kV transmission line between Baker Street and Needham Substations. The Noticed Alternative and Grosvenor/Valley Road Routes each have a route-specific underground segment; they share a common overhead segment from the Baker Street Substation to an overhead-to-underground transition point at 15 Valley Road (Exhs. EV-20, at 5-2(S), 5-3(S); NOYMER-1-6(S)). Sections VI.B.1 and VI.B.2 describe the underground portions of the Noticed Alternative Route and the Grosvenor/Valley Road Route, respectively. The overhead segment common to the two routes is described in Section VI.B.3, below.

1. Noticed Alternative Route (Underground Segment)

The underground segment of the Noticed Alternative Route would be primarily in public roads and approximately 2.9 miles long (Exhs. EV-2, at 5-9; EV-20, at 5-3(S); RR-EFSB-18(S1)). The underground segment of the Noticed Alternative Route begins at a proposed overhead-underground transition structure (Structure 308N) on the property at 15 Valley Road, Needham, continues generally to the south along Valley Road and Peacedale Road, and then west on Great Plain Avenue, South Street, and High Rock Street; the segment then travels east over the Company's ROW No. 3 for approximately 1,000 feet to connect into Needham Substation (Exh. EV-20, at 5-3(S), fig. 1).⁴¹

2. Grosvenor/Valley Road Route (Underground Segment)

The underground segment of the Grosvenor/Valley Road Route would be primarily in public roads and approximately 3.0 miles long (Exh. EV-20, at 5-1(S) to 5-2(S); RR-EFSB-18(S1)). The Grosvenor/Valley Road Route, like the Noticed Alternative Route, transitions underground at proposed Structure 308N at 15 Valley Road, Needham (Exh. EV-20, at 5-1(S) to 5-2(S)). From Structure 308N, the underground portion of the Grosvenor/Valley Road Route heads south along Valley Road; turns west onto Norwich and Intervale Roads; and continues north onto Greendale Avenue to cross within or adjacent to an existing bridge that spans MBTA (Needham Line) railroad tracks (id. at 5-2(S)). The route then heads west on Grosvenor Road to Broad Meadow Road, on Broad Meadow Road to Great Plain Avenue, and on Great Plain Avenue to Harris Avenue (id.). The route follows Harris Avenue across Dedham Avenue onto Warren Street, continues west on School Street, south on Grant Street, and west along Junction Street, then south on Chestnut Street, turning into the driveway of 433 Chestnut Street, and then onto ROW No. 3 adjacent to the Needham Substation (id. at 5-2(S), 5-3(S)). The New Line would make an overhead connection to the Needham Substation from ROW No. 3 (id. at 5-3(S)).

⁴¹ The Company executed a purchase and sale agreement for intervenor Noymer's property at 15 Valley Road during the current proceeding (Exh. Noymer 1-6(S) at 2; Tr. 1, at 30).

3. Common Overhead Segment

Both the Noticed Alternative and Grosvenor/Valley Road Routes include 1.6 miles of overhead transmission line construction beginning at the Baker Street Substation and running parallel to MBTA commuter rail tracks (the Needham Line) within the Company's existing ROW No. 3 (Exh. EV-2, at 5-1). The route alignment, which has no significant turns or bends, passes through Boston, Needham, and a short stretch of Dedham along the Charles River within the Cutler Park Reservation (id.). The steel monopole design spans the Veterans of Foreign Wars ("VFW") Parkway, Charles River, and I-95, and consists of 22 steel monopoles (id. at 5-1, 5-3). The New Line transitions from overhead to underground at 15 Valley Road (Exhs. EV-20, at 5-1(S), 5-3(S); Noymer-1-6(S) at 2).

4. Substation Upgrades

The Company stated that the Project requires no significant substation upgrades at the Baker Street or Needham Substations (Exh. EV-2, at 1-10). The location of the fenceline crossing of Line 240-510 would likely shift approximately 15 feet toward the northwestern corner of the Needham Substation and 25 feet toward the northeastern corner of the Baker Street Substation (Exh. EFSB-MF-2(R)). The Company indicated that no fenceline expansion would be necessary at either substation (Exh. EV-2, at 1-10).

5. General Description of Project Construction

a. Overhead Transmission Line Segment

Construction of the overhead portion of the Project would involve the following sequence of activities: (1) preparing the work area by removing vegetation (trees and brush), installing timber swamp mats, and improving existing access roads and work pads as necessary; (2) constructing foundations; (3) assembling transmission line structures and support arms; (4) removing conductors and support arms from existing DCTs; (5) pulling/stringing conductors on new structures; (6) installing lightning shield wires and counterpoise wires (by trenching); and (7) restoring the corridor (Exh. EV-2, at 5-14).

The Company indicated that it would implement best management practices (“BMPs”) specified in its BMP Manual to minimize or avoid, if possible, potential impacts to the surrounding area and sensitive resources (Exh. EV-2, at 5-15). The Company anticipated that it would, for the most part, rely on existing public roads to access ROW No. 3 for construction, but that the Project would require a new access road near West Roxbury High School and improvements to access at the entrance gate to the ROW from I-95 (id.). The Company would also aim to keep construction equipment on the ROW to the maximum extent practicable when moving from one structure location to the next (id. at 5-17).

b. Underground Transmission Line Segment

The Company described four stages for underground transmission line construction: (1) manhole installation; (2) trenching and duct bank installation; (3) cable pulling, splicing, and testing; and (4) final pavement restoration (Exh. EV-2, at 5-24). The Company would conduct the stages in sequence at each location; several stages of construction would therefore be ongoing simultaneously along various sections of the route (id. at 5-59). The Company anticipated spending three to four days in front of any single abutter’s property; however, manhole installations, cable splicing, and/or culvert crossings and other activities might extend to 16 to 20 days (id. at 5-33). The Company would implement BMPs to minimize and mitigate potential impacts of Project construction to the surrounding area and sensitive resources (id. at 1-12).

The Company would construct manholes at 1,500 to 1,800 foot intervals along the underground portion of the Project to facilitate cable installation and splicing, as well as to provide future access to the cable for maintenance and repairs (Exh. EV-2, at 5-26). The Company would likely require seven to ten days to install each eight-foot-tall, 30-foot-long, and 20-foot-wide manhole vault for the Project, with actual duration of the work influenced by existing utility and below-grade conditions, among other factors (id.). The Company would likely install nine manholes if constructing along the Noticed Alternative Route and ten manholes along the Grosvenor/Valley Road Route (Exh. RR-EFSB-13(1) at 2; RR-EFSB-15(1)).

The underground portion of the Project would use open-cut trenching as the primary method of underground duct bank construction (Exh. EV-2, at 5-29). The Company explained that trench excavation and duct bank installation would generally progress linearly in 100- to 200-foot segments, and would require, in each segment: survey and layout; pavement cutting; trench excavation and shoring; conduit installation; duct bank concrete placement, curing, and shoring removal; backfilling; and, temporary pavement restoration (id. at 5-26).

The Company indicated that space for traffic management devices would typically extend the work zone for duct bank construction up to another 100 feet (Tr. 5, at 776). According to the Company, typical open trench excavation would require, at a minimum, a work space approximately eleven feet wide (Exh. EFSB-T-6). Deep excavation at some dense utility intersections might require a work area as wide as 18 feet; manhole installation would require a 20-foot wide work area (id.).

The Company indicated that the final step before closing a trench with conduits and high-strength thermal concrete in place would be to fill the area around the conduits with fluidized thermal backfill or native soil, depending on local conditions (Exh. EV-2, at 5-30). The Company would also backfill approximately 1,000 feet of trenching that would occur on ROW No. 3 where the Noticed Alternative Route would transition from High Rock Street to its termination at Needham Substation (id. at 5-31).

The Company stated that the Project would involve three cable splices at each manhole; approximately twelve hours would be necessary for splicing each cable (Exhs. EFSB-NO-10; EFSB-NO-17). Cable splicing and associated activities would not be continuous, but would take approximately four to five days, utilizing one twelve-hour shift a day, to complete each manhole location (Exhs. EFSB-NO-10; EFSB-NO-17). See also Section VI.C.4.

The Company would restore roadway surfaces to a condition as good as or better than the pre-construction condition (Exh. EV-2, at 5-32). In addition, the Company stated that final

pavement restoration would meet the standards of state agencies, including the D.P.U. Restoration Standards (id.).⁴²

C. Environmental Impacts

In this section, discussion of both the Noticed Alternative Route and the Grosvenor/Valley Road Route encompasses each route in its entirety, both overhead and underground portions, unless otherwise specified.

1. Land Use Impacts

a. Description

The Company indicated that there would be no permanent changes to land use associated with construction of the Project along either route, including along the overhead route segment (Exh. EV-20, at 5-6(S)). The Company indicated that environmental impacts along the unique segments of the Noticed Alternative and Grosvenor/Valley Road Routes would likely be temporary because of their underground location (Exh. EV-20, at 5-6(S); Company Brief at 80).

Using MassGIS data, the Company identified the extent of land use types within approximately 100 feet of the existing roadway edge for the two routes as well as along the edge of the Common Segment (Exh. EV-20, at 5-4(S), table 5-1(S)). The Company's comparison of land uses for the two in-street portions indicated four more acres of total residential land use (58.9 acres versus 54.9 acres) along the Noticed Alternative Route than along the Grosvenor/Valley Road Route (id. at 5-5(S)). The Grosvenor/Valley Road Route, however, has significantly greater high density residential land use (46.9 acres versus 18.4 acres) (id.).

The Company's construction contractors would have responsibility for planning and securing laydown and staging areas for the Project (Exhs. EV-2, at 5-18, n.8; EFSB-LU-4). The areas the Company might be able to make available to its contractor(s) for temporary staging and

⁴² See D.T.E. 98-22-A (1999). Section 9.16 of D.T.E. 98-22 states that "[t]he [m]unicipality shall have jurisdiction to determine the pavement repair method to be utilized on all pavements which have been installed for less than five years."

laydown include: (1) ROW No. 3 next to the Needham Substation; (2) its existing contractor laydown at the Baker Street Substation; (3) an area just inside the Cutler Park Reservation near the access gate from I-95 Northbound (subject to review and approval by the Massachusetts Department of Conservation and Recreation (“MassDCR”), in coordination with the Massachusetts Department of Transportation (“MassDOT”)); and (4) a currently shuttered warehouse and parking area on Rivermoor Street in West Roxbury (Exhs. EFSB-LU-4; EFSB-LU-4(1)).

The Company stated that construction of the Project would occur in previously disturbed areas, i.e., within public roadways or on ROW No. 3 (Exhs. EV-20, at 5-7(S); EFSB-LU-5). The Company reported that its archaeological consultant assessed the roadway portions of the Noticed Alternative and Grosvenor/Valley Road Routes as having low archaeological sensitivity; the analysis also indicated that the construction and operation of the Project would not affect buildings or structures (Exhs. EV-20, at 5-7(S); EV-8, at 5-46). The Company’s consultant identified two areas of moderate/high sensitivity with respect to historic and archaeological resources within and/or adjacent to the common corridor for the overhead portion of the Project (Exh. EV-8, at 5-46). The Company reported that the combined results of area walkovers, subsurface testing, and archival research completed by its consultant as part of the survey of these two areas did not identify any Native American materials or potentially significant archaeological deposits along the Common Segment (Exh. EV-8, at 5-46). The Company stated that the Massachusetts Historic Commission had no additional comments on the findings of its consultant, nor did it provide any comments on the Massachusetts Environmental Policy Act (“MEPA”) Environmental Notification Form (“ENF”) or Draft Environmental Impact Report (“DEIR”) filings, thus concluding its review relative to the Project transmission line work (Exh. EV-20, at 5-8(S)). The Company received no comments from local historical commissions or MassDCR’s Office of Cultural Resources (id.).

The Company indicated that no part of the Project along either the Noticed Alternative or Grosvenor/Valley Road Routes would involve conversion of land held for natural resource purposes in accordance with an Article 97 designation (Exhs. EFSB-G-10(S); NOYMER-1-6(S)(1) at 1).

The Company explained that it used integrated vegetation management (“IVM”) within its transmission ROW, and that its vegetation management plan (“VMP”) incorporated IVM principles (Exh. EFSB-LU-10). The Company provided a copy of its current five year (2013 to 2017) VMP, and indicated that, when operating its Project, it would continue to manage vegetation according to plan guidelines (Exhs. EV-8, at app. 5-5; NOYMER-1-6, at 4).⁴³ The Company anticipated that its selective application of herbicide to eliminate vegetation incompatible with the Company’s operations, yet facilitate the desirable replacement vegetation in the ROW, would over time reduce the need for herbicide use (Exh. EFSB-LU-10). The Company indicated that, in addition, it would apply herbicides at the Baker Street and Needham Substations to maintain the standard ten-foot separation of woody vegetation from substation fencelines (Exh. EFSB-LU-9). In accordance with Massachusetts Department of Agricultural Resources (“MDAR”) regulations, the Company indicated that it would not apply herbicides within 400 feet of a public water supply, 50 feet of private wells, or ten feet of standing water (id.).

Based on required plant surveys for the Project under the Massachusetts Natural Heritage and Endangered Species Program (“NHESP”) and on consultations with NHESP staff, the Company did not anticipate that the Project would adversely affect state-listed endangered plant species or result in a take under the Massachusetts Endangered Species Act (“MESA”) (Exh. EV-8, at 1-9).

With regard to tree clearing in ROW No. 3, there are limited areas of tree removal that would be required near the edge of the ROW to construct and operate the transmission line, including installation of timber construction mats (Exh. EV-8, at 5-3). The Company indicated that it would clear a total of approximately 1.1 acres, at the following areas: 9,800 square feet of trees and other vegetation between I-95 and Valley Road, Needham; approximately 13,000 square feet near the West Roxbury High School and nearby industrial areas in Boston;

⁴³ The primary objective of the VMP is to control noncompatible vegetation on the entire cleared width of the Company’s ROWs while reducing the risk of adverse effects to wildlife and other environmental resources as well as to humans (Exh. EV-8, app. 5-5).

and approximately 26,300 square feet in Needham and Dedham between Cutler Park Reservation and I-95 (Exhs. EV-2, at 5-15; EFSB-LU-7(S)).

The Company stated that roadway perimeters for both underground route segments were well vegetated, with a preponderance of mature trees, but that trees were generally set back from the roads (Exh. EV-2, at 5-54). The Company indicated that construction in paved roadways would not require tree removal along the Noticed Alternative Route or the Grosvenor/Valley Road Route, but might require trimming of trees (*id.*)⁴⁴. The Company stated that in the unlikely event that excavation for new construction were required within the tree pit area and/or sidewalk, the Company would replace trees and vegetation in a manner approved by the Needham Tree Warden (*id.* at 5-55).

Two parkland/recreation sites would abut the underground portions of the Noticed Alternative Route while three would abut the underground portions of the Grosvenor/Valley Road Route (Exh. EV-20, at 5-22(S)). The Company indicated that for the Common Segment, it would time overhead construction work to avoid peak periods (*i.e.*, summer months) for recreational use of the Cutler Park Reservation (Exh. EV-2, at 4-14).

The Company indicated that the Project would not require transmission line installation beneath sidewalks along the Noticed Alternative Route (Exh. TON-3; Tr. 4, at 533; RR-EFSB-12; RR-EFSB-13(1); RR-EFSB-14; RR-EFSB-18(S1)). Along the Grosvenor/Valley Road Route, the Company anticipated installing a total of 580 linear feet of transmission line beneath sidewalks in two locations on Broad Meadow Road (based on 90 percent design drawings) (Exh. McCarthy/Jones-1-34(R); RR-EFSB-18(S1)).

The Company viewed the land use types and impacts along the Noticed Alternative Route and the Grosvenor/Valley Road Route as comparable (Exh. EV-20, at 5-4(S)),

⁴⁴ Mitigation measures proposed by the Company to guard trees adjacent to roadways from construction damage included: (1) surveying the location and pre-construction condition of trees to plan measures to avoid and/or minimize impacts to trees; (2) in the case of trees within 15 feet of construction trench edges, protecting trunks and exposed roots, respectively, with a circle of two-by-fours and with carefully placed thermal backfill and wet burlap or plastic coverings; and (3) maintaining a temporary fence around the perimeter of individual tree pits (Exh. EV-2, at 5-54 to 5-55).

table 5-1(S)). However, the Company noted that the Grosvenor/Valley Road Route would require a “high impact” crossing at the Greendale Avenue Bridge at the MBTA Needham Line railroad tracks (Exhs. EV-20, at 5-6(S); Exh. EFSB-LU-37).^{45,46} The Company indicated that the Noticed Alternative Route would not involve any high impact crossings (Exh. EV-20, at 5-7(S)).

The Company stated that, for the Grosvenor/Valley Road Route, the Company would likely install the New Line at the Greendale Avenue Bridge by: (1) installing the cable in the bridge deck/roadway pavement; (2) attaching the cable to the side of the bridge; or (3) constructing a separate self-supporting utility bridge to carry the cable over the MBTA railroad tracks (Exh. EFSB-LU-29). The Company reported that MassDOT, the owner of the bridge, favors option three, constructing an independent utility support structure (Exh. EV-20, at 5-6(S)). The Company’s field reconnaissance indicated that an independent utility support structure, from an engineering perspective, would be feasible but challenging, and would add to Project costs (Exhs. EFSB-LU-36; EFSB-LU-37; RR-EFSB-19).⁴⁷

⁴⁵ The Company explained that high impact crossings are locations in close proximity to residences and businesses where crossings over roads, railroads, or waterbodies would likely take more than three months with associated noise, visual, traffic, and dust impacts (Exh. EV-2, at 4-64 to 4-65).

⁴⁶ The Company explained that the Greendale Avenue Bridge, originally constructed in 1906, is a concrete, two-lane, single-arch bridge that spans the MBTA Needham Line railroad tracks (Exhs. EFSB-LU-29; EV-20, at 5-8(S)). The Company stated that the Greendale Avenue Bridge is included in the Inventory of Historic and Archaeological Assets of the Commonwealth and located within an area with potential for listing as a National Register Historic District (Exhs. EFSB-LU-29; EV-20, at 5-8(S)).

⁴⁷ The Company indicated that constructing an independent utility support structure at the Greendale Avenue Bridge would involve, among other requirements: identifying construction access from Greendale Avenue; cable transition work to-and-from Greendale Avenue onto the utility bridge; acquiring a MassDOT permit and, possibly, an access license from the MBTA; site preparation work; construction over an active MBTA commuter rail line; historic resource considerations; and, increased potential for traffic congestion on Greendale Avenue (Exhs. EV-20, at 5-6(S) to 5-7(S); EFSB-LU-29; EFSB-LU-36; EFSB-LU-37).

b. Positions of the Parties

Needham states that it will not object to the Noticed Alternative Route, despite the use of Valley Road, “if, but only if, no portion of the Project will be built under a sidewalk” (Needham Brief at 3-4). The Town explained that one of its paramount concerns is keeping as much distance as possible between the Project and nearby walkable neighborhoods, residences, schools and hospitals so as to minimize both short- and long-term impacts of the lines on these receptors (id. at 4-5). Where the Project cannot avoid the identified receptors entirely, the Town argues that the line should be as close to the center of roads as reasonably possible to reduce impacts on adjacent properties (id. at 5). Needham agrees with the selection of the Noticed Alternative Route, provided the Project comports with representations made by the Company to the Board of Selectman in a September 12, 2017 letter, namely: (1) that the Company will “design the transmission line to be located within the paved way [along Valley Road and Peacedale Road]; and (2) that in the event of “conflicts with existing utilities” the Company will “relocate those utilities at [the Company’s] expense, rather than place the transmission line under a sidewalk” (Exh. TON-3; Needham Brief at 5).

Needham further asserts that the Project along either route should be approved only on the condition that the Project duct bank be installed at: (1) an overall average depth of 62 inches; (2) an average depth of 7.5 feet for 50 percent of the route within the Town; and (3) a depth of not less than 3.5 feet (Needham Brief at 5). Needham explained that it based its position on the Company’s statements (Exhs. EV-3, at app. 5-8, app. C; TON-1-1(f); Needham Brief at 5).

c. Company’s Response

The Company represents that it has committed to the Needham Board of Selectmen to design the New Line such that it would be located within the paved way of the street and, in consultation with the Town Engineer, it would mitigate any conflicts with existing in-street utilities by relocating those utilities at the Company’s expense (Company Reply Brief at 5). The Company contends that the Town proposed a new condition in its Brief that the New Line be located “as close as reasonably possible to the center of the road” (id., citing Needham Brief at 6-7). The Company argues that there is no basis for further constraining the Company’s

design process, and that the Town has failed to justify that locating the New Line near the center of the road is a “low-cost measure,” especially if such placement would necessitate relocation of existing utilities and infrastructure (Company Reply Brief at 5). The Company contends that it may not be practical to locate the transmission line in the center of the applicable roadways because of the existence of other underground infrastructure that may be encountered (id. at 5). The Company warns that any condition requiring such location may be infeasible and counterproductive and that the Siting Board should not adopt the Town’s proposal (id.).

The Company also takes issue with the condition, sought by the Town, that the New Line be located at particular depths – an overall average depth of 62 inches; an average depth of 7.5 feet for 50 percent of the route within the Town; and a minimum depth of 3.5 feet (Company Reply Brief at 5, citing Needham Brief at 6-7). The Company agrees with the Town that the uppermost 115 kV phase conductors in the duct bank are likely to be 3.5 feet below grade, with the bottom of the duct bank approximately 62 inches below pavement top to the maximum extent practical (Exh. TON-1-1; Tr. 3, at 441-442; Company Reply Brief at 5). The Company opposes, setting mandatory depths for any part of the Project, or an average depth of the line for 50 percent of the route as proposed by the Town. The Company contends that the Town has provided no basis for these requirements beyond citing the Company’s proposal for “similar projects” (i.e., Woburn-Wakefield (Exh. TON-1-1(f))).⁴⁸

d. Analysis and Findings

The Common Segment, largely in an existing Company ROW, has the same land use impacts, regardless of which route is selected. The Company currently has vegetation management plans in place as a result of existing operation and maintenance of facilities in its ROW and at its Baker Street and Needham Substations.

⁴⁸ The Company describes the burial depths for Woburn-Wakefield as based on an assessment of conditions specific to that particular route and engineering specifications necessary to achieve particular cable ratings (Company Reply Brief at 6).

Either the Noticed Alternative or the Grosvenor/Valley Road Routes, including the Common Segment, would be in previously disturbed areas with low archeological sensitivity; construction and operation of the Project would not likely affect buildings or structures and would have only temporary impacts in roadways. There are reasonable opportunities for the Company's construction contractors to arrange for staging and laydown for Project construction without undue impact to surrounding areas. With respect to trees along roadways used for either route, the Company anticipates no tree removal due to construction in paved roadways, but proposes measures to limit construction-related impacts to trees.

Land use designations along the underground portions of the Noticed Alternative and Grosvenor/Valley Road Routes are comparable, but there is significantly greater residential density along the Grosvenor/Valley Road Route. In addition, construction of the Grosvenor/Valley Road Route would require a high impact bridge crossing that would not be necessary with the Noticed Alternative Route. Furthermore, the Company does not anticipate installing the New Line beneath sidewalks along the Noticed Alternative Route but expects that the Grosvenor/Valley Road Route would require 580 feet of transmission line beneath sidewalks. Accordingly, the Siting Board finds that the Noticed Alternative Route is preferable to the Grosvenor/Valley Road Route with respect to land use and historic resource impacts.

Land use impacts of the Project would be, for the most part, temporary. However, there would be approximately 1.1 acres of tree removal along the ROW for the Common Segment. Further, although there is no tree removal along the roadways of the underground segments, tree trimming along the streets may be required. Therefore, the Siting Board directs the Company to minimize any tree trimming along streets or the ROW and to limit tree removal to the three areas identified by the Company. If additional tree trimming or tree removal, beyond that specified, is needed, the Company shall consult with the Tree Warden and shall file with the Siting Board in advance the Company's revised tree trimming and clearing plans, including any comments, or recommendations, or conditions by the local Tree Warden. The Siting Board notes that the Company has committed to building the overhead portion of the Project to avoid summer recreational use of Cutler Park Reservation. To further reduce impacts, the Siting Board directs

the Company to follow all applicable guidelines developed to limit wildlife and resource impacts in vegetation management areas, in keeping with details specified in the Company's VMP.

The Siting Board notes the Company's commitment to confine the underground installation of the New Line to in-street locations, to avoid sidewalks, and to mitigate conflicts with existing utilities by relocating those utilities at the Company's expense. Therefore, the Siting Board directs the Company, in keeping with its representations to Needham, to locate its transmission line within the paved way of the street avoiding sidewalks, and to mitigate any conflicts with existing utilities by relocating the affected utilities at the Company's expense. In addition, the Siting Board directs the Company to return roadways where construction occurs to original or better condition (see Section VI.C.3, below).

Given implementation of the mitigation measures and conditions discussed above, the Siting Board finds that land use impacts of the Project along the Noticed Alternative Route would be minimized.

2. Wetland and Water Resource Impacts

a. Description

The Company indicated that the majority of Project work in wetlands would result from construction of the overhead Common Segment along ROW No. 3 through Cutler Park Reservation and adjacent to West Roxbury High School; because the construction would occur in conjunction with the Common Segment, it would occur with use of either the Noticed Primary Route or the Grosvenor/Valley Road Route (Exhs. EV-2, at 5-52; EV-19, at 5-14(S); NOYMER-1-6(S)(1)).

The Company would install eleven new DCT structures along ROW No. 3, which passes through Bordering Land Subject to Flooding ("BLSF") when crossing Cutler Park Reservation, an area of state-owned wetlands and conservation lands (Exhs. EV-2, at 1-6, 5-23; EFSB-LU-23). According to the Company, installing the new DCT structures would result in an approximately 550-square-foot-area of fill (Exh. EFSB-LU-23). Within this area, the Company would reduce total flood storage volume by approximately 1,459 cubic feet, with approximately

483 cubic feet of flood storage volume in Dedham, 624 cubic feet in Needham, and 352 cubic feet in West Roxbury (id.)

The Company would provide compensatory flood storage to mitigate for potential impacts to BLSF resulting from flood storage volume lost due to Project construction (Exh. EFSB-LU-23). The Company proposed providing compensatory flood storage at a 2:1 ratio in the Town of Dedham pursuant to Dedham's wetland bylaw requirements and at a 1:1 ratio in Needham and Boston pursuant to Massachusetts Wetlands Protection Act regulations and performance standards (id.).^{49,50}

The Company also indicated that four of the 22 proposed new monopole structures for the Project would be installed in Bordering Vegetated Wetlands ("BVW"): three in Cutler Park Reservation in Needham and Dedham, and one in Boston adjacent to West Roxbury High School, and require approximately 200 square feet of fill in total (50 square feet per structure) (Exh. EV-8, at 2-20) (id.). The Company would provide 400 square feet (2:1 ratio) of replicated wetlands proximate to the impact locations to mitigate the permanent impacts to BVW (Exhs. EV-22(1) at 4-7; EV-8, at 2-20). With regard to potential secondary effects associated with conversion of a forested wetland cover type to a scrub-shrub wetland cover type (without permanent loss of wetlands from filling), the Company proposed impact mitigation through the USACE in-lieu fee payment program (Exh. EV-22(1) at 4-2 to 4-4, app. 4-2). The Company indicated that it would finalize plans for wetland replication size, location, and design with the

⁴⁹ MassDEP encouraged 2:1 replication in its MEPA comments on the ENF (Exh. EV-8, at 2-20).

⁵⁰ The Company stated that it was not proposing compensatory flood storage at a 2:1 ratio except where required by more stringent local regulation – as in Dedham – for two reasons (Exh. EV-22(1) at 4-5 to 4-6). According to the Company, providing flood storage at a 2:1 ratio in Boston and Needham would: (1) result in greater land disturbance in the form of grading and vegetation clearing to the buffer zone, floodplain, and Riverfront Area than would occur by adhering to state regulatory performance standards; and (2) result in limited effect on the overall flood storage capacity of the resource area (id.).

local conservation commissions, MassDEP, and USACE during the wetlands permitting process (Exh. EFSB-LU-22).

Dewatering would likely be necessary for structures located in the vicinity of wetland areas (Exh. EV-22(1) at 4-10). The Company indicated it had identified 13 areas along ROW No. 3 for implementation of dewatering BMPs during Project construction (*id.*). The Company would require its contractors to adhere to a Stormwater Pollution Prevention Plan (“SWPPP”) developed and maintained by for the Project (*id.* at 5-21). The Company reported that total tree clearing in wetland resource areas would be the same along both the Noticed Alternative and the Grosvenor/Valley Road Routes (*id.* at 4-2).

With respect to the underground segment of the Project along the Noticed Alternative Route, stream/culvert crossings in Needham would include the Alder Brook culvert on South Street, an unnamed stream/culvert on High Rock Street, and an unnamed intermittent stream crossing in ROW No. 3 between High Rock Street and the Needham Substation (Exh. EFSB-LU-11(S)). The Grosvenor/Valley Road Route would involve two culverted intermittent stream crossings in Needham, one on Harris Avenue near the municipal golf course and a second at the entrance drive to 433 Chestnut Street (Exh. EV-20, at 5-15(S)). The Company anticipated that it would install its cable without affecting culverts or associated streams by shoring up the culverts and working beneath them (Exh. EFSB-LU-11(S); Tr. 4, at 628). The Company indicated the potential for approximately 1,000 square feet of wetland alterations at the Needham Substation access on the Noticed Alternative Route, but anticipated restoring any disturbed wetland following construction (Tr. 5, at 708-709, RR-EFSB-18(S1)).

The Company stated that for either route, there are no Surface Water Protection Areas A or B, MassDEP-approved Zones I and II Wellhead Protection Areas, Areas of Critical Environmental Concern, or Outstanding Resource Waters anywhere in close proximity (Exhs. EV-2, at 4-54, n.14). Finally, the Company also reported that the Project would not substantially reduce the capacity of affected wetland resource areas to provide wildlife habitat functions (*i.e.*, those functions listed in 310 CMR 10.60(2) under Massachusetts Wetlands Protection Act regulations) (Exhs. EV-22(1) at 4-2, app. 4-1; EV-8, at 5-9 at 5-37, app. 5-2).

b. Analysis and Findings

The record shows that wetland and water resource impacts would be the same for the Noticed Alternative and Grosvenor/Valley Road Routes along the common overhead portion of the Project. The Company would replicate wetland resource areas permanently affected in the overhead segment of the Project at an approximate 2:1 ratio. Consistent with the Town of Dedham's wetland bylaw requirements, the Company would mitigate Project-related loss of compensatory flood storage at a 2:1 ratio in the Town of Dedham; in Needham and Boston, consistent with Massachusetts Wetlands Protection Act regulations and performance standards, the Company would mitigate loss of compensatory flood storage at a 1:1 ratio. The Company would also protect water quality by applying dewatering BMPs to filter groundwater discharges properly and prevent degradation of groundwater discharge quality and the quality of the receiving wetland resource area. The Company would, additionally, require adherence by its contractors to a Company-developed SWPPP.

In-street construction of the underground portion of the Noticed Alternative and Grosvenor/Valley Road Routes would limit wetland and water resource impacts along both routes. The record shows, in particular, comparable impacts along underground portions of either the Noticed Alternative or Grosvenor/Valley Road Routes with respect to tree clearing specific to wetlands and other water resource areas (e.g., BVW and IVW resource areas). Furthermore, the Company's approach to construction of its Project at culverts/stream crossings would, along both evaluated routes, comparably avoid and minimize wetlands and water resource impacts at these locations. Potential wetland impacts estimated for the Needham Substation access on the Noticed Alternative Route would be limited and temporary, with post-construction restoration of any disturbed wetland. The Project would not negatively affect regulated drinking water or other water supply areas, nor would it have negative impacts on wetland-dependent wildlife habitat areas or functions.

The Siting Board therefore finds wetlands and water resource impacts of the Project would be comparable with use of either the Noticed Alternative or the Grosvenor/Valley Road Routes. In addition, given implementation of the mitigation measures discussed above, the

Siting Board finds that wetland and water resource impacts along the Noticed Alternative Route would be minimized.

3. Traffic Impacts

a. Description

The Company indicated that the majority of Project work associated with the Common Segment for the Project would occur along existing ROW No. 3 primarily in remote areas or commercial/industrial parking lots not located on public roads (Exh. EFSB-T-12). The Company did not anticipate that work for the Common Segment would affect school bus routes or school activities in Needham or Dedham (*id.*). In consultation with the City of Boston, the Company would coordinate any Project-related work performed within ROW No. 3 near the entrance to the West Roxbury High School (*id.*). The Company explained that the objective of such coordination would be to avoid Project impacts on student arrivals at, and departures from, West Roxbury High School and its adjacent athletic facilities (*id.*).

The Company indicated that construction of the underground portion of the Project, and associated traffic impacts, would be confined to Needham public roads (Exh. EV-2, at 5-40). The Company stated that traffic impacts along the underground portion of the Project would be temporary, ending with Project completion (*id.*). Given that South Street is a narrow, winding, collector road with a number of tight corners. The Company indicated that portions of the Noticed Alternative Route along South Street and High Rock Street could potentially require temporary road closures and detours (Exh. EV-20, at 5-10,11(S)). The Grosvenor/Valley Road Route would continue in the vicinity of the Needham Junction MBTA area, raising the possibility that the MBTA parking lot could be temporarily closed or relocated during Project construction (Exh. EFSB-T-16).

The Company anticipated a work zone approximately 200 to 300 feet in length for underground duct bank installation, including space for traffic management (*e.g.*, a police detail and/or use of traffic management devices); outside the work zone, the Company would maintain normal traffic flow to the extent possible (Tr. 5, at 776). The Company stated that, even along the narrower streets for the Project, if the cable were located completely along one side of the

road or the other, the Company could construct within an eleven-foot-wide minimum work space corridor leaving ten or eleven feet to maintain one-way alternating traffic (Tr. 5, at 765).⁵¹ If the cable were closer to the center of the road, maintaining one-way alternating traffic down that segment might be more difficult (Tr. 5, at 766). Such situations could necessitate a detour to move traffic around the work zone, and, if so, the Company would work with Needham to establish traffic flow detours as short-lived and minimally disruptive as possible (Tr. 5, at 766-767). According to the Company, its approach to traffic control has proven effective in maintaining reasonable traffic flow in past projects involving construction in public roadways (Tr. 5, at 776-777).

The Company did not anticipate road closures or blockages in association with minor work at either the Needham or Baker Street Substations (Exh. EFSB-T-11). The Company stated that it would, as necessary, arrange for a police detail or other traffic control measures to minimize disruption to traffic due to materials delivery or the movement of construction equipment in conjunction with substation work (id.). The Company would plan arrival of materials and/or equipment at the Needham and Baker Street Substations and elsewhere along the Project route for off-peak traffic hours when possible (id.). The Company would undertake traffic planning with appropriate state agencies, including MassDOT, the MBTA, and MassDCR, as well as with the municipalities along the Project route (id.).

The Company stated that, after design completion, it would work closely to develop a Traffic Management Plan (“TMP”) with each community affected by its Project and would finalize draft TMPs after local community and applicable state agency review (Exhs. EV-2, at 5-50; EFSB-T-11; RR-EFSB-21). Specifically with respect to Needham, the Company stated that its TMP would address: coordination with police and fire departments; provision for emergency vehicle access; the timing and delivery of equipment and materials; lane location and width within the work zone to minimize impacts to vehicular traffic movement and to promote

⁵¹ The Company pointed to South Street and High Rock Street as examples, explaining that the pavement of each of these relatively narrow roadways was 20 feet wide, with an additional twelve inches of soft berm on either side in most locations (Tr. 5, at 765).

safe passage; work schedule and the duration of proposed lane closures, alternative traffic flow patterns, road closures, and detours where necessary; traffic control devices; locations for temporary provisions to maintain access to homes and businesses; routing of, and measures to safeguard, pedestrian and bicycle traffic, including along routes connecting to school and MBTA facilities; communication with proximate businesses to avoid interruptions to deliveries; and development of a system to notify municipal officials, local businesses, and the public of the timing and duration of travel restrictions (Exh. EV-20, at 5-12(S) to 5-13(S); see also Section VI.C.5.d).

With respect to public safety vehicle access and travel, the Company would coordinate with police and fire departments to ensure emergency access at all times through the in-street portion of its Project (Exh. EV-2, at 5-51). The Company indicated that, in most cases, police would maintain one-way alternating travel through the work zone and would give priority access to emergency vehicles (id.). In the unlikely occurrence of temporary roadway closure (for the installation of a manhole, for example), the Company would halt construction activity and clear a section of roadway to allow emergency vehicle passage (id.).

The Company would work to limit impacts to school bus stops when coordinating with Town of Needham officials to reduce Project-related traffic impacts (Exh. EFSB-T-12). The Company indicated that the effect of Project installation on school bus stops would be a concern along the underground portion of its Project if constructed along either the Noticed Alternative or Grosvenor/Valley Road Routes (id.). Because bus stops vary each year with changes in the school population, the Company would finalize planning for the number and location of school bus stops at the time of Project construction (id.).

b. Analysis and Findings

The record shows that traffic impacts would primarily occur in conjunction with construction of the in-street portion of the Project in Needham, whether along the Noticed Alternative or Grosvenor/Valley Road Route. The Grosvenor/Valley Road Route, however, is slightly longer (see Section VI.C.4, below). The Siting Board observes that while portions of the Noticed Alternative Route would be narrow and winding, the Grosvenor/Valley Road Route has

significantly greater residential density (see Section VI.C.1, above) and could temporarily affect the Needham Junction MBTA parking areas. Regardless of the route selected, the Company represented that it would work with Needham to limit traffic disruption.⁵² The Siting Board therefore finds that the traffic impacts of the Noticed Alternative Route and the Grosvenor/Valley Road Route would be comparable.

With respect to the Town of Needham's requests that the underground portion of the Project be located as close as reasonably possible to the middle of the street and with specified requirements for average depth (as described in Section VI.C.1, above), the Siting Board finds that such requirements may be impractical and could increase traffic impacts of the Project. To the extent that construction of the New Line is in the center of affected streets, or at greater depth than necessary, it is more likely that detours would be required, creating additional traffic impacts during construction and future maintenance activities. The Siting Board therefore declines to mandate placement of the underground cables in the center of streets, or at particular depths beyond those commitments already made by the Company. Where such placement is practical, and can be reasonably accommodated, the Siting Board encourages the Company to construct its Project accordingly. We note that the Company has agreed to avoid installation of the New Line under sidewalks.

The Company's expected coordination with the City of Boston would avoid Project impacts to student arrivals and departures at the entrance to West Roxbury High School and adjacent athletic facilities near ROW No. 3. In addition, the record shows that work at Needham and Baker Street Substations would not likely involve road closures or blockages at either substation location. To minimize impacts, the Company would implement traffic control measures, including police details, as necessary, and would schedule material and equipment deliveries for off-peak traffic hours at the substations and elsewhere along the Project route.

⁵² The Company anticipates developing a detailed TMP with each community affected by its Project. The record shows that the Company would finalize school bus stops at the time of Project construction to reflect annual changes in the school population. The Company also plans measures to alert officials, businesses, and members of the public to impending travel restrictions.

Given that the Project is located in multiple communities, outreach and notification will be critical. The Siting Board directs the Company, in consultation with the Towns of Needham and Dedham and the City of Boston, to develop a separate, comprehensive outreach plan for the Project for each municipality. Each outreach plan should describe the procedures to be used to notify the public about: (1) the scheduled start, duration, and hours of construction in particular areas; (2) the methods of construction that will be used in particular areas (including any use of nighttime construction); and (3) anticipated street closures and detours. Each outreach plan should also include information on complaint and response procedures; Project contact information; the availability of web-based project information; and protocols for notifying the MBTA and schools of upcoming construction.

The Siting Board notes that based on the record, with proposed mitigation, traffic impacts of the Project along either the Noticed Alternative or Grosvenor/Valley Road Routes would be temporary and comparable. The Siting Board directs the Company to arrange for off-peak delivery of Project equipment and materials and to develop TMPs for the Project, as the Company has proposed. The Siting Board also directs the Companies to submit a copy of each final TMP to the Siting Board and all other parties when available, but no less than two weeks prior to the commencement of construction, and to publish the TMPs on the Company's Project website. With the implementation of the above delivery, TMP, and communications outreach plan conditions imposed above, the Siting Board finds that traffic impacts of the Project along the Noticed Alternative Route would be minimized.

4. Noise Impacts

a. Description

The Company stated that noise from construction of the Project may result in sound levels temporarily elevated above ambient conditions near sensitive receptors, such as residences and businesses along the Project route (Exh. EV-2, at 5-58 to 5-59, 5-62). According to the Company, the potential noise impacts of Project installation would be a function of specific receptors along the route, proposed hours of construction, and the equipment used (Exh. EV-20, at 5-19(S)).

With regard to construction noise associated with the common overhead portion of the Project, the Company reported that the Project's location almost entirely in ROW No. 3, well removed from residences and sensitive receptors in West Roxbury, Dedham, and Needham, would limit noise impacts (Exh. EV-2, at 5-62).⁵³ The Company indicated that construction of new overhead structures and wire pulling would be the principal sources of noise generation and would likely range from 85 to 95 A-weighted decibels ("dBA") at 50 feet (*id.*).

With regard to installation of the underground Project segment, the Company provided noise levels for the four principal phases of in-street underground cable construction, *i.e.*, manhole installation; trenching and duct bank installation; cable pulling, splicing, and testing; and final pavement restoration (Exh. EV-2, at 5-58 to 5-62). According to the Company, typical sound levels for within-street underground cable construction would range from 57 dBA to 83 dBA at 50 feet from the edge of construction (*id.*).⁵⁴ As reported by the Company, the Noticed Alternative and Grosvenor/Valley Road Routes would pass by residential buildings and individual units at the distances indicated in Tables 2 and 3, below (with distances to the nearest point on the residential structure measured from the edge of the ROW) (Exh. EFSB-MF-3; RR-EFSB-18(S1)).^{55, 56}

⁵³ For the overhead portion of the ROW, there are only two residential units within 100 feet of the edge of the ROW (Exh. EFSB-LU-1).

⁵⁴ The Company specified that reference sound levels would decrease by six dBA for locations 100 feet from the edge of construction; where setbacks from construction activity were only 25 feet, sound levels from each piece of equipment would increase by six dBA (Exh. EV-2, at 5-60).

⁵⁵ According to the Company, buildings would supplement noise mitigation afforded by distance and regulation of work hours (Exhs. EV-2, at 5-20; EFSB-NO-7). A building would provide sound level reductions of approximately 27 dBA in winter (windows closed) and 17 dBA in summer (windows open) (Exh. EFSB-NO-7).

⁵⁶ The nearest residential structure to the Baker Street Substation is 15 feet and to the Needham Substation is 31 feet (Exh. EFSB-LU-3).

Table 2. Noticed Alternative Route: Distance/Counts of Residential Units (Underground Portion Only)

Distance (in feet)	≤ 25	> 25 to ≤ 50	> 50 to ≤ 100	> 100 to ≤ 200	> 200 to ≤ 300
North / Units	3	28	58	50	62
South / Units	0	29	38	27	17

Source: RR-EFSB-18(S1).

Table 3. Grosvenor/Valley Road Route: Distance/Counts of Residential Units (Underground Portion Only)

Distance (in feet)	≤ 25	> 25 to ≤ 50	> 50 to ≤ 100	> 100 to ≤ 200	> 200 to ≤ 300
North / Units	1	35	78	64	126
South / Units	1	52	57	48	62

Source: RR-EFSB-18(S1).

Eight residences would be within 50 feet of proposed manhole locations along the Noticed Alternative Route; nine residences and two commercial properties would be within 50 feet of proposed manhole locations along the Grosvenor/Valley Road Route (RR-EFSB-18(S1); RR-EFSB-17).

The Company anticipated that normal work hours for Project construction would be between 7:00 a.m. and 5:00 p.m. on Monday to Friday (Exhs. EV-2, at 5-20; EFSB-NO-11). The Company explained that its intent was to work Monday through Friday, with Saturdays reserved for schedule makeup, emergency work or other unpredicted situations (Tr. 4, at 617-621). The Company indicated that it would consult with representatives of each affected municipality and other stakeholders should it determine the need for Saturday work to meet the Project schedule (Exhs. EV-2, at 5-20; EFSB-NO-11). The Company would also coordinate with municipalities regarding any night work proposed, for example, to avoid traffic congestion (e.g., at the construction access point onto ROW No. 3 at I-95) or to minimize other impacts

related to Project installation (Exh. EV-2, at 5-20).⁵⁷ The Company did not anticipate a violation of local noise ordinances during construction of the Project (Exh. EFSB-NO-3; Tr. 4, at 617-621).

The Company identified no Project elements that would require planned, continuous (around-the-clock) activity once started, but that it could not exclude the possibility (Exh. EFSB-NO-2). With regard to manholes and cable splicing, the Company explained that each of the three cables at a given manhole location would take twelve continuous hours to splice, but that it was not necessary to make the three splices concurrently or one after the other (Exh. EFSB-NO-10). The Company would maximize day shift work for cable splicing to limit potential noise impacts (*id.*). The Company also indicated, however, that, depending on the manhole location, municipal officials might require that cable splicing occur at times to minimize traffic impacts (Exh. EFSB-NO-10).

The Company stated that the new equipment at the Baker Street Substation and the Needham Substation would not generate a change in operational noise (Exh. EFSB-NO-4). The Company indicated that construction at the substations would involve removal of existing transmission lines at the substation entrances, reconnection of the proposed New Line, and the resetting of protective devices (Exh. EFSB-NO-12). The Company indicated that removal of

⁵⁷ The Company provided copies of municipal noise ordinances for the three communities located along the Noticed Alternative and the Grosvenor/Valley Road Routes (Exh. EFSB-NO-3). Regarding construction noise, the City of Boston Municipal Code (1) limits construction hours to 7:00 a.m. and 6:00 p.m. on weekdays, or except in the interest of public safety or welfare, upon issuance of and pursuant to a permit from the Commissioner, Inspectional Services Department, “which permit may be renewed for one or more periods of not exceeding one week each;” and (2) prohibits construction site operation between 6:00 p.m. and 7:00 a.m. of equipment emitting noise in excess of 50 dBA as measured at a residential lot line (Exh. EV-3, app. 5-10). The noise ordinances for Needham and Dedham limit work hours to between 7:00 a.m. and 8:00 p.m. in Needham; and 7:00 a.m. and 9:00 p.m. Monday through Friday, and 8:00 a.m. to 9:00 p.m. on Saturday in Dedham (unless otherwise permitted) but do not identify noise level baselines or exceedance thresholds specific to a particular activity or type of work (Exhs. EFSB-NO-3; EV-3, app. 5-10).

existing transmission lines and reconnection of the proposed New Line would produce noise levels similar to those associated with stringing overhead transmission lines (id.).

The Company did not anticipate blasting along either the Noticed Alternative or Grosvenor/Valley Road Routes or the Common Segment; it would use an excavator or hydraulic hammer to remove rock or ledge, if required (Exh. EFSB-NO-6). The Company further indicated that construction equipment would meet all regulatory requirements and that only necessary equipment would run at any given time during Project installation (Exh. EFSB-NO-5).

Because it anticipated typical in-street construction noise levels from the Project, the Company did not expect to use temporary noise barriers during normal work hours (Exh. EFSB-NO-14). The Company stated that, in the event of excessive noise from Project activities, it would mitigate noise impacts consistent with best management practices (id.). If temporary noise barriers were among these options, the Company might include free-standing frames with either acoustical dampening blankets or rigid walls attached to them, positioned to block the line-of-sight from nearby residences (id.). According to the Company, such temporary noise barriers might restrict movement within the work zone and introduce additional safety concerns and the Company did not consider them advantageous for in-street construction (id.).

b. Analysis and Findings

Construction of the Project would have appreciable noise impacts along the entire route, and particularly from construction of the underground segment in residential areas in Needham. The record shows that Project construction noise could be as high as 89 dBA at the outside edge of the closest residential structures along the underground segment of either route in Needham. In contrast, the location of the Common Segment of the New Line, almost entirely in ROW No. 3, is near only a few residences. The record shows that the limited reconnection work at the substations, confined to the interior of the control house, would pose no noticeable noise impacts from the Project.

Proximity of residents, businesses, and pedestrians to construction and the relative length of the active work zone are both important determinants of the relative impact of construction-related noise along the Noticed Alternative and Grosvenor/Valley Road Routes. There are fewer

residential housing units and sensitive receptors along the Noticed Alternative Route compared to the Grosvenor/Valley Road Route, and the Grosvenor/Valley Road Route is slightly longer. The Siting Board therefore finds the Noticed Alternative Route preferable to the Grosvenor/Valley Road Route with respect to construction noise impacts.

The record shows that cable splicing is expected to occur over extended 12-hour workdays but would not be a continuous operation. In order to minimize sound impacts during cable splicing in particular, the Siting Board directs the Company to use the quietest generators and portable HVAC units reasonably available. In addition, when the Company operates stationary noisy equipment, such as whole tree chippers or compressors, the Siting Board directs the Company to locate such equipment as far away as possible from nearby residences, where flexibility exists to do so, to reduce noise impacts on residences.

The Siting Board accepts as reasonable the standard construction hours of Monday to Friday from 7:00 a.m. to 5:00 p.m., and Saturday work in the event of emergency or other unpredicted situations requiring such work hours. Saturday work at the Needham and Baker Street Substations is allowed, but limited to large equipment deliveries and to quiet assembly and testing activities. Because in-street construction is in close proximity to many residential areas, including some where homes are within 50 feet of the ROW, the Siting Board directs the Company to limit construction of the New Line in residential areas to Monday through Friday from 7:00 a.m. to 5:00 p.m. Work requiring longer continuous duration than normal construction hours allow, such as cable splicing, is exempted from this condition.

Should the Company need to extend construction work beyond the above-noted hours and days, with the exception of emergency circumstances on a given day necessitating extended hours, the Siting Board directs the Company to seek written permission from the relevant municipal authority before the commencement of such work, and to provide the Siting Board with a copy of such permission. If the Company and municipal officials are not able to agree on whether such extended construction hours should occur, the Company may request prior authorization from the Siting Board and shall provide the relevant municipality with a copy of any such request.

The Company shall inform the Siting Board and the relevant municipality within 72 hours of any work that continues beyond the hours allowed by the Siting Board. The Company shall also send a copy to the Siting Board, within 72 hours of receipt, of any municipal authorization for an extension of work hours. Furthermore, the Company shall keep records of the dates, times, locations, and duration of all instances in which work continues beyond the hours allowed by the Siting Board; if a municipality grants the Company extended work hours in writing, the Company shall keep records of work that continues past allowed hours, and must submit such record to the Siting Board within 90 days of Project completion.

With the implementation of the above noise conditions, the Siting Board finds that noise impacts of the Project along the Noticed Alternative Route would be minimized.

5. Air, Visual, Soil Management, and Safety Impacts

a. Air

Regardless of route chosen, the Company indicated it would control dust at construction sites by placing water trucks with misters in or near work areas during construction activities (Exh. EV-8, at 2-22). The Company indicated that it would also comply with state laws concerning vehicle idling (id.). To minimize air emissions from equipment operation, the Company would direct its contractors to retrofit any diesel-powered, non-road construction equipment rated 50 horsepower or above, whose engine is not certified to USEPA Tier 4 standards, and that will be used for 30 days or more over the course of the Project, with USEPA-verified (or equivalent) emission control devices (id.). The Company stated that its own diesel-powered construction equipment would use ultra-low-sulfur diesel (“ULSD”) fuel and that it would require its contractors to use ULSD fuel in their diesel-powered construction equipment used for the Project (id.).⁵⁸

⁵⁸ The Company indicated that it did not anticipate adding, using, or replacing equipment filled with sulfur hexafluoride gas (“SF₆”) in conjunction with the Project (Exh. EFSB-A-1).

b. Visual

The Company stated that the in-street portions of the Noticed Alternative and Grosvenor/Valley Road Routes would have no new above-ground structures other than the overhead-underground transition point at 15 Valley Road (Exh. EV-20, at 5-17(S)). The Company anticipated limited visual impacts at the 15 Valley Road transition point from tree clearing and the addition of structures (id.). According to the Company, the viewsheds in this area had been previously altered by the presence of the Company's existing transmission lines and MBTA commuter rail tracks (id.).

The Company submitted a viewshed analysis showing the visual impacts of the common overhead portion of the Project (Exhs. EV-20, at 5-17(S); NOYMER-1-6(S)(4)). The Company stated that Project structures may be visible from select locations near the Greendale Village condominiums in Needham and areas along the MBTA railroad corridor north of Valley Road, and may be partly visible from the undeveloped municipal land east of Valley Road and from select locations on a few residential properties bordering Valley Road to the south and west (Exhs. EV-20, at 5-17(S); NOYMER-1-6(S)(4)).

The Company stated that residential neighborhood viewsheds affected by proposed tree clearing and overhead transmission line construction work for the Project would also potentially include the Park Place Condominiums located on the VFW Parkway in West Roxbury and the West Roxbury High School complex (Exh. EFSB-V-2). The Company indicated that this tree clearing and construction work might also affect the viewsheds of residences located north and east of the Baker Street Substation (id.). The Company stated that it did not propose tree clearing at the Baker Street Substation or Needham Substation in conjunction with the Project and that the views of the substations from adjacent residential neighborhoods in these locations would therefore remain unchanged (id.).

To address visual impacts of the Project, the Company represented that it would work with individual landowners "in a reasonable manner" to provide off-site plantings on properties where the Project affects the landowner's viewshed (Company Brief at 103). In the event of Project-related street tree damage or removal, the Company would replace any such trees or

vegetation in a manner approved by the Needham Tree Warden and consistent with any other applicable local requirements (Exh. EFSB-V-3).

c. Soil Management

As noted above, open-cut trenching would be the primary method of underground duct bank construction (Exh. EV-2, at 5-29). The Company would handle soil and pavement separately (id.). The Company would remove pavement to an asphalt batching plant for recycling; it would either temporarily stockpile removed or excavated soils off-site or haul it to an off-site facility for recycling, re-use or disposal (id.). The Company indicated that hauling soils off-site would maintain the size of its construction site and limit dust and sedimentation in the area (id.). As a general matter, the Company would promptly remove and re-use or dispose of waste materials produced along any construction route during transmission duct bank and manhole installation (id. at 5-35). If contaminated soil or other regulated materials are encountered during construction, the Company would manage materials in question according to the Utility-Related Abatement Measure (“URAM”) provisions of the Massachusetts Contingency Plan (“MCP”) (id.). The Company would contract with a Licensed Site Professional (“LSP”) as necessitated by conditions consistent with MCP requirements (id.).

d. Safety

The Company indicated that work crews would not leave unattended open construction trenches for the Project; they would instead backfill any such trenches or cover them with engineered road plates to prevent public access (Exh. EV-2, at 5-30, n.10). The Company would work closely with town officials to minimize the impacts of in-road construction on the public in Needham, where all in-road construction would occur (Exh. EV-20, at 5-12(S)). The Company also stated that, prior to the start of in-road construction, it would develop, and submit to Needham authorities for their review, a set of plans consistent with the *Manual on Urban Traffic Control Devices*, published by the Federal Highway Administration (“FHA”), and *Work Zone Safety*, a publication of MassDOT (id. at 5-13(S)). The Company further stated that all design, construction, and operation activities for the Project would follow applicable governmental and

industry standards including, but not limited to, the National Electrical Safety Code and Occupational Safety and Health Administration (“OSHA”) regulations (Exh. EV-2, at 5-30 and n.10).

e. Analysis and Findings

i. Air

With respect to air impacts, the record shows the Company has made a number of commitments to limit potential air impacts of the Project, including a commitment to use water trucks with misters at worksites to control construction-related dust, and to comply with state law, regulations concerning engine idling, and the Siting Board standard condition on diesel retrofits.

Based on the record, the Siting Board finds air impacts of the Project along the Noticed Alternative Route and the Grosvenor/Valley Road Route would be comparable. With the proposed measures to minimize dust and air emissions from construction equipment, the Siting Board finds that potential air impacts of the Project along the Noticed Alternative Route would be minimized.

ii. Visual

With respect to visual impacts, the record shows the underground portion of either the Noticed Alternative or the Grosvenor/Valley Road Routes would involve no new above-ground structures. The only visual impact for this section is associated with the overhead-underground transition point for either route. The record shows visual impacts associated with tree clearing and added structures for the common overhead line construction, with potential visual impacts at the locations listed above in Section VI.C.5.b.

The Siting Board directs the Company, as it represented, to work with individual landowners in the vicinity of overhead structures to provide off-site screening in a reasonable manner on properties where the Project affects the landowner’s viewshed. The Siting Board further directs the Company, in the event of Project-related street tree damage or removal, to replace any such trees or vegetation in consultation with the Needham Tree Warden.

Based on the record, the Siting Board finds that visual impacts of the Project along the Noticed Alternative Route and the Grosvenor/Valley Road Route would be comparable. With the proposed conditions outlined above, the Siting Board finds that potential visual impacts of the Project along the Noticed Alternative Route would be minimized.

iii. Soil Management

The record shows that the Company proposes appropriate treatment measures for soil management along either the Noticed Alternative or Grosvenor/Valley Road Routes. Based on the record, the Siting Board finds that for both the Noticed Alternative and the Grosvenor/Valley Road Routes, potentially contaminated soil impacts would be comparable. The Siting Board directs the Company to comply with all applicable federal and state laws with respect to excavation and disposal of soil and pavement which the Company may encounter in the process of Project construction. With these measures the Siting Board finds that contaminated soil impacts of the Project along the Noticed Alternative Route would be minimized.

iv. Safety

With respect to construction safety measures for the Project, the Company committed to follow all relevant safety laws and regulations during construction along either the Noticed Alternative or the Grosvenor/Valley Road Routes. Given the Company's proposed safety mitigation measures, the Siting Board finds that the Noticed Alternative and Grosvenor/Valley Road Routes would be comparable with respect to safety. Based on the Company's proposed safety mitigation measures, the Siting Board finds that potential safety impacts of the Project along the Noticed Alternative Route would be minimized.

6. Magnetic Field Impacts

a. Background

A magnetic field is present whenever current flows in a conductor (Exh. EV-2, at 5-56). Magnetic field values decrease rapidly with lateral distance from the lines (Exh. EV-3, app. 5-8, at 3). Some epidemiology studies have identified statistical associations between exposure to power-frequency magnetic fields and diseases such as childhood leukemia (RR-EFSB-9(1)

at 13-14). In 2007, the World Health Organization (“WHO”) concluded that the evidence of a causal relationship is limited and that magnetic field exposure limits based upon epidemiological evidence are not recommended, but some precautionary measures are warranted (id. at 14-15). When reviewing magnetic fields in past proceedings, the Siting Board, in recognition of public concern about magnetic fields and in keeping with WHO guidance, has encouraged use of low cost measures that would minimize magnetic fields along transmission ROWs.

Woburn-Wakefield at 121; Salem Cables at 88.

b. Company Description

The Company submitted modeled magnetic field results for the overhead and underground portions of its Project for two load scenarios, average 2018 load levels and summer peak 2018 load levels (Exh. EV-3, app. 5-8, at 10 to 21). Table 4, below, provides the Company’s modeled average edge-of-ROW magnetic field values and within-ROW magnetic field values for each of three representative overhead cross-section and load scenarios (id. at 11).

The Company stated that, for each of the three overhead line cross-sections evaluated in its submitted magnetic field assessment (East of Gardner Street, West of Gardner Street/East of Valley Road cul-de-sac, and West of Valley Road cul-de-sac), the modeled with-Project within-ROW maximum magnetic field values were less than corresponding values without the Project (Exhs. EV-2, at 5-57; EV-3, app. 5-8, at 2). The Company explained that this is due primarily to the greater separation between the two circuits that would result from the proposed Project configuration versus the existing DCT configuration (Exh. EFSB-EV-2, at 5-57).

Table 4. Modeled Edge-of-ROW Magnetic Field Values, Overhead Transmission Line

Load Scenario	Cross Section/ Route Segment (Number of residences within 25 feet)	Southern Edge-of-ROW Magnetic Field (mG)		Northern Edge-of-ROW Magnetic Field (mG)	
		W/O Project	With Project	W/O Project	With Project
Average 2018 load level	E of Gardner (0)	4.0-4.4	▼ 3.9-4.3	2.4-16.3	▲ 2.9-19.8
	W of Gardner St/ E of Valley Rd cul-de-sac (1)	3.8-11.1	▲ 4.8-14.8	1.7-4.1	▼ 1.7-3.9
	W of Valley Rd cul-de-sac (29)	2.9-29.9	▼ 1.3-13.6	1.3-8.7	▼ 0.7-4.9

▼ ▲ = Direction of change in magnetic field values.

Source: Exhs. EV-3, app. 5-8, at 11; EFSB-MF-3.

For the proposed underground Project, at annual average load (“AAL”), the maximum modeled magnetic field value immediately above the cables for the majority of the line length was 33 mG, with a reduction to 3.6 mG at 20 feet to either side of the conductor centerline (Exhs. EV-3, app. 5-8, at 2-3; EFSB-MF-4) (see Table 5, below).⁵⁹ For splice vaults, the Company reported that the AAL maximum modeled magnetic field was 46 mG, dropping with perpendicular distance from the conductor centerline to 9 mG at 20 feet in either direction (Exhs. EV-3, app. 5-8, at 2-3; EFSB-MF-4).

Table 5, below, shows the magnetic field levels for the underground New Line at three feet above ground level immediately above the centerline and 20 feet to either side of the centerline (Exh. EFSB-MF-4).

⁵⁹ The Company explained that the AAL is an average of system loads in each of the 8,760 hours of a year (Exh. EFSB-MF-9). Reaching the AAL is likely to occur during part of a day over most days of the year, with the possible exception of April and October, typically the “light load” months of the year (*id.*).

Table 5. Modeled Magnetic Field Values, Underground Transmission Line

Underground Line Section	Load Scenario	Magnetic Field Directly Above Centerline (mG)	Magnetic Field, 20 Feet from Centerline (mG)
Underground Line Sections	Average 2018 load level	32.8	3.6
Splice Vault Locations	Average 2018 load level	45.6	9.4

Source: Exh. EFSB-MF-4.

Modeled magnetic field levels with and without the Project at the substation fencelines indicated little change at the Needham Substation (Exh. EFSB-MF-2(R)). The Company reported an increase of three to four mG near the northwestern corner of the Baker Street Substation fenceline due to the repositioning of Line 240-510 (Exhs. EFSB-MF-2(R) at 3; EFSB-MF-14; EFSB-MF-15).⁶⁰ The Company's analysis indicated that the Project would have minimal impact in the direction of residential properties to the north (Exhs. EFSB-MF-14; EFSB-MF-15).

The Company would mitigate magnetic fields in several ways (Exh. EFSB-MF-5). First, it would optimize the phasing of the overhead portion of the Project; second, for the underground portion of the Project, the Company anticipated installing phase conductors closer to each other than would be possible in above-ground circuit construction (*id.*). The Company explained that close spacing of the underground phase conductors accelerates the rate at which magnetic field levels decrease with distance from the buried circuit (*id.*). The Company stated that it does not expect any adverse health effects due to magnetic field level impacts of the proposed Project

⁶⁰ The Company stated that the location where Line 110-522 crosses the fenceline and taps into the Needham Substation would not change as a result of the Project; the Company also reported no change for the location where Line 110-522 would enter and tap into Baker Street Substation (Exh. EFSB-MF-2(R)). Line 240-510 would, however, as a result of the Project, cross approximately 15 feet farther west at Needham Substation, towards the northwestern corner of the fenceline, and shift approximately 25 feet toward the northwestern corner of Baker Street Substation fenceline (*id.*).

(Exhs. EV-3, app. 5-8, at 1-2; EFSB-MF-11). The Company concluded that there is no significant difference between the Noticed Alternative and Grosvenor/Valley Road Routes with regard to magnetic fields (Exh. EV-20, at 19).

c. Positions of the Parties

Needham argues that using the Company's choice of cable technology (i.e., HVED technology) in residential areas is relatively new, that magnetic field levels associated with the technology are a concern, and that the Company has provided insufficient support for proposed use of its cable technology in the instant case given magnetic field concerns (Needham Brief at 8). Needham further argues that, as in Salem Cables at 88, the Siting Board should here condition any approval on: (1) the use of magnetic field mitigation measures near manholes; and (2) following one year of Project operation, submission of a report identifying whether actual measurements of magnetic fields are consistent with projected measurements and, if not, identification of additional steps that may be taken to reduce magnetic fields (id.). Needham also asserts that, as in Salem Cables, the Board should condition any approval on the installation of uncompensated passive loops in areas near manholes where EMF levels will be greatest (id.).

Needham represents that the identified results of magnetic field monitoring would help to inform and protect Town residents (Needham Brief at 9). Needham asserts that the Company has previously represented that it is able and willing to perform pre-and post-construction magnetic field monitoring if required by the Siting Board, and that the Company does not oppose imposition of such a condition by the Siting Board on any approval (id.). The Town points to the pre-filed testimony of Needham's witness regarding the desirability of pre- and post-construction monitoring of magnetic fields "...to confirm the accuracy of predicted levels and to provide advance notice if magnetic fields levels exceed safe exposure limits in the future" (Exh. TON-JF-1, at 3-4; Needham Brief at 9). Additionally, Needham contends that, because the Commonwealth has limited experience with HVED installations and the Company does not oppose monitoring, any approval of the Project should be conditioned on

pre- and post-construction monitoring performed by the Company in consultation with the Town (Needham Brief at 9).⁶¹

Needham argues that, consistent with WHO recommendations to take precautionary measures limiting magnetic field impacts, the New Line should be as close as reasonably possible to the center of the road rather than under sidewalks (Needham Brief at 6-7). Needham also asserts that, for precautionary reasons, as discussed in Section VI.C.1, above, the Company should install the duct bank for the Project at an overall average depth of 62 inches, and an average depth of 7.5 feet for 50 percent of the route within Needham, but at no point, at a depth of less than 3.5 feet (id.).

d. Company's Response

In response to Needham's arguments, Eversource maintains that it has fully addressed Needham's concerns (Company Reply Brief at 3). The Company contends that it has not only fully supported its choice of cable technology (see Section IV.C), but it has also agreed to requests made by Needham regarding Project design and magnetic field measurements, including a request for a pre- and post-construction magnetic field monitoring program (Company Reply Brief at 2-3). In addition, the Company asserts that it has committed to certain design elements, in consultation with Needham, that address the Town's concern that no portion of the Project be constructed under sidewalks (Company Reply Brief at 3-4; see also Section VI.C.1.b).

The Company emphasizes that the low level of magnetic fields revealed by the Company's modeling are at the shallowest anticipated duct bank depth (where the uppermost

⁶¹ Needham contends that, because the record does not include a protocol for the conduct of such monitoring, the Siting Board should require submission from the Company of such a protocol for approval prior to its implementation; the Company, according to Needham, should submit the proposed monitoring protocol within 30 days following any Siting Board approval of the Project (Needham Brief at 9, 11). Needham further argues that the referenced monitoring protocol should: (1) be prepared in consultation with Needham; and (2) require submission of a report to the Siting Board following one year of Project operation that identifies whether actual measurements are consistent with projected measurements and, if not, identifying additional measures that may be undertaken to reduce exposure levels (id. at 9).

conductors are 3.5 feet below grade), and that these represent the highest anticipated magnetic field levels projected to occur above a duct bank along the Project route (Exhs. TON-1-1; RR-EFSB-12; RR-EFSB-18(S1)). The Company points out that magnetic field values decrease rapidly with lateral distance from the lines in all cases (Company Brief at 106; Exh. EV-2, at 5-58).

With respect to passive loops, the Company contends that this mitigation measure is not appropriate for the Project because of differences in project design and scope between this Project and National Grid's Salem Cables project (Exh. McCarthy/Jones-1-13(1), at 30; Company Reply Brief at 12). The Company explains that National Grid's voluntarily proposed mitigation for Salem Cables reflected the reduced cancellation of higher magnetic fields at manholes due to installation of two parallel 115 kV cables in a single duct bank (Exh. McCarthy/Jones-1-13(1), at 30; Company Reply Brief at 12). See also Salem Cables at 85-86. The Company indicates that here, it proposes a single transmission line, rather than two parallel lines in a single duct bank (Exh. EV-2, at 1-11). Therefore, the Company asserts, the Project does not rely on mutual field cancellation from parallel lines to mitigate magnetic fields, and magnetic field levels at the manholes do not vary appreciably from those along the remainder of the underground duct bank (Exh. McCarthy/Jones-1-13(1) at 30; Company Reply Brief at 13).

According to the Company, modeled magnetic field levels for the Project are already much lower than in Salem Cables, and any magnetic field reductions have already been realized for the Project on account of the closer proximity of the phase conductors in the underground design (Exh. EFSB-MF-5; Company Reply Brief at 13). The Company asserts that it is not proposing additional mitigation in the form of passive loops because it would not provide any meaningful or cost-effective benefit for the Project. The Company concludes that the Siting Board should reject Needham's request to install passive loops in areas near manholes (Exh. McCarthy/Jones-1-13(1) at 30; Company Reply Brief at 13).

e. Analysis and Findings

The record shows that magnetic field strengths along the Noticed Alternative and Grosvenor/Valley Road Routes would be similar. Therefore, the Siting Board finds that the Noticed Alternative Route and the Grosvenor/Valley Road Route are comparable with respect to magnetic field impacts.

Consistent with WHO recommendations, the Siting Board continues to look for low-cost measures that would minimize exposures to magnetic fields from transmission lines.⁶² In prior Siting Board decisions, the Siting Board has recognized public concern about magnetic fields and has encouraged the use of practical and low-cost design to minimize magnetic fields along transmission ROWs. See e.g., Salem Cables at 88 (2014). The Siting Board requires magnetic field mitigation which, in its judgment, is consistent with minimizing cost. The Company's maximum modeled magnetic field values, as indicated in Section VI.C.6.b, above, show that with the separation of the DCT and optimum phasing, the New Line would reduce maximum magnetic fields along the common overhead portion. For the underground portion, the New Lines' close positioning of the phases provides mitigation of magnetic fields that would otherwise occur. Further, with respect to mitigation of magnetic fields along the underground portion of the New Line, the record shows that the Company has committed to two measures requested by Needham: pre-and post-construction magnetic field monitoring and avoidance of construction under sidewalk. Another measure requested by Needham, however, installation of uncompensated passive loops in areas near manholes where magnetic field levels would be greatest, would not provide meaningful benefits, given the design of the Project. Specifically, the record does not show that there are applicable locations for installing passive shielding loops, such as were used at manhole vaults in Salem Cables.

⁶² We note that the Siting Board has previously specifically declined to find that an applicant is presumed to have mitigated environmental impacts by presenting an edge-of-ROW MF of 85 mG or lower: “[P]reviously accepted EMF levels are not a standard limiting acceptable impacts, and do not provide the sole or principal basis for our evaluation of EMF impacts in current reviews.” See, e.g., Brockton Power Company, 10 DOMSB 157, EFSB 99-1, at 77-78 (2000) (“Brockton Power”).

With regard to pre- and post-construction magnetic field monitoring, as requested by the Needham, the Siting Board directs the Company to: (1) consult with Needham and provide a magnetic field measurement protocol to the Siting Board within two months of the Final Decision; and (2) following one year of Project operation, submit a report identifying whether actual measurements of magnetic fields are consistent with projected measurements and, if not, identifying (a) additional steps that may be taken to reduce magnetic fields, and (b) whether such measures are warranted. Further, as discussed in Section VI.C.1, above, the Company has agreed to ensure that no portion of the Project is constructed under Needham sidewalks, and the Siting Board has included a condition to that effect. The issues of cable type and depth of duct bank are discussed in Sections IV, VI.C.1, and VI.C.3.

The Siting Board finds that magnetic field impacts for the Noticed Alternative Route and the Grosvenor/Valley Road Route would be similar, and that, given the conditions described above, magnetic field impacts from construction and operation of the Project using the Noticed Alternative Route would be minimized.

7. Summary of Environmental Impacts

The Siting Board finds that the information provided by the Company regarding the Project's environmental impacts is substantially accurate and complete. In comparing the environmental impacts along the Noticed Alternative and Grosvenor/Valley Road Routes, the Siting Board finds that the Noticed Alternative Route would have lower land use impacts and lower noise impacts than the Grosvenor/Valley Road Route due to the location of the underground portion of the route in less densely settled streets and at a greater distance from residences overall. The Siting Board further finds that traffic, air, visual, soil, safety, magnetic field, and wetland and water resource impacts would be comparable for the Noticed Alternative and Grosvenor/Valley Road Routes given their shared overhead component and the installation of their underground segments in similar in-street locations using the same technology and construction methods. On balance, the Siting Board finds that the Noticed Alternative Route is preferable to the Grosvenor/Valley Road Route with respect to environmental impacts.

D. Cost

The Company provided cost breakdowns for the Noticed Alternative and Grosvenor/Valley Road Routes to update its initial (+25%/-25%) conceptual level cost estimates for the Project (RR-EFSB-18(S1); Exhs. EFSB-C-1; EFSB-C-4). Table 6, below, indicates the Company's estimated costs per component/component group for each route.

Table 6. Costs (2017 dollars), Noticed Alternative and Grosvenor/Valley Road Routes

Noticed Alternative Route	Overhead	\$7.6 million
	Underground	\$27.6 million
	Station work & other (ROW, easements, environmental, legal, construction management)	\$5 million
	TOTAL	\$40.2 million
Grosvenor/Valley Road Route	Overhead	\$7.6 million
	Underground	\$28.3 million
	Station work & other (ROW, easements, environmental, legal, construction management)	\$5.6 million
	TOTAL	\$41.5 million

Source: RR-EFSB-18(S1).

The Company estimated total construction costs for the Noticed Alternative Route at \$40.2 million, approximately \$1.3 million less than the cost for the Grosvenor/Valley Road Route (RR-EFSB-18(S1)). The Company explained that the cost difference between the underground segment of the Noticed Alternative Route (2.9 miles) and the Grosvenor/Valley Road Route (3.0 miles) is due to the longer length of the underground portion of the Grosvenor/Valley Road Route (RR-EFSB-18(S1)). The Company also indicated that the estimate for the underground segment of the Grosvenor/Valley Road Route included approximately \$475,000 for a proposed utility bridge at the Greendale Avenue bridge crossing (id.; RR-EFSB-19). The Company stated that estimated costs for the Noticed Alternative Route might increase with further engineering work towards the final design of the Project (RR-EFSB-18(S1)).

Based on the above considerations, the Siting Board concludes that construction estimates for the Project along either the Noticed Alternative Route or the Grosvenor/Valley Road Route would not be significantly different. Accordingly, the Siting Board finds that the Noticed Alternative Route is comparable to the Grosvenor/Valley Road Route with respect to cost.

E. Reliability

The Company evaluated the Noticed Alternative Route and Grosvenor/Valley Road Route for factors such as length, physical environment, and construction as items that might affect their reliability to provide a 115 kV line connection between the Baker and Needham Substations (Exhs. EV-2, at 5-64; EV-20, at 5-25(S)). The Company's analysis indicated that, taking such factors into consideration, the Project would operate reliably if constructed along either the Noticed Alternative or Grosvenor/Valley Road Routes: there are no meaningful differences between the operating characteristics of the two routes (Exh. EV-20, at 5-25(S)). Accordingly, the Siting Board finds that Project reliability is comparable for the Noticed Alternative and the Grosvenor/Valley Road Routes.

F. Conclusion

The Siting Board finds that the Noticed Alternative Route is preferable to the Grosvenor/Valley Road Route with respect to environmental impacts, and that the two routes are comparable with respect to cost and reliability. The Siting Board therefore finds that the Noticed Alternative Route is superior to the Grosvenor/Valley Road Route with respect to providing a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.

Based on review of the record, the Siting Board finds that the Company provided sufficient information to allow the Siting Board to determine whether the Project has achieved a proper balance among cost, reliability, and environmental impacts. The Siting Board finds that, with the implementation of the specified mitigation and conditions, and compliance with all local, state, and federal requirements, the environmental impacts of the Project along the Noticed

Alternative Route would be minimized. The Siting Board finds that the Project along the Noticed Alternative Route would achieve an appropriate balance among conflicting environmental concerns as well as among environmental impacts, reliability, and cost.

VII. CONSISTENCY WITH POLICIES OF THE COMMONWEALTH

A. Standard of Review

G.L. c. 164, § 69J requires the Siting Board to determine whether plans for construction of the applicant's new facilities are consistent with current health, environmental protection, and resource use and development policies as adopted by the Commonwealth.

B. Analysis and Conclusions

1. Health Policies

In Section 1 of the Electric Utility Restructuring Act of 1997, the Legislature declared that "electricity service is essential to the health and well-being of all residents of the Commonwealth" and that "reliable electric service is of utmost importance to the safety, health, and welfare of the Commonwealth's citizens." See St. 1997, c. 164. In Section IV.D, above, the Siting Board found that the Project would improve the reliability of electric service in Massachusetts. Reliable electricity service is essential to the health of citizens of the Commonwealth; therefore, an improvement in reliability will result in health benefits.

The Company has committed to use retrofitted off-road construction equipment to limit emissions of particulate matter during Project construction (Exhs. EV-2, at 5-22; EV-8, at 2-22). This commitment is consistent with MassDEP's Diesel Retrofit Program designed to address health concerns related to diesel emissions. In Sections VI.C and VI.F, the Siting Board finds that the Project's land use, historic resources, wetland and water resources, traffic, noise, air, visual, soil management safety, and magnetic fields impacts have been minimized. Accordingly, subject to the Company's specified mitigation and the Siting Board's conditions set forth in Section X, below, the Siting Board finds that the Company's plans for construction of the Project are consistent with current health policies of the Commonwealth.

2. Environmental Protection Policies

The Global Warming Solutions Act (“GWSA”), enacted in August 2008, is a comprehensive statutory framework to address climate change in Massachusetts. St. 2008, c. 298. The GWSA mandates that the Commonwealth reduce its GHG emissions by 10 to 25 percent below 1990 levels by 2020, and by at least 80 percent below 1990 levels by 2050. G. L. c. 21N, §3(b). Pursuant to the GWSA, the Secretary issued the Massachusetts Clean Energy and Climate Plan for 2020 on December 29, 2010 (the “2020 CECP”) and an update dated December 31, 2015 (the “2020 CECP Update”). In a determination accompanying the 2020 CECP, the Secretary set the 2020 state-wide GHG emissions limit at 25 percent below 1990 levels. In 2016, Governor Charles D. Baker issued Executive Order 569, titled “Establishing an Integrated Climate Change Strategy for the Commonwealth,” and in 2017, MassDEP issued final regulations in accordance with the GWSA.

The GWSA obligates administrative agencies, such as the Siting Board, to consider reasonably foreseeable climate change impacts and related effects when reviewing permit requests. G.L. c. 30, § 61. The Company has shown that construction of the Project would have no adverse climate change impacts or negative effects relating to sea level rise (Exh. EV-2, at 6-3).

In 2016, Massachusetts Governor Charles D. Baker signed into law “An Act to Promote Energy Diversity” (“Energy Diversity Act”). St. 2016, c. 188. The Energy Diversity Act requires utilities to procure additional renewable energy resources including offshore wind, hydroelectric generation, and new Class I RPS eligible resources. St. 2016, c. 188, § 12. By improving the reliability of the regional transmission system, the Project will help facilitate the integration of these renewable energy resources (Companies Brief at 132-133, citing Exh. JP-1, at 7-3).

In Section VI.C, above, the Siting Board reviewed how the Project would meet other state environmental protection requirements. The Siting Board also: (1) considered the Project’s environmental impacts, including those related to land use, historic resources, wetlands and water resources, traffic, noise, air, visual, soil management safety, and magnetic fields impacts;

and (2) concluded that, subject to the specified mitigation and conditions set forth below, the Project's environmental impacts have been minimized.

The Project does not trigger enhanced public participation or enhanced analysis of impacts and mitigation under either the "Environmental Justice Policy of the Executive Office of Energy and Environmental Affairs" issued on January 31, 2017 ("2017 EJ Policy"), or the prior EJ Policy issued in 2002 and in effect at the time the Company filed the Petitions (Exh. EV-2, at 6-2 to 6-7).⁶³ Further, consistent with established Siting Board practice and language access considerations, the Siting Board staff examined the linguistic composition of the affected Project area, and determined that additional outreach, in languages other than English, was neither required, nor specifically requested by members of the public.

Subject to the specified mitigation and conditions set forth in this Decision, the Siting Board finds that the Companies' plans for construction of the Project are consistent with the current environmental protection policies of the Commonwealth.

3. Resource Use and Development Policies

In 2007, pursuant to the Commonwealth's Smart Growth/Smart Energy policy, EEA established Sustainable Development Principles. Among the principles are: (1) supporting the revitalization of city centers and neighborhoods by promoting development that is compact, conserves land, protects historic resources and integrates uses; (2) encouraging reuse of existing sites, structures and infrastructure; and (3) protecting environmentally sensitive lands, natural resources, critical habitats, wetlands and water resources and cultural and historic landscapes. In Section V, the Siting Board reviewed the process by which the Company selected the

⁶³ The Project does not require enhanced public participation because it does not exceed an ENF threshold under MEPA for air, solid and hazardous waste, or wastewater and sewage. The Project does not require enhanced analysis of impacts and mitigation because it did not require a mandatory Environmental Impact Report ("EIR") under MEPA for air, solid and hazardous waste, or wastewater and sewage. See 2017 EJ Policy at 10-11.

Noticed Alternative Route for the Project. The Project using the Noticed Alternative Route has been designed and conditioned to avoid or minimize impacts to natural and cultural resources by being constructed primarily in existing roadways and existing Eversource ROW linking the existing Baker Street and Needham Substations.

Subject to the specific mitigation and the conditions set forth in this Decision, the Siting Board finds that the Company's plans for construction of the Project are consistent with the current resource use and development policies of the Commonwealth.

VIII. ANALYSIS UNDER G.L. C. 164, § 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.⁶⁴

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. Id. 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

⁶⁴ Pursuant to G.L. c. 164, § 72, the electric company must file with its petition a general description of the transmission line, a map or plan showing its general location, an estimate showing in reasonable detail the cost of the line, and such additional maps and information as the Department requires.

other impacts of the present or proposed use; and (3) the present or proposed use and any alternatives identified. Woburn-Wakefield at 152; East Eagle at 164; Boston Edison Company, D.T.E. 99-57, at 3-4 (1999). 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.

Woburn-Wakefield at 152; East Eagle at 164.

B. Analysis and Findings

As described above in Sections III through VI, the Siting Board examined: (1) the need for, or public benefits of, the proposed Project; (2) the environmental impacts of the proposed Project; and (3) any identified alternatives. With implementation of the specified mitigation measures proposed by the Companies and the conditions set forth by the Siting Board in Section X, below, the Siting Board finds pursuant to G.L. c. 164, § 72, that the proposed New Line is necessary for the purpose alleged, would serve the public convenience, and is consistent with the public interest. Thus, the Siting Board approves the Section 72 Petition.

IX. SECTION 61 FINDINGS

MEPA provides that “[a]ny determination made by an agency of the commonwealth shall include a finding describing the environmental impact, if any, of the Project and a finding that all feasible measures have been taken to avoid or minimize said impact” (“Section 61 Findings”). G.L. c. 30, § 61. Pursuant to 301 CMR 11.01(3), Section 61 Findings are necessary when an EIR is submitted to the Secretary of EEA and Section 61 Findings should be based on such EIR. Where an EIR is not required, Section 61 Findings are not necessary. 301 CMR 11.01(4).

The record shows that Eversource filed an ENF for the Project with MEPA on June 15, 2016 (Exh. EV-6) and that the Secretary issued a Certificate on the ENF on July 22, 2016, requiring the Company to file a DEIR and an FEIR (Exh. EV-7). Therefore a finding under

G.L. c. 30, § 61 is necessary for the Company's Section 72 Petition.⁶⁵ The Company submitted its DEIR on October 31, 2016 (Exh. EV-8) and the Secretary issued a Certificate on the DEIR on November 9, 2016 (Exh. EV-8(2)). The Company submitted its FEIR on August 31, 2017 (Exh. EV-22(1)). The Secretary issued a Certificate on the FEIR on October 13, 2017, determining that the FEIR adequately and properly complied with MEPA and its implementing regulations (Exh. EV-22(3)).

The Siting Board recognizes the Commonwealth's policies relating to GHG emissions, including G.L. c. 30, § 61 and the MEPA Greenhouse Gas Emission Policy and Protocol. The Siting Board notes that the Project would have minimal GHG emissions as it is an overhead and underground transmission line.⁶⁶ As such, the Project would not have direct emissions from a stationary source or indirect emissions from energy consumption. In Section VI.C, above, the Siting Board conducted a comprehensive analysis of the environmental impacts of the proposed New Line. Based on the record in this case, implementation of the required mitigation measures, and compliance with all applicable federal, state, and local laws and regulations, the Siting Board finds that the Company has taken all feasible measures to avoid or minimize the environmental impacts of the Project.

The record contains, and the Siting Board has reviewed, the MEPA documents submitted by the Company, including the ENF, DEIR, and FEIR for the Project, as well as public comments on the DEIR (Exhs. EV-6; EV-7; EV-8; EV-8(1); EV-8(2); EV-22(1); EV-22(2);

⁶⁵ The Siting Board generally is not required to make a G.L. c. 30, § 61 finding in a G.L. c. 164, § 69J proceeding, as the Siting Board is exempt by statute from MEPA. G.L. c. 164, § 69I. However, the Board must comply with MEPA with respect to review of the Company's Section 72 Petition. Section 72 Petitions are filed pursuant to G.L. c. 164, § 72, a Department statute, and the Department is not exempt from MEPA. Accordingly, in approving the Company's Section 72 Petition in this case, the Siting Board has conducted the review and made the findings required by MEPA.

⁶⁶ The Secretary's Certificate on the ENF states that, while the [P]roject is subject to the MEPA Greenhouse Gas (GHG) Emissions Policy and Protocol, it falls under the de minimis exemption and therefore Eversource was not required to prepare a GHG analysis (Exh. EV-7, at 12-13).

EV-22(3). Additionally, in Section VI above, the Siting Board conducted a comprehensive analysis of the potential environmental impacts of the Project. The Siting Board found that the Company's plans for the construction of the Project, as presented to the Siting Board and as conditioned and mitigated in this Decision, would provide a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.

G.L. c. 164, § 69H.

In accordance with the requirements of MEPA, the Siting Board has: reviewed the FEIR for the Project; evaluated, and determined the impact of the Project on the natural environment; and specified in detail in this Decision measures to be taken by Eversource to avoid damage to the environment or, to the extent damage to the environment cannot be avoided, to minimize and mitigate damage to the environment to the maximum extent practicable. G.L. c. 30, § 61. The Siting Board notes that the Secretary has determined that the FEIR for the Project adequately and properly complies with MEPA (Exh. EV-22(3), at 1). Accordingly, as provided by MEPA, the Siting Board finds that all feasible measures have been taken to avoid or minimize the environmental impacts of the proposed Project. G.L. c. 30, § 61; 301 CMR 11.2(5).

X. DECISION

The Siting Board's enabling statute directs the Siting Board to implement the energy policies contained in G.L. c. 164, §§ 69H to 69Q, to provide a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.

G.L. c. 164, § 69H. Thus, an applicant must obtain Siting Board approval under G.L. c. 164, § 69J, prior to construction of a proposed energy facility.

In Section III, above, the Siting Board finds that additional energy resources are needed to maintain a reliable supply of electricity within the Baker Street/Hyde Park/Newton Highlands Area.

In Section IV, above, the Siting Board finds that the Project is superior to the other alternatives identified with respect to providing a reliable energy supply for the Commonwealth with minimum impact on the environment at the lowest possible cost.

In Section V, above, the Siting Board finds that the Company has developed and applied a reasonable set of criteria for identifying and evaluating alternatives to the Project in a manner that ensures that the Company has not overlooked or eliminated any routes that, on balance, are clearly superior to the Project. The Siting Board also finds that the Company has identified a range of practical transmission line routes with some measure of geographic diversity. Consequently, the Siting Board finds that the Company has demonstrated that it examined a reasonable range of practical siting alternatives.

In Section VI, above, the Siting Board finds that the proposed facilities along the Noticed Alternative Route would be superior to the proposed facilities along the Grosvenor Road/Valley Road Route with respect to providing a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.

In Section VI, above, the Siting Board reviewed environmental impacts of the Project and finds that with the implementation of the specified mitigation and conditions, and compliance with all applicable local, state and federal requirements, the environmental impacts of the Project along the Noticed Alternative Route would be minimized.

In Section VII, above, the Siting Board finds that with the implementation of specified mitigation and conditions, the Project is consistent with the health, environmental, and resource use and development policies of the Commonwealth.

In addition, the Siting Board finds, pursuant to G.L. c. 164, § 72, that the Project is necessary for the purpose alleged, and will serve the public convenience and is consistent with the public interest, subject to the following Conditions A through Q.

Accordingly, the Siting Board approves pursuant to G.L. c. 164, § 69J, the Company's Petition to construct the Project using the Noticed Alternative Route, as described herein, and approves the Company's Section 72 Petition, both approvals subject to the following Conditions A through Q.

- A. The Siting Board directs the Company to minimize any tree trimming along streets or the ROW and to limit tree removal to the three areas identified by the Company. If additional tree trimming or tree removal, beyond that specified, is needed, the Company shall consult with the Tree Warden and shall file with the Siting Board in

advance the Company's revised tree trimming and clearing plans, including any comments, or recommendations, or conditions by the local Tree Warden.

- B. The Siting Board directs the Company to follow all applicable guidelines developed to limit wildlife and resource impacts in vegetation management areas, in keeping with details specified in the Company's VMP.
- C. The Siting Board directs the Company, in keeping with its representations to Needham, to locate its transmission line within the paved way of the street avoiding sidewalks, and to mitigate any conflicts with existing utilities by relocating the affected utilities at the Company's expense.
- D. The Siting Board directs the Company to return roadways where construction occurs to original or better condition.
- E. The Siting Board directs the Company, in consultation with the Towns of Needham and Dedham and the City of Boston, to develop a separate, comprehensive outreach plan for the Project for each municipality. Each outreach plan should describe the procedures to be used to notify the public about: (1) the scheduled start, duration, and hours of construction in particular areas; (2) the methods of construction that will be used in particular areas (including any use of nighttime construction); and (3) anticipated street closures and detours. Each outreach plan should also include information on complaint and response procedures; Project contact information; the availability of web-based project information; and protocols for notifying the MBTA and schools of upcoming construction.
- F. The Siting Board directs the Company to arrange for off-peak delivery of Project equipment and materials.
- G. The Siting Board directs the Company to develop TMPs for its Project, and to submit a copy of each final TMP to the Siting Board and all other parties when available, but no less than two weeks prior to the commencement of construction, and to publish the TMPs on the Company's Project website.
- H. The Siting Board directs the Company to use the quietest generators and portable HVAC units reasonably available. In addition, when the Company operates stationary noisy equipment, such as whole tree chippers or compressors, the Siting Board directs the Company to locate such equipment as far away as possible from nearby residences, where flexibility exists to do so, to reduce noise impacts on residences.
- I. The Siting Board directs the Company to limit construction of the New Line in residential areas to Monday through Friday from 7:00 a.m. to 5:00 p.m. Work requiring longer continuous duration than normal construction hours allow, such as cable splicing, is exempted from this condition. Should the Company need to extend

construction work beyond those hours and days (with the exception of emergency circumstances on a given day that necessitate extended hours), the Siting Board directs the Company to seek written permission from the relevant municipal authority before the commencement of such work and to provide the Siting Board with a copy of such permission. If the Company and municipal officials are not able to agree on whether such extended construction hours should occur, the Company may request prior authorization from the Siting Board and shall provide the relevant municipality with a copy of any such request.

The Company shall inform the Siting Board and the relevant municipality in writing within 72 hours of any work that continues beyond the hours allowed by the Siting Board. The Company shall also send a copy to the Siting Board, within 72 hours of receipt, of any municipal authorization for an extension of work hours. Furthermore, the Company shall keep records of the dates, times, locations, and durations of all instances in which work continues beyond the hours allowed by the Siting Board, or, if granted extended work hours in writing by a municipality, work that continues past such allowed hours, and must submit such record to the Siting Board within 90 days of Project completion.

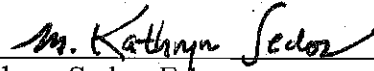
- J. The Siting Board directs the Company to work with individual landowners in the vicinity of overhead structures to provide off-site screening in a reasonable manner on properties where the Project affects the landowner's viewshed.
- K. The Siting Board directs the Company, in the event of Project-related street tree damage or removal, to replace any such trees or vegetation in consultation with the Needham Tree Warden.
- L. The Siting Board directs the Company to comply with all applicable federal and state laws with respect to excavation and disposal of soil and pavement which the Company may encounter in the process of Project construction.
- M. The Siting Board directs the Company to: (1) consult with Needham and provide a magnetic field measurement protocol to the Siting Board within two months of the Final Decision; and (2) following one year of Project operation, submit a report identifying whether actual measurements of magnetic fields are consistent with projected measurements and, if not, identifying (a) additional steps that may be taken to reduce magnetic fields, and (b) whether such measures are warranted.
- N. The Siting Board directs the Company to provide to the Board a copy of a Host Community Agreement, or similar agreement, if any, entered into between the Company and any municipality affected by the Project.

- O. The Siting Board directs the Company and its contractors and subcontractors to comply with all applicable federal, state, and local laws, regulations, and ordinances from which the Company has not received an exemption.
- P. The Siting Board directs the Company to submit to the Board an updated and certified cost estimate for the Project prior to the commencement of construction. Additionally, the Siting Board directs the Company to file semi-annual compliance reports with the Siting Board starting within 180 days of the commencement of construction, that include projected and actual construction costs and explanations for any discrepancies between projected and actual costs and completion dates, and an explanation of the Company's internal capital authorization approval process.
- Q. The Siting Board directs the Company, within 90 days of Project completion, to submit a report to the Siting Board documenting compliance with all conditions contained in this Decision, noting any outstanding conditions yet to be satisfied and the expected date and status of such resolution.

Because issues addressed in this Decision relative to this facility are subject to change over time, construction of the proposed Project must be commenced within three years of the date of the Decision.

In addition, the Siting Board notes that the findings in this Decision are based upon the record in this case. A project proponent has an absolute obligation to construct and operate its facility in conformance with all aspects of its proposal as presented to the Siting Board. Therefore, the Siting Board requires the Company, and its successors in interest, to notify the Siting Board of any changes other than minor variations to the proposal so that the Siting Board may decide whether to inquire further into a particular issue. The Company or its successors in interest are obligated to provide the Siting Board with sufficient information on changes to the proposed Project to enable the Siting Board to make these determinations.

The Secretary of the Department shall transmit a copy of this Decision and the Section 61 findings herein to the Executive Office of Energy and Environmental Affairs and the Company shall serve a copy of this Decision on the Town of Needham Board of Selectmen, the Town of Dedham Board of Selectmen, and the City Council of the City of Boston. The Company shall certify to the Secretary of the Department within ten business days of issuance that such service has been made.



M. Kathryn Sedor, Esq.
Presiding Officer

Dated this 18th day of May, 2018

APPROVED by a vote of the Energy Facilities Siting Board at its meeting on May 17, 2018, by the members present and voting. Voting for the Tentative Decision as amended: Matthew A. Beaton, Secretary of the Executive Office of Energy and Environmental Affairs, Siting Board Chairman; Angela M. O'Connor, Chairman of the Department of Public Utilities; Cecile M. Fraser, Commissioner of the Department of Public Utilities; Judith Judson, Commissioner of the Department of Energy Resources; Jonathan Cosco, Senior Deputy General Counsel and designee for the Secretary of the Executive Office of Housing and Economic Development; Gary Moran, Deputy Commissioner and designee for the Commissioner of Massachusetts Department of Environmental Protection; and Glenn Harkness, Public Member.



Matthew A. Beaton, Chairman
Energy Facilities Siting Board

Dated this 18th day of May, 2018

Appeal as to matters of law from any final decision, order or ruling of the Siting Board 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 Siting Board be modified or set aside in whole or in part. Such petition for appeal shall be filed with the Siting Board within twenty days after the date of service of the decision, order or ruling of the Siting Board, or within such further time as the Siting Board 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. Massachusetts General Laws, Chapter 25, Sec. 5; Chapter 164, Sec. 69P.