COMMONWEALTH OF MASSACHUSETTS
ENERGY FACILITIES SITING BOARD

Petition of NSTAR Electric Company d/b/a Eversource Energy Pursuant to G.L. c. 164, § 69J for Approval to Construct a New 115 kV Overhead Transmission Line through the Towns of Bourne, Sandwich, and Barnstable, Massachusetts	EFSB 19-06
Petition of NSTAR Electric Company d/b/a Eversource Energy Pursuant to G.L. c. 164, § 72, for Approval to Construct and Use a New 115 kV Overhead Transmission Line through the Towns of Bourne, Sandwich, and Barnstable, Massachusetts	D.P.U. 19-142
Petition of NSTAR Electric Company d/b/a Eversource Energy Pursuant to G.L. c. 40A § 3, for Individual and Comprehensive Exemptions from the Zoning Ordinances of the Town of Barnstable, Massachusetts	D.P.U. 19-143

Tentative Decision

On the Decision:

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Presiding Officer
December 5, 2022

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ABBREVIATIONS

2016 Needs Assessment	SEMA-RI [Southeastern Massachusetts-Rhode Island] Area Transmission Needs Assessment (by ISO-NE)
2017 EJ Policy	Environmental Justice Policy of the Executive Office of Energy and Environmental Affairs, dated January 31, 2017
2021 EJ Policy	Environmental Justice Policy of the Executive Office of Energy and Environmental Affairs, dated June 24, 2021
Andrew-Dewar	NSTAR Electric Company d/b/a Eversource Energy, EFSB 19-03/D.P.U. 19-15 (2021)
Berkshire Power	Berkshire Power Development, Inc., D.P.U. 96-104 (1997)
BESS	Battery Energy Storage System
BMPs	best management practices
Braintree	Planning Board of Braintree v. Department of Public Utilities, 420 Mass. 22 (1995)
BVW	bordering vegetated wetland
Company	NSTAR Electric Company d/b/a Eversource Energy
dBA	A-weighted decibels
Department	Massachusetts Department of Public Utilities
DG	distributed generation
DR	demand response
East Eagle	NSTAR Electric Company d/b/a Eversource Energy, EFSB 14-04/D.P.U. 14-153/ 14-154 (2017)
EE	energy efficiency
EFSB	Massachusetts Energy Facilities Siting Board
EJ	environmental justice
EMF	electric and magnetic fields

ABBREVIATIONS

FCA	Forward Capacity Auction
GHG	greenhouse gas
G.L. c.	Massachusetts General Laws chapter
GreenRoots	GreenRoots, Inc. v. Energy Facilities Siting Board, 490 Mass. 747 (2022)
GWSA	Global Warming Solutions Act
Hampden County	New England Power Company d/b/a National Grid, EFSB 10-1/D.P.U. 10-107/10-108 (2012)
Hopkinton	NSTAR Electric Company, D.P.U. 15-02 (2015)
ISO-NE	ISO-New England
JBCC	Joint Base Cape Cod
kV	kilovolt
MassDEP	Massachusetts Department of Environmental Protection
MassDOT	Massachusetts Department of Transportation
MassGIS	Massachusetts Geographic Information System
MCP	Massachusetts Contingency Plan
MEPA	Massachusetts Environmental Policy Act
mG	milligauss
MHC	Massachusetts Historical Commission
Mid Cape Reliability Project	construction and operation of the New Line, together with related station modifications
MVA	megavolt-amperes
MVRP	New England Power Company d/b/a National Grid, D.P.U. 15-44/15-45 (2016)

ABBREVIATIONS

MW	megawatts
MWh	megawatt-hours
Mystic-Woburn	NSTAR Electric Company d/b/a Eversource Energy, EFSB 15-03/D.P.U. 15-64/15-65 (2017)
Needham-West Roxbury	NSTAR Electric Company d/b/a Eversource Energy, EFSB 16-02/D.P.U. 16-77 (2018)
NERC	North American Electric Reliability Corporation
New Line	An approximately 12.5-mile, proposed overhead 115 kV electric transmission line in the towns of Bourne, Sandwich, and Barnstable
Notice	Notice of Adjudication and Public Comment Hearing
Noticed Alternative Route	a route for the New Line combining parts of the Primary Route and public roads in Sandwich and Barnstable
Noticed Variation	a 345-kV-capable line option proposed by Eversource along the same route as the Project on ROW 342 that would use transmission structures capable of supporting 345-kV conductors to facilitate eventual interconnection of offshore wind projects
NPCC	Northeast Power Coordinating Council
NPDES	National Pollutant Discharge Elimination System
NY Central Railroad	New York Central Railroad v. Department of Public Utilities, 347 Mass. 586 (1964)
NRG	NRG Canal 3 Development LLC, EFSB 15-06/D.P.U. 15-180 (2017)
NREL	National Renewable Energy Laboratory
NTAs	non-transmission alternatives
OSHA	U.S. Occupational Safety and Health Administration

ABBREVIATIONS

Petitions	Eversource's Siting Petition, Section 72 Petition, and Zoning Petition
PPA	Proposed Plan Application
Primary Route	Eversource's proposed route for the New Line, entirely within an existing Eversource ROW
Project	Mid Cape Reliability Project (the New Line, together with the related station modifications)
PSC	public service corporation
QP 700	ISO-NE interconnection queue position 700
ROW	right-of-way
Russell	Russell Biomass, LLC, EFSB 07-4/D.P.U. 07-35/07-36 (2009)
Salem Cables	New England Power Company d/b/a National Grid, EFSB 13-2/D.P.U. 13-151/13-152 (2014)
Save the Bay	Save the Bay v. Department of Public Utilities, 366 Mass. 667 (1975)
Section 72 Petition	Eversource petition pursuant to G.L. c. 164, § 72
SF_6	sulfur hexafluoride
Siting Board	Massachusetts Energy Facilities Siting Board
Siting Board Petition	Eversource petition pursuant to G.L. c. 164 § 69J
PV	solar photovoltaic
Study Area	The geographic area considered for possible routes for the New Line
Sudbury-Hudson	NSTAR Electric Company d/b/a Eversource Energy, EFSB 17-02/D.P.U. 17-82/17-83 (2019)
Stoughton-Boston	Boston Edison Company d/b/a NSTAR Electric, EFSB 04-1/D.P.U. 04-5/04-6 (2005)

ABBREVIATIONS

SWPPP	stormwater pollution prevention plan
TMP	Traffic Management Plan
Town of Sudbury v. EFSB	Town of Sudbury v. Energy Facilities Siting Board, 487 Mass. 737 (2021)
Town of Truro	Town of Truro v. Department of Public Utilities, 365 Mass. 407 (1974)
Walpole-Holbrook	National NSTAR Electric Company d/b/a Eversource Energy and New England Power Company d/b/a National Grid, EFSB 14-2/D.P.U. 14-73/14-74 (2017)
Winchester v. EFSB	Town of Winchester v. Energy Facilities Siting Board, 98 Mass.App.Ct. 1101 (2020) (Unpublished Opinion)
Woburn-Wakefield	NSTAR Electric Company d/b/a Eversource Energy, EFSB 15-04/D.P.U. 15-140/15-141 (2018)
ULSD	ultra-low sulfur diesel
URAM	Utility-Related Abatement Measure (310 CMR 40.0460)
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
Walpole-Holbrook	NSTAR Electric Company d/b/a Eversource Energy, EFSB 14-2/D.P.U. 14-73/14-74 (2017)
WHO	World Health Organization
WPA	Wellhead Protection Area
Zoning Ordinance	Zoning Ordinance of the Town of Barnstable
Zoning Petition	Eversource petition pursuant to G.L. c. 40A § 3

Summary of the Tentative Decision

The Tentative Decision recommends approval with conditions for Eversource's Mid Cape Reliability Project, a 12.5-mile overhead electric transmission line proposed for construction within an existing electric transmission right-of-way (ROW) between Eversource's existing Bourne Switching Station and its existing West Barnstable Substation (the "Project"). As part of a 2016 Needs Assessment study for the Southeast Massachusetts/Rhode Island area (updated in 2020) ISO-NE reviewed and approved the Project as a new 115 kV line to address reliability needs on Cape Cod. The Project addresses numerous threats to continuing reliable service in the Cape Cod Subarea, an area comprising 22 towns with over 200,000 customers and over 500 megawatts of peak load.

In the event of peak summer load conditions, and potential system contingencies (such as the loss of an existing transmission line, a substation transformer, or a major generating unit), electric service to Cape Cod area customers is at risk of interruption due to thermal overloads and voltage problems on the transmission and distribution systems. Eversource performed additional studies with updated data that confirmed the identified threats to reliable service in the Cape Cod area, and the need for the Project. ISO-NE also determined that the Project is needed for the Vineyard Wind offshore wind project to be able to provide full, unrestricted output at all hours of operation.

Eversource also requested that the Siting Board approve the Project as a 345-kV-capable line to facilitate the eventual interconnection of the Park City Wind offshore wind project. The 345kV-capable line, called the Noticed Variation, would follow the same ROW as the Project, but use slightly taller structures, with some modifications on placement of these structures within the existing ROW. In March 2022, Park City Wind entered into an agreement with Eversource to compensate Eversource for all incremental costs to make the Project a 345-kV-capable line. The Noticed Variation would operate at 115 kV voltage until such time as Eversource proposes additional modifications to the Bourne Switching Station and the West Barnstable Substation, subject to future review and approval of the Siting Board and the Department.

Eversource conducted an extensive routing analysis and presented a Primary Route (on the existing ROW) and a Noticed Alternative Route (using the ROW and in-street construction) on the basis of cost, constructability, and environmental impacts. The Tentative Decision finds that the Primary Route would have comparable environmental impacts to the Noticed Alternative Route, but cost significantly less. Consequently, the Tentative Decision finds that the Primary Route would be superior in providing a reliable energy supply with a minimum impact on the environment at the lowest possible cost.

Given comparable environmental impacts, and the cost sharing agreement with Park City Wind, the Tentative Decision finds that construction of the Project, as a 345 kV-capable line, would be consistent with current health, environmental protection, and resource use and development policies as adopted by the Commonwealth. In addition, the Tentative Decision finds that zoning exemptions requested by Eversource are required for construction and operation of the Project.

Pursuant to G.L. c. 164, § 69J, the Massachusetts Energy Facilities Siting Board ("Siting Board") hereby [denies/ approves], subject to the conditions set forth below, the Petition of NSTAR Electric Company d/b/a Eversource Energy ("Eversource" or "Company") to construct and operate: (1) an approximately 12.5-mile, overhead 115 kilovolt ("kV") electric transmission line along an existing Eversource-owned right-of-way ("ROW") between Eversource's Bourne Switching Station and its West Barnstable Substation; and (2) modifications at the West Barnstable Substation (together, the "Project"). As described below, the Project would be built with sufficient electrical clearances for later conversion to transmission at 345 kV, if necessary, without need of constructing or reconstructing any transmission towers or reconductoring the New Line (Exhs. EV-1(A) at 2-16). Pursuant to G.L. c. 164, § 72, the Siting Board approves, subject to the conditions set forth below, the Petition of Eversource for a determination that the proposed transmission line is necessary, serves the public convenience, and is consistent with the public interest. Pursuant to G.L. c. 40A, § 3, the Siting Board approves, subject to the conditions set forth below, the Petition of Eversource for individual and comprehensive zoning exemptions from the Zoning Ordinance of the Town of Barnstable in connection with the work at the West Barnstable Substation, as described herein.

I. INTRODUCTION

A. Description of the Proposed Project

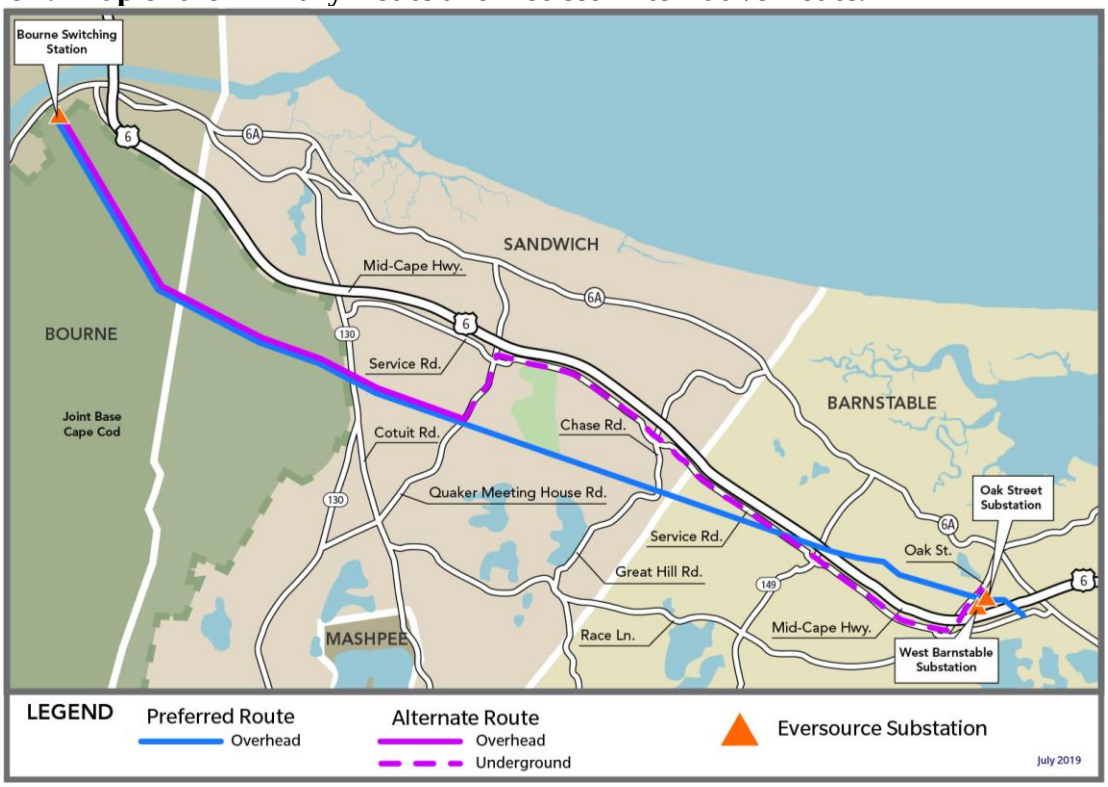
Eversource proposes to construct, operate, and maintain an approximately 12.5-mile, overhead 115 kV electric transmission line ("New Line") in the towns of Bourne, Sandwich, and Barnstable, Massachusetts (Exh. EV-2, at 1-1). Eversource would construct the New Line in an existing, Company-owned right-of-way ("ROW") between Eversource's Bourne Switching Station and West Barnstable Substation (Exh. EV-2, at 1-1). The Bourne Switching Station and West Barnstable Substation will require new equipment, and the existing western fence line at the West Barnstable Substation will be extended by approximately 65 feet to accommodate the modifications (Exhs. EV-2, at 1-2; EV-3(C) at 1-1). The New Line, together with the related station modifications, are referred to as the Mid Cape Reliability Project (Exhs. EV-1, at 1-1; EV-2, at 1-1). In one version presented by the Company, the New Line would be capable of

carrying 115 kV power (with related 115 kV station modifications, "Base Project"). In a variation to the Primary Route presented by the Company, the New Line would use the same ROW as the Base Project, but with transmission structures, conductors, and clearances capable of operating at 345 kV in anticipation of a need for this voltage by an interconnecting offshore wind generator, and funding from such an entity to support the incremental costs ("Noticed Variation") (Exh. EV-1(A) at 1-2). If future operation of the Noticed Variation at 345 kV is required, the Company would return to the Siting Board for permission to operate the line at 345 kV, with information on the need for such operation and any incremental environmental impacts (Exhs. EV-1(A) at 1-2; VW-NSTAR-5, VW-NSTAR-6, VW-NSTAR-7; Tr. 1, at 133, 142-146).[1]

Eversource identified its proposed route (the "Primary Route") and an alternative route ("Noticed Alternative Route"), both shown in Figure 1, below. The Primary Route would run entirely within an existing Eversource ROW, while the Noticed Alternative Route would use a combination of the same ROW and public roads in Sandwich and Barnstable (Exh. EV-1(A) at 1-4). The Company's estimate for the cost of the Project is $59.1 million (-25%/+25%); $72.3 million for the Noticed Variation (-50%/+200%); and $262.3 million for the Noticed Alternative Route (-50%/+200%) (Exhs. EV-1(A) at 5-9; EFSB-C-1; and RR-EFSB-10(S1) at 1).

[1] To operate the Noticed Variation at 345 kV in the future, additional equipment would be needed at both Bourne Switching Station and West Barnstable Substation (Exh. EFSB-N-25). That equipment, if needed, would be the subject of a later request by the Company for approval from the Siting Board (Exhs. EV-1(A) at 2-17; EFSB-N-25).

Figure 1. Map of the Primary Route and Noticed Alternative Route.



Source: https://www.eversource.com/content/ema-c/residential/about/transmission-distribution/projects/massachusetts-projects/mid-cape-reliability-project.

B. Procedural History

On November 8, 2019, Eversource filed petitions for: (1) Siting Board approval to construct the Project pursuant to G.L. c. 164, §69J ("Siting Board Petition"); (2) Department of Public Utilities ("Department") approval to construct the Project pursuant to G.L. c. 164, §72 ("Section 72 Petition"); and (3) a Department grant of individual and comprehensive exemptions from the operation of the Zoning Ordinance of the Town of Barnstable ("Zoning Ordinance") for the Project pursuant to G.L. c. 40A, §3 ("Zoning Petition") (together, the "Petitions").

The Siting Petition was docketed as EFSB 19-06, the Section 72 Petition as D.P.U. 19-142, and the Zoning Petition as D.P.U. 19-143. On April 29, 2020, the Chair of the Department issued an Order, pursuant to G.L. c. 164, § H(2), referring the Section 72 Petition and the Zoning Petition to the Siting Board for review and consolidation with the Siting Board

Petition, and docketed as EFSB 19-06/D.P.U. 19-142/19-143. The Siting Board conducted a single adjudicatory proceeding and developed a single evidentiary record for the Petitions.

On May 7, 2020, the Siting Board issued a Notice of Adjudication and Public Comment Hearing ("Notice"), setting a public comment hearing date of June 10, 2020, and directing the Company to publish the Notice once a week for a minimum of two consecutive weeks prior to the public comment hearing in the Cape Cod Times, the Bourne Enterprise, the Sandwich Enterprise, and the Barnstable Patriot. The Siting Board also directed Eversource to provide copies of the Notice and Petition to municipal officials including the town clerks, planning boards, town managers, boards of selectmen, zoning boards of appeals, departments of public works, and conservation commissions of Bourne, Barnstable, and Sandwich. In addition, the Siting Board required the Company to provide copies of the Notice to the planning boards of Falmouth, Wareham, Marion, Plymouth, Mashpee, and Yarmouth. Finally, the Siting Board directed the Company to provide the Notice and a Please Read document describing the Project to the owners of all property abutting the outermost property lines of the West Barnstable Substation, Bourne Switching Station, and abutters to abutters within three hundred feet of the property to be used for the Project, owners of all property abutting the outermost property lines of the West Barnstable Substation, Bourne Switching Station, and the existing Eversource right-of-way ("ROW") between Eversource's Bourne Switching Station and the West Barnstable Substation; owners of properties opposite the property across any public or private street or way; and abutters to abutters within three hundred feet of the property to be used for the Project, in addition to owners of property across any public or private street or way affected.[2,3] Finally, the

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[2] The Project did not trigger either the enhanced public participation or enhanced analysis requirements of the Executive Office of Energy and Environmental Affairs ("EEA") 2017 Environmental Justice Policy (revised June 24, 2021). In addition, the Siting Board staff's analysis of relevant language demographic data indicated that no interpretation or translation services were required, consistent with the Commonwealth's Language Access Policy. See Language Access Policy and Implementation Guidelines, Office of Access and Opportunity, A&F Administrative Bulletin #16, issued March 2015.

[3] On June 10, 2020, the Company submitted an affidavit as a return of service indicating its compliance with the terms of the Siting Board's publication and notice requirements.

Siting Board directed the Company to send the Notice electronically to the Clerk's Office in the Towns of Barnstable, Bourne, and Sandwich for posting on the Town's websites. The Notice required the Company to post notice on its website in prominent location.

The Siting Board staff conducted a remote public comment hearing using Zoom videoconferencing on June 10, 2020.[4] At that remote public comment hearing, commenters raised various concerns regarding the Project, including planned tree cutting, impacts on birds and other wildlife due to habitat loss, the potential for stray voltage to impact residents near the Oak Street Substation, hazards of downed wires, pole placement, visual impacts, noise impacts, impacts to property values, requested zoning relief, herbicide use, and standards for property restoration.

The Siting Board received two timely petitions to intervene from Park City Wind LLC ("Park City Wind" formerly Vineyard Wind LLC)[5] and Mayflower Wind Energy, LLC ("Mayflower Wind"), both offshore wind developers with planned projects located in

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[4] Pursuant to Massachusetts Open Meeting Law, G.L. c. 30A, §§18-25, 980 CMR 2.04(1), Governor Baker's March 10, 2020 Declaration of Emergency, and the related March 12, 2020 Order Suspending Certain Provisions of the Open Meeting Law, the Siting Board conducted its hearings remotely using Zoom videoconferencing. On June 16, 2021, Governor Baker signed into law An Act Extending Certain COVID-19 Measures Adopted During the State of Emergency. St. 2021, c. 20. This Act includes an extension, until April 1, 2022, of the remote meeting provisions of the Governor's March 12, 2020, Executive Order, and was subsequently extended by St. 2022, c. 107.

[5] Based on the letter from counsel of November 3, 2022, Park City Wind LLC is the successor entity to Vineyard Wind LLC ("Vineyard Wind"), the original intervenor in this proceeding. Counsel for Park City Wind and Vineyard Wind has confirmed that the corporate change has no effect on the testimony provided or positions taken by Vineyard Wind in this proceeding, and that Park City Wind is now the intervenor in this proceeding. We reflect that change in the record in this proceeding but retain the naming convention used in reference to the individual wind projects as "VW Project" and "PCW Project" throughout the decision. Please note that the use of those terms is consistent with those as used in describing (1) the Vineyard Wind project, the Massachusetts portions of which (the "Vineyard Wind Connector") were approved by the Siting Board in EFSB 17-05/18-18/18-19 on May 10, 2019; and (2) the Park City Wind Project, the Massachusetts portions of which (the "New England Wind Connector") are currently under Siting Board review in EFSB 20-01/D.P.U. 20-56/20-57.

southeastern Massachusetts coastal waters and proposed interconnections to the transmission grid onshore in the Commonwealth. In its petition to intervene ("PCW Petition"), Park City Wind asserted that the Noticed Variation proposed by Eversource in this docket is critical to support the interconnection of proposed offshore wind facilities including the Vineyard Wind Project ("VW Project") and Park City Wind Project (PCW Project) and to meet the Commonwealth's mandate to procure offshore wind energy and its carbon reduction and renewable energy policy goals (PCW Petition at 4-5). The VW Project and PCW Project each plan to interconnect in the vicinity of the Company's proposed Project (PCW Petition at 5-7). Mayflower Wind expressed its intent to bring power onshore in Falmouth, Massachusetts, and interconnect to the regional transmission grid at a point in the vicinity of the Company's Bourne Switching Station based on on-going discussions with Eversource (Mayflower Wind Petition at 4). The Company did not oppose either petition to intervene, and the Presiding Officer granted intervenor status to both entities on August 4, 2020.

The Siting Board issued two sets of discovery to the Company and one set of discovery to Park City Wind and Mayflower Wind, respectively. The Siting Board conducted three days of evidentiary hearings in November 2020. Eversource presented the following seven witnesses: Robert Andrew, director of system solutions; James Bodkin, lead transmission engineer; Elizabeth Leonard, senior transmission planning engineer; Jacob Lucas, director of transmission planning; Daniel Ludwig, sales and forecasting manager; David Burnham, economic analysis manager; Christopher Paul Soderman, director of transmission line engineering; Hans van Lingen, senior licensing and permitting specialist; Jamil Abdullah, lead transmission engineer; Charles Eck, Project manager; Theresa Feuersanger, rights-of-way supervisor; Ronit Goldstein, community relations; John Zicko, director of capital projects engineering; Megan Aconfora, public relations, Burns & McDonnell; Michael Howard, managing principal at Epsilon Associates, Inc.; and Robert O'Neal, managing principal at Epsilon Associates, Inc.

Intervenor Mayflower Wind presented the testimony of Seth Kaplan, director of external affairs, and Park City Wind presented the testimony of John "Jack" Arruda, technical development manager, and Christopher Rodstrom, technical design and permitting manager. The record in this matter consists of approximately 400 exhibits. The Company's Initial Brief

and the Initial Brief by Intervenor Park City Wind, both filed on December 16, 2020, are the only briefs submitted in this proceeding.

Siting Board staff prepared a Tentative Decision and distributed it to the Siting Board members and all parties for review and comment on December 5, 2022. The parties were given until December 12, 2022 to file written comments. The Siting Board received timely written comments from Eversource [and any others].

The Siting Board scheduled a remote Board meeting using Zoom videoconferencing for December 15, 2022 to receive comments, deliberate, and vote on the Tentative Decision. The Siting Board issued a Notice of Siting Board Meeting, provided an opportunity to provide written comments regarding the Tentative Decision. The Board directed the Company to provide Notice by the following means: (1) provide a copy of the Notice to all owners of property owners of all property abutting the outermost property lines of the West Barnstable Substation, Bourne Switching Station, and the existing Eversource right-of-way ("ROW") between Eversource's Bourne Switching Station and the West Barnstable Substation; owners of properties opposite the property across any public or private street or way; and abutters to abutters within three hundred feet of the property to be used for the Project; (2) to provide notice to the Planning Boards of the Town of Bourne, the Town of Barnstable, the Town of Sandwich, and to the Planning Boards of each abutting Town and the Town Clerks, Town Managers, Boards of Selectmen, Zoning Boards of Appeals, Departments of Public Works, and Conservation Commissions for the Towns of Bourne, Sandwich and Barnstable; and (3) post a copy of the Notice on the Company's website.

The Board conducted a remote public Board meeting to consider the Tentative Decision on December 15, 2022 . Eversource [and others] commented on the Tentative Decision. After deliberation, the Board voted to [approve/deny] the Petitions, subject to conditions. The Siting Board directed staff to prepare a Final Decision, as set forth below.

II. JURISDICTION

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, and are consistent with current health, environmental protection, and resource use and development policies of the Commonwealth. See Town of Sudbury v. Energy Facilities Siting Board, 487 Mass. 737, 746-747 (2021). 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 [kV] 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 [kV] or more and which is one mile or more in length on a new transmission corridor." The Company's proposed 115 kV overhead transmission line would be approximately 12.5 miles long and run almost entirely along an existing transmission corridor. Therefore, the proposed 115 kV transmission line is a "facility" with respect to Section 69J and the Project is subject to Siting Board jurisdiction.

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 while ensuring a reliable energy supply (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. New England Power Company d/b/a National Grid, EFSB 19-04/D.P.U. 19-77/19-78, at 10 (2021) ("Beverly-Salem"); NSTAR Electric Company d/b/a Eversource Energy, EFSB 19-03/D.P.U. 19-15, at 7 (2021) ("Andrew-Dewar"); NSTAR Electric Company d/b/a Eversource Energy, EFSB 17-02/D.P.U. 17-82/17-83, at 15 (2019) ("Sudbury-Hudson").

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. Beverly-Salem at 10; Andrew-Dewar at 7; Sudbury-Hudson at 15. See also Town of Sudbury v. EFSB, 487 Mass. at 748-749.

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. Beverly-Salem at 11: Andrew-Dewar at 7-8; Sudbury-Hudson at 15.

B. Description of the Company's Demonstration of Need

The transmission system in New England is designed to meet reliability standards and criteria developed by the North American Electric Reliability Corporation ("NERC"), which sets the minimum standards for electric power transmission for all of North America, the Northeast Power Coordinating Council ("NPCC"), and the independent system operator of New England ("ISO-NE") (Exh. EV-1(A) at 2-1). These reliability criteria require that transmission system thermal and voltage levels remain within applicable limits following certain representative contingencies (Exh. EV-1(A) at 2-5, 2-8). ISO-NE carries out a regional system planning process, wherein it conducts periodic needs assessments on a system-wide or specific-area basis and develops an annual regional transmission plan using a ten-year planning horizon (Exh. EV-1(A) at 2-6). In May 2016, ISO-NE issued its Southeastern Massachusetts-Rhode Island ("SEMA-RI") Area Transmission Needs Assessment ("2016 Needs Assessment") (Exh. EV-1(A) at 2-1 to 2-2, 2-7). The goal of the 2016 Needs Assessment was to identify the reliability performance of the transmission system serving the Southeastern Massachusetts and Rhode Island under 2026 projected conditions (Exh. EV-1(A) at 2-7).

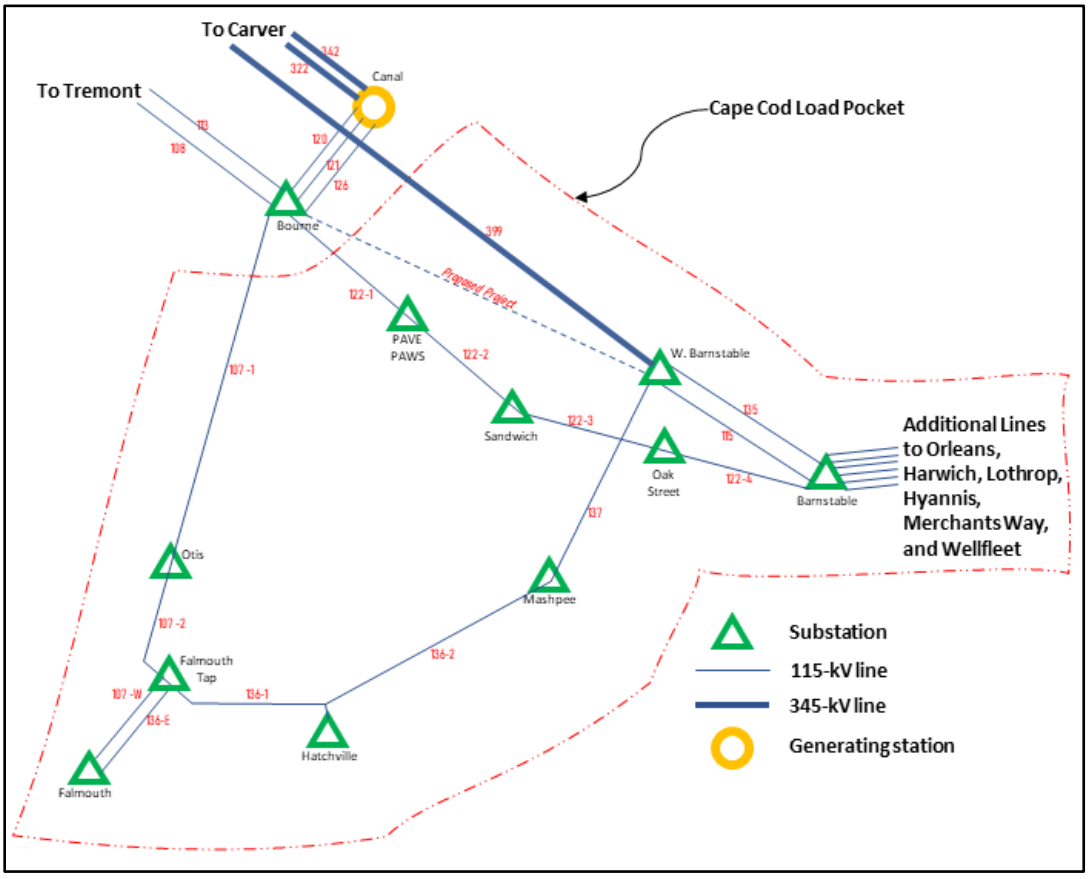
The Company's assertion of need for the Base Project is based largely on the 2016 ISO-NE Needs Assessment, including the planning standards and criteria, and demand forecast contained therein (Exhs. EV-1(A) at 2-1 to 2-2; EFSB-N-1). Eversource also described the need for a new 345 kV transmission line on Cape Cod soon and proposed a Noticed Variation to the Project which would enable the New Line to operate at 345 kV without replacing the structures or conductors if that becomes necessary (Exh. EV-1(A) at 2-16 to 2-17). Eversource stated that a new 345 kV line would facilitate the future interconnection of planned offshore wind resources (Exh. EV-1(A) at 2-16 to 2-17). The Company noted that ISO-NE may periodically update its need assessments on a going forward basis for a variety of reasons including, but not limited to,

changes to the transmission system, markets, economics, environmental factors, and other considerations (Exh. EV-1(A) at 2-6). Various updates by Eversource and ISO-NE, completed after the 2016 Needs Assessment, are also described below.

1. Description of Existing System

The 2016 Needs Assessment evaluated need in SEMA-RI (Exh. EV-1(A) at 2-3). Within that area, the Project addresses an area identified by the Company as the Cape Cod Load Pocket, which includes all of Cape Cod (i.e., lands east of the Cape Cod Canal) excluding the Canal generating station, plus the islands of Martha's Vineyard and Nantucket (Exhs. EV-1(A) at 2-3; EFSB-N-26). Eversource stated that this area is supplied by five transmission lines: three 345 kV transmission lines and two 115 kV transmission lines (Exh. EV-1(A) at 2-3). These five lines run essentially west to east, crossing onto Cape Cod and terminating variously at Bourne Switching Station, West Barnstable Substation, and Barnstable Switching Station, with other lines continuing from these points to serve subregions in Falmouth, Hyannis, Harwich, Orleans, Wellfleet, and the islands (Exh. EV-1(A) at 2-3). Figure 2, below, is a simplified schematic of the Company's transmission system serving the Cape Cod Load Pocket.

Figure 2. Cape Cod Load Pocket Transmission System and Proposed Project



Sources: Exh. EFSB-G-22.

2. ISO-NE's 2016 Needs Assessment

Eversource must ensure that its transmission system has the capability to serve forecasted load under the conditions specified in relevant reliability standards and criteria established by NERC, NPCC, and ISO-NE; ISO-NE completed its 2016 Needs Assessment in accordance with these standards (Exh. EV-1(A) at 2-1, 2-5). As a transmission operator, Eversource is obligated to plan and implement system additions and/or upgrades to address inadequacies identified through the ISO-NE system planning process (Tr. 1, at 32).

An "N-1" contingency is defined as a single event causing the loss of one or more system elements (including two transmission circuits on a double-circuit transmission tower) (Exh. EV-1(A) at 2-8). The occurrence of two separate and unrelated contingencies is known as an

"N-1-1" contingency (Exh. EV-1(A) at 2-8). For the transmission system to meet the established reliability criteria, there cannot be any instances of a transmission element violating its thermal capability, or unacceptably high or low voltage levels, following an N-1 or N-1-1 contingency (Exh. EV-1(A) at 2-8).

The 2016 Needs Assessment identified elements in the Cape Cod Load Pocket (and Cape Cod Subarea)[6] that failed to meet thermal and voltage criteria (together, "criteria violations") under projected 2026 conditions (Exh. EV-1(A) at 2-7, 2-12 to 2-13). In February 2017, ISO-NE issued the SEMA-RI 2026 Solutions Study ("Solutions Study"), outlining the recommended transmission investments for addressing the reliability needs identified in the 2016 Needs Assessment (Exh. EV-1(A) at 3-1; app. 3-1, at 68-69). The Project is one of approximately 25 individual transmission projects identified by the Solutions Study, intended to reinforce the SEMA-RI transmission system and comply with reliability standards and criteria established by NERC, NPCC, and ISO-NE (Exh. EV-1(A) at 2-1). Eversource states that the need for the Project is immediate because existing load levels in the Cape Cod Subarea exceed the critical load level – i.e., the amount of load at which any additional load would result in violations of planning criteria on the system (Tr. 1, at 54-55; Company Brief at 33, citing Exhs. EFSB-N-13, EFSB-N-31, EFSB-N-32).

a. Load Forecast Methodology and Base Cases Assessed

The 2016 Needs Assessment relied on ISO-NE's 2015 Capacity, Energy, Loads, and Transmission ("CELT") report, the most recent CELT report available at the time the 2016 Needs Assessment was performed, as the basis for a "90/10" forecast of peak load levels through

[6] The Cape Cod Load Pocket is the portion of the Cape Cod Subarea east of Bourne Switching Station. Exhs. EV-1(A), at 2.4, Fig. 2-3; EFSB-N-26. It does not include areas in the Cape Cod Subarea that exist to the west of the Cape Cod Canal, such as Manomet, Valley, Wareham, Tremont, Rochester, Crystal Spring and Industrial Park (Exh. EFSB-N-26). The Cape Cod Subarea was one of several subareas defined by ISO-NE as a part of the 2016 Needs Assessment (Exhs. EV-1(A), at 2-2, Fig. 2-1; EFSB-N-26).

2026 (Exh. EV-1(A) at 2-7 to 2-8).[7] ISO-NE uses the CELT report for load forecasts when performing needs assessments so that system planning is consistent across the region (Exh. EFSB-N-1).

The CELT report takes into consideration factors such as historical energy consumption, regional economic data, photovoltaic ("PV") deployment, and passive and active demand response resources, including energy efficiency (Exhs. EV-1(A) at 2-9 to 2-10; EFSB-N-1; EFSB-N-1(3) at 7-8; Tr. 1, at 44-45). Eversource indicated that passive and active demand response resources that had cleared Forward Capacity Auction ("FCA") #9 and forecasted energy efficiency were modeled as load reductions in the CELT Report (Exh. EV-1(A) at 2-10).

The 2016 Needs Assessment included a range of possible dispatch and availability conditions, including combinations of one and two generating units out of service (Exh. EV-1(A) at 2-11). The Company stated that generation dispatch has no significant impact on the identified thermal capacity deficiency needs since there is no generation in the Cape Cod Load Pocket, except for five small diesel generating units on Martha's Vineyard (Exh. EV-1(A) at 2-11).

b. Cape Cod Load Pocket Needs

Eversource stated that the 2016 Needs Assessment identified numerous potential N-1-1 thermal overloads and low voltage violations in the Cape Cod Load Pocket under both current and forecasted system load levels (Exh. EV-1(A) at 2-12 to 2-13). The Company stated that the ISO-NE Solutions Study determined that the Project would alleviate the thermal overload conditions, provide necessary voltage support to area substations, and prevent a voltage collapse (Exh. EV-1(A) at 2-1, 2-7). Eversource reported that the identified criteria violations could result in loss of service to over 200,000 customers in 22 towns within the Cape Cod Subarea, totaling over 500 MW of load (Exh. EV-1(A) at 1-2, 2-1, 2-7).

[7] Eversource noted that the 90/10 forecasted load level is an extreme weather level and is the peak demand expected once every ten years; as such, the 90/10 extreme peak load level has a 10 percent chance of being exceeded in any year because of weather conditions (Exh. EV-1(A) at 2-8).

3. Eversource's Updated Analyses

Given the passage of time since the completion of the 2016 Needs Assessment, Eversource conducted its own updated analysis in 2019 ("Eversource Updated Analysis") of the need for the Project in the year 2026 using data in the 2019 CELT report, and the updated EE and PV forecasts contained therein (Exh. EV-1(A), at 2-13 to 2-15). Eversource noted that it used the 2019 CELT report for its Updated Analysis to be consistent with ISO-NE's system planning (Exh. EFSB-N-1). Eversource included generation and demand response resources that had cleared FCA 13, and all other transmission reinforcements (aside from the Project) identified in ISO-NE's 2017 Solutions Study (Exh. EV-1(A) at 2-13 to 2-14). The Company noted that ISO-NE's 2026 forecast of regional load decreased between its 2015 CELT report and its 2019 CELT report (Exh. EV-1(A) at 2-9, 2-14; RR-EFSB-2).

The Eversource Updated Analysis confirmed the need for the Project, with modeling continuing to show post-contingency thermal overloads and low voltage violations in the Cape Cod Load Pocket (Exh. EV-1(A) at 2-14 to 2-15). Specifically, Eversource confirmed the potential for thermal overloads on several lines given particular N-1-1 contingencies and 315 MW load conditions in the Cape Cod Subarea (i.e., the critical load level) (Exhs. EV-1(A) at 2-15; EFSB-N-12). In comparison, the actual peak load for summer 2019 was 623 MW (Exhs. EV-1(A) at 2-15; EFSB-N-12).[8] The Company maintains that the Eversource Updated Analysis together with actual load information indicates that the Project is needed immediately to prevent severe thermal overloads and voltage collapse affecting approximately 200,000 customers on the Cape and Islands (Company Brief at 30, citing Exh. EV-1(A) at 2-13).

4. ISO-NE's Updated Analysis

In early 2020, ISO-NE initiated an evaluation of need for projects identified by the Solutions Study that had not started construction ("ISO-NE Updated Analysis"), including the Project (Exhs. EFSB-N-27; EFSB-N-28(1), at 5). Eversource provided ISO-NE information,

[8] Eversource stated that the Cape Cod Subarea experienced loads greater than 315 MW for at least 1,000 hours for each year between 2016 and 2020 (RR-EFSB-1).

including the actual peak load level experienced on Cape Cod in 2019, for use in the ISO-NE Updated Analysis (Exhs. EFSB-N-27; EFSB-N-28). Eversource also stated that the ISO-NE modeled the VW Project as an in-service generator because that project received Proposed Plan Application ("PPA") approval from ISO-NE after issuance of the 2016 Needs Assessment; Eversource also noted that the PPA for the VW Project was approved after the Eversource Updated Analysis (Exhs. EFSB-N-1; EFSB-N-28; EFSB-N-29).[9] The VW Project will interconnect to the transmission system at Eversource's Barnstable Switching Station, within the Cape Cod Load Pocket. Vineyard Wind, LLC, EFSB 17-05/D.P.U. 18-18/18-19 (2019) at 1 ("Vineyard Wind").

Eversource stated that, compared to New England loads, the Cape Cod Subarea tends to have peak loads at a later hour in the day, and peak loads often occur on weekends rather than weekdays – a phenomenon called non-coincident peak load (Exhs. EFSB-N-1; EFSB-N-31; Tr. 1, at 80). Therefore, because peak occurs at a different time in the Cape Cod Subarea, peak loads exceed loads on Cape Cod that would occur at the day and hour identified for peak regional load in a CELT report (Exhs. EFSB-N-1; EFSB-N-31; Tr. 1, at 80).[10] The Company reported that the using the actual 2019 peak load and incorporating the generation availability from the VW Project reduces modeled thermal overloads to one line and reduces the severity of modeled low voltage violations (Exhs. EFSB-N-31; EFSB-N-32).[11] Therefore, ISO-NE's updated modeling indicates that the potential for criteria violations still exists in the Cape Cod

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9 On May 10, 2019, the Siting Board approved Vineyard Wind's request to build the Massachusetts portions of an 800 MW offshore wind energy project, including facilities to interconnect to the regional electric grid at the Barnstable Switching Station. Vineyard Wind, at 161.

10 Eversource noted that the Cape Cod Subarea peaked in 2019 on a Sunday evening at approximately 6:40 p.m. at 623 MW, which is substantially above the ISO-NE forecasted net load peak of 508 MW for the Cape Cod Subarea (Exhs. EV-1(A) at 2-15; EFSB-N-1).

11 Considered independently, the higher 2019 peak load would increase the thermal overloads and increase the probability of voltage collapse; however, incorporating the availability of the VW Project reduces line loadings under various contingency situations (Exhs. EFSB-N-27; EFSB-N-32)

Subarea, and that the Project is still required to maintain the reliability of the distribution and transmission system (Exh. EFSB-N-28(1), at 21, 58-59). ISO-NE re-confirmed the reliability analysis for the Project in a "Revised SEMA/RI 2029 Needs Assessment Update," dated July 21, 2020 (Exh. EFSB-N-28(1)).

5. The Noticed Variation

As previously indicated, Eversource presented a "Noticed Variation" to the Base Project, that would enable Eversource to energize the New Line on the Primary Route to 345 kV in the future without constructing or reconstructing any transmission towers and without reconductoring the Line (Exhs. EV-1(A) at 2-16)[12]. In deciding whether to build the Noticed Variation, Eversource maintains that two basic criteria must be met: (1) the need for upgrades associated with the Noticed Variation must be identified by ISO-NE through its interconnection study process; and (2) the interconnecting customer (i.e., PCW)[13] must execute an agreement with the Company under which the interconnection customer is responsible for the incremental costs associated with the Noticed Variation that are not attributable to the Project alone (Company Brief at 33-34, citing Exhs. EFSB-N-20; VW-NSTAR-12; EFSB-C-7, EFSB-C-8).

[12] To eliminate the need for future property rights acquisition along ROW 342, the Company developed an updated design for the Noticed Variation that would shift the location of 17 structures and require the addition of two intermediate structures. Eversource asserts that the Noticed Variation with the re-engineered design is the superior option for the Noticed Variation (Company Brief at 9, citing Exhs. RR-EFSB-10; RR-EFSB-10(1); RR-EFSB-10(2); RR-EFSB-10(S1)).

[13] On March 4, 2022, Eversource and PCW LLC executed a Settlement Transmission Support Agreement setting forth the basic terms and conditions for cost recovery associated with the Noticed Variation and the upgrades needed to interconnect PCW LLC's project with Eversource's transmission system at the West Barnstable Substation (RR-EFSB-6(S1)). The transmission line between PCW and Eversource's West Barnstable Substation is now under review by the Siting Board in EFSB 20-01/D.P.U. 20-56/20-57.

a. Interconnection Study Process for Park City Wind Project

Generators seeking to interconnect to the New England transmission system must follow the interconnection process set forth by ISO-NE's Open Access Transmission Tariff ("OATT") (Exh. EV-1(A) at 2-16). Per its OATT, when a generator seeks to interconnect to the New England transmission system, ISO-NE conducts various engineering studies, including a mandatory System Impact Study ("SIS"), to determine if interconnecting a proposed generator would result in adverse reliability impacts to the transmission system (e.g., thermal overloads, grid instability) (Exhs. EV-1(A) at 2-16; EFSB-G-27; EFSB-N-15). If the interconnection study process identifies adverse impacts, ISO-NE and the owners of the affected transmission facilities propose upgrades or other modifications to mitigate the adverse impacts (Exhs. EV-1(A) at 2-16); EFSB-G-27).

Eversource reported that, in addition to the VW Project, ISO-NE has completed at least three feasibility studies for offshore wind facilities proposing to interconnect in the Cape Cod Subarea, with over 2,600 MW of offshore wind generation seeking to connect at the West Barnstable Substation (Exhs. EV-1(A) at 2-16; EFSB-N-14; EFSB-N-17; EFSB-N-24). Based on these preliminary engineering studies, ISO-NE proposed multiple system upgrades, including converting the Project to 345 kV from the currently proposed 115-kV line; building a new 345 kV Bourne Station; and looping the existing transmission lines into the new 345-kV Bourne Station to allow multiple offshore wind facilities to export power onto the grid simultaneously (Exh. EFSB-N-14). Based on these results, Eversource proposed the Noticed Variation (Exhs. EV-1(A) at 2-16; EFSB-N-14; EFSB-N-17). Eversource argues that designing and building the Project to 345 kV standards (i.e., the Noticed Variation) allows the Company to both meet the needs of the Project, while simultaneously positioning the Company to accommodate a large injection of wind generation in an efficient and cost-effective manner (Company Brief at 35, citing Exh. EV-1(A) at 2-16).

In October 2021, ISO-NE completed a SIS for the VW Project (designated as queue position 700 ("QP 700")), wherein ISO-NE evaluated the expected system impacts and required facilities needed to connect the VW Project to the West Barnstable Substation

(Exh. EFSB-N-17(S1)).[14] According to the SIS, the VW Project would not have a significant adverse impact on the electric grid as long as Eversource implements certain upgrades, including adding an additional 345 kV line to its transmission facilities on Cape Cod (Exhs. EFSB-N-17(S1); EFSB-N-21; EFSB-N-25).[15] Eversource noted that, other than construction of the Project as conforming to requirements for 345 kV, the system upgrades identified by the SIS for QP 700 (other than those related to the Noticed Variation) are not within the scope of this proceeding; however, Eversource stated that it would return to the Siting Board for permission to operate the New Line at 345 kV when warranted (Company Brief at 34, n.28; Exh. EV-1(A) at 2-17, n.13).

The Company argues that, even if the VW Project and the PCW Project were not approved and/or constructed as presently proposed, there would be other offshore wind developers seeking to interconnect in the mid-Cape area; such a project would also require conversion of the 115 kV Base Project to 345 kV, necessitating an eventual upgrade or approval of a project similar to the Noticed Variation (Company Brief at 6, 36 n.30, citing Exh. EFSB-N-14; Tr. 1 at 115; Tr. 3, at 378-379).

b. Cost Recovery for the Noticed Variation and Other Upgrades

Eversource stated that to protect ratepayers it must have a satisfactory cost recovery mechanism for the incremental costs to proceed with construction of the Noticed Variation (Exhs. EV-1(A) at 3-10; VW-NSTAR-12; EFSB-C-8; Company Brief at 37). Eversource indicated that, absent a cost recovery agreement for the incremental costs of the Noticed

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[14] The SIS evaluated the system impact based on steady-state, short-circuit and stability analyses (Exh. EFSB-N-17(S1)).

[15] The SIS identified the following upgrades, in addition to converting the New Line to 345 kV, as required for PCW to connect: building a new 345 kV GIS Substation (consisting of three bays with a total of eight new breakers) adjacent to the existing Bourne Switching Station ("New Bourne"); tap the existing Lines 322 and 399 into the New Bourne 345-kV Substation; upgrade the existing West Barnstable 345 kV Substation as GIS with four bays and nine new breakers; install a second 345 kV/115 kV transformer at the West Barnstable Substation and install two 115-kV breakers (Exhs. EFSB-N-17(S1); EFSB-VW-12(S1)(1); EFSB-N-25).

Variation, ISO-NE's OATT does not include a mechanism for Eversource to recover those costs (Tr. 1, at 136-138; RR-EFSB-7).

Cost recovery terms are often included in the interconnection agreement between the transmission owner (Eversource), the interconnecting customer (PCW LLC), and ISO-NE (Tr. 1, at 120-121). Eversource initially stated it would require an executed interconnection agreement before proceeding with construction of the Noticed Variation; however, the Company later noted that, to avoid delays often associated with negotiating an interconnection agreement, it could also execute a cost recovery mechanism in separate agreements directly with PCW LLC (Exh. EFSB-N-20; Tr. 1, at 120-121). At the time of its brief, Eversource stated that it was negotiating in good faith with PCW LLC to expeditiously reach a cost recovery agreement for the incremental costs associated with the Noticed Variation; however, the Company was uncertain when the parties would reach such an agreement (Company Brief at 37, citing RR-EFSB-6.)

Subsequently in March 2021, Eversource reached an agreement with PCW LLC setting forth the basic terms and conditions for financing, constructing, and cost recovery associated with the Noticed Variation and other upgrades needed to interconnect PCW LLC's QP 700 (RR-EFSB-6(S1)). On March 4, 2022, Eversource and PCW LLC executed a Settlement Transmission Support Agreement ("Settlement TSA") setting forth the basic terms and conditions for cost recovery associated with the Noticed Variation and the upgrades needed to interconnect PCW LLC's QP 700 project with Eversource's transmission system (RR-EFSB-6(S2) and Attachment). Pursuant to the Settlement TSA, there are three categories of transmission facilities necessary to facilitate PCW LLC's QP 700 to be reliably interconnected to Eversource's West Barnstable Substation: (1) Phase I Upgrades; (2) Phase II Upgrades; and (3) Direct Assign Facilities (RR-EFSB-6(S2)). The Phase I Upgrades are the same facilities that Eversource has described in this proceeding as the Noticed Variation (i.e., building the proposed new transmission line at 345 kV) (RR-EFSB-6(S2)). Under the Settlement TSA, Eversource and PCW LLC will jointly request that ISO-NE approve regional cost recovery of the incremental costs associated with the Noticed Variation (approximately $13.2 million) on the basis that construction of the Noticed Variation provides the flexibility to respond to changing circumstances and various future scenarios, including the high likelihood of significant future

offshore wind development interconnecting to Cape Cod (RR-EFSB-6(S2)). However, to avoid delay to either Eversource or PCW LLC in the construction of their respective projects, PCW LLC has agreed to pay the differential between the estimated cost to build the Project at 115 kV and the Noticed Variation if such costs are not regionalized by ISO-NE (RR-EFSB-6(S2)).

C. Positions of the Parties

Park City Wind supports the 345 kV-capable Noticed Variation and maintains that it is needed to facilitate an efficient and cost-effective interconnection for the proposed VW Project and PCW Project (PCW Brief at 1-2). Specifically, Park City Wind points to: (1) the SIS completed for QP 700 identifying the electrical need for a new 345 kV line on Cape Cod; (2) key development markers indicating the likelihood that offshore wind facilities will interconnect on Cape Cod; and (3) consistency with state policies that call for offshore wind development (PCW Brief at 9, 11-12). Park City Wind also argues that a fully executed interconnection agreement is not necessary for the Siting Board to find that the Noticed Variation is needed (PCW Brief at 13-14).

Pointing to ISO-NE's SIS for QP 700, Park City Wind confirms that a new 345 kV transmission line on Cape Cod is required for the PCW Project to connect at West Barnstable Substation without adversely impacting the regional power grid (PCW Brief at 3). Park City Wind argues that approving and constructing the Noticed Variation would enable the interconnection of offshore wind resources called for by state policies, and reduce net impacts to the environment and the community (PCW Brief at 3). Park City Wind posits that, if the Project were constructed as only 115 kV capable, the need would likely arise to dismantle that new 115 kV line and replace it with a 345 kV line along the same route in order for the PCW Project to interconnect (PCW Brief at 3, citing Tr. 1 at 144; Exh. VW-JA/CR-1, at 5-6). Park City Wind argues that doing so would "essentially double" the environmental impacts of the Noticed

Variation and result in significant additional costs (PCW Brief at 16-18, citing Exhs. VW-NSTAR-5, VW-NSTAR-6, VW-NSTAR-7, VW-NSTAR-8; Tr. 1, at 141-142, Tr. 3, at 385).[16]

Park City Wind is confident that both VW and PCW will be constructed (VW/PCW Brief at 11). Park City Wind argues that the following elements strongly support its position: (1) Park City Wind's direct involvement in the highly competitive offshore lease areas, (2) approved procurement contracts with Massachusetts and Connecticut, (3) recent regulatory approvals for the VW Project, and (4) advanced permitting review for the PCW Project (PCW Brief at 11-12). Therefore, Park City Wind maintains that the Noticed Variation, and eventual 345 kV operation of that line, is necessary (PCW Brief at 11-12, citing Exh. VW-JA/CR-1, at 10, 16, EFSB-VW-1).

Park City Wind argues that approving the Noticed Variation is consistent with state policies that support offshore wind (PCW Brief at 12-13). Park City Wind notes that the VW Project and PCW Project have been proposed in response to statutes in Massachusetts and Connecticut, respectively, mandating the procurement of offshore wind energy and that electric distribution companies in those states have executed long-term power purchase agreements for the output of the two proposed projects, and state regulators have approved those agreements (PCW Brief at 2, citing Exhs. VW-JA/CR-1, at 10, EFSB-VW-1(1)). Thus, Park City Wind argues that approving and constructing the Noticed Variation is critical to achieving "the Commonwealth's broader clean energy goals and objectives" (PCW Brief at 4-5, 7-8).[17] Park City Wind offers that a cost recovery agreement executed directly with Eversource, such as a

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16 Park City Wind stresses that, although detailed cost estimates were not developed for dismantling the 115 kV line and rebuilding a 345 kV line along the same route, those costs would certainly exceed the incremental cost of initially constructing the Noticed Variation (PCW Brief at 16, citing Tr. 1, at 141-142, Tr. 3, at 385; Exh. VW-NSTAR-5).

17 Park City Wind noted that the ISO-NE SIS for the VW Project assumed the existence of the 115 kV Base Project (PCW Brief at 8, citing Exh. EV-1(A) at 3-10 to 3-11). Thus, failure to construct at least the Base Project could adversely affect the VW Project (PCW Brief at 8, citing Exhs. VW-JA/CR-1, at 12, EFSB-VW-2).

"phased-in notice to proceed," would provide Eversource with sufficient assurances to move ahead with the Noticed Variation (PCW Brief at 15, citing Tr. 1, at 122). [18]

D. Analysis and Findings on Need

In the 2016 Needs Assessment, ISO-NE identified numerous reliability needs within the SEMA-RI area, including deficiencies in the Cape Cod Load Pocket. The Siting Board recognizes the responsibilities and expertise of ISO-NE and accords considerable weight to the ISO-NE Needs Assessments and its findings. See e.g., NSTAR Electric Company d/b/a Eversource Energy, EFSB 16-02/D.P.U. 16-77, at 13 (2018) ("Needham-West Roxbury"); NSTAR Electric Company d/b/a Eversource Energy, EFSB 15-04/D.P.U. 15-140/15-141, at 17-18 (2018) ("Woburn Wakefield"); NSTAR Electric Company d/b/a Eversource Energy, EFSB 15-04/D.P.U. 15-140/15-141, at 16-17 (2018) ("Walpole Holbrook").

The 2016 Needs Assessment's evaluation of the Cape Cod Load Pocket demonstrated that the existing transmission system is insufficient to reliably supply customers under both existing and forecast load conditions following certain N-1-1 contingencies. Eversource's 2019 Updated Analysis, which was consistent with the study approach used in the 2016 Needs Assessment, and ISO-NE's Updated Analysis in 2020 demonstrated that this remains the case under a range of study assumptions, including the actual 2019 peak load level for the Cape Cod Load Pocket and the availability of the VW Project as a generator.

Eversource must eliminate the potential for post contingency thermal overloads and low voltages in the Cape Cod Load Pocket to comply with applicable national and regional reliability standards, and to provide a reliable supply of electricity to customers in the Cape Cod Load Pocket. The Siting Board finds that the Company's use of an N-1-1 planning criterion is reasonable, that the methods used to assess system reliability are reviewable and appropriate, and that Eversource's existing transmission system does not currently meet the established reliability

[18] Many of these arguments appear to be moot now that PCW LLC has executed a cost recovery agreement with Eversource for the 345 kV Noticed Variation (RR-EFSB-6(S2)).

criteria. See e.g., Needham-West Roxbury at 13; Woburn Wakefield at 17-18; Walpole Holbrook at 16-17.

The Company's assessment of need for the Cape Cod Load Pocket relied in part on the 2016 Needs Assessment and the demand forecast contained therein. This forecast was developed using the summer peak 90/10 load forecast from the 2015 CELT Report, adjusted to reflect the contributions of forecast DR and EE resources. The Company also reviewed the need for the Project using net load projections derived from data in the 2019 CELT Report. The Siting Board finds that the Company has provided sufficient information to permit an understanding of its forecasting method, and that its forecast is reviewable, appropriate, and reliable for use in this proceeding to evaluate the Company's assertion of need. For these reasons, the Siting Board finds that additional energy resources are needed to maintain a reliable supply of electricity in the Cape Cod Load Pocket.

With regard to the potential need for an additional 345 kV line on Cape Cod in the future, the record shows that such a line would be required for additional offshore wind facilities (i.e., beyond the VW Project) to interconnect. Specifically, ISO-NE's SIS for QP 700 concluded that such a 345 kV transmission line (among other related upgrades) would be necessary to allow PCW to export power without having an adverse effect on the regional power grid. In addition to the VW Project's specific proposal for QP 700, the record shows that legislatively mandated PPAs for offshore wind are a strong incentive for developing offshore wind facilities and that West Barnstable Substation is an attractive interconnection point, given its close proximity to offshore federal lease areas. At the time Eversource submitted its petitions, the ISO-NE's interconnection queue identified more than 2,600 MW of offshore wind proposed to interconnect at the West Barnstable Substation. It is clear that some offshore wind projects will interconnect on Cape Cod, necessitating 345 kV service. In consideration of the above, Siting Board agrees that a new 345 kV transmission line on Cape Cod will likely be needed in the near future.

The Noticed Variation would allow Eversource to resolve the imminent reliability issues described above, while positioning the Company to efficiently meet the need for a new 345 kV line, when that additional capacity is warranted. As the interconnecting customer, PCW would be responsible for the incremental costs associated with constructing the New Line as 345-kV-

capable (i.e., the Noticed Variation). The record shows that Eversource and PCW have now reached a final cost recovery agreement, thus eliminating the risk that either Eversource, or its ratepayers, might end up paying more than required to address the identified reliability need in the Cape Cod Load Pocket, should the Siting Board approve a 345-kV capable line, as addressed below.

The Siting Board directs the Company to file with the Siting Board information regarding the remaining steps to complete the conversion of the 115 kV Noticed Variation approved in this Decision to full 345 kV transmission capability for the purposes of providing interconnection of offshore wind projects to the regional grid. Such filing shall be made no fewer than 180 days prior to any intended construction or operational changes to effect 345-kV service. The filing should include at a minimum: updated cost figures, a construction timeline, a clarification of steps that would need to be taken for Eversource to be able to provide full 345 kV transmission services (e.g., additional easement rights), a clarification of all equipment modifications necessary to convert the New Line to 345 kV. In addition, the Company should describe and provide, when available, any additional agreements related to the interconnection arrangements, and the collection of costs associated with the 345 kV transmission facilities.

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.[19] 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

[19] G.L. c. 164, § 69J also requires an applicant to present "other site locations." Compliance with the requirement is evaluated in Section V, below.

project is superior to alternative project approaches. Beverly-Salem at 28-29; Andrew-Dewar at 24; Sudbury-Hudson at 27.

B. Company Analysis of Alternative Approaches to Meet Need

The 2016 Needs Assessment indicated that the Cape Cod Load Pocket would not be reliably served in the event of certain N-1-1 contingencies (Exh. EV-1(A) at 2-12 to 2-13). As indicated above, ISO-NE's 2016 Solutions Study identified the Project, a new, approximately 12.5-mile-long 115 kV transmission line between the Bourne Switching Station and West Barnstable Substation as the proposed solution (Exh. EV-1(A) at 3-1). Eversource maintains that the Project is the best solution for meeting the identified need, with minimal impact to the environment, with a greater degree of reliability, and at the lowest possible cost (Exh. EV-1(A) at 3-1; Company Brief at 39). The Company's analysis of both non-transmission alternatives ("NTAs") and transmission alternatives follows.[20]

1. Non-Transmission Alternatives

In conducting its NTA analysis, Eversource considered the reliability needs for the projected 2026 transmission system under N-1-1 contingency conditions and a load forecast based on ISO-NE's 2019 CELT Report; the Company concluded that the minimum level of resources necessary is 180 MW (Exhs. EV-1(A) at 3-9 to 3-10; EFSB-PA-9).[21] Specifically, Eversource indicated that it needs to plan for an outage duration of 15 hours and a total of 1,734 MWh of energy (Exh. EFSB-PA-15).[22] The Company arrived at this figure by modeling

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[20] Eversource also explored a no-build approach (Exh. EV-1(A) at 3-1). However, this approach would not address the identified reliability need (Exh. EV-1(A) at 1-3 and 3-1) and therefore is not discussed further.

[21] The Company noted that NTA injection requirement of 180 MW is in addition to 193 MW of energy efficiency ("EE") and distributed generation ("DG") already accounted for the load forecast described in Section III.B.3, above (Exhs. EV-1(A) at 3-10 and 3-13; EFSB-PA-9).

[22] To determine the overload duration, Eversource selected the highest historical peak day load for Cape Cod, going back approximately five years, and scaled the load curve for

the injection of incremental energy at Barnstable Switching Station until the projected transmission overloads from the N-1-1 contingencies were eliminated (Exhs. EV-1(A) at 3-9 to 3-10; EFSB-PA-9).[23] The Company evaluated NTAs using a maximum response time of 30 minutes from the occurrence of the first contingency; the resource must then be able to continue to operate until the failed transmission system element is repaired or until loads sufficiently decline (Exh. EV-1(A) at 3-12).

a. Planned Offshore Wind Resources

Considering how 180 MW of power injection could be developed, the Company first reviewed the ISO-NE Interconnection Queue to see if any currently proposed large-scale, transmission-connected generation projects could serve as an alternative (Exh. EV-1(A) at 3-9). Eversource evaluated whether the 800 MW VW Project could contribute to the NTA injection requirement (Exh. EFSB-PA-10). The Company stated that there are two main factors that render the VW Project incapable of meeting the NTA injection requirement: (1) the VW Project is not a dispatchable generating resource; and (2) the ISO-NE SIS for the VW Project modeled the Project as in-service (Exhs. EV-1(A) at 3-11; EFSB-PA-11, EFSB-PA-12; Tr. 1, at 106-107).

Because ISO-NE undertook the SIS for the VW Project subsequent to approving Eversource's PPA the Base Project, there is no existing ISO-NE evaluation to identify what transmission upgrades would be necessary to allow for the reliable interconnection of the VW Project, in the event the Project is not constructed (Exhs. EV-1(A) at 3-11; Tr. 1, at 105). Eversource stated that, even if such alternative upgrades could be developed, the length of time

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that day matching the peak day load to its projected future net peak load for Cape Cod (Exh. EFSB-PA-15). The Company then calculated the magnitude and duration of the transmission line overloads that would occur based on the projected load curve and the identified critical load level, calculating that over a 15-hour period of insufficient transmission capacity, 1,734 MWh of energy would be required to mitigate the transmission overloads (Exh. EFSB-PA-15).

[23] Eversource stated that the NTA injection could alternatively be split between West Barnstable, Barnstable, and/or substations to the east (Exh. EV-1(A) at 3-9 to 3-10).

to develop, plan, and obtain approvals for such upgrades would delay the in-service date of the VW Project (Exh. EV-1(A) at 3-11).

Eversource stated that, because the VW Project is an intermittent resource, it would not reliably generate the minimum NTA injection requirement of 180 MW at the time of a transmission outage – even if it were somehow allowed to be built without benefit of the Project (Exh. EFSB-PA-11). Per ISO-NE's Transmission Planning Technical Guide, offshore wind resources are assumed to operate at 20 percent of their full capacity; thus, Eversource modeled the VW Project's output as 160 MW at the point of interconnection (Exh. EFSB-PA-11). Eversource stated that the availability of the 160 MW would not materially change the selection of the project approach because additional NTA resources would still be necessary to address the variability of offshore wind generation (Exh. EFSB-PA-11; Tr. 1, at 106-107).

Eversource described system performance following contingencies under a hypothetical of the VW Project having been built and operating, without construction of the Project (Exh. EFSB-PA-12). Eversource explained that if the VW Project output was greater than load in the Cape Cod load pocket, system operators would respond to a first contingency by seeking to reduce the VW Project's output to match local load so that transmission line overloads would not occur after the second contingency (Exh. EFSB-PA-12). In the event of an N-1-1 contingency occurring when the VW Project's output is too low while the Cape Cod load is high, the remaining transmission line would be overloaded (Exh. EFSB-PA-12).

b. Battery Energy Storage Systems, Photovoltaics, Conventional Generation, and Demand Management

Eversource evaluated whether the various battery energy storage systems ("BESS") already proposed in the Cape Cod Load Pocket would address the NTA injection requirement (i.e., 180 MW within 30 minutes of the occurrence of the first contingency) (Exhs. EV-1(A) at 3-10; EV-4 at 4; EFSB-PA-9). The Company considered distribution-connected energy

storage projects under development in Provincetown[24] and now operating on Nantucket (Exh. EV-1(A) at 3-11; EFSB-PA-13).[25] Eversource is the developer of the Provincetown BESS, which is designed to provide 25 MW/41 MWh of net injection; National Grid is responsible for the Nantucket BESS, which is designed to add approximately 6 MW/48 MWh of injection (Exh. EV-1(A) at 3-11; EFSB-PA-13).

Eversource stated that the capacity of these two BESS projects together is insufficient relative to the required injection requirement of 180 MW/1,734 MWh, and that the BESS projects were proposed to address local reliability needs (Exhs. EV-1(A) at 3-12; EFSB-PA-13). The Company explained that it did not design the Provincetown BESS with system controls that would enable ISO-NE to dispatch it in the event of the contingencies of concern (Exhs. EV-1(A) at 3-12; EFSB-PA-13, EFSB-PA-15). Eversource indicated that it does not know how National Grid intends to operate its Nantucket storage project (Exh. EFSB-PA-13). Eversource concluded, based on its evaluation described above, that these BESS alternatives would not be sufficient to address the project need in isolation (Exhs. EV-1(A) at 3-12; EFSB-PA-12; EFSB-PA-13). Eversource noted that, to mitigate the N-1-1 contingency of concern, a stand-alone BESS (such as the Provincetown and Nantucket facilities) would need to be supplied with adequate transmission capacity to recharge after up to 15 hours of discharge (Exhs. EV-1(A) at 3-12 to 3-13; EFSB-PA-15). The Company stated that the remaining nine hours would be inadequate to recharge a sufficiently sized BESS (Exhs. EV-1(A) at 3-12 to 3-13; EFSB-PA-15).

Eversource also considered hypothetical generating resources and projects that could be developed in the vicinity of the Barnstable Switching Station (Exh. EV-1(A) at 3-13).

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24 Eversource's Provincetown BESS is now operational. See https://www.eversource.com/content/general/residential/about/sustainability/renewable-generation/battery-energy-storage

25 Eversource also initially included a 14.7 MW BESS previously proposed for Martha's Vineyard (Exh. EV-1(A) at 3-11). However, in May 2021, Eversource notified the Department of its decision to cancel the planned Martha's Vineyard BESS due in part to increased project costs and updated information regarding the load forecast for Martha's Vineyard. See D.P.U. 21-30 Eversource Energy 2020 Grid Modernization Annual Report, at 1.

Eversource concluded that the most feasible NTA – a combination of PV and energy storage – would cost significantly more than the Project and, given the scale of land requirements, would likely encounter significant development obstacles (Exhs. EV-1(A) at 3-12; EFSB-PA-16).[26] Acting as a consultant for the Company, London Economics International, LLC ("LEI") estimated the size and cost of a hypothetical PV and energy storage capable of addressing the minimum NTA injection requirements (Exh. EFSB-PA-16). LEI's least-cost configuration required a minimum of 281 MW of PV, with a total energy requirement of 1,112 MWh (Exh. EFSB-PA-16). The estimated up-front investment cost for this configuration was calculated at $289.7 million, exclusive of costs related to land, permitting, and site preparation (Exh. EFSB-PA-16).[27] Eversource estimated the land requirement for such an alternative to be between 1,686 and 2,248 acres, which the Company considered an infeasible amount of land to acquire on Cape Cod (Exh. EV-1(A) at 3-13; RR-EFSB-8; Tr. 1, at 162).

More conventional alternatives like gas-fired generators would also require significant amounts of land and were dismissed by the Company due to the need for additional construction to ensure adequate fuel supply and lengthy permitting timelines for both gas supply enhancements and the generators themselves (Exh. EV-1(A) at 3-13).[28] Eversource also concluded that conventional alternatives to the Project were cost prohibitive: the least expensive

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[26] Although energy efficiency and demand-side programs would not feasibly address the need for this Project, Eversource should also continue to explore ways to use NTAs (individually or in combination) to avoid or delay the need for new transmission infrastructure. In addition, the Siting Board expects that Eversource will strongly encourage its customers, both existing and new, to take full advantage of energy efficiency programs, which may also help avoid or delay the need for new transmission infrastructure.

[27] Eversource stated that the cost estimate assumes a 100 MW, four-hour battery unit (Exh. EFSB-PA-16).

[28] Dual-fuel generators would require even more land (compared to the Base Project) due to the need for a backup supply such as a storage tank, further increasing costs and complicating permitting in ways the Company deemed prohibitive for a feasible Project NTA (Exh. EV-1(A) at 3-13).

option would utilize frame peaker gas turbine technology and was estimated to cost $268 million to install one turbine of sufficient size (Exh. EV-1(A) at 3-14).

Eversource noted that the load forecast already anticipates that EE measures (i.e., active and passive demand response) will reduce load by 61 MW through the year 2026; therefore, the Company concluded that deploying an additional 180 MW of EE measures is not feasible (Exh. EV-1(A) at 3-13).

Finally, Eversource argues that the only way to help facilitate the interconnection of offshore wind projects in the Barnstable area is to increase the transmission capacity for export of power out of the area (Company Brief at 48, citing Exh. EFSB-PA-19).

2. Transmission Alternatives

a. The Project

As described above, the Base Project consists of a new approximately 12.5-mile-long 115 kV overhead electric transmission line in the towns of Bourne, Sandwich, and Barnstable between Eversource's Bourne Switching Station and West Barnstable Substation and construction of a new 115 kV switchyard bay on the west side of the West Barnstable Substation (Exh. EV-1(A) at 1-1, 3-2; Tr. 1 at 5, 7). Eversource would expand the western fence line of the West Barnstable Substation by approximately 65 feet to accommodate the new switchyard bay (Exh. EV-1(A) at 3-3; Tr. 1 at 7). The Base Project would increase the total transmission capacity to the Cape Cod Load Pocket (i.e., under N-1-1 conditions) to 727 MVA (Exhs. EV-1(A) at 3-7; EFSB-PA-5). Eversource estimated the total cost of the Base Project to be approximately $59.1 million (including direct costs of $38.1 million for transmission line work and $14.1 million for substation work) (Exhs. EFSB-C-2, EFSB-C-4; EFSB-PA-5). Eversource estimated that Project construction would take place intermittently over approximately 27 months (Exh. ESB-G-2(1)).

As described above, ISO-NE's SIS for PCW concluded that a new 345 kV transmission line on Cape Cod will be necessary to interconnect PCW at West Barnstable Substation (PCW Brief at 9-10; Tr. 1 at 113-114). To prepare for the eventual need of this new 345 kV transmission line, Eversource presented the Noticed Variation that, as described above in

Section I.A, involves constructing the New Line to 345 kV standards (i.e., using larger and taller transmission structures and larger conductors) (Exhs. EV-1(A) at ES-1 and 4-60). If the Noticed Variation is approved by the Siting Board, Eversource would operate the New Line at 115 kV until such a time that 345 kV transmission connections are permitted and constructed and the Siting Board approves operation of the New Line at 345 kV (Exh. EV-1(A) at ES-1 and 1-2; Tr. 1, at 115-116). The Noticed Variation would increase the total transmission capacity to the Cape Cod Load Pocket (i.e., under N-1-1 conditions) to 1033 MVA (Exhs. EV-1(A) at 3-7; EFSB-PA-5). In order to fit within the existing ROW with electrical clearances required for operation at 345 kV, the Noticed Variation has two additional intermediate structures and a shift in position for 17 other structures, relative to the Base Project (Exh. EFSB-G-23; RR-EFSB-22 at 1-1; Tr. 2 at 196; Tr. 3 at 384).[29]

The seventeen structures would need to shift from 20 to 243 feet, with an average shift of 94 feet (RR-EFSB-10). The two intermediate structures would be 142 feet and 152 feet tall,

[29] The original Petition described a version of the Noticed Variation that would have required Eversource to widen portions its ROW by five to nine feet before it converted the Noticed Variation from 115 kV to 345 kV (Exhs. EFSB-LU-6; EFSB-G-23; VW-NSTAR-2). Eversource estimated that it would need new easement rights on approximately 50 parcels (Tr. 2 at 252). Line clearance requirements to other transmission lines and to the edge of the ROW are based on design codes specified in 220 CMR 125.23(7) (Separation Between Transmission Conductors and Conductors or Wires of Another Structure) (Exh. VW-NSTAR-2). To eliminate the need for acquiring property rights in the future, Eversource modified its original Noticed Variation, reducing some span lengths and therefore potential "blowout" such that required electrical clearances under windy conditions are still within the existing ROW (Exhs. EFSB-LU-6, at 1-1, EFSB-G-23; RR-EFSB-22 at 1-1; Tr. 2, at 196, 254; Tr. 3 at 384). It is this modified version that is under consideration in this Decision. Eversource stated that the modified version of the Noticed Variation would have environmental impacts comparable to those of the original version of the Noticed Variation (RR-EFSB-10, at 1-1; RR-EFSB-28; RR-EFSB-29; RR-EFSB-33, at 1-1). Hereafter, we simply refer to the redesigned Noticed Variation as the Noticed Variation, as this is now the variation proffered by the Company.

respectively (RR-EFSB-10).[30] The Company estimated that the modified Noticed Variation would have a total cost of approximately $72.3 million which is $0.6 million more than the originally presented Noticed Variation and would not require any cost for acquiring land rights (RR-EFSB-10(S1) at 1-2).

b. Transmission Alternative 2

Transmission Alternative 2 would involve: (1) reconductoring and replacing/reinforcing transmission structures for approximately 26.5 miles of three existing 115 kV overhead transmission lines connecting Bourne Switching Station to West Barnstable Substation via Falmouth; (2) bifurcating the existing, 16-mile-long 115 kV transmission Line 122 from Bourne Switching Station to Barnstable Switching Station; and (3) associated terminal system upgrades (Exh. EV-1(A) at 3-3; Tr. 1 at 147). The approximately 26.5-mile reconductored and rebuilt 115 kV overhead transmission line includes Line 107 from Bourne Switching Station to Falmouth Tap (approximately 10 miles long) and Lines 136 and 137 from Falmouth Tap to West Barnstable Substation (approximately 16.5 miles) (see Figure 1, above) (Exhs. EV-1(A) at 3-2; EFSB-PA-7). The Company stated that Transmission Alternative 2 would increase the total transmission capacity to the Cape Cod Load Pocket to 559 MVA (Exh. EFSB-PA-5).

The Company stated that Transmission Alternative 2 would require "lengthy line outages," placing the Cape Cod Load Pocket at risk of voltage collapse in the event of certain N-1 contingencies during these construction period outages (Exhs. EV-1(A) at 3-6 and 3-7; EFSB-PA-3). Eversource reported that Transmission Alternative 2 would likely involve construction period impacts to existing environmental resources on or adjacent to the ROWs involved, including approximately 67 acres of wetland resource areas, buffer zones, and various waterbodies (Exhs. EV-1(A) at 3-7 and 3-8; EFSB-PA-8). Eversource asserted that Transmission Alternative 2 would also be inferior to the Base Project with respect to supporting the future interconnection of offshore wind generating resources, because no new circuits leading

30 The Noticed Variation may require a third additional structure ("Structure 75A") in the median of Route 6, subject to further analysis and discussion with the Massachusetts Department of Transportation ("MassDOT") (RR-EFSB-10; RR-EFSB-25).

towards the mainland are created and the lower capacity of the resulting system (Exh. EFSB-PA-23).[31] Eversource estimated that Transmission Alternative 2 would cost approximately $69.1 million at -25%/+50% (Exh. EV-1(A) at 3-3).

c. Company Comparison of Transmission Alternatives

The Company compared the proposed Project, Noticed Variation, and Transmission Alternative 2 and concluded that the proposed Project and Noticed Variation are both superior to Transmission Alternative 2 (Exh. EV-1(A) at 3-2; RR-EFSB-17; Company Brief at 41). Eversource's compared the two transmission alternatives on the basis of: additional capacity added to the Cape Cod Load Pocket, potential to interconnect future renewable energy generation, the duration of line outages required to upgrade and associated vulnerabilities while upgrading, environmental impacts, and construction costs (Company Brief at 41-44).

The Company stated that, assuming N-1-1 conditions and existing lines in the area, Transmission Alternative 2 would offer 559 MVA of overall capacity for the Cape load pocket while the Base Project and Noticed Variation would offer 727 and 1,033 MVA, respectively (Exh. EFSB-PA-1, EFSB-PA-6; Company Brief at 41). Unlike the Base Project (and Noticed Variation), Transmission Alternative 2 would not add a new independent transmission line on Cape Cod to enable future interconnection of renewable energy generation (Exh. EFSB-PA-1, EFSB-PA-6; RR-EFSB-17; Company Brief at 41).

Eversource noted that the line outages and associated vulnerabilities required for constructing Transmission Alternative 2 also exceed that of both the Project and the Noticed Variation (Exh. EFSB-PA-3; RR-EFSB-17). Eversource concluded that, given the greater overall capacity, future renewable energy interconnection potential, and transmission system reliability, the Base Project and Noticed Variation are each superior to Transmission Alternative 2 (Company Brief at 42).

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[31] The Company dismissed an approach of changing the 115 kV circuits along the route of Transmission Alternative 2 to accommodate 345 kV power, in part, because these substations require continued connection to the existing 115 kV lines (Exh. EFSB-PA-21).

The Company compared the potential environmental impacts of the Base Project, Noticed Variation, and Transmission Alternative 2, as shown in the table below:

Table 1. Environmental Comparison of Transmission Alternatives

Analyzed Criteria	Base Project	Noticed Variation	Transmission Alternative 2
Affected Municipalities:	Bourne, Sandwich, Barnstable	Bourne, Sandwich, Barnstable	Bourne, Sandwich, Barnstable, Falmouth, Mashpee
Approximate Total Length (miles):	12.5	12.5	43
Tree Clearing (acres)	0.19	0.19	0
Wetlands & Buffer Zones in ROW (acres)	12	12	67
Number of Major Waterbody Crossings	2	2	14
Mapped Rare Species Habitat in ROW (acres)	253	253	332
Moderate and High Sensitivity Archaeology Areas (miles crossed by ROW)	4.5	4.5	0
Residential Units (direct abutters to ROW)	70	70	1,021
Public Water Supplies (miles crossed by ROW)	5	5	11
Conservation Land (miles crossed by ROW)	9	9	13

Source: Exh. EV-1(A) at 3-8; RR-EFSB-17; RR-EFSB-17(1)

As illustrated in Table 1, Transmission Alternative 2, when compared to the Base Project and Noticed Variation, would: (1) result in construction along approximately 30 additional miles of existing ROW; (2) potentially affect approximately 951 more residential properties directly abutting the ROWs; (3) involve work (including structure installation and use of swamp mats in certain locations) within or near 55 more acres of wetland resource area and buffer zones and twelve major waterbodies; (4) involve work with more impacts to rare species habitat, public water supply lands and conservation land/protected open space; and (5) affect two additional municipalities (Falmouth and Mashpee) (RR-EFSB-17; RR-EFSB-17(1); Company Brief at 43-44). Although Transmission Alternative 2 would avoid crossing sensitive archaeological areas, Eversource argues, based on the other impact categories, that the Base Project and Noticed

Variation are each superior to Transmission Alternative 2 with respect to environmental impacts (Company Brief at 43).

Finally, Eversource compared the projects based on their costs. The Base Project (at $59.1 million) is the least-cost alternative compared to the Noticed Variation (at $72.3 million) and Transmission Alternative 2 (at $69.1 million) (RR-EFSB-10; RR-EFSB-17; Company Brief at 44). While the Noticed Variation and Transmission Alternative 2 are comparable with respect to cost, Eversource asserts that the Noticed Variation's advantages with respect to reliability and environmental impacts outweigh its higher cost in comparison to Transmission Alternative 2 (Company Brief at 44).

Based on the above comparisons, Eversource concluded that both the Base Project and Noticed Variation are superior to Transmission Alternative 2.

C. Analysis and Findings on Alternative Approaches

The Company's assessment of alternative approaches to the proposed Project included a review of potential non-transmission and transmission alternatives. Eversource first considered whether generation facilities proposed to interconnect within the Cape Cod Load Pocket could meet the NTA injection requirement of 180 MW. Although the VW Project could provide a source of NTA injection capacity, it would only provide 160 MW of modeled capacity, and is dependent on the Project to deliver that capacity to the regional grid via the Barnstable Switching Station. Furthermore, offshore wind facilities are intermittent and not dispatchable; therefore, the VW Project would not meet the full NTA requirement at all times.

Distribution-connected BESS units on Nantucket and in Provincetown would have a combined capacity of 31 MW and 89 MWh, respectively, well short of the NTA requirement. The record shows that a hypothetical combined PV and utility-scale BESS facility, although technically feasible, would be cost-prohibitive due to the scale of energy storage needed and the permitting and development costs associated with locating such a facility. Conventional generators such as gas-fired or dual-fuel generators were similarly dismissed due to land and infrastructure requirements, complicated and costly permitting timelines, and the high upfront capital costs of the equipment.

Finally, the record shows that active and passive demand response measures are not deployable to the scale necessary to meet the minimum injection requirement of 180 MW, even when factoring in measures forecasted as far as 2026. Overall, the record shows that the NTA alternatives identified in the record are technically infeasible or inferior to the Project with respect to reliability and cost. Thus, the Siting Board finds that the Project is preferable to NTA alternatives.

Regarding transmission alternatives, the record shows that Transmission Alternative 2 is inferior to the Base Project and the Noticed Variation. Transmission Alternative 2 would involve construction over a distance of ROW nearly three times longer; it would provide less incremental capacity; and it would not provide an additional transmission circuit capable of supporting additional offshore wind resource interconnections.

According to ISO-NE system impact reports for the VW Project and PCW Project, offshore wind projects connecting to the Cape Cod Load Pocket will require the development of 345 kV transmission lines. The Noticed Variation offers a cost-competitive 345 kV transmission solution between the Bourne Switching Station and West Barnstable Switching Station at relatively low incremental cost beyond the Base Project. The incremental cost of pursuing the Noticed Variation relative to the Base Project is approximately $13.2 million – which is approximately one-fifth the cost of decommissioning the Base Project after its completion and replacing it with a 345 kV line. As noted above, PCW has agreed to bear the incremental costs for the Noticed Variation, so this cost would not burden Eversource or its ratepayers. The Siting Board therefore finds that the Noticed Variation warrants further consideration below, even though its gross cost (before payment by PCW LLC) would exceed than the Base Project in meeting the identified need.

V. ROUTE SELECTION

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 energy 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. Beverly-Salem at 38-39; Andrew-Dewar at 43; Sudbury-Hudson at 71. But see Colonial Gas Company d/b/a National Grid, EFSB 16-01, at 28-29 (2016) ("Colonial 2016"); Colonial Gas Company d/b/a National Grid, EFSB 18-01/D.P.U. 18-30, at 40-42 (2019) ("Colonial 2019"), where the Siting Board found the company's decision not to notice an alternative route to be reasonable.

B. Company's Approach to Route Selection

Eversource described its routing analysis as an adaptive and iterative process whereby the Company evaluates possible routes for a proposed project (Exh. EV-1(A) at 1-4, 4-1). In sequence, the Company described a study area; identified potential routes and design options;[32] identified the most viable routes and variations; scored potential routes based on environmental and constructability criteria; and selected two candidate routes and appropriate variations based on considerations of environmental impacts, constructability, cost, and reliability (Exh. EV-1(A) at 4-2).[33]

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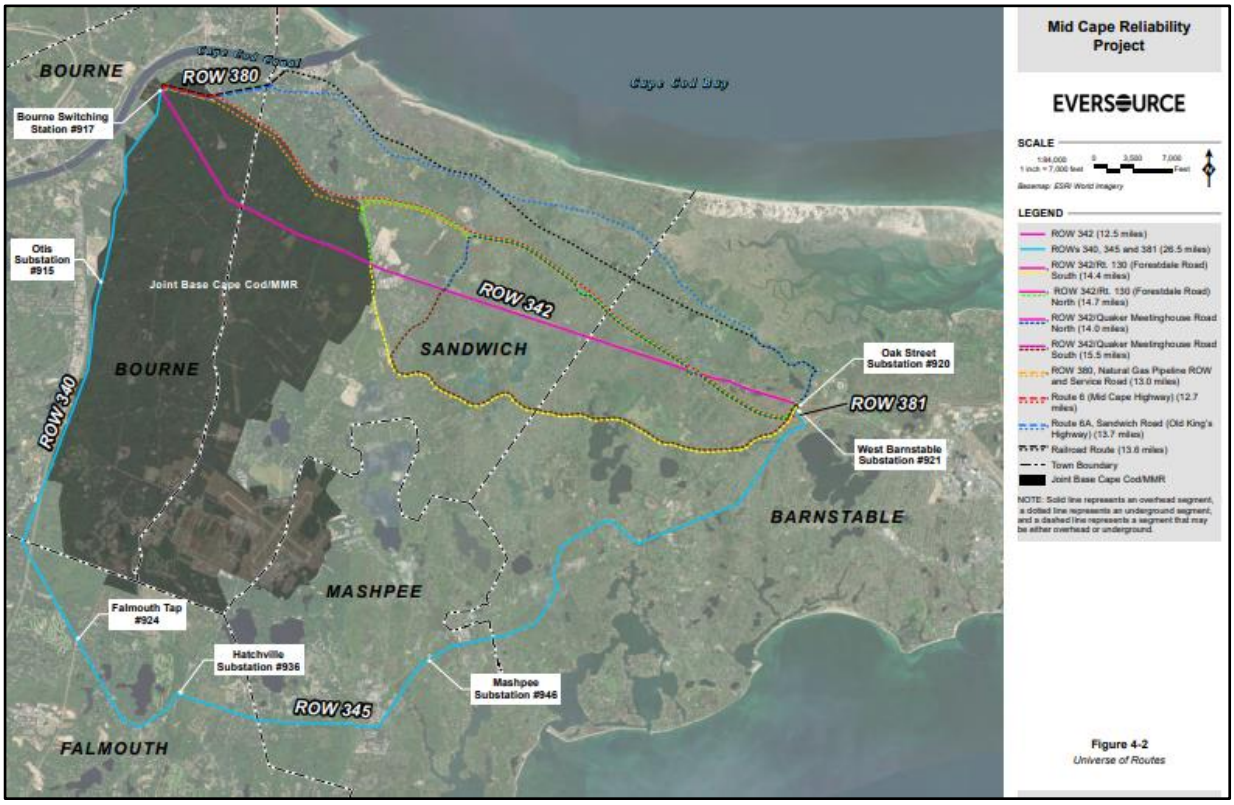
32 Eversource stated that, within its universe of routes, it included designs for a primarily overhead line, primarily underground, and a combination (Exh. EV-1(A) at 4-1). The Company claimed that considering a variety of design variations is appropriate given that each has distinct environmental impacts and costs (Exh. EV-1(A) at 4-1).

33 The Company stated that, in addition, to allow consideration of the anticipated future potential need of the interconnection of additional renewable generation, the Company introduced the concept of constructing the Project to support the potential future operation of the 115 kV transmission line as a 345 kV transmission line (Exh. EV-1(A) at 4-1).

The Company stated that the overall goal of its routing analysis was to identify a cost-effective and technically feasible design that would directly interconnect the Bourne Switching Station and West Barnstable Substation (Exh. EV-1(A) at 4-1). Specifically, the Company aimed to: (1) comply with all applicable federal and state statutory requirements, regulations, and policies; (2) achieve a reliable, operable, and cost-effective solution; (3) maximize the reasonable, practical, and feasible use of existing linear corridors; (4) minimize/avoid the need to acquire property rights; and (5) maximize the potential for direct routing options over circuitous routes (Exh. EV-1(A) at 4-1 to 4-2).

Eversource identified a geographic area for consideration of potential routes for the New Line, encompassing portions of the towns of Bourne, Sandwich, Barnstable, Falmouth, and Mashpee, extending north to transmission ROW 380 and Cape Cod Bay, west to transmission ROWs 380 and 340 in Bourne, east to West Barnstable Substation, and west to transmission ROWs 345 and 340 in Falmouth, Mashpee, and Barnstable ("Study Area") (Exh. EV-1(A)1, at 4-3). Figure 3, below, illustrates the routes within the Study Area considered feasible by the Company.

Figure 3: The Universe of Routes within the Study Area



Source: Exh. EV-1(A) at 4-5

Eversource characterized land use within the Study Area as including federal, municipal, and private open space areas, including conservation and water protection supply areas (Exh. EV-1(A) at 4-3). Joint Base Cape Cod ("JBCC") occupies a significant portion of the western half of the Study Area (Exh. EV-1(A) at 4-3). The Study Area contains a variety of linear corridors including: Eversource transmission ROWs 380, 340, 342, 345, and 381; public roadways including Routes 6 and 6A (and the service road thereto); the Cape Cod Central Railroad; and a gas pipeline ROW owned by Spectra Energy (Exh. EV-1(A) at 4-3).

Eversource identified potential routes within the Study Area, applying the above routing objectives, by reviewing U.S. Geological Survey maps, Massachusetts Geographic Information System ("MassGIS") data, aerial photographs, and conducting some field reconnaissance (Exh. EV-1(A) at 4-3). The Company conducted municipal outreach in Bourne, Sandwich, and Barnstable to gather input on possible routes (Exh. EV-1(A) at 1-6 to 1-9). The Company's

Universe of Routes consisted of ten route options, shown on Figure 3, above (Exh. EV-1(A) at 4-16). Eversource completed an initial screening of routes that considered adjacent land uses; the presence of natural resources (e.g., wetlands, waterways, and rare species habitat); existing land ownership and easement details, including various easement constraints; the potential requirement for Article 97 authorization; constructability constraints such as difficult crossings; and order of magnitude cost estimates (Exh. EV-1(A) at 4-17).

Eversource indicated that, in discussing potential route options with local officials, the Town of Barnstable expressed a preference for avoiding construction of a new transmission line on Service Road (Exh. EV-1(A) at 4-26). Barnstable stated its concern about potential impacts to the community resulting from on-going gas pipeline construction and possible future infrastructure construction (Exh. EV-1(A) at 4-26).[34]

Based on this initial assessment, Eversource eliminated four routes: the Railroad Route, the Route 6 Route, the Route 6A/Sandwich Road Route, and the ROW 380/Gas Pipeline ROW/Service Road Route (Exh. EV-1(A) at 4-17). The Company eliminated these routes for a variety of reasons, including significant environmental impacts, regulatory constructability concerns, the need for new property rights, and other challenges (Company Brief at 52, citing Exh. EV-1(A) at 4-17 to 4-21, table 4-2).

The Company advanced the remaining six ("Candidate Routes") for more detailed analysis and subsequent scoring and ranking (Exh. EV-1(A) at 4-21). Of the Candidate Routes, two would entirely use existing, Company-owned ROWs and four would use a combination of ROWs and public roadways (Exh. EV-1(A) at fig. 4-3).

The Company's scoring process consisted of the following: (1) identifying evaluation criteria to identify impacts of each route; (2) calculating a ratio score for each criterion for each route; (3) assigning individual weights to each criterion to reflect its potential for impact; and (4) determining a total raw ratio score and total weighted ratio score for each route

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[34] The Service Road segment between Route 130 in Sandwich and Chase Road in Barnstable has existing utility infrastructure that includes the new construction of a 20-inch diameter natural gas pipeline, part of National Grid's ongoing effort to complete another facility (the Sagamore Line Reinforcement Project) (Exh. EV-1(A) at 4-19).

(Exh. EV-1(A) at 4-52 to 5-53). Eversource scored the Candidate Routes based on 17 criteria that fell into three categories: (1) developed environment criteria, (2) natural environment criteria, and (3) constructability criteria; see Table 2, below (Exh. EV-1(A) at 4-28 to 4-49).

Table 2. Applied Weights for Scoring Criteria

Category	Scoring Criterion	Weight
Developed Environment Criteria	Residential Units	3
	Sensitive Receptors	3
	Potential for Traffic Congestion	3
	Commercial/Industrial Units	2
	Scenic Roadways	1
	Historic Resources	1
	Archaeological Resources	1
	Subsurface Contamination	1
Natural Environment Criteria	Tree Removal	3
	Wetland Resource Areas/Buffer Zones	1
	Mapped State-Listed Rare Species Habitat	2
	Public Water Supply	3
	Protected Open Space/Conservation Lands)	1
	Article 97 Authorization	3
Constructability Criteria	Existing Utility Density	1
	Number Of Trenchless Crossings	1
	High Impact Crossings	3

Source: Exh. EV-1(A) at 4-53

The Company used a ratio scoring approach for its route evaluation due to the different scales and units of the raw scores for various criteria (Exh. EV-1(A) at 4-28). The Company used the highest impacted route as the denominator, such that a ratio score between zero and one was calculated (Exh. EV-1(A)1, at 4-52).[35] The Company summed scores for each criterion to get a total raw ratio score for each candidate route (Exh. EV-1(A) at 4-52, 4-54). Each criterion was then assigned a weighting factor (1 to 3), as shown in Table 2, above, to reflect the Company's assessment of its importance, with higher weights having greater impact

[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" (Exh. EV-1(A) at 4-52). A hypothetical Route Y with five proximate residential structures has a residential structure impact score of 5 structures/10 structures or "0.5" (Exh. EV-1(A) at 4-52).

(Exh. EV-1(A) at 4-52 to 4-53). The Company also developed cost estimates and assessed the reliability of each route to determine the routes that would best balance reliability, cost, and environmental impact considerations (Exh. EV-1(A)1, at 4-28).[36] Table 3, below, summarizes the total weighted environmental impacts scores, cost, and relative rank of the Candidate Routes.

Table 3. Ranking Summary of Candidate Routes (115 kV Base Project)

Candidate Route (length in miles)	Total Weighted Environmental Score	Total Weighted Environmental Rank	Cost ($ millions)	Cost Rank
Route 1 – Overhead on ROW 342 (12.5) (the Primary Route)	9.56	1	59.1	1
Route 2 – Overhead on ROWs 340/345/381 (26.5)	21.54	6	102	2
Route 3 – Hybrid: ROW 342/Route 130 South (14.4)	19.49	5	304.2	5
Route 4 – Hybrid: ROW 342/Route 130 North (14.7)	11.36	2	312.5	6
Route 5 – Hybrid: ROW 342/Quaker Meetinghouse Road North (14.0) (the Noticed Alternative Route)	11.38	3	262.3	3
Route 6 – Hybrid: ROW 342/ Quaker Meetinghouse Road South (15.5)	16.97	4	303.8	4

Source: Exh. EV-1(A)1, at 4-55 to 4-58, table 4-5; RR-EFSB-10(S1).

[36] Cost estimates include transmission line design, substation modifications/connections, survey, environmental compliance, environmental mitigation, siting and permitting, construction management, public outreach, risk contingency, any related distribution line work, and other potential associated costs (Exh. EV-1(A) at 4-58 n.38). A planning grade estimate (-25%/+25%) was developed for Candidate Route 1 (115 kV design) based on the detailed engineering drawings for that route ($59.1 million) (Exh. EV-1(A) at 4-58 n.39). An order of magnitude estimate (-50%/+200%) was developed for Candidate Route 1 with a 345 kV-upgradeable design ($68.0 million) based on conceptual engineering drawings (Exh. EV-1(A) at 4-58 n.39). An estimate (-50%/+200%) was developed for Candidate Routes 2 through 6 based on conceptual engineering drawings (Exh. EV-1(A) at 4-58 n.40).

As shown in Table 2, above, the Company's analysis indicated that total weighted environmental scores ranged from 9.56 (best) for Route 1 and 21.54 (worst) for Route 2 (Exh. EV-1(A) at 4-54, 4-55). Constructability scores favored Routes 1 and 2, followed by Routes 4 and 5, with Routes 3 and 6 having the most construction challenges (Exh. EV-1(A) at 4-54, 4-57). The Company estimated the lowest cost for construction of the Project at $59.1 million, assuming that the Project would be constructed to 115 kV standards, as originally proposed, along Route 1 (Exh. EV-1(A) at 4-58). Other Base Project (115 kV) cost estimates were significantly more than for Route 1, ranging from $102 million (for Route 2) to as much as $312.5 million (for Route 4) (Exh. EV-1(A) at 4-58).[37]

In addition to potential environmental impacts and cost, Eversource evaluated the Candidate Routes on the basis of reliability (Exh. EV-1(A) at 4-58 to 4-59). Eversource stated that, while a longer transmission line increased exposure to potential faults, this factor was difficult to quantify and not a material element in the Company's analysis (Exh. EV-1(A) at 4-58 to 4-59). With regard to overhead versus underground designs, the Company indicated that weather-induced outages would be less likely with an underground line, but an overhead line could generally be repaired more quickly (Exh. EV-1(A) at 4-59). Eversource stated that it therefore did not use reliability when comparing the Candidate Routes but distinguished between various routes and made selections for further study based on the results of its routing analysis (Exh. EV-1(A) at 4-59).

The Company explained that it selected Candidate Route 1 for the Base Project's Primary Route because Route 1 had the lowest overall environmental score and lowest cost (Exh. EV-1(A) at 4-59). For the Noticed Variation along Route 1, assuming initial operation at 115 kV,

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[37] Eversource estimated the cost to install a new 345 kV underground transmission line along the 7.9-mile underground portion of Route 5 (aka the Noticed Alternative Route) to be an order of magnitude of $24.5 million (-50%/+200%) (RR-EFSB-18(S1). This would be an increase of $26.6 million from the comparable $221.9 million estimate provided in Exh. EFSB-C-4 for the underground portion of the transmission line using 115 kV underground cable and infrastructure associated with the Noticed Alternative Route (RR-EFSB-18(S1)). The additional cost to make Route 1 (a.k.a. the Noticed Variation) 345 kV capable relative to the Base Project would be $13.2 million (RR-EFSB-10(S1) at 1)).

this would not require any additional substation expansion impacts; therefore, the Company did not identify any change to environmental scoring for the Noticed Variation as compared to the Base Project on the Primary Route (Exh. EV-1(A) at 4-60). The Company represented that both the Base Project and the Noticed Variation along the Primary Route would share the lowest overall weighted environmental score and the lowest costs (Exh. EV-1(A) at 4-60). The Company maintains that Route 1 is the Company's choice of Primary Route whether it builds the Project or the Noticed Variation (Company Brief at 63).

Eversource selected Candidate Route 5 as the Noticed Alternative Route for the Project (Exh. EV-1(A) at 4-60). The Company stated that the overall environmental score of Candidate Route 4 (11.36) and Candidate Route 5 (11.38) were similar, but that Candidate Route 4 would cost $50 million dollars more to construct than Candidate Route 5 ($312.5 million compared to $263.3 million) (Exh. EV-1(A) at 4-59). Candidate Route 5 ranked third overall from a cost perspective and had the lowest cost for hybrid routes considered by the Company; furthermore, it would provide a measure of geographic diversity relative to the Project (Exh. EV-1(A) at 4-60). Eversource accordingly identified Candidate Route 5 as the Noticed Alternative Route for the Project (Exh. EV-1(A) at 4-60).

The Company indicated that it assessed a wide array of potential routes and design variations within the bounds of the Project Study Area (Exh. EV-1(A) at 4-60). The Company contends that in identifying its Primary and Noticed Alternative Routes, along with a Noticed Variation, it has advanced options for further review that offer the best balance of environmental impacts, costs, and reliability (Company Brief at 64; Exh. EV-1(A) at 4-60).

C. Geographic Diversity

Eversource asserted that it selected a Noticed Alternative Route with an appropriate measure of geographic diversity for further consideration in a detailed comparison to the Primary Route (Exh. EV-1(A) at 4-60). Although segments of the Primary and Noticed Alternative Routes overlap, the unique portions of the two routes have distinct environmental impacts (Exh. EV-1(A) at 4-21 to 4-27). Considering the location of the Project termini, route selection criteria, geographical constraints, any expressed preferences of Bourne, Sandwich, and

Barnstable officials, and results of the candidate route analysis, Eversource concluded that the Noticed Alternative Route, independent of the Primary Route for approximately 56 percent of its total length, offered significant geographical diversity to the Primary Route (Exh. EV-1(A) at 4-21 to 4-27, 4-52 to 4-60, fig. 4-16).

D. Analysis and Findings on Route Selection

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 to be appropriate for identifying and evaluating route options for transmission lines and related facilities. These criteria include natural resource impacts, land use impacts, community impacts, cost, and reliability. Beverly-Salem at 93: Andrew-Dewar at 43; Sudbury-Hudson at 71; Boston Edison Company d/b/a NSTAR Electric, EFSB 04-1/D.P.U. 04-5/04-6, at 43-44 (2005) ("Stoughton-Boston"). 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. Beverly-Salem at 93; Andrew-Dewar at 43; Sudbury-Hudson at 71; Boston Edison Company, EFSB 89-12A, at 34-38 (1989).

Here, the record shows that Company developed a range of screening criteria to evaluate its routing options given the limitations imposed by an interconnection between the Bourne Switching Station and West Barnstable Substation. 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.

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 on balance clearly superior to the proposed Project; and (2) identified a range of 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 and that its proposed facilities are sited in locations that minimize cost and environmental impacts while ensuring a reliable supply.

In typical circumstances, the Siting Board's review of a proposed electric transmission project would include a detailed analysis of the Project using the Primary Route and the Noticed Alternative Route, comparing environmental impacts, costs, and reliability. Given the identified characteristics of the Primary Route and the Noticed Alternative Route, and the results of the scoring analysis performed by the Company, as described above, the Siting Board sees little benefit in continuing its consideration of the Noticed Alternative Route for either a 115 kV line or a 345 kV-capable line. The Primary Route offers a moderate environmental and construction impact scoring advantage over the Noticed Alternative Route; however, its cost advantage (for either the Base Project or Noticed Variation) is profound. The Base Project along the Noticed Alternative Route would cost 4.4 times more that the Base Project on the Primary Route, and 3.6 times more than the Noticed Variation, producing cost savings of between $190.0 million and $203.2 million for the Primary Route's Noticed Variation and Base Project, respectively. The record shows that a 345 kV capable line using the Noticed Alternative Route would cost an additional $26.2 million, resulting in a cost difference of $229.4 million for comparable 345-capable transmission solutions on the Primary Route as compared with the Noticed Alternative Route. In addition, no parties favor the Noticed Alternative Route over the Primary Route, nor did the Siting Board receive public comment in favor of the Noticed Alternative Route. The record in this proceeding does not establish that the Noticed Alternative Route would offer a transmission solution that would pass a system impact study test by ISO-NE for interconnecting significant new offshore wind resources, such as PCW.

The Siting Board does not necessarily find that the lowest cost solutions are always the most appropriate ones for detailed evaluation in its decisions. The selection of a Project and an alternative to compare involves a balancing of environmental impact, cost and reliability considerations to ensure that potentially superior alternatives have not been overlooked by an applicant. See Town of Sudbury, 487 Mass. at 1165. However, the Siting Board has recognized that in some instances, the comparisons are so obvious that it makes little sense to perform such

an exercise. See e.g., Colonial 2019 at 40-42; Colonial 2016 at 29; Woburn-Wakefield at 70-71 (dismissing the Green Street Variation). Although the Company took the step of noticing the Noticed Alternative Route, (as opposed to just performing a study of it, as in Colonial 2016 and Colonial 2019), the Siting Board sees little to no benefit in conducting further analysis of it in this Decision. Even at the higher-level environmental screening used in the route selection process, it is manifestly apparent that the Primary Route is superior to the Noticed Alternative Route on cost and environmental grounds as a 115 kV line, and cost, environmental, and reliability grounds as a 345 kV-capable line.

The Siting Board also sees no benefit in conducting further analysis on the Primary Route between the Base Project and the Noticed Variation. The imperative for a 345 kV-capable solution is already apparent from multiple policy pronouncements and legislative enactments, the overwhelmingly favorable economics of building the New Line as a 345 kV-capable line from the outset rather than reconstructing it later; and the execution of a cost recovery agreement between Eversource and PCW LLC that fund all incremental costs beyond those that ISO-NE would allow for regional cost recovery in the ISO-NE Regional network tariff, thereby protecting ratepayers' interests.

Therefore, the remainder of the Tentative Decision focuses solely on a detailed analysis of minimizing environmental impacts for the Noticed Variation on the Primary Route.[38]

VI. MINIMIZATION OF ENVIRONMENTAL IMPACTS

A. Standard of Review

In implementing its statutory mandate under G.L. c. 164, §§ 69H and 69J, the Siting Board requires a petitioner to show that its proposed facility minimizes costs and environmental impacts while ensuring a reliable energy supply. Beverly-Salem at 41-42; Andrew-Dewar at 44-

[38] The Siting Board notes that the decision to analyze the Noticed Variation solely is based on the specific facts in this proceeding. While there is not an explicit provision in Section 69J that requires a noticed alternative route that is geographically diverse from a primary route, the Siting Board continues to expect project proponents to analyze and notice a route that is geographically diverse from its primary route.

45; New England Power Company d/b/a National Grid, EFSB 10-1/D.P.U. 10-107/10-108, at 39 (2012) ("Hampden County"). To evaluate the proposed facility, 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 facility 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. Beverly-Salem at 41-42; Andrew-Dewar at 45; Sudbury-Hudson at 78.

B. Description of the Noticed Variation on the Primary Route

The Primary Route consists of approximately 12.5 miles of new overhead transmission line on existing Eversource ROWs 342 and 381 between the Project termini (Exh. EV-1(A) at 1-4). A map of the Primary Route is included above, in Section III.B.1. The Project requires improvements and equipment modifications at the Bourne Switching Station within the JBCC, and at West Barnstable Substation to accommodate the New Line (Exh. EV-1(A) at 5-3, 5-5). Eversource stated that the Bourne Switching Station equipment would include a new 115 kV bus, one 115 kV breaker and line terminal disconnect switch, disconnect switches, and the associated control work within a new control house constructed as part of the station rebuild (Exh. EV-1(A) at 5-5). The Company estimates it will complete current work at the Bourne Switching Station in 2023 (Exh. EV-1(A) at 1-5 n.2).

At the West Barnstable Substation, new equipment would consist of two 115 kV circuit breakers, buswork, and related terminal equipment (Exhs. EV-1(A) at 5-3; EV-4). The Company does not propose additional transformers at West Barnstable Substation but would add new control equipment within the existing control house along the substation's eastern edge (Exhs. EV-1(A) at 5-3; EV-3). These modifications would require an expansion of the existing

western fence line of the substation by approximately 65 feet (Exhs. EV-1(A) at 5-3; EV-3, at 3).[39]

The expansion work at the West Barnstable Substation would take place on some existing disturbed and graveled areas but would also include approximately 1.4 acres of tree removal where grading, modifications to an existing stormwater swale, reconfiguring an existing gravel access road, and relocating the existing 25 kV distribution line poles would occur (Exhs. EV-1(A)1, at 5-3; EV-3, at 3).[40] A wooded buffer of approximately 200 feet would remain between the expanded substation facility and two residences, one at 575 Oak Street and another at 550 Oak Street (Exh. EV-1(A) at 5-3 to 5-5). The potential need to provide abutting land users with visual mitigation is discussed in Section VI.D.4, below.

For the Noticed Variation on the Primary Route, Eversource would construct the new 115 kV transmission line to meet standards necessary to operate it in the future at 345 kV (RR-EFSB-10; Exh. EV-1(A) at 2-17 n.13). For 345 kV operation in the future, additional equipment would be needed both at Bourne Switching Station and West Barnstable Substation (Exhs. EFSB-N-25; EV-1(A) at 2-17). However, such equipment is not included in the Project, and the Company would operate the Project at 115 kV until such time as the Company receives approval from the Siting Board to operate the New Line at 345 kV (Exhs. EFSB-N-25; EV-1(A) at 2-17). The Noticed Variation includes a new transmission line capable of carrying 345 kV but does not require equipment at either the Bourne Switching Station or the West Barnstable Substation that would be different from the equipment of the Base Project (RR-EFSB-10). Future upgrades at

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39 The West Barnstable Substation facilities are bordered to the north by Eversource ROW 342 and residential properties; to the east by undeveloped woodland; to the south by Route 6 and Eversource ROW 381; and to the west by undeveloped woodland and residential properties (Exh. EV-1(A) at 5-3 n.41). The wooded portions of the site are comprised primarily of oak and pine species (Exh. EV-1(A) at 5-3, n.41). A small approximately 2,600 square-foot isolated vegetated wetland exists just north of the West Barnstable Substation fence line (Exh. EV-1(A) at 5-3, n.41).

40 The Company estimated approximately 0.19 acres tree removal near the Bourne Switching Station, and 1.4 acres of tree removal at the West Barnstable Substation for work associated with substation expansion (Exh. EV-1(A) at 4-9, 5-6, 5-7, 5-8 5-44).

Bourne and West Barnstable would be the subject of a later request by the Company for approval from the Siting Board (Exhs. EFSB-N-25; EV-1(A) at 2-17).

C. Description of Project Construction

The Company stated it would implement best management practices ("BMPs") to minimize and mitigate potential impacts to the surrounding area and sensitive resources along the Noticed Variation (Exh. EV-1(A), app. 5-4). Key stages of construction are described below. Eversource indicated it would construct the new overhead transmission facilities in several stages, some overlapping in time (Exh. EV-1(A) at 5-5). The typical sequence for the overhead construction line segment is as follows: survey and stake the ROW, vegetation clearing boundaries, and new structure locations; mark the boundaries of previously delineated wetlands and water courses; establish construction field offices and laydown yards and prepare storage and staging areas to support the construction effort; install erosion and sediment controls; perform tree and vegetation removal; improve existing access roads and/or construct new temporary and permanent access roads as necessary; construct work and pull pads; relocate the existing 25 kV distribution line; construct structure foundations; install structure grounding systems, including counterpoise (where needed); erect/assemble new transmission line structures; install conductor and shield wire; remove temporary roads and construction debris and restore disturbed sites; and, maintain temporary erosion and sediment controls until their removal when vegetation is re-established or disturbed areas are otherwise stabilized (Exh. EV-1(A) at 5-5 to 5-6).

For site preparation, Eversource would identify a staging area for construction materials and crews in the vicinity of ROW 342 (Exh. EV-1(A) at 5-6). The staging area is typically an existing contractor's yard or unused location at a commercial or industrial facility that provides space for temporary offices, sanitation facilities, dumpsters, and containers for collection and recycling of shipping and crating material and scrap metals (Exh. EV-1(A) at 5-6).

Next, Eversource would install erosion and sediment controls (e.g., straw bales, silt fences, compost filter tubes, and/or straw wattles) in accordance with the Company's BMP manual and applicable environmental permit requirements (Exh. EV-1(A) at 5-6). Eversource

would install erosion and sediment controls, as required, between work areas and environmentally sensitive areas such as wetlands and streams (Exh. EV-1(A) at 5-6). The Company stated that it would inspect erosion and sediment controls regularly, and undertake prompt repair or replacement, as needed (Exh. EV-1(A) at 5-6).

The Company indicated that some tree clearing and vegetation removal would be required to construct the Project, noting that it already maintains its ROWs free of mature trees (Exh. EV-1(A) at 5-6, fig. 4-9). Eversource indicated that it would use existing gravel access roads to access work sites and transport materials during construction (Exh. EV-1(A) at 5-6, 5-9). The Company reported that these roads run the length of the ROW and are for the most part in good condition but would require some minor grading and top-dressing to support heavy equipment (Exh. EV-1(A) at 5-6). The Company stated it is unlikely that construction would require new access roads beyond the above-identified improvements (Exh. EV-1(A) at 5-9).

At each proposed structure location, the Company would prepare a safe, level work area for construction equipment to install foundations and assemble the structures (Exh. EV-1(A) at 5-9). To prepare work sites for construction equipment, the Company would create work pads of approximately 100 feet square by mowing low growing woody vegetation and brush, then grading to level the space, if necessary (Exh. EV-1(A) at 5-9). Eversource indicated that it can avoid placing new structures in wetland resource areas and avoid the need to use timber construction mats at these locations (Exh. EV-1(A) at 5-9). At certain locations along the ROW, however, the Company might require pull pads for conductor installation (Exh. EV-1(A) at 5-9).

Using the Primary Route would involve relocation of approximately 7.6 miles of an existing 25 kV distribution line on ROW 342 towards the center of the ROW (Exh. EV-1(A) at 5-9). New overhead transmission structures for the Project would require concrete foundations of eight to twelve feet in diameter and deeper (Exh. EV-1(A) at 5-9, n.42). Eversource proposes no new structure foundations in wetlands but stated that installing foundations in upland areas might require dewatering of groundwater (Exh. EV-1(A) at 5-9). At these locations, Eversource would pump water into a sediment filter bag in a straw bale/silt fence basin within the upland area, with the basin and accumulated sediment removed after dewatering operations and the area restored, as needed (Exh. EV-1(A) at 5-9 to 5-10).

Eversource stated that the Project would require 89 new steel monopole transmission structures (Exh. EV-1(A) at 5-10 and app. 5-5). The design of transmission structures for the Noticed Variation would range from 100 to 153 feet, with 65 structures at 120 feet or above, and 33 structures at 140 feet or above (Exh. EV-1(A) at 5-10 and app. 5-5). The Company indicated that, at the completion of the Project, it would stabilize soils disturbed during construction with an appropriate seed mixture, stone, erosion control blankets and/or mulch, in accordance with applicable regulations and permit conditions (Exh. EV-1(A) at 5-10). After sites are stable, it would remove temporary erosion and sediment control measures, restore temporary construction access areas, and remove construction equipment and debris from the ROW (Exh. EV-1(A) at 5-10).

The Company anticipates ten months of construction for the Project along the Primary Route (Exh. EV-1(A) at 5-21). The Company proposes construction hours of 7:00 a.m. to 7:00 p.m., Monday through Friday, and from 9:00 a.m. to 5:00 p.m. on Saturdays, when daylight and weather conditions allow (Exh. EV-1(A) at 5-21). In some instances, and as dictated by Massachusetts Department of Transportation ("MassDOT") or local authorities, Eversource anticipates performing work at night to minimize daytime impacts to commuters and Project abutters (Exh. EV-1(A) at 5-21). Eversource states that if these circumstances occur, the Company will work with MassDOT through its access permit review and the local communities through the Grant of Location processes to formalize allowable work hours and schedule (Exh. EV-1(A) at 5-21). Eversource also states that some work tasks once started may require continuous operation until completion (Exh. EV-1(A) at 5-21). Eversource expects that such tasks, in addition to any tasks necessitating scheduled outages, may require construction or implementation outside normal work hours, including evenings, Sundays and holidays (Exh. EV-1(A) at 5-21).

D. Environmental Impacts

1. Land Use and Historic Resources

a. Company Description

Eversource assessed land use using current (2016) MassGIS land use data (Exh. EV-1(A) at 5-22). The Company tabulated land use in acres within approximately 100 feet of the edge of ROW 342 and at the edge of roadways, with results listed in Table 4, below (Exh. EV-1(A) at 5-24).

Table 4. Land Use (acres) within 100 Feet of the Primary Route

Land Use	**Acres**
Agriculture	0.19
Open Land	111.30
Recreation	0
Industrial	11.91
Commercial	2.39
Mixed Use Primarily Residential	0
Residential – Single Family	28.26
Residential – Multi-Family	0
Special Purpose – JBCC, Ch. 61, etc.	130.68

Source: Exh. EV-1(A) at 5-24.

The Primary Route would cross several expansive municipal conservation lands in Sandwich and Barnstable along ROW 342 (Exh. EV-1(A) at 5-24). Eversource emphasized, however, that there would be no change to open land associated with construction of the Project including construction proposed within ROW 342 (Exh. EV-1(A) at 5-24). Residential-single family properties and special purpose (tax exempt) lands account for significant segments of the Primary Route (Exh. EV-1(A) at 5-24). Eversource indicated that about 70 residential units would directly abut the Project along the Primary Route (Exh. EV-1(A) at 5-24).

As previously noted, station upgrades and modifications are required. The Bourne Switching Station is in a primarily wooded portion of JBCC; the nearest residential neighborhood is approximately 1,000 feet northeast of the station in the Hobbler Road neighborhood of Bourne (Exh. EV-1(A) at 5-5, figs. 4-9, 5-8). Eversource indicated that the West Barnstable Substation is surrounded by a mixture of single-family residential properties and open land (Exh. EV-1(A) at fig. 5-8). The distance to the closest residential parcels from the

proposed expanded West Barnstable Substation fence line would be approximately 265 feet and 283 feet, respectively; the residential structures on the identified lots would be approximately 286 feet and 390 feet from the new substation fence line (Exh. EV-1(A) at 5-5, fig. 5-3a, fig. 5-3b). The Company stated that it owns the land onto which it would expand the West Barnstable Substation (Exh. EFSB-N-25).

The Company anticipated removing approximately 0.19 acres of trees in ROW 342 near the Bourne Switching Station to construct the Project but indicated that maintenance and clearance of mature trees from ROW 342 is otherwise edge-to-edge already (Exh. EV-1(A) at 5-6, fig. 4-9). The Company estimated that it would need to remove 1.4 acres of trees at West Barnstable Substation for work associated with the substation's expansion (Exh. EV-1(A) at 5-6, figs. 5-3a, 5-3b). The expansion work at West Barnstable Substation will otherwise take place on some existing disturbed and graveled areas (Exh. EV-1(A) at 5-3). The tree removal would occur where grading, modifications to an existing stormwater swale, reconfiguring an existing gravel access road, and relocating existing 25-kV distribution line poles take place (Exh. EV-1(A) at 5-3).

Eversource counted no sensitive receptors along overhead segments of the Primary Route (Exh. EV-1(A) at 5-25, table 5-2). Eversource indicated that the nearest sensitive receptor to the Primary Route would be the Oak Ridge School in Sandwich, which is located approximately 1,000 feet north of the Project (Exh. EV-1(A) at 5-25).[41]

Eversource reported that most of ROW 342 is within mapped rare species habitat for state-listed wildlife species, invertebrate species, and plant species (Exh. EV-1(A) at 5-44, fig. 4-11). With respect to portions of the Project located within ROW 342, the Company indicated that movement of vehicles and disturbance of vegetation could result in the mortality of some rare/endangered flora and fauna during construction (Exh. EV-1(A) at 5-44). Eversource stated that potential impacts from access road construction to rare species habitat and state-listed plant species would be limited because the existing access roads are well maintained, and

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41 Eversource has organized Project construction to avoid impacts to school bus routes and school activities (Exh. EFSB-T-12).

construction would only require limited grading and/or placement of gravel (Exh. EV-1(A) at 5-44).

Eversource stated that the area of mapped habitat affected by tree removal for the Project would be limited and would occur primarily in the vicinity of the Bourne Switching Station and the West Barnstable Substation (Exh. EV-1(A) at 5-44). Eversource indicated that, with respect to tree loss in the vicinity of the Bourne Switching Station, the cover type would convert from forested habitat to scrub-shrub (Exh. EV-1(A)1, at 5-44). The Company anticipated that this change would be generally positive, resulting in potentially increased acreage for foraging, migration, and basking habitat for state-listed animal species (e.g., eastern box turtle) and improved quality of habitat for certain invertebrate species (e.g., state-listed moths and butterflies) (Exh. EV-1(A)1, at 5-44).

Regarding state-listed plants, Eversource stated that, in consultation with the Natural Heritage and Endangered Species Program ("NHESP"), it conducted plant surveys within ROW 342 for the length of Primary Route (Exh. EV-1(A) at 5-44 to 5-45).[42] As a result of these surveys, Eversource identified "exclusion zones" within which no construction equipment or work will be allowed to avoid impacts to state listed plants (Exh. EV-1(A) at 5-45). Eversource stated it would delineate these areas with fencing and signage during construction (Exh. EV-1(A) at 5-45).

Eversource stated that it would further mitigate the potential for Project construction to impact state-listed species negatively by implementing measures, including contractor training, restricted work zones, clearing sweeps for turtles prior to the start of work and/or other protective measures that NHESP might prescribe (Exh. EV-1(A) at 5-45). The Company stated that, consistent with current practices, and subsequent to completion of ROW construction, it would conduct ongoing vegetation management within the ROW under the Company's Vegetation

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42 Eversource reported the Primary Route does not contain state-listed plants near the proposed work zones (Exh. EV-1(A) at 5-45, n.59). Eversource focused its botanical survey efforts on the Project in locations where such plants are generally known to occur (Exh. EV-1(A) at 5-45, n.59).

Management Plan ("VMP") and Yearly Operational Plan ("YOP"), which include NHESP's required state-listed species BMPs (Exh. EV-1(A) at 5-45).

The Company's archaeological consultant, Public Archaeology Laboratory ("PAL"), completed an Archaeological Sensitivity Assessment to identify sites in the Project area which might contain significant archaeological resources (Exh. EV-1(A) at 5-45). Archaeological surveys for the Bourne Switching Station area and ROWs 342 and 343 in Bourne, Sandwich, and Barnstable included an approximately 200-foot-wide corridor within the existing ROW where work would take place for the Project along the Primary Route (RR-EFSB-29). PAL's surveys did not identify any potentially significant archaeological resources within the study area and MHC concurred with this assessment (Exh. EV-1(A) at 5-46 to 5-47). Eversource supplied a copy of MHC's January 26, 2016, letter documenting the agency's conclusion (Exh. EV-1(A), app. 5-10).

b. Analysis and Findings on Land Use and Historic Resources

The Primary Route follows Eversource's ROW between the Bourne Switching Station east to the West Barnstable Substation. Some station modifications and upgrades are required. Approximately 1,000 feet would separate the Bourne Switching Station site from the closest residential structure. Connecting at the West Barnstable Substation would require expanding the existing western fence line of the substation by roughly 65 feet to allow for new circuit breakers and other terminal equipment but would not involve the addition of new transformers. Expansion of the West Barnstable Substation would generally occur in previously disturbed areas with gravel cover. The West Barnstable Substation proposed new substation fence line would be closer to two residential structures, approximately 286 feet and 390 feet away, respectively. The record shows that Eversource does not need any additional property rights for the fence line expansion and that an approximately 200-foot-wide wooded buffer would remain between the expanded substation and the residential properties. Therefore, the Siting Board finds that land use impacts associated with station modifications and upgrades required for the Project would be minimized.

The Primary Route would not require any change to existing land uses, and abuts no sensitive receptors. The record shows that tree clearing near the Bourne Switching Station and at the West Barnstable Substation would be required for the Primary Route and that providing some additional open-canopy space may be beneficial to certain rare and/or state-listed species. Most of ROW 342, which the Primary Route would follow, is within mapped habitats for state-listed wildlife, invertebrate, and plant species; construction activities within ROW 342 could damage such habitats. The Company would, prior to construction, demarcate exclusion zones for state-listed plant species and implement other measures such as contractor training to minimize and further mitigate the risk of construction-period impacts to rare species habitats.

The record also shows the Company will undertake construction consistent with all state and local regulations and will continue the Company's ongoing vegetation management practices along its ROW during Project operation. The record shows that an Eversource-commissioned survey of the Primary Route did not detect any potentially significant archaeological resources, a result that the MHC supports. Given the limited land use and historic resource impacts along the Primary Route, construction would have minimal impacts.

The Siting Board directs the Company to develop a comprehensive outreach plan for the Project in consultation with the Towns of Bourne, Sandwich, and Barnstable, and submit it to the Siting Board before the start of construction. The outreach plan shall 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 traffic lane and street closures and detours. The outreach plan shall use plain language, include detailed maps, and shall also include information on complaint and response procedures; Project contact information; the availability of web-based Project information; and protocols for notifying schools and/or other sensitive receptors of upcoming construction. The Company shall translate the outreach plan into appropriate languages for the Project area, if and as necessary.

2. Water Resources and Wetlands

a. Company Description

Water supply protection overlay districts are regions important to the recharge of local water supply sources (Exh. EV-1(A) at 5-40). A Zone I Wellhead Protection Area ("WPA") is the protective 400-foot radius required around a public water supply well or wellfield (Exh. EV-1(A)1 at 5-40). Zone II WPAs are those portions of an aquifer that contribute to the recharge of an existing public water supply well or wellfield (Exh. EV-1(A) at 5-40). The Cape Cod Commission Regional Policy Plan has also identified freshwater recharge areas along the Primary and Noticed Alternative Routes for the Project (Exh. EV-1(A) at 5-42). Table 5, below, shows public water supply protection areas within the vicinity of the Project along the Primary Route (Exh. EV-1(A) at 5-40).

Table 5. Water Resources Crossed by Primary Route

Water Resources Designation	Primary Route (Linear Feet)
Interim Wellhead Protection Area	0
MassDEP Approved WPA Zone II	18,920
MassDEP Approved WPA Zone I	0
Barnstable Wellhead Protection Overlay District	2,838
Barnstable Groundwater Protection Overlay District	4,167
Identified Freshwater Recharge Area, Cape Cod Commission ("CCC") Regional Policy Plan)	12,484

Source: Exh. EV-1(A) at 5-42

Eversource anticipated that the Project on the Primary Route would have limited potential to impact groundwater and drinking water supplies during construction (Exh. EV-1(A) at 5-42). To minimize the potential for impacts during construction, Eversource's Stormwater Pollution Prevention Plan ("SWPPP") would include spill protection controls and countermeasures (Company Brief at 84, citing Exhs. EV-1(A) at 5-42; EFSB-W-4). Eversource would prepare and implement the SWPPP in accordance with the USEPA's National Pollution Discharge Elimination System Stormwater ("NPDES") Construction General Permit and the Eversource BMP Manual (Exhs. EV-1(A) at 5-42 and app. 5-4; EFSB-W-4).

Eversource stated it would require its contractors to use properly maintained equipment and to have spill response devices (e.g., drip pans, absorbent pads) accessible at each work location (Exh. EV-1(A) at 5-42). The Company would also require its contractors to adhere to its BMPs, including those relative to the storage and handling of oils, lubricants, and other chemicals during construction (Exh. EV-1(A) at 5-42). Eversource anticipated locating contractor staging areas and yards at developed areas (such as parking lots), where storage of construction materials and equipment, including fuels and lubricants, would not conflict with protection of public surface water supplies or wetland resources (Exh. EV-1(A) at 5-42). Eversource would continue to manage vegetation along its ROW(s) in compliance with the Massachusetts Department of Agricultural Resources regulations in 333 CMR 11.00 and the Massachusetts Pesticide Control Act (G.L. c. 132B), which protect public water supplies (Exh. EV-1(A) at 5-42).

Eversource stated that certain transmission line construction activities (e.g., vegetation clearing, construction access, work pad construction, material laydown) have the potential to affect wetland resource areas and their buffer zones (Exh. EV-1(A) at 5-42). Wetlands and water resources near the Primary Route include freshwater wetlands, cranberry bogs, two certified vernal pools, and two ponds (Sandy Hill and Spruce Ponds) located on ROW 342, and the 100-foot buffer zone to wetland resource areas (Exh. EV-1(A) at 5-43; EV-1(A) app. 6-1, at 9, 13, 14). Eversource reported limited areas of wetlands at the West Barnstable Substation (Exh. EV-1(A) at 5-43 and app. 5-2, at 15, 17, 24). There are no mapped wetland resources in the vicinity of Bourne Switching Station (Exh. EV-1(A), app. 5-2, at 1).

The Company stated that, based on its preliminary design work, it does not anticipate any permanent wetland impacts from the Project (Exhs. EV-1(A) at 5-43; EFSB-W-7). Along the Primary Route, transmission structures 80 through 83 would span cranberry bogs and Sandy Hill Pond in Barnstable, and Eversource would install structures 81 through 83 in the buffer zone to these wetlands (Exh. EV-1(A) at 5-43). The Company stated that neither the 17 shifted structures nor the two intermediate structures would be in wetland resource areas or the 100-foot buffer zone (RR-EFSB-33).

Eversource stated that it coordinated with the conservation commissions in Bourne, Sandwich, and Barnstable during its Massachusetts Environmental Policy Act ("MEPA") Environmental Notification Form ("ENF") review process; the town conservation commissions did not submit any formal comments or otherwise express concerns in response to the Project's ENF (Exhs. EFSB-W-6; EV-4). The Company expects to submit a Notice of Intent with the Barnstable Conservation Commission for work associated with the expansion of West Barnstable Substation (Exh. EFSB-W-6). According to the Company, the Bourne and Sandwich Conservation Commissions do not require further consultations for the Project (Exh. EFSB-W-6).

b. Analysis and Findings on Water Resources and Wetlands

The record shows that the Project would traverse public water supply protection areas along the Primary Route. Hazardous materials used during construction (e.g., fuel, equipment lubricants) could, if accidentally spilled, present a risk to groundwater and/or drinking water resources. To prevent construction-period impacts to groundwater and/or drinking water supplies, Eversource would implement measures including a Project SWPPP consistent with the USEPA's NPDES Construction General Permit and the Company's BMP manual and selecting material laydown and staging areas at developed areas (e.g., parking lots).[43] The Company would continue its vegetation management program within its ROW to protect public water supplies, pursuant to Massachusetts regulations.

With respect to potential wetland impacts, the record shows few resource areas in the vicinity of ROW 342. The potential for impacts exists where the New Line would span cranberry bogs and Sandy Hill Pond in Barnstable and at structures 81 to 83, which Eversource would install within wetland buffer zones. While the Company does not expect any impacts as a result of such work, Eversource indicated it would seek an Order of Conditions from the Barnstable Conservation Commission and committed to inspecting sediment and erosion controls regularly and to repair or replace them promptly as needed.

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[43] The Siting Board addresses spill prevention and response in Section IV.D.7, below.

With respect to public water supply, the potential for impacts is negligible along the Primary Route. Similarly, while there is potential for wetland impacts in construction of Primary Route transmission line structures 80 to 83, these impacts have been mitigated. The Siting Board therefore finds that the Primary Route impacts for the Project would be largely temporary, mitigated throughout construction, and would comply with all permit requirements. Accordingly, water resource and wetland impacts along the Primary Route would be minimized.

3. Noise

a. Company's Description

Eversource indicated that noise impacts from construction would vary with the proximity of receptors along route, the equipment used for construction, and the hours of equipment operation (Exh. EV-1(A) at 5-32). During Project construction, intermittent use of heavy machinery such as vegetation removal equipment, jackhammers, drilling rigs, cranes, back hoes, and large trucks, depending on the approved route, would temporarily increase ambient noise levels near work sites (Exh. EV-1(A) at 5-32). Eversource stated that potential noise impacts from construction would be greatest during typical construction work hours, from Monday through Friday, 7:00 a.m. to 7:00 p.m., and on Saturday from 9:00 a.m. to 5:00 p.m., assuming permission of local authorities and as daylight and weather conditions allow (Exhs. EFSB-NO-3; EV-1(A) at 5-32).[44,45]

The Company analyzed Project noise along the Primary Route. For its analysis, Eversource used a receptor reference point of 50 feet from the noise source and extrapolated to estimate noise levels at the nearest residential structure from the route (Exh. EV-1(A) at 5-32). The Company reported that typical sound levels of equipment used for overhead construction

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44 Eversource recognized that in some instances, and as dictated by MassDOT (for Route 6) or by the local authority, night work might be necessary to minimize daytime impacts to commuters and abutters (Exhs. EFSB-NO-4; EV-1(A) at 5-32).

45 Noise ordinances in the communities where construction would take place do not specify requirements for construction noise (Exh. EV-1(A) at 5-32 and app. 5-7).

would range from 85 to 95 A-weighted decibels ("dBA") at 50 feet from the Project ROW (Exh. EV-1(A) at 5-33).

The Company counted 23 residential units located within 50 feet of the edge of the ROW and reported that the nearest residences to the proposed transmission line structures would be approximately 67 feet (Exh. EV-1(A) at 5-33). Extrapolating the typical sound levels of equipment used for overhead construction, Eversource estimated that sound levels at these residences would likely range from 83 to 93 dBA (Exhs. EV-1(A) at 5-33 to 5-35, app. 5-1, at 9).[46] Eversource noted that the duration of construction noise at a particular location varies based on the activity (e.g., vegetation removal and site preparation, structure installation, wire stringing) (Exh. EFSB-NO-2). The Company reported that, in general, construction-related sound at would be occur in intermittent periods of approximately three to four days, amounting to a total of two to three weeks (Exh. EFSB-NO-2).

Eversource explained that buildings and/or residences would provide significant attenuation of associated construction sound levels (Exh. EV-1(A) at 5-35). The Company stated that an outdoor-to-indoor sound level reduction of 27 dBA was typical during the winter (windows closed), with reductions of 17 dBA during the summer (windows open) (Exh. EV-1(A) at 5-35). Eversource indicated that the duration of exposure to noise impacts of construction at residences would vary based on the construction activity underway (Exh. EFSB-NO-2). The Company anticipated that work to complete overhead transmission line construction would proceed relatively quickly, limiting the duration of potential daytime construction noise impacts to approximately two-to-three weeks at a given ROW location (Exhs. EFSB-NO-2; EV-1(A) at 5-35).

Eversource stated that the Company has established several communication channels, a 24-hour hotline and a website (Exh. EFSB-NO-13). Eversource guaranteed to respond to all complaints in a timely manner, within 24 to 48 hours to the extent possible (Exh. EFSB-NO-13). Eversource indicated that, if its initial response does not resolve the matter, the Company would

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[46] By comparison, Eversource noted that the nearest residence to the overhead segment of the Noticed Alternative Route would be approximately 112 feet (Exhs. EV-1(A) at 5-35 n.52, app. 5-2, at 1).

continue to make every effort to reach a mutually agreeable solution to the complaint (Exh. EFSB-NO-13).

Eversource stated that no new transformers or other sources of sound from new equipment would be required at the West Barnstable Substation or the Bourne Switching Station for the Base Project (Exh. EV-1(A) at 5-38, 5-39). The Noticed Variation, however, would require additional transformers (Exh. EFSB-N-25). Eversource states that, if it needed to operate the Noticed Variation at 345 kV, it would return to the Siting Board at that time with a description of the need for, and impacts associated with, operation at 345 kV (RR-EFSB-10).[47] With respect to noise from corona effects, Eversource represented that it is not an issue at the 115 kV voltage level (Exh. EFSB-NO-14).

b. Analysis and Findings on Noise

The record shows that the potential for noise impacts from construction activities during Project installation depends on the equipment used, the hours of work, and the receptors along the route. Project construction would create noise regardless of the route selected. The record shows that typical construction activities such as truck movements, work with concrete, and heavy equipment operations would be the source of the bulk of the noise in the transmission line construction process.

The number of receptors adjacent to construction is an important determinant of the comparative impacts of construction-related noise. Overhead line construction entails sustained construction noise (e.g., structure installation, wire stringing) at discrete locations along the route. The record also shows that the Base Project would not involve additional sources of noise, such as transformers, to be installed at either the Bourne Switching Station or West Barnstable

47 With respect to corona effects and the Noticed Variation, the Eversource reiterated its intention, if authorized to construct the Noticed Variation, to operate the proposed transmission line at 115 kV until such time as it becomes necessary to operate the line at 345 kV (Company Brief at 82, citing Exh. EFSB-NO-14). Eversource also stated that the Noticed Variation (but not the Base Project) would include at the time of initial construction features such as bundled conductor and corona rings to minimize corona effects and associated noise should the line be operated at 345 kV (Exh. EFSB-NO-14).

Substation. With respect to operational noise for the Noticed Variation, any noise impacts associated with new substation equipment necessary for operating the New Line at 345 kV would be evaluated as part of a separate proceeding.

Eversource has committed to strict compliance (see Section VI.D.5), for itself and its contractors, with MassDEP's anti-idling regulations. In addition, Eversource will use low-noise generators and schedule loud activities to avoid nighttime hours to the extent possible. The record shows that, assuming permission of local authorities, and as daylight and weather conditions allow, Eversource will confine most work on the Project to the hours of 7:00 a.m. to 7:00 p.m., Monday through Friday, and to the hours of 9:00 a.m. to 5:00 p.m. on Saturday. The Siting Board accordingly directs the Company to limit construction to the above schedule, except by request of the Towns of Bourne, Sandwich, and Barnstable, or of an agency with oversight of operations potentially affected by the Project, such as MassDOT. Work requiring longer continuous duration than normal construction hours allow, such as cable splicing, is exempted from this condition. The Siting Board also directs the Company to coordinate with the Towns of Bourne, Sandwich, and Barnstable, and MassDOT or other jurisdictional agencies, to determine facilities and areas, such as schools and school grounds, where construction hour limitations may be appropriate to mitigate noise or other concerns.

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, Eversource shall seek written permission from the relevant local town authority before the commencement of such work and provide the Siting Board with a copy of such permission. If Eversource and town 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.

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

4. Visual

a. Company Description

Eversource reported that existing transmission lines had previously altered the viewsheds of the properties the Primary Route (Exhs. EV-1(A) at 5-45 to 5-46; EFSB-V-3). According to the Company, using the Primary Route for the Noticed Variation would not involve additional tree removal with the potential to alter the overall landscape and viewshed (Exhs. EV-1(A) at 5-45; EFSB-V-3). For the Primary Route the New Line would be: (1) installed within the southern portion of ROW 342, parallel to existing the Company's existing 115 kV (Line 122) and 345 kV (Line 399) transmission lines; and (2) installed on gray steel monopoles structures, consistent with the existing lines in the right-of-way (Exh. EV-1(A) at 5-10; app. 6-1, at 2, fig. A2-B). Structure heights for the Noticed Variation would be approximately the same height as existing structures between the Bourne Switching Station and Forestdale Road, in Sandwich; however, between Forestdale Road and the West Barnstable Substation, structures for the Noticed Variation would be taller than existing structures (Exhs. EV-1(A) at 5-10, fig. 5-4b; EFSB-V-5(1); RR-EFSB-10).

For the Noticed Variation, most structures would still line up with existing structures but locations of seventeen structures would be shifted longitudinally along the right-of-way and two intermediate structures would be added (RR-EFSB-10). Shifting these structures within the ROW would result in some locations where new structures are not directly aligned with existing structures; however, Eversource stated that only three of the "mismatched" structures would be located closer to residential properties or a public road crossing compared to the Base Project (RR-EFSB-12).[48] Eversource maintains that the visual impact associated with these shifts is minimal and would not significantly alter or modify existing viewsheds (Company Brief at 89, citing RR-EFSB-12; RR-EFSB-12(1)). Similarly, Eversource argues that the two new intermediate structures required for the Noticed Variation would not have a material effect on existing viewsheds (Company Brief at 89, citing RR-EFSB-12; RR-EFSB-12(1)). Eversource

[48] Eversource indicated that most of the relocated structures would be in "remote" areas of the ROW, distant from neighborhoods where visual impacts of mismatched structures could potentially be a concern to abutters (RR-EFSB-12).

stated that it would meet with nearby abutters to discuss appropriate and reasonable visual mitigation to the extent it is desired in select locations (RR-EFSB-32).

Eversource indicated that the Bourne Switching Station would not become more visible from accessible locations along the Primary Route (Exhs. EFSB-V-1; EFSB-V-3; EFSB-V-4).[49] Eversource conducted a visual assessment of the West Barnstable Substation and chose a one-mile distance because it would likely offer the greatest potential for residents to view the facility and its proposed expansion (Exhs. EFSB-V-1; EFSB-V-1(1)). Based on its visual assessment, the Company anticipated that the West Barnstable Substation would be visible from approximately 0.6 percent (13 acres) of the one-mile study area; visibility would be limited, generally, to the substation area itself, portions of a ROW to the south and lands immediately to the north (Exh. EFSB-V-1(1) at 13). The visual assessment indicated that there would likely be only limited opportunities for the general public to access views, with the exception of the land to the north (Exh. EFSB-V-1(1) at 13).

The Company indicated a small opportunity for views of the West Barnstable Substation Expansion from Route 6, but Eversource anticipated that these would be fleeting; such views, according to the Company, would also contain existing transmission structures (Exh. EFSB-V-1(1) at 13). Eversource indicated that residents on Oak Street and other streets immediately adjacent to the substation might have partial views of the facility under the existing tree canopies if there were no shorter vegetation present (Exh. EFSB-V-1(1) at 13). The Company expected the substation expansion to be visible at locations where the existing West Barnstable Substation is already visible (Exhs. EFSB-V-1(1) at 13; EFSB-V-4).

b. Analysis and Findings on Visual Impacts

The Company would construct its Project along the Primary Route within an existing Eversource ROW already used for overhead transmission lines. The record shows that the use of

[49] Eversource noted ongoing work to replace the existing Bourne Switching Station and reported that given that construction and the remote location of the switching station, passers-by would not discern any difference in the switching station viewshed (Exhs. EFSB-V-1; EFSB-V-3).

grey colored steel monopole transmission structures for the Primary Route would be consistent with existing transmission lines in ROW 342. For the Noticed Variation, structures would be taller than existing structures east of Forestdale Road and, in some instances, new structures would not be aligned with existing structures. At the West Barnstable Substation, above-ground structures for the Noticed Variation would not stand out within the existing viewshed.

Transmission lines and related equipment within ROW 342 will not alter the general character of views. Although transmission structures for the Noticed Variation would be taller and wider, they would be similar enough (in height, material, line configuration, and horizontal span) to afford only a modest visual change to surrounding land uses. Prior to construction, the Siting Board directs the Company to notify by direct mail or hand-delivery all property owners with residential structures within 300 feet of (1) any new transmission structure that would be "mismatched" with existing structures in ROW 342, and (2) both "intermediate" structures required for the Noticed Variation. Where Eversource would install such structures for the Noticed Variation, the Company shall offer to those property owners with residential structures within 300 feet the opportunity to install reasonable off-site visual mitigation (such as shrubs, trees, or fences) if those measures do not interfere with operation and maintenance of transmission lines.

With respect to station improvements, the record shows that the distance of the Bourne Switching Station from the closest residences for expansion of the switching station is unlikely to increase or change views from nearby private properties. The Company undertook a visual assessment of the expanded West Barnstable Substation and the surrounding area because expansion of the West Barnstable Substation would make it more widely visible. Views would be limited to the substation area itself, portions of the ROW to the south, and land immediately to the north. Views from the Route 6 highway would be fleeting. The assessment shows, however, that residents on Oak Street and other streets immediately adjacent to the substation might have filtered views of the facility during leaf-off seasons. The Siting Board directs Eversource to discuss any such affected views with property owners including reasonable off-site visual mitigation, and to mitigate and minimize view impacts to the reasonable satisfaction of said owners.

The Siting Board observes that the taller and heavier poles of the Noticed Variation would likely be more visible than the overhead lines and structures now in ROW 342 but would be consistent with the present use and character of the viewshed. The Siting Board finds that visual impacts of the Noticed Variation along the Primary Route with the would be minimized.

5. Air

a. Company Description

Eversource committed to complying with the State Implementation Plan for Air Quality in addition to the Federal Clean Air Act (Exh. EV-1(A), app. 6-1, att. E at 13). Eversource stated that the main sources of potential construction-related air quality impacts would be emissions from construction equipment, motor vehicles, and fugitive dust emissions from disturbed soil surface areas (Exhs. EV-1(A), app. 6-1, att. E at 13; EFSB-A-2). The Company committed to contractually requiring its construction contractors to adhere to all applicable federal and state regulations regarding control of dust and emissions (Exhs. EV-1(A), app. 6-1, att. E at 13; EFSB-A-2). More specifically, Eversource stated that the Company and its contractors would comply with anti-idling state law (G.L. c. 90, Section 16A and G.L. c.111, Section 142A – 142M) and MassDEP regulations (310 CMR 7.11(1)) (Exhs. EV-1(A), app. 6-1, att. E at 13; EFSB-A-2).[50]

Eversource explained that it would primarily control dust generated from earthwork and other construction activities by spraying with water, with other dust suppression methods implemented if necessary (e.g., vegetative cover, barriers or plastic coverings, regular pavement sweeping during construction, sediment tracking pads at construction entrances) (Exh. EFSB-A-2). In addition, the Company stated that it would require several measures of its contractors to further reduce potential emissions and minimize impacts from construction vehicles, including:

- use of well-maintained equipment with functioning mufflers, as applicable, and training for construction contractors with respect to same and with the Company's anti-idling and other relevant policies;

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50 MassDEP regulation 310 CMR 7.11(1)(b) restricts vehicle idling to no more than five minutes with a limited number of identified exceptions (Exh. EV-1(A) app. 6-1, att. Eat 13).

- use of muffling enclosures on continuously operating equipment (e.g., air compressors and welding generators); and

- monitoring of construction practices to minimize unnecessary transfers and mechanical disturbances of loose materials.

(Exhs. EV-1(A), app. 6-1, att. E at 13-14; EFSB-A-2).

Eversource stated that it would direct its contractors to retrofit any diesel-powered non-road construction equipment rated 50 horsepower or above to be used for 30 or more days over the course of the Project with USEPA-verified (or equivalent) emission control devices (e.g., oxidation catalysts or other comparable technologies) (Exh. EV-1(A) app. 6-1, att. E at 14). Eversource also indicated that it would require contractors to use ultra-low sulfur diesel ("ULSD") fuel in their diesel-powered construction equipment used for the Project (Exh. EV-1(A) app. 6-1, att. E at 14). The Company represented that dust and emissions control would be part of regular SWPPP inspections and that a qualified SWPPP inspector would request performance of additional measures as needed (Exh. EV-1(A) app. 6-1, att. E at 14).[51]

The Project includes installation of three 115 kV breakers containing sulfur hexafluoride ("SF_6") – one at the rebuilt Bourne Switching Station and two at the West Barnstable Substation (Exh. EFSB-A-1). Each new 115 kV breaker would contain 71 pounds of SF_6 (Exh. EFSB-A-4). Eversource stated that the design, installation, and management of the new 115 kV breakers for the Project would be identical to that for the existing 115 kV breakers at these substations and that the Company would comply with applicable MassDEP SF_6 requirements (Exh. EFSB-A-1).

b. Analysis and Findings on Air Impacts

The record shows that the potential for Project-related emissions would exist during construction, regardless of the route selected. The Company has made a number of commitments to limit potential air impacts of the Project, including a commitment to implement construction BMPs for dust suppression and control and to comply with state law, regulations,

[51] According to the Company, no activity associated with the Project would require air sampling by regulation (Exh. EV-1(A)2, app. 6-1, att. E at 13).

and requirements concerning air pollution/air quality standards, anti-idling requirements, diesel retrofits, and ULSD fuel.

In conjunction with Project construction, the Company will add equipment containing SF_6 at the Bourne Switching Station (one new 115 kV circuit breaker) and the West Barnstable Substation (two new 115 kV circuit breakers). The record shows that the equipment and its operation and maintenance will be the same as that of existing equipment at the identified Bourne and West Barnstable facilities. In addition, the Company has committed to complying with MassDEP regulations regarding SF_6.

The Siting Board finds that air impacts of the Noticed Variation along the Primary Route would be minimized.

6. Traffic

a. Company Description

Eversource emphasized that construction of the Primary Route would be within an existing Eversource ROW and would involve a limited number of aerial crossings of roadways, including Forestdale Road (Route 130), Quaker Meetinghouse Road, Meetinghouse Way, Route 6, Pine Street, and Oak Street (Exhs. EFSB-T-9; EV-1(A)1, at 5-32). The Company stated that aerial crossings usually result in short-term impacts from such activities as stringing wires over the roadways and associated traffic disruption (Exhs. EFSB-T-9; EV-1(A)1, at 5-32).[52] With respect to the Noticed Variation, the Company indicated that it might need access to the median of Route 6 for installation of Structure 75A (RR-EFSB-25; RR-EFSB-27).[53] In this

[52] The Company reported that once construction vehicles reached the ROW, particularly when operating in remote areas, they would rely on the existing gravel access roads; these run nearly the full length of the ROW (Exh. EFSB-T-9). Wire stringing over Route 130, Route 149, and Route 6 would occur during off-peak commuter hours with police details, as directed by MassDOT and local officials (Exh. EFSB-T-9).

[53] Eversource indicated that, pending further engineering analysis and consultation with MassDOT, it might be possible to avoid installation of Structure 75A in the median of Route 6 (RR-EFSB-30). Should the structure be necessary, however, the Company estimated that preparation of the site for Structure 75A would take three-to-four weeks of intermittent construction and associated traffic management measures (RR-EFSB-30).

case, Eversource stated that the work would require a Non-Vehicular Access Permit from MassDOT, including a site-specific Traffic Management Plans ("TMP") for site preparation, foundation/ structure installation, and wire connections (RR-EFSB-27). The permit application would include a detailed description of the Company's construction methodology, access plan, limits of work plan, schedule (including proposed work hours), and site restoration measures; Eversource indicated that MassDOT would prescribe conditions on the work, as necessary (RR-EFSB-27). Foundation installation and wire pulling work might involve off-peak commuter hours with police details (RR-EFSB-27). MassDOT might also require that Eversource undertake work outside the summer tourism season, generally between Memorial Day and Labor Day (RR-EFSB-27). The Company stated that town official from the Towns of Sandwich and Barnstable would restrict the timing of in-road construction to avoid impacts to residents and businesses during tourist season – typically summer months (Exh. EFSB-T-9).

Eversource explained that contractors would be responsible for obtaining an off-site marshalling yard with capacity for construction worker parking (Exh. EFSB-T-2). The Company stated that it would encourage work crew carpooling, including carpooling between the marshalling yard and work sites; there would be no parking on public roadways (Exh. EFSB-T-2). Eversource noted that it would make available the Bourne Switching Station and West Barnstable Substation for contractor parking (Exh. EFSB-T-2).

The Company indicated that it had not yet developed TMPs for the Primary Route (Exh. EFSB-T-6).[54] Regardless, Eversource would schedule the delivery of materials and/or equipment during off-peak traffic hours when possible and in coordination with the affected municipalities and with MassDOT (Exh. EFSB-T-6). Eversource stated that it would review its construction plans (e.g., staging, work hours) with relevant municipalities and MassDOT (Exh. EFSB-T-6). Eversource indicated that its TMPs would detail efforts to minimize impacts to area businesses and other abutters (Exh. EFSB-T-13). The Company committed to ensuring safe and

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54 Eversource stated that it would typically develop TMPs, including the possibility of delayed construction start times and/or nighttime construction, in consultation with the appropriate municipal officials and other stakeholders (e.g., MassDOT) after further work on transmission line design (Exh. EFSB-T-9).

unencumbered access to abutting residential, commercial, and industrial properties along the route of the Project (Exh. EFSB-T-13).

Eversource did not expect to work at night unless required by a permitting agency, municipality, or MassDOT (Exh. EFSB-T-8). Eversource stated that night work typically occurred at locations with high traffic volumes and congestion during the day or where commercial and/or industrial land uses were prominent (Exh. EFSB-T-8). The Company stated that areas where night work might minimize daytime impacts to commuters and abutters would likely be limited to MassDOT-jurisdictional areas at Route 6 but could include access points along the ROW for structure and wire deliveries (Exh. EFSB-T-8).

Eversource pledged to adhere to the Federal Highway administration's Manual of Uniform Traffic Control Devices ("MUTCD") to ensure that both vehicular and pedestrian traffic would be safely routed around all street and curbside construction activities (Exh. EFSB-S-6). This would include, during active work hours, the use of police details, cones, barricades, signage, electronic signboards, or any combination of the above, as required by the MUTCD (Exh. EFSB-S-6).

The Company stated it would meet with MassDOT, municipalities, police departments, the JBCC, and/or other jurisdictional entities, as appropriate, to discuss roadway and traffic safety after finalization of Project design and the completion of the associated construction sequence (Exh. EFSB-T-5). Eversource stated it would, with the listed entities, jointly develop final traffic control staging and planning (Exh. EFSB-T-5). Plans would include, among other elements, types and location of signage, requirements for police details, and timing of various construction-related activities (Exh. EFSB-T-5).

The Company does not anticipate that construction of the Project along the Primary Route would affect school bus routes or school activities (Exh. EFSB-T-12). Police details would be assigned as necessary (Exh. EFSB-T-12). Project work would be coordinated with local officials and police and timed to avoid interference with school arrivals and departures and with school sessions (Exh. EFSB-T-12).

Eversource did not anticipate parking prohibitions in work areas during construction (Exh. EFSB-T-3). The Company indicated, however, that it would coordinate with potentially

affected residents and businesses approximately three weeks prior to proximate construction activities that might affect normal operations including, but not limited to, parking, pedestrian traffic flow and access, deliveries, and trash removal (Exh. EFSB-T-3). Eversource stated it would, if needed, provide alternative parking options for residents and businesses (Exh. EFSB-T-3).

Eversource indicated stated it would maintain communication with Barnstable, Bourne, and Sandwich officials throughout all phases of the Project and notify affected stakeholders of upcoming construction activities (Exh. EFSB-T-4). Prior to the beginning of construction, the Company specified that it would update municipal officials with an anticipated timeline for construction and address any concerns (Exh. EFSB-T-4). Eversource would send mailers to all property owners within 300 feet of the ROW to notify those affected of the start of construction and the anticipated timeline (Exh. EFSB-T-4). The Company would, in addition, conduct door hanging activities for abutting property owners and businesses to provide information on what to expect during construction and to address any questions or concerns (Exh. EFSB-T-4). Eversource stated it would follow strict health and safety protocols to address Covid-19-related matters (Exh. EFSB-T-4). Throughout the duration of the Project, the Company pledged to provide construction updates via door hangers, e-mails, and phone calls in advance of new or major work, such as delivery of large equipment, extended work hours, or other potentially disruptive activities (Exh. EFSB-T-4).[55]

b. Analysis and Findings on Traffic

The record shows that some limited traffic impacts from stringing wires across public roadways would result from constructing the Project along the Primary Route. Wire stringing over larger roadways encountered during overhead route construction would be during off-peak hours of traffic flow and would occur with police details in place as directed by jurisdictional agencies and local officials.

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[55] Eversource stated that, throughout the Project, it would also maintain a public website for construction updates: www.eversource.com/content/mid-cape-project (Exh. EFSB-T-4).

The record shows that the Noticed Variation may require the installation of a structure in the median of Route 6 (i.e., Structure 75A). MassDOT permit conditions would minimize traffic disruption resulting from Structure 75A installation; MassDOT analysis may determine, however, that Structure 75A is unnecessary, avoiding associated construction impacts to traffic.

Eversource plans to assign to its contractors the responsibility of obtaining and managing marshalling yard space with capacity for off-site worker parking and to make available the Bourne Switching Station and the West Barnstable Substation for additional contractor parking, as necessary. Eversource would develop TMPs for the Project in conjunction with municipal officials, the JBCC, MassDOT, police departments, and other jurisdictional authorities for traffic supervision. Eversource indicated that its TMPs would address minimization of impacts to area businesses and residences, including safe and unencumbered access to abutting residential, commercial, and industrial properties. Eversource will also adhere to the MUTCD. The record shows that construction of the Project along the considered routes would not affect schools, their bus routes, or school activities.

The Siting Board notes that Eversource has committed to working closely with jurisdictional roadway authorities to develop TMPs that reflect that coordination to reduce Project traffic impacts to the extent possible. The record shows that Eversource would develop its TMPs in accordance with FHA and MassDOT guidelines. The Siting Board specifically directs Eversource to to develop TMPs for the Project and to arrange for off-peak delivery of Project equipment and materials. The Siting Board also directs the Company to submit a copy of final TMPs to the Siting Board 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 to ensure availability of traffic-related planning information for the Project area.

In addition to developing an appropriate TMP, the Siting Board directs the Company to develop an outreach plan to keep property owners, business, and municipal officers (e.g., fire, police, and emergency personnel) up-to-date on anticipated construction activities. Traffic impacts occurring in conjunction with work at the Bourne Switching Station and the West Barnstable Substation would be temporary and associated with construction vehicle traffic and equipment delivery. The Siting Board concurs with the Company's plan to use mitigation

measures such as use of traffic control devices and coordination with police and fire departments to minimize potential traffic congestion during construction at the identified substation and switching station.

With the implementation of the above conditions, the Siting Board finds that traffic impacts of the Noticed Variation along the Primary Route would be minimized.

7. Hazardous Waste and Safety

a. Company Description

The Company did not identify any site on or directly abutting the Primary Route where a documented release of oil and/or hazardous materials occurred, or where past land uses potentially resulting in contamination have been documented in the MassDEP Bureau of Waste Site Cleanup online database, pursuant to the Massachusetts Contingency Plan ("MCP") (Exhs. EV-1(A) at 4-35, app. 4-1, fig. 4-8).

Solid waste generated for the Project using the Primary Route would include wood, paper, cardboard, and plastic packaging waste, as well as asphalt, concrete, wire, and other demolition debris (Exh. EFSB-S-2). Eversource stated that it would dispose any solid waste generated by the Project in accordance with applicable regulations; there would be no landfill disposal of materials characterized by MassDEP as waste ban materials, in accordance with 310 CMR 19.01.017(3) (Exh. EFSB-S-2). To the extent practicable, materials would be recycled (Exh. EFSB-S-2).

Eversource reported that it maintains a 24/7 spill response program for immediate activation in the event of a potentially harmful spill (Exhs. EFSB-S-3; EFSB-S-4).[56] The Company's spill response includes assessing, controlling, and containing the spill; subsequent cleanup would involve the removal of all impacted media in accordance with applicable

[56] The Company provided a copy of its spill response program, "Oil and Hazardous Material Spill Release Notification/Contingency Plan Policy and Procedure" (Exhs. EFSB-S-3; EFSB-S-7(1)).

regulations (Exhs. EFSB-S-3; EFSB-S-4).[57] The Company will require its contractors to inspect vehicles and equipment on a daily basis and, with an attendant present, refuel outside wetlands and buffer zones to the extent feasible (Exh. EFSB-S-3). The Company provided its Oil & Hazardous Material Spill Release Notification/Contingency Plan Policy & Procedure, which documents the roles and responsibilities for spill response and will apply to the Project (Exhs. EFSB-S-7; EFSB-S-7(1) at 3).

During post-construction operations and maintenance, the West Barnstable Substation expansion would use additional SF_6 gas-insulated switching equipment, consistent with practice at the existing substation and MassDEP requirements (Exh. EFSB-S-3). There would be no change to the use or amount of insulating fluid and battery electrolyte as a result of the Project (Exh. EFSB-S-3). Post construction, the Company anticipated no generation of solid waste due to transmission line operation and no increase in the amount of solid waste presently generated during normal operation of the West Barnstable Substation (Exh. EFSB-S-2).[58]

Eversource stated that it would require its contractors to submit a Project Safety Plan pursuant to the Company's internal safety standards, OSHA, and other applicable regulatory agencies (Exh. EFSB-S-1). The Project Safety Plan would include work-related safety protocols such as scheduled safety meetings, pre-work briefings, insulation and isolation of electrical equipment, and sheeting of excavations (Exh. EFSB-S-1). Eversource stated that, as part of its contract specifications, it would require its contractors to have a "dedicated safety individual" on site during construction to monitor compliance with all safety means and methods (Exh. EFSB-S-1). In addition, Eversource safety professionals would perform random inspections to ensure safety compliance (Exh. EFSB-S-1). The Company committed to providing construction

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57 Eversource stated that it would have spill kits available to respond to release of substances such as hydraulic oils, greases for lubricating, and gasoline and diesel construction equipment fuels (Exhs. EFSB-S-3; EFSB-S-5).

58 At the new Bourne Switching Station, some of the new equipment will contain mineral oil dielectric fluid ("MODF") in the instrument and station service transformers (Exh. EFSB-S-5). The Company reported that this equipment does not ordinarily require secondary containment measures and will not contain large quantities of materials that might adversely affect local groundwater supplies (Exh. EFSB-S-5).

updates to those living and working in the vicinity of the ROW, as well as to the municipalities, to inform them as to the nature and location of construction (Exh. EFSB-S-1). Eversource indicated it would consult with its contractors to determine and implement appropriate security measures, as necessary, to secure Project work sites and discourage unauthorized access (Exh. EFSB-S-1).

Eversource addressed comments and questions received at the public comment hearing about perceived electrical currents at one or more residences, sometimes described as "stray voltage," under existing conditions near the proposed Project site (Tr. A, at 51-53, 93).[59] The Company concluded that identified problems of stray voltage were not associated with equipment at the nearby Oak Street, West Barnstable, or Sandwich Substations, nor with electromagnetic fields from those substations (Exhs. EFSB-SV-3; EFSB-SV-5). In any event, the Company reported that it investigated the concerns of the commenter residing near the West Barnstable Substation, and that the condition was remedied by installing enhanced grounding on his premises on July 16, 2020 (Exh. EFSB-SV-2).

b. Analysis and Findings on Hazardous Waste and Safety

The record shows that Eversource did not identify any sites of known contamination along the Primary Route, therefore, the likelihood of encountering subsurface contamination during construction is low. Eversource pledged to recycle materials to the extent practicable, and otherwise to dispose of solid waste (primarily packaging waste and demolition debris) in accordance with applicable regulations in accordance with 310 CMR 19.01.017(3).

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59 According to the Company, if there is a voltage differential between any two points, including the neutral wire in a distribution circuit and local ground, when the two points are connected by a conductive (or semi-conductive) path, current will flow (Exhs. EFSB-SV-2; EFSB-SV-4). Humans (and other animals) may feel a sensation from this current flow (Exh. EFSB-SV-2). Whether the current flow creates a sensation in a particular case depends upon the amount of current flowing and the individual's threshold of sensation (Exh. EFSB-SV-2). Eversource stated that the chief challenge in establishing grounding systems specifically on Cape Cod is the characteristically high soil resistivity caused by the sandy nature of the soils (Exh. EFSB-SV-2). The Company explained that the impedance of the network is such that current may flow through paths other than the intended path (Exh. EFSB-SV-2).

Construction of the Bourne Switching Station and the West Barnstable Substation might include hydraulic oils, greases for lubrication, and gasoline and diesel construction equipment fuels. The record shows that the Company and its contractors would be prepared with spill kits at all times to respond to an accidental release of these substances. The record shows that Eversource maintains a 24/7 spill response program activated immediately when a potentially harmful spill occurs. The program involves assessing, controlling, and containing any spill(s) and includes collection of all spill-affected media for disposal in accordance with applicable regulations. In addition, Eversource and its contractors would inspect vehicles and equipment on a daily basis and refuel construction vehicles outside wetlands and buffer zones to the extent feasible.

With respect to hazardous materials used during Project operation and maintenance, the record shows that Eversource would use and store hazardous materials consistent with existing practice. Use and amount of insulating fluid and battery electrolyte would remain the same after completion of Project construction; however, the Project requires additional SF_6 gas-insulated switching equipment at the West Barnstable Substation and Bourne Switching Station. SF_6 is already in use at the West Barnstable Substation and additional quantities of the insulating gas would be managed consistent with existing practices and MassDEP regulations. The record shows no generation of solid waste after Project completion and no increase in solid waste during normal operation of the West Barnstable Substation and Bourne Switching Station. The record shows that while the Bourne Switching Station would contain some MODF, it would not contain large enough quantities that might adversely affect local groundwater supplies.

Eversource pledges that its contractors will submit to the Company a Project Safety Plan meeting all applicable federal, state, and local safety standards for Project construction, in addition to the Company's own safety policies and best practices. The Company will also require, as part of its contract specifications, that its contractors have a "dedicated safety individual" on staff to ensure compliance with all safety procedures and will itself foster safety compliance with random safety inspections. The record shows that Eversource will keep stakeholders (business and property owners along the ROW, municipalities) up-to-date on the location, timing, and nature of scheduled construction.

Based on the record, the Siting Board finds the construction of the Noticed Variation along the Primary Route would minimize hazardous waste and safety impacts.

8. Magnetic Fields

a. Background

Magnetic fields are present whenever current flows in a conductor; they are not dependent on the voltage of the conductor (Exh. EV-1(A) at 5-25 to 5-26). At any point, the strength of the magnetic field depends on characteristics of the source; in the case of power lines, magnetic-field strength is dependent on the arrangement of conductors, the amount of current flow, and distance from the conductors (Exhs. EV-1(A) at 5-25 to 5-26; EV-1(A) app. 5-6, at 2). Magnetic fields from transmission lines generally decrease with distance from the conductors (Exh. EV-1(A) app. 5-6, at 1).

Over the years, some epidemiology studies have reported statistical associations between power-frequency magnetic fields and diseases such as childhood leukemia (Exh. EFSB-MF-13(1) at 11-12). 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 (Exh. EFSB-MF-13(1) at 12-14). 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. Beverly-Salem at 103; Andrew-Dewar at 88; New England Power Company d/b/a National Grid, EFSB 13-2/D.P.U. 13-15/13-152, at 88 (2014) ("Salem Cables").

b. Company Description

Eversource stated that magnetic field levels, measured in milliGauss ("mG"), vary moment-to-moment, depending on current flow (Exh. EV-1(A)1, at 5-26). The Company explained that calculations to predict levels of magnetic fields generated from a specific source, a new 115 kV transmission line, for example, were therefore based on predicted line loadings (Exh. EV-1(A)1, at 5-26). Eversource maintains that calculations based on the annual average load provide the best estimate of magnetic fields on a typical day (Company Brief at 74, citing

Exh. EV-1(A), at 5-26). Magnetic field levels vary with current flow in response to customers' electricity use and generation dispatch (Exh. EV-1(A) at 5-28). Eversource stated that magnetic field levels would vary along different portions of the New Line consistent with the type of proposed construction (e.g., overhead line, underground line, or splice vault) (Exh. EV-1(A) at 5-28).[60] In Table 6 below, Eversource presented calculated magnetic field levels for the Noticed Variation along the Primary Route, operated at 115 kV (Exh. EV-1(A)1, at 5-29 to 5-31). Eversource stated that the nearest residences to the proposed transmission lines are approximately 67 feet away (Exh. EV-1(A) at 5-33).

The Company explained that although both the Project and Noticed Variation would operate at 115 kV, magnetic field levels would differ due to the 345 kV structures being on a different alignment and conductors having a different configuration (Exh. EV-1(A) at 5-30). Eversource stated that all its routing options include relatively low- or no-cost measures to reduce magnetic field levels (Exh. EV-1(A) at 5-31). Among these measures is the height of the conductors for the overhead segments, which exceeds National Electrical Safety Code ("NESC") standards for conductor clearance of 115 kV lines (Exh. EV-1(A) at 5-31). This additional height results in lower magnetic field levels at ground level (Exh. EV-1(A) at 5-31). Eversource reported, in addition, that it had optimized the phasing of the proposed lines to maximize cancellation of magnetic fields between circuits (Exh. EV-1(A) at 5-31).

The Company also calculated magnetic field in mG under average annual loads in the vicinity of the West Barnstable Substation for the existing system and the Project (Exhs. EFSB-MF-3(S1); EFSB-MF-3(S1)(1)). The calculations indicate that in-the-field magnetic field contributions at the nearest homes from the substation and transmission lines would be less than 0.1 mG (Exhs. EFSB-MF-3(S1); EFSB-MF-3(S1)(1)). The Company indicated that the nearest home to transmission lines leaving West Barnstable Substation is approximately 700 feet to north (Tr. 3, at 480). Eversource indicated that the distance between Bourne Switching Station

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60 Eversource provided a summary of the load flows and voltages given by the Company to its consultant for magnetic field calculations at average annual loading for the Project along the Primary or Noticed Alternative Route and for the Noticed Alternative (Exhs. EFSB-MF-1(1); EFSB-MF-9(1); EV-1(A)1, at 5-29 to 5-31).

and residences is such that the switching station would have effectively zero contribution to magnetic fields at residences (Exhs. EFSB-MF-3(S1); EFSB-MF-3(S1)(1)). According to the Company, the nearest residential neighborhood is approximately 1000 feet away from the Bourne Switching Station (Exh. EV-1(A) at 5-5).

Table 6. Noticed Variation Calculated Magnetic Field (mG) Levels at Average Annual Loading (Overhead)

Project Segment	Existing/ Proposed	North Edge of ROW	Maximum in ROW	South Edge of ROW
Bourne S/S to Pave Paws Tap	Existing	31.6	49.6	3.1
	Proposed	25.6	42.1	11.3
Pave Paws Tap to Sandwich Town Line	Existing	31.2	48.9	3.2
	Proposed	25.5	41.3	11.3
Sandwich Town Line to Sandwich S/S	Existing	31.2	49.0	9.3
	Proposed	25.0	41.4	13.5
Sandwich S/S to Great Hill Road	Existing	20.0	29.8	10.0
	Proposed	21.1	48.7	22.8
Great Hill Road to W Barnstable S/S	Existing	19.9	30.0	7.7
	Proposed	18.7	31.9	21.6

Source: Exh. EV-1(A), Table 5-9, at 5-31

c. Analysis and Findings on Magnetic Fields

The record shows that magnetic fields for the Noticed Variation, operating at 115 kV, would range from 11.3 to 25.6 mG, with slight decreases on the north side but a greater increase on the south side of the ROW. The Siting Board will review the magnetic fields for operation of the Project at 345 kV when Eversource files for approval to operate at 345 kV. Construction of a 345 kV-capable project requires greater electrical clearances, such that the conductors are further apart from each other and magnetic field mutual cancellation is lessened. Overall, however, the range of expected average magnetic fields is generally in a similar order of magnitude to pre-project conditions.

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. The Siting Board requires magnetic field mitigation which, in its judgment, is consistent with minimizing cost. Eversource would construct the Project predominantly overhead within an existing utility ROW, ending at a Company switching station and substation. In addition, the additional height of transmission line conductors would result in lower magnetic field levels at ground level. Furthermore, the Company's optimized phasing of transmission lines will maximize cancellation

of magnetic fields between circuits. These design elements, taken together, would provide substantial mitigation of magnetic fields. Based on the record of the design and operation of the Noticed Variation, the Siting Board finds that magnetic field impacts along the Primary Route would be minimized.

9. 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. The Siting Board finds that the Noticed Variation along the Primary Route would minimize noise and traffic impacts. Given use an existing Eversource ROW (with relatively few abutters and those abutters at a distance from the center line of the New Line) the Siting Board further finds that land use, visual impacts, air, hazardous waste and safety, and magnetic field impacts would be substantially mitigated and minimized. The Siting Board finds no impacts to public water supply in construction or operation of the New Line along the Primary Route. Finally, the Siting Board finds that work on the Primary Route for the Project would not likely result in impacts to water resources and wetlands. On balance, the Siting Board finds that the Noticed Variation design along the Primary Route mitigates environmental impacts, and that environmental impacts would be minimized.

E. Cost

1. Company Description

Eversource estimated cost for the Base Project along the Primary Route at $59.1 million with an uncertainty range of -25%/+25% (RR-EFSB-10(S1); Exh. EV-1(A)1, at 5-48). Eversource estimated that the transmission line cost for the Noticed Variation (using a conceptual confidence level of -25%/+50% for a 12.5-mile, 345 kV overhead line operated at 115 kV), would be $72.3 million (RR-EFSB-10(S1)).

The Company indicated that costs of substation work for the Base Project or Noticed Variation (345 kV overhead line operated at 115 kV) would be $14.1 million (Exh. EFSB-C-3). If Eversource were to build a separate 345 kV line from West Barnstable to Bourne at a later time to support the interconnection of QP 700, it would cost approximately $51.8 million,

whereas the cost of implementing the taller structures necessary for Noticed Variation is approximately $13.2 million (Tr. 3, at 384-385). However, the additional cost of the Noticed Variation would be recovered from PCW LLC under the cost recovery agreement (RR-EFSB-6(S1)(1)).

2. Analysis and Findings

Based on the Company's cost estimates, the Siting Board finds that the Project along the Primary Route is the least cost alternative. While the Base Project would cost less than the Noticed Variation, the need for a 345-capable New Line cannot be served with the Base Project. Furthermore, the incremental costs of $13.2 million to build the Noticed Variation are fully covered under the cost recovery agreement with PCW LLC and will not be borne by Eversource or its ratepayers. In addition, by providing this upgrade now in conjunction with the Project (at a cost to PCW LLC of $13.2 million), rather constructing a new line from West Barnstable to Bourne later to support the interconnection of QP 700 (at a cost approximately $51.8 million), the Noticed Variation would save approximately $38.6 million. Accordingly, the Siting Board finds that the Noticed Variation minimizes costs, as required to serve the identified need.

F. Reliability

Eversource maintains that the Project as the Noticed Variation is a reliable means for meeting the identified need (Exh. EV-1(A)1, at 5-49). Eversource states that neither the Company nor ISO-NE has evaluated the system impacts of operating the transmission line along the Noticed Alternative Route at 345 kV (RR-EFSB-18(S1); Tr. 3, at 510-518). According to the Company, it is therefore unclear whether the Noticed Alternative Route at 345 kV would be comparable with respect to reliability in meeting the need for servicing offshore wind facilities in the same manner as the Noticed Variation (Company Brief at 70, n.57). The Company represents that, in any event, the record shows that such an option would be considerably more expensive and have more significant construction impacts than the Noticed Variation (RR-EFSB-18(S1); Exh. EV-1(A)1, at 5-47 to 5-49). The Noticed Variation has reliability

advantages for integrating identified future offshore wind resources. The Siting Board finds the Noticed Variation superior to other reviewed options for reliability.

G. Conclusion on Minimization of Environmental Impacts

The Siting Board is charged with ensuring jurisdictional facilities approved for construction in the Commonwealth achieve an appropriate balance between environmental impacts, reliability, and cost. G.L. c. 164, §§ 69H, 69J. See Town of Sudbury v. EFSB, 487 Mass at 747-748 (2021). The Siting Board notes that the Noticed Variation operating at 115 kV would be comparable to the 115 kV Base Project along the Primary Route with respect to environmental impacts and cost (net of the cost recovery agreement), and has reliability advantages in being able to operate now at 115 kV, or prospectively, at 345 kV.

The Siting Board finds that the Noticed Variation offers greater certainty to the Project with respect to 345 kV operation than does the Noticed Alternative Route. Accordingly, the Noticed Variation may offer advantages that in the long run make it a comparable or better option than the Base Project along the Primary Route for construction.

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 conditions and mitigation presented above, and compliance with all applicable local, state, and federal requirements, the environmental impacts of the Noticed Variation along the Primary Route would be minimized. The Siting Board finds that the Noticed Variation along the Primary 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. Beverly-Salem at 109; Andrew-Dewar at 96-97; Sudbury-Hudson at 183-184.

B. Position of the Parties

Eversource asserts that the Noticed Variation is consistent with the current health, environmental protection, and resource and development policies of the Commonwealth including the Electric Utility Restructuring Act of 1997 ("Restructuring Act"), the Green Communities Act (Chapter 169 of the Acts of 2008), the Global Warming Solutions Act (Chapter 298 of the Acts of 2008) (the "GWSA"), the Energy Diversity Act (Chapter 188 of the Acts of 2016), and the Clean Energy Act (Chapter 227 of the Acts of 2018) (Exhs. EV-1(A) at 6-1, 6-4; EFSB-CPC-1; RR-EFSB-14; Company Brief at 92).

Park City Wind supports the Noticed Variation as the best option to meet the need for the Project and support the proposed offshore wind projects planned for Cape Cod (PCW Brief at 3).[61] Park City Wind notes that a transmission system capable of receiving offshore wind generation is critical to the achievement of the Commonwealth's broader clean energy goals and objectives (PCW Brief at 4). Park City Wind states that the Noticed Variation is critical to the interconnection of both the VW Project and PCW Project[62] and is consistent with the Commonwealth's efforts to procure wind energy as contemplated by the Energy Diversity Act and combat climate change as contemplated by the GWSA (PCW Brief at 8). Park City Wind asserts that the Noticed Variation better supports the public interest and welfare by reducing greenhouse gas emissions, developing an offshore wind generation industry, and integrating

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61 Park City Wind specifically supports the Noticed Variation presented in RR-EFSB-10 which would not require an expansion of the Company's existing ROW as originally presented by Eversource (PCW Brief at 19). Park City Wind argues that the Noticed Variation is consistent with the Commonwealth's energy and environmental policies (PCW Brief at 21-22).

62 The VW Project was approved by the Board in 2019 in Vineyard Wind LLC, EFSB 17-05/D.P.U. 18-18/18-19 (2019). The PCW Project is currently under review by the Board in Park City Wind LLC, EFSB 20-01/D.P.U. 20-56/20-57.

offshore wind generation into the generation mix to enhance reliability and reduce winter prices spikes (PCW Brief at 21-22).

Mayflower Wind did not file a brief. However, in prefiled testimony, Mayflower Wind stated that the Commonwealth's goal to promote offshore wind energy as a tool to reduce greenhouse gas emissions should be considered in reviewing transmission infrastructure projects on Cape Cod, citing the GWSA, the Green Communities Act and the Clean Energy Act (Exh. MWE-SK-1, at 9-10). Mayflower Wind stated that enabling interconnections will minimize environmental and cost impacts and advance the climate and clean energy statutory goals of the Commonwealth (Exh. MWE-SK-1, at 13). Mayflower Wind recommended that the Board allow for the design of certain facilities to 345 kV to accommodate offshore wind as requested by Eversource in the Noticed Variation (Exh. MWE-SK-1, at 15-16).

C. Analysis and Conclusions

1. Consistency with Health Policies

The Restructuring Act noted the fundamental importance of reliable electric service to public health in declaring 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 and economy." St. 1997, c. 164. Following this reasoning, a project that increases reliability in electric service should also be deemed to contribute to the health of the Commonwealth's citizens (Company Brief at 102). See, e.g., Beverly-Salem at 109-110; Andrew-Dewar at 99; Sudbury-Hudson at 188. In Section VI.F., above, the Siting Board found that the Project would improve the reliability of electric service in Massachusetts. Therefore, the Siting Board concludes that the increase in reliability from by the Project will result in health benefits to Commonwealth residents.

Accordingly, subject to the specified mitigation and conditions set forth in this Decision, the Siting Board finds that the Company's plans for construction of the Project and the Noticed Variation are consistent with current health policies of the Commonwealth.

2. Consistency with Environmental Laws, Regulations, and Policies

Both Eversource and the Intervenors have asserted that the construction of the Noticed Variation will advance the Commonwealth's environmental protection and energy policies as noted above by facilitating the construction of transmission facilities to interconnect offshore wind projects to the regional transmission grid and promoting the increase in clean renewable resources to meet the region's energy needs. Since the filing of the initial petitions in this proceeding, the Commonwealth has enacted the Roadmap Act,[63] which updated, among other things, the requirements under the Global Warming Solutions Act and environmental justice policy.

a. The Global Warming Solutions Act and Updates

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.[64] The GWSA mandates that the Commonwealth reduce its greenhouse gas ("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). More recent policy developments, following the

63 An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy. St. 2021, c. 8 ("Roadmap Act").

64 G.L. c. 164, § 69J requires consistency with environmental protection policies of the Commonwealth but does not explicitly recognize energy policies. However, the Siting Board accomplishes its statutory mandate to ensure reliable energy supply with minimum impact on the environment at the lowest possible cost within the context of current energy policies of the Commonwealth. G.L. c. 164, § 69H; see also Beverly-Salem at 110 n.95; Andrew-Dewar at 100 n.96.

hearings and briefs in this proceeding, have both increased and accelerated the Commonwealth's GHG emissions reduction targets.[6566]

On April 22, 2020, pursuant to the GWSA, the Secretary issued a "Determination of Statewide Emissions Limit for 2050" ("Determination"), which established a "net zero" level of statewide greenhouse gas emissions. The Determination defined net zero as "[a] level of statewide greenhouse gas emissions that is equal in quantity to the amount of carbon dioxide or its equivalent that is removed from the atmosphere and stored annually by, or attributable to, the Commonwealth; provided, however, that in no event shall the level of emissions be greater than a level that is 85 percent below the 1990 level" (Determination at 4).

The Secretary issued an "Interim Massachusetts Clean Energy and Climate Plan for 2030" on December 30, 2020 (the "Interim 2030 CECP") for public comment. In the 2030 Interim CECP, the Secretary set the 2030 statewide GHG emissions limit at 45 percent below 1990 levels. Also on December 30, 2020, Secretary issued the "Massachusetts 2050 Decarbonization Roadmap" ("2050 Roadmap"). Based on its analysis of a range of potential pathways, the 2050 Roadmap finds that the most cost-effective, low-risk pathways to net zero GHG emissions share core elements, including a balanced clean energy portfolio anchored by significant offshore wind resources, more interstate transmission, widespread electrification of transportation, building heat and hot water, and cost-effective replacement of equipment, infrastructure, and systems that use fossil fuels (2050 Roadmap at 21-26).

The 2050 Roadmap provides the Commonwealth with near- and long-term strategies to achieve the goal of reaching net zero emissions by 2050. The importance of additional electric transmission infrastructure in achieving net zero GHG emissions in a cost-effective manner is one of the key findings of the 2050 Roadmap: "Additional transmission increases access to, and

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65 The Siting Board officially notices the following recent policies of the Commonwealth: "Determination of Statewide Emissions Limit for 2050" dated April 22, 2020; "Interim Clean Energy and Climate Plan for 2030" dated December 30, 2020; "Massachusetts 2050 Decarbonization Roadmap" dated December 30, 2020; and "Clean Energy and Climate Plan for 2025 and 2030" dated June 30, 2022. 980 CMR 1.06(7).

66 GWSA provisions have been updated in the Energy Diversity Act (Chapter 188 of the Acts of 2016), and the Clean Energy Act (Chapter 227 of the Acts of 2018).

the ability to share, additional low-cost clean energy resources across the Northeast, lowering costs overall" (2050 Roadmap at 15). The Roadmap underscores the importance of maintaining and enhancing transmission capability in Massachusetts to provide cost-effective, reliable service, and facilitate development and use of both local and regional clean and renewable resources (2050 Roadmap at 59, 65). In addition, the 2050 Roadmap identifies a need for increasing electrification to achieve deep GHG emission reductions and envisions the widespread deployment of electric vehicles in place of gasoline and diesel engines, and of heat pump-based electrified heating and hot water systems in place of gas and oil furnaces, boilers, and water-heating equipment (2050 Roadmap at 35, 44).

On March 26, 2021, Governor Baker signed the Roadmap Act which updates the greenhouse gas emissions limits in the 2008 GWSA, codifies Massachusetts' commitment to achieve Net Zero emissions in 2050, and authorizes the Secretary of EEA to establish a greenhouse gas limit based on an emissions reduction of at least 50 percent below 1990 levels for 2030, and at least 75 percent for 2040. Roadmap Act, Section 10. On June 30, 2022, the Secretary issued the final draft of the Clean Energy and Climate Plan for 2025 and 2030 ("2025-2030 CECP"). This document updates key strategies the Commonwealth will use to reach the statutorily required 50 percent reduction in GHG emissions below 1990 levels. As noted in the 2025-2030 CECP, electricity demand in the Commonwealth is projected to increase significantly by 2050 due to the widespread electrification of building and transportation services. "Thus, the emissions intensity of electricity generation must continue to decrease even while total generation increases. The Commonwealth anticipates offshore wind will be the primary source of electricity for its decarbonized energy system, all of which would need to be interconnected to land in Massachusetts or other parts of the New England grid." 2025-2030 CECP at 62. Consequently, the interconnection of offshore wind resources through proposed infrastructure such as the Project continues to be a key goal in reducing GHG emissions.

The 2050 Roadmap provides the Commonwealth with near- and long-term strategies to achieve the goal of reaching net zero emissions by 2050. The importance of additional electric transmission infrastructure in achieving net zero GHG emissions in a cost-effective manner is one of the key findings of the 2050 Roadmap: "Additional transmission increases access to, and

the ability to share, additional low-cost clean energy resources across the Northeast, lowering costs overall" (2050 Roadmap at 15). The Roadmap underscores the importance of maintaining and enhancing transmission capability in Massachusetts to provide cost-effective, reliable service, and facilitate development and use of both local and regional clean and renewable resources (2050 Roadmap at 59, 65). In addition, the 2050 Roadmap identifies a need for increasing electrification to achieve deep GHG emission reductions and envisions the widespread deployment of electric vehicles in place of gasoline and diesel engines, and of heat pump-based electrified heating and hot water systems in place of gas and oil furnaces, boilers, and water-heating equipment (2050 Roadmap at 35, 44).

The GWSA also obligates administrative agencies to consider reasonably foreseeable climate change impacts and related effects when reviewing permit requests. G.L. c. 30, § 61. Pursuant to this obligation, the Siting Board finds that the Noticed Variation would provide an initial step in the eventual construction of a 345 kV line on the Primary Route, improving the reliability of the transmission and distribution system once constructed as well as a launching point for future expansion deemed necessary on a regional basis. See Section III of this Decision for a detailed discussion of the need for the Noticed Variation. With regard to increasing use of renewable energy resources, by improving the reliability of the regional transmission system, the Project will help facilitate the integration of these renewable energy resources (Company Brief at 93-94). The Siting Board also agrees with the Company's assessment that the improvements to the transmission system in the Cape Cod Load Pocket will strengthen and improve the reliability and enable a more efficient and flexible operation of the grid, consistent with the goals of the Green Communities Act and the Clean Energy Act.

On March 26, 2021, Governor Baker signed the Roadmap Act which updates the greenhouse gas emissions limits in the 2008 Global Warming Solutions Act, codifies Massachusetts' commitment to achieve Net Zero emissions in 2050, and authorizes the Secretary of EEA to establish a greenhouse gas limit based on an emissions reduction of at least 50 percent below 1990 levels for 2030, and at least 75 percent for 2040. Roadmap Act, Section 10. The most recent CECP and the related environmental and decarbonization efforts within the plan issued in June 2022 is discussed above.

b. Environmental Justice Policy

At the time of this proceeding, the 2017 EJ Policy was in effect. However, since briefing in this matter, additional provisions relating to environmental justice are now in effect. On March 26, 2021, Governor Baker the Roadmap Act.[67] The Roadmap Act included several provisions that address environmental justice. See Roadmap Act, Sections 56-60. The Roadmap Act sets forth environmental justice principles to support protection from environmental pollution and the ability to live in and enjoy a clean and healthy environment, regardless of race, color, income, class, handicap, gender identity, sexual orientation, national origin, ethnicity or ancestry, religious belief, or English language proficiency. St. 2021, c. 8, § 56.

The Roadmap Act contains statutory definitions of environmental justice populations, environmental benefits, and environmental burdens and environmental justice principles (including those from climate change). See Roadmap Act, Section 56, amending G.L. c. 30, § 62. The Roadmap Act's definition of "environmental justice population," includes four categories of environmental justice neighborhoods (defined as census block groups) based on: (1) median income level; (2) percentage of residents who are minorities; (3) percentage of residents who have limited English proficiency; and (4) a combined minority percentage and income threshold. Roadmap Act, Section 56.

The Roadmap Act requires the Secretary to direct EEA agencies (including departments, divisions, boards, and offices under the Secretary's control and authority) to consider environmental justice principles in making "any policy, determination or taking any other action related to a project review, or in undertaking any project pursuant to [G.L. c. 30] sections 61 through 62J, inclusive, and related regulations that is likely to affect environmental justice populations." Roadmap Act, Section 60, creating new G.L. c. 30, § 62K; see also 2021 EJ Policy, Statement of Purpose.[68] The Roadmap Act defines those environmental justice principles

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[67] The Siting Board notes that at the time of hearings and briefing in this proceeding, the Roadmap Act and updated 2021 EJ Policy were not in effect.

[68] The Climate Roadmap Act requires MEPA to promulgate regulations to implement sections of the Act within 180 days after the effective date of the Act. MEPA

as including (1) the meaningful involvement of all people with respect to the development, implementation and enforcement of environmental laws, regulations and policies, including climate change policies; and (2) the equitable distribution of energy and environmental benefits and environmental burdens. G.L. c. 30, § 62; Roadmap Act, Section 56.

As stated above, at the time of this proceeding the 2017 EJ Policy, dated January 31, 2017, was in effect. On June 24, 2021, EEA updated its prior EJ Policy, ("2021 EJ Policy"), consistent with the Roadmap Act, including adding new statutory definitions, and stating that environmental justice principles are to be an "integral consideration" in MEPA review and all EEA programs.[69,70,71] In addition to the Roadmap Act environmental justice requirements discussed above, the Siting Board is also guided by the 2021 EJ Policy, applicable to all agencies within EEA, including the Siting Board and the Department.[72]

The EJ Policy applies to the Siting Board. See Winchester v. EFSB, 98 Mass.App.Ct. at 1101 ("Both the current version of the [Environmental Justice] policy, promulgated in 2017, and the prior version, which was in effect at the start of the original proceeding, apply to the

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promulgated new regulations on December 24, 2021. The Act further provides that new requirements relating to EIR near EJ Populations apply to new projects filed with MEPA after the effective date of these regulations. St. 2021, c. 8, §§ 102A, 102B.

69 In addition, the CECP explains the core environmental justice principles incorporated throughout the policies set forth in the most recent CECP. To realize the Commonwealth's vision for environmental justice as part of the strategies described in the CECP, the Plan reiterates the Commonwealth's commitment to utilizing best practices for enhanced community engagement. 2025/2030 CECP, Chapter 2.

70 The 2021 EJ Policy provides that Projects, such as the present one, that have filed an ENF prior to the issuance of the 2021 EJ Policy are not subject to the enhanced analysis or enhanced participation provisions in Sections 16 and 17 of the updated policy. 2021 EJ Policy at 11 n.3. Provisions specific to the Siting Board under the 2021 EJ Policy (i.e., Section 20, Enhanced Public Participation and Analysis of Impacts and Mitigation Under the Energy Facilities Siting Board) did not change compared to the 2017 EJ Policy. See 2021 EJ Policy at 12; 2017 EJ Policy at 11.

71 https://www.mass.gov/doc/environmental-justice-policy6242021-update/download.

72 The EJ Policy explicitly references compliance with the A&F Bulletin #16 Language Access Policy and Implementation Guidelines (March 20, 2015).

siting board"). See also GreenRoots, Inc. v. Energy Facilities Siting Board, 490 Mass. 747 (2022). The 2021 EJ Policy also identified specific provisions applicable to the Siting Board and its review of energy facilities: 2021 EJ Policy at Section 20. The Siting Board's obligations for enhanced public participation and enhanced analysis of impacts and mitigation procedures are triggered by certain MEPA review thresholds as identified in Sections 16 and 17 of the 2021 EJ Policy. As stated earlier, the EJ Policy did not require any enhanced public participation and enhanced analysis of impacts for this Project.

Eversource acknowledged that, at the time it filed the Project with the Siting Board in 2019, no part of the proposed Project or Noticed Variation passed through EJ neighborhoods (Exh. EV-1(A) at 6-3; Company Brief at 94).[73] The Company notes that the community outreach program launched by Eversource for the Project represents an effort to undertake an extensive community outreach effort to facilitate the "meaningful opportunity to participate by all" (Company Brief at 94 n.74). In addition, consistent with established Siting Board practice and the Commonwealth's Language Access Policy, 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. Furthermore, the Siting Board notes that the benefits of the Project include increased electric reliability and facilitation of interconnection of clean energy sources, and that any environmental burdens are minimized and mitigated. The Siting Board finds that the Project is consistent with EJ principles and policies.

In Section VI.D.9, the Siting Board finds that the Noticed Variation's land use, wetland and water resource, noise, visual, air, hazardous waste and safety, traffic, and magnetic field impacts have been minimized. See also Section VI.G. In addition to the Siting Board's conditions imposed in this Decision, the Company must also obtain all environmental approvals

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[73] Consistent with the Roadmap Act, the 2021 EJ Policy includes a revised definition for EJ populations. Siting Board staff note that, using EEA's EJ Viewer mapping application, which reflects the revised definition for EJ populations and uses American Community Survey 2015-2019 five-year-estimates for demographic data, it appears that the Project now passes through areas with EJ Populations.

and permits required by federal, state, and local agencies; the Project must be constructed and operated according to those permits and approvals.

Accordingly, the Siting Board finds that with obtaining the necessary permits and authorizations, and compliance with Conditions D and E, the Noticed Variation is consistent with the energy and environmental protection policies of the Commonwealth.

3. Consistency with Resource Use and Development Policies

In 2007, Governor Patrick established Sustainable Development Principles pursuant to the Commonwealth's Smart Growth/Smart Energy Policy which had been produced by the Executive Office of Energy and Environmental Affairs (Exh. EV-1(A) at 6-4).[74] These principles include: (1) supporting the revitalization of city centers and neighborhoods by promoting development that is compact and conserves land; and (2) encouraging remediation and reuse of existing sites, structures, and infrastructure rather than new construction in undeveloped areas (Exh. EV-1(A) at 6-4 to 6-5; Company Brief at 100).

Construction of the Project would further these principles. The Project would be built primarily within existing ROWs and, therefore, construction would not require new rights of way and instead reuse existing sites (Exhs. EV-1(A) at 6-5; EV-1(A), app. 5-1; RR-EFSB-9(1); RR-EFSB-10(2); Company Brief at 100-101). Consequently, the Siting Board finds that construction of the Project would be consistent with the resource use and development policies of the Commonwealth.

D. Conclusion

Subject to the specified mitigation and 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 health, environmental protection, and resource use and development policies as adopted by the Commonwealth.

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[74] See https://www.mass.gov/topics/the-smart-growth-smart-energy-toolkit. Click on Smart Growth/Smart Energy Background Information.

VIII. INDIVIDUAL ZONING EXEMPTIONS

Pursuant to G.L. c. 40A, § 3, the Company filed a petition ("Zoning Petition") seeking individual and comprehensive zoning exemptions from the Barnstable Zoning Ordinance for the Company's Project.

A. Standard of Review

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

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

Thus, a petitioner seeking exemption from a local zoning bylaw under G.L. c. 40A, § 3 must meet three criteria.[75] First, the petitioner must qualify as a public service corporation. Save the Bay, Inc. v. Department of Public Utilities, 366 Mass. 667, 677 (1975) ("Save the Bay"). Second, the petitioner must demonstrate that its present or proposed use of the land or structure is reasonably necessary for the public convenience or welfare. Sudbury-Hudson at 193; Vineyard Wind LLC, EFSB 17-05/D.P.U. 18-18/18-19, at 132 (2019) ("Vineyard Wind"); NRG Canal 3 Development LLC, EFSB 15-06/D.P.U. 15-180, at 140-141 (2017) ("NRG"). Finally, the petitioner must establish that it requires exemption from the zoning ordinance or bylaw. Sudbury-Hudson at 193; NRG at 141; Tennessee Gas Pipeline Company, D.T.E. 01-57, at 3-4 (2002).

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[75] G.L. c. 40A, § 3, applies to the Department. The Department refers zoning exemption cases to the Siting Board for hearing and decision pursuant to G.L. c. 25, § 4. In accordance with G.L. c. 164, § 69H, when deciding cases under a Department statute, the Siting Board applies Department and Board standards "in a consistent manner." Thus, the Siting Board and the Department implement G.L. c. 40A, § 3, using consistent standards of review, and this Decision cites to both Siting Board decisions and Department orders interpreting G.L. c. 40A, § 3. On October 28, 2019, the Chair of the Department referred the Company's Zoning Petition to the Siting Board for review and decision pursuant to G.L. c. 25, § 4.

Additionally, the Siting Board favors the resolution of local issues on a local level whenever possible, to reduce concern regarding any intrusion on home rule. The Siting Board believes that the most effective approach for doing so is for a petitioner to consult with local officials regarding its project before seeking zoning exemptions pursuant to G.L. c. 40A, § 3. Sudbury-Hudson at 193; Vineyard Wind at 132; Russell Biomass LLC, EFSB 07-4/D.P.U. 07-35/07-36, at 61-62 (2009) ("Russell"). Thus, the Siting Board encourages petitioners to consult with local officials, and in some circumstances, to apply for local zoning permits, before seeking zoning exemptions from the Department under G.L. c. 40A, § 3. Sudbury-Hudson at 193; Vineyard Wind at 132; Russell at 68.

B. Public Service Corporation

1. Standard of Review

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

> among the pertinent considerations are whether the corporation is organized pursuant to an appropriate franchise from the State to provide for a necessity or convenience to the general public which could not be furnished through the ordinary channels of private business; whether the corporation is subject to the requisite degree of governmental control and regulation; and the nature of the public benefit to be derived from the service provided.

Save the Bay, 366 Mass. at 680; Beverly-Salem at 116; Sudbury-Hudson at 194; Berkshire Power Development, Inc. D.P.U. 96-104, at 26-36 (1997) ("Berkshire Power").[76]

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[76] The Department interprets this list not as a test, but rather, as guidance to ensure that the intent of G.L. c. 40A, § 3, will be realized: i.e., that a present or proposed use of land or structure that is determined by the Department to be "reasonably necessary for the convenience or welfare of the public" not be foreclosed due to local opposition. Berkshire Power at 30; Save the Bay, 366 Mass. at 685-686; Sudbury-Hudson at 194 n.172; Town of Truro , 365 Mass. 407, 410 (1974); Exelon West Medway at 135 n.117; New England Power Company d/b/a National Grid, D.P.U. 15-44/15-45, at 5-6 (2016) ("MVRP"). The Department has interpreted the "pertinent considerations" as a "flexible set of criteria which allow the Department to respond to changes in the environment in which the industries it regulates operate and still provide for the public

2. Analysis and Finding

Eversource is a Massachusetts corporation that is an electric company as defined by G.L. c. 164, § 1 and, as such, qualifies as a public service corporation. Sudbury-Hudson at 194; Mystic-Woburn at 6; NSTAR Electric Company d/b/a Eversource Energy, D.P.U. 15- 02, at 6-7 (2015) ("Hopkinton").

C. Public Convenience or Welfare

1. Standard of Review

In determining whether the present or proposed use is reasonably necessary for the public convenience or welfare, the Department must balance the interests of the general public against the local interest. Save the Bay at 680; Town of Truro at 407. Specifically, the Department is empowered and required to undertake "a broad and balanced consideration of all aspects of the general public interest and welfare and not merely [make an] examination of the local and individual interests which might be affected." New York Central Railroad v. Department of Public Utilities, 347 Mass. 586, 592 (1964) ("NY Central Railroad"). When reviewing a petition for a zoning exemption under G.L. c. 40A, § 3, the Department is empowered and required to consider the public effects of the requested exemption in the State as a whole and upon the territory served by the applicant. Save the Bay at 685; NY Central Railroad at 592.

Therefore, when making a determination as to whether a petitioner's present or proposed use is reasonably necessary for the public convenience or welfare, the Department examines: (1) the need for, or public benefits of, the present or proposed use; (2) the present or proposed use and any alternatives or alternative sites identified;[77] and (3) the environmental impacts or any

welfare." Berkshire Power at 30; MVRP at 6; see also Dispatch Communications of New England d/b/a Nextel Communications, Inc., D.P.U./D.T.E. 95-59B/95-80/95-112/96-113, at 6 (1998). The Department has determined that it is not necessary for a petitioner to demonstrate the existence of "an appropriate franchise" in order to establish PSC status. Berkshire Power at 31; MVRP at 6; NSTAR Electric Company, D.P.U. 15-02, at 4-5 (2015).

[77] With respect to the particular site chosen by a petitioner, G.L. c. 40A, § 3 does not require the petitioner to demonstrate that its primary site is the best possible alternative, nor does the statute require the Department to consider and reject every possible alternative site presented. Rather, the availability of alternative sites, the efforts

other impacts of the present or proposed use. The Department then balances the interests of the general public against the local interest and determines whether the present or proposed use of the land or structures is reasonably necessary for the convenience or welfare of the public. Sudbury-Hudson at 195; Vineyard Wind at 136-137; Tennessee Gas Company, D.T.E. 98-33, at 4-5 (1998).

2. Position of the Company

The Company asserts that the Project is needed to protect against potential thermal overloads and voltage violations on its transmission network that could result in the loss of electric service within the Mid-Cape area of Cape Cod, totaling over 500 megawatts of load and potentially over 200,000 customers in the area at existing load levels (Exhs. EV-1(A) at sections 2 and 3, EV-2 at 4-5; Company Brief at 104-105). In addition, the Company presented an analysis of the Noticed Variation which involves the design and construction of structures which would enable the later operation, if approved, of a 345 kV transmission line on the same ROW as the Project (Exh. EV-2, at 5-6). The Company has asserted that construction of the Noticed Variation would provide potential synergy for the future interconnection of renewable energy generation (Exh. EV-2, at 6). Eversource further states that the Noticed Variation would allow the reliable transmission of electricity within the Mid Cape area and will benefit regional electricity customers consistent with the requirements of Chapter 40A and Section 72 (Company Brief at 104).[78]

necessary to secure them, and the relative advantages and disadvantages of those sites are matters of fact bearing solely upon the main issue of whether the primary site is reasonably necessary for the convenience or welfare of the public. Martarano v. Department of Public Utilities, 401 Mass. 257, 265 (1987); NY Central Railroad at 591.

78 Eversource notes that the Department's precedent regarding the public interest analysis required by G.L. c. 40A, § 3 is analogous to the Department analysis of the public welfare standard under G.L. c. 164, § 72.(Company Brief at 104, citing Stoughton-Boston, at 93; New England Power Company, D.P.U. 89-163, at 6 (1993).

3. Analysis and Findings

With respect to the need for, or public benefits of, the Project and the Noticed Variation, the Siting Board found in Section III that additional energy resources are needed for reliability in the Project area. In Section IV the Siting Board analyzed different project approaches, including transmission and non-transmission alternatives, that the Company might use to meet the reliability need and concluded that the proposed approach is superior to other approaches. The Siting Board also reviewed the Company's route selection process in Section V and has found that the Company demonstrated that it: (1) examined a reasonable range of practical siting alternatives and (2) identified locations which would minimize cost and environmental impacts while ensuring a reliable energy supply. Regarding Project impacts, in Section VI, the Siting Board evaluated the environmental impacts of the Noticed Variation found that they would be minimized with the implementation of mitigation measures directed by the Siting Board and described in this Decision and compliance with all local, state, and federal requirements. The Siting Board concluded that the using the Primary Route, the Noticed Variation would provide a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost. Based on the foregoing, the Siting Board finds that the need for the Noticed Variation on balance outweighs identifiable adverse local impacts associated with its construction and operation. Accordingly, the Siting Board finds that the Noticed Variation is reasonably necessary for the convenience or welfare of the public.

D. Individual Exemption Required

1. Standard of Review

In determining whether an exemption from a particular provision of a zoning bylaw is "required" for purposes of G.L. c. 40A, § 3, the Department determines whether the exemption is necessary to allow construction or operation of the petitioner's project. Beverly-Salem at 116; Sudbury-Hudson at 196; Vineyard Wind at 139; Tennessee Gas Company, D.P.U. 92-261, at 20-21 (1993). The Petitioner bears the burden to identify the individual zoning provisions applicable to the project and establish on the record that exemption from each of those provisions is required:

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

Beverly-Salem at 120-121; Sudbury-Hudson at 197; New York Cellular Geographic Service Area, Inc., D.P.U. 94-44, at 18 (1995).

2. Company Description

The Company states that individual zoning exemptions are required for construction and operation of the Project in Barnstable for proposed modification to the existing West Barnstable Substation located on Oak Street in Barnstable (Exh. EV-3, at 1, 12-23; Company Brief at 108-119). The Substation is located in the Residence F ("RF") Zoning District and in the Aquifer Protection ("AP") and Resource Protection ("RP") Overlay Districts (Exh. EV-3, at 12). Eversource requests relief related to use variances, frontage requirements, height requirements, building limitations, site plan review, parking, signage and performance bond, and occupancy permit requirements, otherwise required for these districts (Exh. EV-3, at 12-23).

a. Individual Exemptions Requested

Table 7 below summarizes: (1) each of the specific provisions of the Barnstable zoning ordinance from which the Company seeks exemptions: (2) the relief available (if any) under the respective ordinances; and (3) the Company's argument as to why it cannot comply with the identified zoning provision and/or why the available zoning relief is inadequate.

Table 7. Requested Individual Exemptions from the Town of Barnstable Zoning Ordinance – Summary of the Company's Position.

Zoning Section	Available Relief	Why Exemption Is Required: Company's Position
Section 240-7A *Prohibits building unless*	Use Variance	The Project design fails to meet several zoning provisions. A use variance would be required to ensure compliance with this provision. The criteria for use variances are

Zoning Section	Available Relief	Why Exemption Is Required: Company's Position
all provisions satisfied		difficult to meet and if secured, could still be susceptible to appeal.
Section 240-10 *Prohibits injurious, noxious or offensive uses*	Use Variance	The Project design includes additional lighting. This use provision does not include standards to assess injurious, noxious or offensive uses. The criteria for use variances are difficult to meet and if secured, could still be susceptible to appeal.
Section 240-14A-D *Prohibits utility uses in the RF Zoning District*	Use Variance	The Substation site is located in the RF Zoning District where utility uses are prohibited. Therefore, the proposed Substation modifications would require a use variance. The criteria for use variances are difficult to meet and if secured, could still be susceptible to appeal.
Section 240-35E *Prohibits utility use*	Use Variance	The Substation site is located in the Aquifer Protection Overlay Zoning District which prohibits utility uses. The criteria for use variances are difficult to meet and if secured, could still be susceptible to appeal.
Section 240 – 36 *Permitted uses and prohibited uses undefined by provision*	Use Variance	As the zoning ordinance does not specify which uses are permitted or prohibited, the proposed use may not comply with the ordinance. Therefore, a use variance would be needed to demonstrate compliance. The criteria for use variances are difficult to meet and if secured, could still be susceptible to appeal.
Section 240-14E *Requires minimum frontage of 150 feet*	Variance	The Substation site has 67.33 feet of frontage on Oak Street, below the minimum frontage requirement of 150 feet. Substation modifications would require a use variance to comply with the zoning requirement. The criteria for use variances are difficult to meet and if secured, could still be susceptible to appeal.
Section 240-14E *Limits heights of buildings to 30 feet or one and two and one-half stories*	Variance	This provision limits the maximum building height limit of 30 feet or two and one-half stories in the RF District. If those limits were to be applied to the proposed 54 foot tower included in the Project design, the Company would require a variance. The criteria for use variances are difficult to meet and if secured, could still be susceptible to appeal.

Zoning Section	**Available Relief**	**Why Exemption Is Required: Company's Position**
Section 240-7F(1) *Limits each lot to one principal permitted building*	Variance	The West Barnstable Substation, the Oak Street Substation and the control stations for those substations are located within the same lot. The Company would need to seek a variance to comply with this zoning provision. The criteria for use variances are difficult to meet and if secured, could still be susceptible to appeal.
Article IX Site Plan Review	Site Plan Approval	The Company seeks an exemption from the Site Plan review process, stating that the proposed modifications are not the type of changes that are the focus of the Site Plan review process. In addition, the Company asserts that the technical engineering and electrical issues are beyond the general scope of municipal review and require Company discretion to design in accordance with utility, state and federal standards to ensure reliability.
Article VI *Off-Street Parking Limits for Non-residential use indeterminate*	Special Permit	There are no specifications for utility parking requirements listed in the schedule for off-street parking in Section 240-56 and space requirements would be established by the Special Permit process. The the Special Permit process introduces legal uncertainty, could include problematic conditions and serve as a potential source of delay and expense in the event of appeals of the grant of a special permit since the criteria for use variances are difficult to meet and if secured, could still be susceptible to appeal.
Section VII Signage *No Trespassing Signs and Informational Signs not permitted*	Variance	The zoning ordinance limits signs to those warning signs necessary for public safety but would not include the No Trespassing and Contact Information signs in the RF Zoning district. Therefore, a use variance would be needed to demonstrate compliance with zoning requirements. The criteria for use variances are difficult to meet and if secured, could still be susceptible to appeal.
Section 240-124A Performance Bond	Variance	The provision includes potential discretionary cash bond amounts to be determined by the Building Inspector and does not define a process to determine the amount of the bond. The Company describes the potential project delay associated with the determination process. The criteria for use variances are difficult to meet and if secured, could still be susceptible to appeal.

Zoning Section	Available Relief	Why Exemption Is Required: Company's Position
Section 240-124B *Occupancy Permit*	Variance	The zoning provisions provide that a grant of an occupancy permit is dependent on the satisfaction of all provisions of the Zoning Ordinance. The Company requires an exemption from this provision to obtain an occupancy permit.

Source: Exhs. EV-3; EFSB-Z-1; Company Brief at 111-119.

b. Consultation with Municipalities and Community Outreach Efforts

The Company held meetings to discuss zoning matters during 2018 and 2019 with Barnstable officials including the Assistant Town Manager, Assistant Town Counsel and Town Engineer, the Building Inspector, the Department of Public Works Director, and the Director of Planning and Development (Exhs. EV-3, at 5-6; EFSB-Z-1; EFSB-Z-1(1); EFSB-Z-2; EFSB-Z-8; Company Brief at 106-108). Eversource stated that the primary issue of concern expressed by the Town was ensuring the protection of groundwater resources (Exhs. EV-3, at 4-5; EFSB-Z-8).[79]

The Company's initial efforts focused on local officials and other stakeholders on the need for the Project, detailing the overall Project schedule and explaining the permitting and siting processes, including opportunities for public input (Exh. EV-1(A) at 1-5). Eversource undertook a community outreach effort that also included Open Houses to provide the public with opportunities to ask questions and share concerns with Project team members (Exh. EV-1(A) at 1-6). At the Open Houses, the Company provided information on the need for and benefits of the Project, described the siting process, explained the route selection process, and provided detail on Project design and location, schedule, and construction activities (Exh. EV-1(A) at 1-6). The Open Houses were held in Sandwich on July 29, 2019, and in Barnstable on July 30, 2019 (Exh. EV-1(A) at 1-6).

[79] 797979 The Siting Board addresses impacts to Water/Wetlands and Hazardous Waste in Section VI.D., above.

The Company mailed invitations to property owners within 300 feet from the route of the Project as identified through local assessor lists, and to municipal officials in Sandwich and Barnstable (Exh. EV-1(A) at 1-6). The Company conducted door-to-door outreach to all properties within the proposed Project route to personally invite property owners, tenants, business owners and employees to learn more about the proposed Project and to the Open House. (Exh. EV-1(A) at 1-6). Newspaper advertisements for the Open Houses were published in the Cape Cod Times (Exh. EV-1(A) at 1-6). After the Open Houses, the Company conducted door-to- door outreach to direct abutters of the Project route (Exh. EV-1(A) at 1-6). Door hangers were distributed and included a Project Fact Sheet that offered individual meetings or phone calls (Exh. EV-1(A) at 1-6). To provide notice to seasonal residents, the Company sent out a mailer on October 10, 2019, to property owners providing an overview of the Project scope, the anticipated schedule, and an offer for individual meetings or phone calls with subject matter experts to ask questions and share concerns (Exh. EV-1(A) at 1-6).

Eversource developed a website which provides Project information, maps, and contact resources and committed to update the website information for the duration of the Project (Exh. EV-1(A) at 1-6). In addition, the Company established a Project Hotline number listed in all Project outreach materials and committed to responding promptly to all inquiries (Exh. EV-1(A) at 1-6). Finally, Eversource created an email address as an additional avenue for property owners and other stakeholders to communicate questions, comments, or concerns (Exh. EV-1(A) at 1-7).

Eversource committed to a construction community outreach plan to keep property owners, businesses and municipal officials including fire, police and emergency personnel, up-to-date on planned construction activities (Exh. EV-1(A) at 1-7). The Company will notify abutting property owners and municipal officials of its planned construction start and work schedule prior to commencing construction and will work closely with both to limit construction impacts (Exh. EV-1(A) at 1-7). Once the construction schedule is finalized, the Company committed to notify direct abutters of the hours of construction and address any concerns raised (Exh. EV-1(A) at 1-7).

Eversource outlined the planned construction outreach plan which includes the following elements: (1) in-person pre-construction briefings with municipalities, abutting residences and businesses, and other stakeholder groups, as requested, to outline the overall construction process, key milestones, and expected timelines; (2) regular email updates to municipal officials; (3) periodic letters or postcards to abutters and other stakeholders regarding advance notice of scheduled construction activities and/or milestone construction activities; (4) work area signage as appropriate; and (5) establishing staff meetings with affected property owners prior to each major stage of construction (Exh. EV-1(A) at 1-7). No other party addressed the zoning exemptions or municipal outreach in their brief.

3. Analysis and Findings on Individual Zoning Exemptions

Eversource identified, as set forth in Table 7 above, the individual provisions of the Barnstable zoning ordinances from which it seeks exemptions in order to minimize delay in the construction and operation of the Project. The record shows that without these exemptions the Company would need to seek several use and dimensional variances as well as site plan approval, a special permit, and a performance bond.

Eversource maintains that variances are "legally disfavored" citing language in a decision issued by the Supreme Judicial Court that variances should be granted only in rare instances and under exceptional circumstances (Company Brief at 111, n.84). The Siting Board notes that the Company has been granted individual exemptions for necessary variances, site plan approval, performance bond requirements and occupancy permits in 2003 and 2012 for construction at the Oak Street Substation (see Exh. EV-3, at 1-2; Company Brief at 111-116).

The Siting Board concurs with the Company that there is the potential for delay and uncertainty in obtaining a variance or a special permit, and that such a delay would be contrary to the public interest because there is a need for the timely construction of the Project. The Siting Board finds that the specifically named zoning exemptions in Table 7 are required for the construction of the Project within the meaning of G.L. c. 40A, § 3. The record also shows that the Company engaged in significant outreach to Barnstable.

Based on the record in this proceeding, the Siting Board finds that the Company has engaged in good faith consultations with Barnstable regarding the Project consistent with the standard articulated in Russell and followed in Vineyard Wind and Sudbury-Hudson.

E. Conclusion on Request for Individual Zoning Exemptions

The Siting Board has found above that: (1) the Company is a public service corporation; (2) the proposed use is reasonably necessary for the public convenience or welfare; and (3) the specifically named zoning exemptions in Table 7 are required for the construction of the Project within the meaning of G.L. c. 40A, § 3. Additionally, the Siting Board finds that the Company engaged in good faith consultation with Barnstable officials. Accordingly, the Siting Board grants the Company's request for the individual zoning exemptions listed above in Table 7.

IX. COMPREHENSIVE ZONING EXEMPTION

A. Standard of Review

The Company requests a comprehensive zoning exemption from the Barnstable Zoning Ordinance for the Company's work at the West Barnstable Substation (Exh. EV-3, at 25; Company Brief at 119-120). The Siting Board grants such requests on a case-by-case basis where the applicant demonstrates that issuance of a comprehensive exemption could avoid substantial public harm by serving to prevent a delay in the construction and operation of a needed facility. Beverly-Salem at 126-127; Sudbury-Hudson at 215; East Eagle at 161-162.

In order to make a determination regarding substantial public harm, the Department and the Siting Board have articulated relevant factors, including, but not limited to, whether: (1) the proposed project contributes to a reliable energy supply for the Commonwealth; (2) the project is time sensitive; (3) the project involves multiple municipalities that could have conflicting zoning provisions that might hinder the uniform development of a large project spanning these communities; (4) the proponent of the project has actively engaged the communities and responsible officials to discuss the applicability of local zoning provisions to the project and any local concerns; and (5) the affected communities do not oppose the issuance of the

comprehensive exemption. Beverly-Salem at 127; Sudbury-Hudson at 215; Woburn-Wakefield at 150.

B. Company Position

Eversource argues that a comprehensive zoning exemption is necessary in this case because the Project including the modifications at the West Barnstable Substation are necessary for system reliability and the need for the upgrades is imminent (Exh. EV-3, at 25; Company Brief at 119-120). The Company notes that the modifications at the West Barnstable Substation are required for the New Line to be operational (Exh. EV-3, at 25). Eversource also states that a comprehensive zoning exemption is necessary due to the lack of clearly defined and specific regulation of electric infrastructure in the Zoning Ordinance (Exh. EV-3, at 24, n7). The Company argues that the grant of a comprehensive exemption would remove any reasonable doubt regarding the ability of the Project to proceed under both current and future provisions of the Zoning Ordinance (Exh. EV-3, at 24; Company Brief at 119-120). The Company also argues that Barnstable has not expressed opposition to the grant of comprehensive zoning relief (Exh. EV-3, at 25; Company Brief at 107-108, 120). Furthermore, the Company states that a comprehensive exemption would ensure the timely construction of the Project (Exh. EV-3, at 25; Company Brief at 120).

C. Analysis and Findings on Comprehensive Zoning Exemption

General Laws c. 40A, § 3 provides the Department with the authority to ensure that local interests do not prevent construction of needed facilities that serve the public interest. "The zoning exemption available under G.L. c. 40A, § 3, is intended to assure utilities' ability to carry out their obligation to serve the public when this duty conflicts with local interests." Planning Bd. of Braintree v. Department of Public Utilities, 420 Mass. 22, 27 (1995) ("Braintree"). Compared to the grant of individual zoning exemptions, which is tailored to meet the construction requirements of a particular project, the grant of a comprehensive zoning exemption serves to nullify a municipality's zoning code in its entirety with respect to the project under review. Thus, compared to the grant of individual zoning exemptions, a comprehensive zoning

exemption constitutes a broader incursion upon municipal home rule authority. In the absence of a showing that substantial public harm may be avoided by granting a comprehensive exemption, the granting of such extraordinary relief is not justified. NSTAR Electric Company, D.P.U. 13-126/13-127, at 38-39 (2014); NSTAR Electric Company, D.P.U. 11-80, at 44 (2012).

Department and Siting Board cases that have considered and granted comprehensive exemptions have typically involved projects that contribute to a reliable supply of energy, were time-sensitive, the project proponent has actively engaged with the community and responsible officials to discuss the applicability of the zoning provisions, and the communities affected by the project do not oppose the issuance of a comprehensive zoning exemption. See e.g., Beverly-Salem at 128-129; Woburn-Wakefield at 150-151; Walpole-Holbrook at 98-100. These salient factors are present here.

As discussed in Section III above, the record in this proceeding shows that the Project is needed to maintain the reliability of the transmission grid in the Cape Cod area. The record also shows that the need is imminent. Thus, construction of the Project both contributes to a reliable energy supply and is also time-sensitive. In addition, the Siting Board has found, in Section VIII.D.2.b above, that the Company has engaged in good-faith consultations with numerous Barnstable officials and engaged in community outreach activities. In Section VI.D, the Siting Board has incorporated specific conditions related to the construction and operation of the Project, which seek to protect local interests with regard to environmental impacts. Under these circumstances, the Siting Board finds that grant of a comprehensive exemption from the zoning ordinance of Barnstable would ensure the timely construction of the Project whose need is imminent and that such grant is warranted. In granting this relief, however, the Siting Board notes that the Company must inform the Siting Board of any changes to the Project other than minor variations so that the Board may decide whether or not to inquire further into a particular issue. This condition ensures that all intervenors and interested persons receive notice of any potential modification proposed by the Company, and that they have the opportunity to comment on the impact of such modifications. Accordingly, the Siting Board grants the requested comprehensive zoning exemption for the Project.

X. 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.[80]

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 other impacts of the present or proposed use; and (3) the present or proposed use and any alternatives identified. Beverly-Salem at 129; Andrew-Dewar at 105; Sudbury-Hudson at 219. 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. Save the Bay, Inc. v. Department of Public Utilities, 266 Mass. 667, 680 (1975); Town of Truro v. Department of Public Utilities, 365 Mass. 407 (1974); New England Power Company d/b/a National Grid, D.P.U. 19-16 (2020).

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[80] Pursuant to G.L. c. 164, § 72, the electric company must include 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.

B. Company Position

The Company is the only party to address the issue of Section 72 findings in its brief. The Company asserts that the findings that would support the Board's approval of the Project pursuant to Section 69J would also support Project approval pursuant to Section 72 (Company Brief at 121). The Company maintains that the Project would contribute to a necessary supply of energy to the Commonwealth; it would do so with a minimum impact on the environment and at the lowest possible cost; and there is a need for, and public benefits from, construction of the Project (id.).

C. Analysis and Findings

In Sections III through VI above, the Siting Board examined: (1) the need for, and public benefits of, the proposed Project; (2) the environmental impacts of the proposed Project; and (3) any identified alternatives. The Siting Board concluded that the Project is needed, and that construction of the Project would achieve an appropriate balance among environmental impacts, reliability, and costs. Accordingly, with the implementation of the specified mitigation measures proposed by the Company and the conditions set forth by the Siting Board in Section XII below, the Siting Board finds pursuant to G.L. c. 164, § 72, that the Project is necessary for the purpose alleged, will serve the public convenience, and is consistent with the public interest. Thus, the Siting Board approves the Section 72 Petition.

XI. 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" and shall consider reasonably foreseeable climate change impacts, including additional greenhouse gas emissions, and effects, such as predicted sea level rise. ("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 the Executive Office of Energy and Environmental Affairs and Section 61 Findings

should be based on such EIR. Where an EIR has not been required and the Secretary has not required additional review, Section 61 Findings are not necessary. 301 CMR 11.01(4).

As noted above in Section VI.D.2.a, the Company filed an ENF pursuant to MEPA (Exhs. EV-4; EFSB-G-1).[81] On December 23, 2019, the Secretary issued a MEPA Certificate stating that the Project does not require an EIR and that the Project's environmental impacts will be avoided, minimized, or mitigated to the extent practicable (Exhs. EV-4; EFSB-G-1). Consequently, Section 61 Findings are not necessary in this proceeding.

XII. 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 finds that additional energy resources are needed to maintain a reliable supply of electricity in the Cape Cod Load Pocket.

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: (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 on balance clearly superior to the proposed Project; and (2) identified a range of 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 and that its

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[81] Eversource noted that the ENF included the Company's Noticed Variation and stated that the Noticed Variation will not require additional filings with MEPA or other state permitting agencies (Company Brief at 94, n.73).

proposed facilities are sited in locations that minimize cost and environmental impacts while ensuring a reliable supply.

In Section VI, above, the Siting Board finds that the Noticed Variation along the Primary Route provides 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 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 conditions and mitigation presented above, and compliance with all applicable local, state, and federal requirements, the environmental impacts of the Project along the Primary Route would be minimized. The Siting Board finds that the Project along the Primary Route would achieve an appropriate balance among conflicting environmental concerns as well as among environmental impacts, reliability, and cost.

In Section VII, above, the Siting Board finds that, subject to the specified mitigation and conditions set forth in this Decision, the Company's plans for construction of the Project are consistent with the current health, environmental protection, and resource use and development policies as adopted by the Commonwealth.

In Section VIII and IX, above, the Siting Board finds, pursuant to G.L. c. 40A, § 3, that construction and operation of the Company's proposed facilities are reasonably necessary for the public convenience or welfare. Accordingly, the Siting Board approves the Company's Petition for an exemption from certain individual provisions of the zoning ordinances of the Town of Barnstable. In addition, the Siting Board finds that delay in the completion of the Project would likely cause substantial public harm and that the grant of comprehensive exemptions from the zoning ordinances of the Town of Barnstable is warranted. Accordingly, the Siting Board approves the Company's Petition for comprehensive exemptions from the provisions of the zoning ordinances of the Town of Barnstable.

In Section X, above, 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 I. Accordingly, the Siting Board approves the Company's Section 72 petition.

Accordingly, the Siting Board approves pursuant to G.L. c. 164, § 69J, the Company's Petition to construct the Project using the Noticed Variation along the Primary Route, as described herein, subject to the following Conditions A through I.

A. The Siting Board directs the Company to comply with all applicable federal, state, and local laws, regulations, and ordinances from which the Company has not received an exemption. The Company shall be responsible for ensuring such compliance by its contractors, subcontractors, or other agents.

B. 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. The Siting Board also directs the Company to notify the Board of significant project cost increase above the ranges referenced in this Decision, pursuant to the Company's obligation to notify the Board of any changes other than minor variations to the proposal.

C. 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 compliance.

D. The Siting Board directs the Company to file with the Siting Board information regarding the remaining steps to complete the conversion of the 115 kV Noticed Variation approved in this Decision to full 345 kV transmission capability for the purposes of providing interconnection of new wind projects to the regional grid. Such filing shall be made no fewer than 180 days prior to any intended construction or operational changes to effect 345-kV service. The filing should include at a minimum: updated cost figures, a construction timeline, a clarification of steps that would need to be taken for Eversource to be able to provide full 345 kV transmission services (e.g., additional easement rights), a clarification of all equipment modifications necessary to convert the New Line to 345 kV. In addition, the Company should describe and provide, when available, any additional agreements related to the interconnection arrangements, and the collection of costs associated with the 345 kV transmission facilities.

E. The Siting Board directs the Company to develop a comprehensive outreach plan for the Project in consultation with the Towns of Bourne, Sandwich, and Barnstable, and submit it to the Siting Board before the start of construction. The outreach plan shall 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 traffic lane and street closures and detours. The outreach plan shall use plain language, include detailed maps, and shall also include information on complaint and response procedures; Project contact information; the availability of web-based Project information; and protocols for notifying schools and/or other sensitive receptors of upcoming construction. The Company shall translate the outreach plan into appropriate languages for the Project area, if and as necessary.

F. The Siting Board directs the Company to limit construction to the hours of 7:00 a.m. to 7:00 p.m., Monday through Friday, and to the hours of 9:00 a.m. to 5:00 p.m. on Saturday, except by request of the Towns of Bourne, Sandwich, and Barnstable, or of an agency with oversight of operations potentially affected by the Project, such as MassDOT. Work requiring longer continuous duration than normal construction hours allow, such as cable splicing, is exempted from this condition. The Siting Board also directs the Company to coordinate with the Towns of Bourne, Sandwich, and Barnstable, and MassDOT or other jurisdictional agencies, to determine facilities and areas, such as schools and school grounds, where construction hour limitations may be appropriate to mitigate noise or other concerns.

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, Eversource shall seek written permission from the relevant local town authority before the commencement of such work and provide the Siting Board with a copy of such permission. If Eversource and town 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.

G. The Siting Board directs the Company to, prior to construction, notify by direct mail or hand-delivery all property owners with residential structures within 300 feet of (1) any new transmission structure that would be "mismatched" with existing structures in ROW 342, and (2) both "intermediate" structures required for the Noticed Variation. Where Eversource would install such structures for the Noticed Variation, the Company shall offer to those property owners with residential structures within 300 feet the opportunity to install shrubs, trees, or fences if it does not interfere with operation and maintenance of transmission lines and offers visual screening from the New Line.

H. The Siting Board directs Eversource to discuss the possibility of any filtered views of the facility during leaf-off seasons with property owners and to mitigate and minimize view impacts to the reasonable satisfaction of said owners.

I. The Siting Board directs Eversource to arrange for off-peak delivery of Project equipment and materials to develop TMPs for the Project, as the Company indicates it will do. The Siting Board also directs the Company to submit a copy of final TMPs to the Siting Board 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 to ensure availability of traffic-related planning information for the Project area.

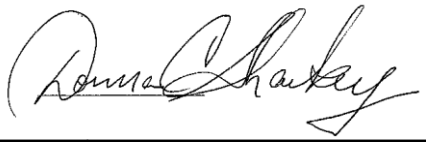
J. The Siting Board directs the Company to develop an outreach plan to keep property owners, business, and municipal officers (e.g., fire, police, and emergency personnel) up to date on anticipated construction activities. Traffic impacts occurring in conjunction with work at the Bourne Switching Station and the West Barnstable Substation would be temporary and associated with construction vehicle traffic and equipment delivery.

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 to the Executive Office of Energy and Environmental Affairs and the Company shall serve a copy of this Decision on the Town Clerk, the Town Manager, the Town Engineer, the Department of Public Works, the Zoning Board of Appeals and the Department of Planning and Development for the Town of Barnstable, the Town Manager of the Town of Bourne and the Town Manager of the

Town of Sandwich. The Company shall certify to the Secretary of the Department within ten business days of issuance that such service has been made.



Donna C. Sharkey, Esq.
Presiding Officer

Dated this 5th day of December 2022

APPROVED by a vote of the Energy Facilities Siting Board at its meeting on [MONTH DAY, 2022], by the members present and voting. Voting for the Tentative Decision as amended: Bethany A. Card, Secretary, Executive Office of Energy and Environmental Affairs and Siting Board Chair; Matthew Nelson, Chair, Department of Public Utilities; Robert Hayden, Commissioner, Department of Public Utilities; Patrick Woodcock, Commissioner, Department of Energy Resources; , Deputy Commissioner and designee for the Commissioner of Massachusetts Department of Environmental Protection; Jonathan Cosco, General Counsel and designee for the Secretary of the Executive Office of Housing and Development; Brian Casey, Public Member; and Crystal Johnson, Public Member.

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Bethany A. Card, Chair
Energy Facilities Siting Board

Dated this Xth day of MONTH, 2022

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 G.L., Chapter 25, Sec. 5; G.L. Chapter 164, Sec. 69P.