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 Eight New 115 kV Underground Transmission Lines in Portions of Cambridge, Somerville and Boston; A New 115/14 kV Substation in Cambridge; and Modifications to Existing Substation Facilities in Cambridge, Somerville, and the Allston/Brighton Section of Boston, Massachusetts	EFSB 22-03
Petition of NSTAR Electric Company d/b/a Eversource Energy Pursuant to G.L. c. 164, § 72 For Approval to Construct, Operate and Maintain Eight New 115 kV Underground Transmission Lines in Portions of Cambridge, Somerville and Boston; A New 115/14 kV Substation in Cambridge; and Modifications to Existing Substation Facilities in Cambridge, Somerville, and the Allston/Brighton Section of Boston, Massachusetts	D.P.U. 22-21

FINAL DECISION

Donna Sharkey,
Presiding Officer
June 28, 2024

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ABBREVIATIONS

Andrew-Dewar	NSTAR Electric Company d/b/a Eversource Energy, EFSB 19-03/D.P.U. 19-15 (2021)
Beverly-Salem	New England Power Company d/b/a National Grid, EFSB 19-04/D.P.U. 19-77/19-78 (2021)
BESS	Battery Energy Storage System
BMPs	best management practices
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
DPW	Department of Public Works
DR	demand response
East Eagle Project Change	NSTAR Electric Company d/b/a Eversource Energy, EFSB 14-04A/D.P.U. 14-153A/ 14-154A (2021)
East Eagle Certificate	NSTAR Electric Company d/b/a Eversource Energy, EFSB 22-01 (2022)
EE	energy efficiency
EEA	Massachusetts Executive Office of Energy and Environmental Affairs
EEI Noise Guide	Electric Power Plant Environmental Noise Guide published by the Edison Electric Institute
EFSB	Massachusetts Energy Facilities Siting Board
EJ	environmental justice
EMF	electric and magnetic fields
Energy Diversity Act	An Act to Promote Energy Diversity, St. 2016, c. 188
ENF	Environmental Notification Form
Eversource	NSTAR Electric Company d/b/a Eversource Energy
GEP	Good Engineering Practice
GHG	greenhouse gas
GIS	gas-insulated switchgear
G.L. c.	Massachusetts General Laws chapter

GWSA	Global Warming Solutions Act, St. 2008, c. 298
HCA	Host Community Agreement
HDD	horizontal directional drill
HDPE	high-density polyethylene
ICNIRP	International Commission on Non-Ionizing Radiation Protection
ISO-NE	ISO New England
kV	kilovolt
MassDCR	Massachusetts Department of Conservation and Recreation
MassDEP	Massachusetts Department of Environmental Protection
MassDOT	Massachusetts Department of Transportation
MassGIS	Massachusetts Geographic Information System
MBTA	Massachusetts Bay Transportation Authority
MCP	Massachusetts Contingency Plan
MEPA	Massachusetts Environmental Policy Act
mG	milligauss
MHC	Massachusetts Historical Commission
Mid Cape Reliability	NSTAR Electric Company d/b/a Eversource Energy, EFSB 19-06/D.P.U. 19-142/19-43(2022)
mm	millimeters
MVA	megavolt-amperes
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 Lines	eight new 115 kV underground transmission lines to be installed as part of the Project that will be housed in a total of five new duct banks, totaling approximately 8.3 miles, in portions of Cambridge, Somerville, and the Allston/Brighton area of Boston

New Substation	a new 115/14 kV substation to be installed as part of the Project, which will be located in an underground vault on a property between Broadway and Binney Streets in Cambridge
NHESP	Natural Heritage and Endangered Species Program
Notice	Notice of Adjudication and Public Comment Hearing
NPCC	Northeast Power Coordinating Council
NPDES	National Pollutant Discharge Elimination System
NREL	National Renewable Energy Laboratory
NWAs	non-wires alternatives
OSHA	U.S. Occupational Safety and Health Administration
Park City or PCW	Park City Wind, LLC, EFSB 20-01/D.P.U. 20-56/20-57 (2023)
Petitions	Eversource's Siting Petition and Section 72 Petition
Project	Greater Cambridge Energy Program
ROW	right-of-way
Salem Cables	New England Power Company d/b/a National Grid, EFSB 13-2/D.P.U. 13-151/13-152 (2014)
Secretary	Massachusetts Secretary of the Executive Office of Energy and Environmental Affairs
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
Stoughton-Boston	Boston Edison Company d/b/a/NSTAR Electric Company, EFSB 04-1/D.P.U. 04-5/04-6 (2005)
Sudbury-Hudson	NSTAR Electric Company d/b/a Eversource Energy, EFSB-17-02/D.P.U. 17-82/17-83 (2019)
TMP	Traffic Management Plan
Town of Sudbury	Town of Sudbury v. Energy Facilities Siting Board, 487 Mass. 737 (2021)
TTCP	temporary traffic control plans
US EPA	United States Environmental Protection Agency
WHO	World Health Organization

Woburn-Wakefield	NSTAR Electric Company d/b/a Eversource Energy, EFSB 15-04/D.P.U. 15-140/15-141 (2018)
XLPE	cross-lined polyethylene (cable)

SUMMARY OF THE FINAL DECISION

The Greater Cambridge Energy Program ("Project"), proposed by Eversource, is a major electric transmission and distribution infrastructure project with new facilities to be located in Cambridge, Somerville and the Brighton area of Boston. The Project is anchored by a new underground substation at the former Blue Garage parking site in Kendall Square. The substation site was identified in collaboration with the City of Cambridge, the Cambridge Redevelopment Authority, community stakeholders, and Boston Properties, Inc. – the developer of a large mixed-use project in Kendall Square, which includes the substation site. This will be the first underground substation in the Commonwealth and among the first in the United States. A new public green space will be created above the substation, providing community benefits in an area with Environmental Justice populations.

The Project includes eight new 115 kilovolt transmission lines housed in five underground duct banks primarily below public roadways, linking the new substation to four existing substations located in Somerville, East Cambridge, Cambridgeport (Putnam), and Brighton. The Project will enable Eversource to meet the rapidly growing electricity needs in the greater Cambridge area, driven by new development activity as well as advancing electrification of buildings and transportation for area residents and businesses. The Project will also help the Commonwealth and area municipalities meet their net zero decarbonization goals, while also helping to maintain reliable and safe electric service.

The Siting Board is required to avoid, minimize, and mitigate environmental and community impacts from constructing and operating the Project's underground substation, 8.3 miles of new transmission lines in Cambridge, Somerville, and Brighton, and modifications at existing area substations. The scale of the Project, in a densely populated urban area, required careful consideration of the least impactful routing locations, construction methods, and approval conditions to avoid, minimize, and mitigate impacts. Eversource has conducted extensive outreach to the community throughout the process and will be required to continue such efforts as the Project proceeds into construction. Input from local residents, municipalities, businesses, universities, and state and local officials, has significantly shaped and improved the Project.

Given the scale and complexity of this estimated $1.5 billion Project, construction is expected to take approximately five years, with completion in 2029. A special permit issued by the City of Cambridge led to Boston Properties offering the underground substation location and assuming a significant share of its development costs, thereby benefitting electric ratepayers.

The Siting Board held a Board meeting on the Tentative Decision on Thursday June 27th, 2024, at which meeting the Siting Board approved the Tentative Decision, with conditions.

Pursuant to G.L. c. 164, § 69J, the Massachusetts Energy Facilities Siting Board ("Siting Board") hereby approves, subject to the conditions set forth below, the Petition of NSTAR Electric Company d/b/a Eversource Energy ("Eversource" or "Company") to construct: (1) eight new 115 kilovolt ("kV") underground transmission lines that will be housed in a total of five new duct banks, totaling approximately 8.3 miles, in portions of Cambridge, Somerville and Boston; (2) a new 115/14 kV substation, which will be located in an underground vault on a property between Broadway and Binney Streets in Cambridge; and (3) modifications to existing substation facilities in the Cambridge, Somerville, and the Allston/Brighton section of Boston, Massachusetts. Pursuant to G.L. c. 164, § 72, the Siting Board hereby approves, subject to the conditions set forth below, the Petition of Eversource for a determination that the proposed transmission lines and related ancillary facilities are necessary, serve the public convenience, and are consistent with the public interest.

I. INTRODUCTION

A. Description of the Proposed Project

Eversource proposes to construct, operate and maintain: (1) eight new 115 kV underground transmission lines that will be housed in a total of five new duct banks, totaling approximately 8.3 miles, in portions of Cambridge, Somerville, and the Allston/Brighton area of Boston (the "New Lines");[1] (2) a new 115/14 kV substation, which will be located in an underground vault on a property between Broadway and Binney Streets in the Kendall Square area of Cambridge (the "New Substation"); and (3) modifications to certain existing substation facilities in Cambridge, Somerville, and Allston/Brighton (Exh. EV-2, at ES-I, 1-1). This work is collectively referred to as the "Greater Cambridge Energy Program," or the "Project." The

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[1] 8.3 miles reflect the approximate total length of the duct banks along the Company's preferred routes (Exh. EV-2, at 4-32 to 4-35). Except for Route S15, all of the Company's preferred routes are shorter than their noticed alternative counterparts (Exhs. EV-2, at 4-32 to 4-35; SCAH-1-6(1) at 6). The approximate total length of the duct banks would increase to a maximum of 9.7 miles if all follow the longer noticed alternative routes (Exh. EV-2, at 4-32 to 4-35).

Company stated that the Project is designed to address long-term reliability needs in the Cambridge area, which is experiencing rapid economic development and sustained load growth (Exh. EV-2, at ES-I, 1-5, 2-1). According to the Company, the net present value cost of the Project is approximately $2.05 billion (Exh. EFSB-C-7).[2]

The New Substation will be constructed underground on a parcel of land that was occupied by the Kendall Center Blue Garage at 290 Binney Street in East Cambridge (Exh. EV-2, at 5-43). Eversource stated that the New Substation would be constructed in an underground vault that has a maximum depth of approximately 110 feet below grade (Exh. EV-2, at 5-43). The Company proposes to use gas-insulated switchgear ("GIS") to minimize the size and footprint of the New Substation (Exh. EV-2, at 1-2). The New Substation would also include three 90 MVA 115/14 kV transformers, twenty-two 115 kV circuit breakers, six 115kV series inductors, six 14 kV, 9.6 MVAR capacitor[3] banks and associated switchgear (Exh. EV-2, at 1-2).

The Project includes eight new 115 kV underground transmission lines within five new duct banks (approximately 8.3 miles in total), primarily in public roadways in portions of Cambridge, Somerville, and Allston/Brighton, each of which would connect to the New Substation in Cambridge (Exh. EV-2, at 1-2). The Project will connect the New Substation to the following substations: Somerville Substation, Putnam Substation, East Cambridge Substation, Brighton Substation, and North Cambridge Substation (Exh. EV-2, at 1-2; 2-1 to 2-5). Figure 1 below

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2 In providing financial calculations of the net present value of the Project, the Company assumed a 40-year project useful life, a 15-year tax depreciation life, and annual operations and maintenance costs similar to those reported by the Company in D.P.U. 22-22 (Exh. EFSB-C-7). The estimated initial capital cost of the Project is $1.47 billion (Exh. EV-2, at 3-12).

3 Reactive power, measured in VARs, is the "non-working" power (as opposed to "real power" measured in W) caused by inductance. Reactive power increases the amount of apparent power, measured in VA. Capacitors are installed to decrease the magnitude of reactive power to improve power factors (the ratio of real power to apparent power). https://www.energy.gov/eere/amo/articles/reducing-power-factor-cost.

depicts the Company's preferred transmission line routes and New Substation location.[4] Figure 2 shows the Company's noticed alternative transmission line routes.[5]

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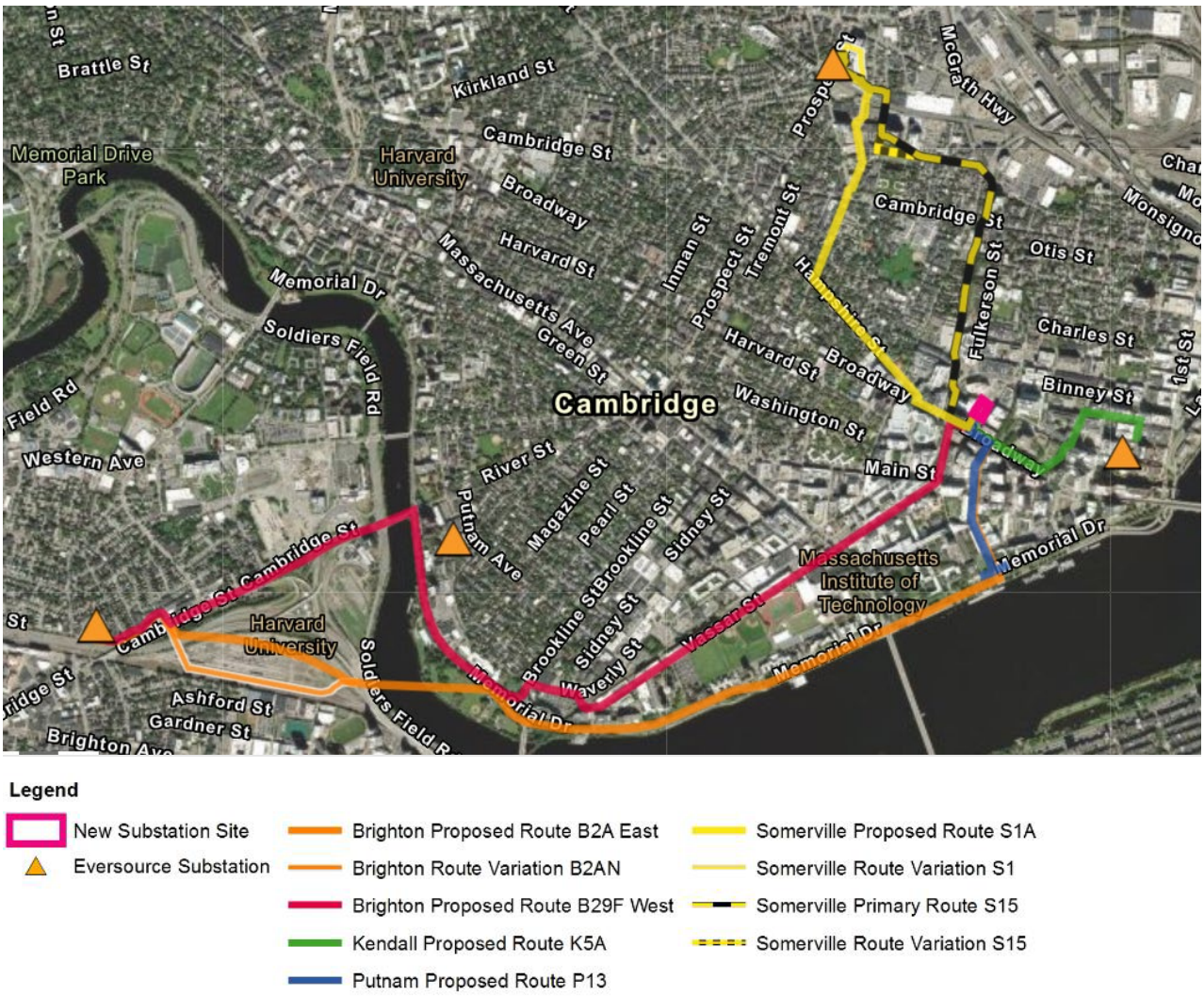
[4] The Company also requests for Approval to Construct variations to its Preferred and Primary routes, specifically the Route S15 Variation, which follows Route S15 except for an approximately 400 foot segment on South Street across a private parcel occupied by an auto parts salvage facility (Exhs. EFSB-RS-19(S1) at 2-3; EFSB-RS-19(1)).

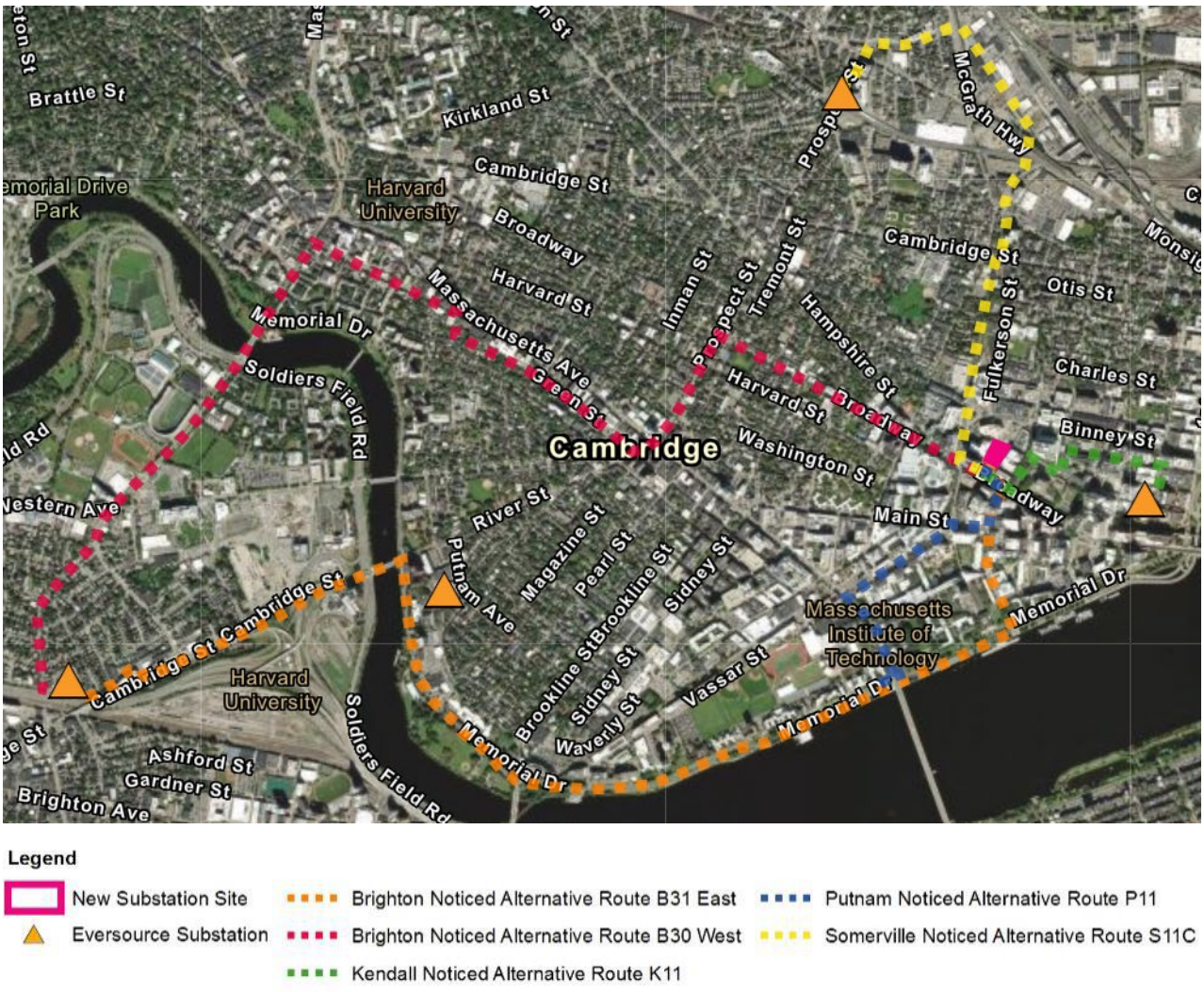
[5] In its original Petition, for the Somerville routes, the Company identified Route S1A as its preferred route and Route S11C as its noticed alternative route. When the Company added Noticed Hybrid Alternative Route S15, the Company designated that route as its "Primary" Route, and referred to both Route S1A and S11C as its Noticed Alternative Routes. In this Decision, the Siting Board refers to Somerville Noticed Hybrid Alternative Route S15 as the Company's "Preferred Route" to Somerville. See Company Brief at 10.

Figure 1: The Company's Preferred Routes



Source: https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/15038417#page=3.

Figure 2: The Company's Noticed Alternative Routes



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B. Procedural History

On March 10, 2022, Eversource filed petitions with the Siting Board and the Department in connection with the Project. Pursuant to G.L. c, 164, § 69J, Eversource filed with the Siting Board a petition for approval to construct the proposed Project, which was docketed as EFSB 22--03. The Company's petition to the Department was filed pursuant to G.L. c, 164, § 72 and requested approval of the New Lines, docketed as D.P.U. 22-21. Eversource filed a Motion requesting that the petition for approval of the New Lines be referred to the Siting Board by the Department, and

that the Siting Board's review of both petitions ("Petitions") be consolidated into a single proceeding. On April 25, 2022, under the provisions of G.L. c. 25, § 4, the Chair of the Department issued an Order that referred the Department matter to the Siting Board for review pursuant to G.L. c. 164, § 69H (2) and 980 CMR 1.09(3), and consolidated the review of the two petitions into a single proceeding pursuant to 980 CMR 1.09(2). The Siting Board accordingly conducted a single adjudicatory proceeding and developed a single evidentiary record with respect to the Petitions, docketed as EFSB 22-03/D.P.U. 22-21.

On June 3, 2022, the Siting Board issued a Notice of Adjudication and Public Comment Hearing (the "Original Notice") that established a remote public comment hearing date of June 28, 2022, directed the publication of the public comment hearing Notice in certain newspapers, the mailing of the Notice and a Summary Notice to public officials, residents and owners in the area of the Project, and the placement of the Petitions and Notices in specific locations open to the public.

As directed by the Siting Board, the Company published the Notice: in English once per week for two consecutive weeks in the Boston Herald, the Somerville Times, and the Cambridge Chronicle; in Spanish in El Mundo; in Portuguese in the Portuguese Times and the Brazilian Times; in Haitian Creole in the Haitian Times online edition; and in Simplified Chinese in Sampan. Eversource also provided the Notice, as well as a related two-page "Summary Notice" translated into Spanish, Portuguese, Simplified Chinese, and Haitian Creole, to all owners of property and U.S. mail addresses: (1) within 300 feet of the edge of the public right of way of the New Lines and their the Noticed Alternative Routes; (2) within one-quarter mile of the substation vault of the New Substation; and (3) within one-quarter mile of the substation fence-lines for Somerville Substation, Putnam Substation, East Cambridge Substation, Brighton Substation, and North Cambridge Substation.

The Company also sent the Notice and Summary Notice in English, Spanish, Portuguese, Simplified Chinese and Haitian Creole to the mayors, city councilors, planning boards, city clerks, city managers, zoning boards of appeals, departments of public works, and conservation commissions for Boston, Cambridge, and Somerville, as well as the Cambridge Public Library (Main Branch and O'Connell Branch), Somerville Public Library and the Boston Public Library (Brighton Branch).

The Siting Board conducted the remote public comment hearing regarding the Company's Petitions via Zoom on June 28, 2022. Interpretation was provided in Spanish, Portuguese, Chinese, and Haitian Creole.

The Siting Board received four timely petitions to intervene from: (1) the Massachusetts Institute of Technology ("MIT"); (2) the City of Somerville ("Somerville"); (3) the City of Cambridge ("Cambridge"); and (4) Save Columbia and Hampshire Neighborhood Association ("SCAH"), an unincorporated association of 16 local residents and businesses in the Hampshire and Columbia Streets area of Cambridge.

At the June 28, 2022 public comment hearing, the Siting Board listened to the concerns of public officials and residents regarding the proposed Project. Those comments included support for a new site in Kendall Square for the New Substation, rather than the previously planned site on Fulkerson Street; the collaborative efforts between Cambridge and Eversource regarding the site and route selection process; alternative routes in the Boynton Yards area of Somerville; and alternatives to the Hampshire/Columbia Street route. In addition, the public commented on construction disruptions; past history of street construction with related disruptions; protection of trees along the routes; noise and vibration impacts associated with the underground construction; the narrowness of the streets; the level of bike traffic; a transition to a cleaner energy grid; equity in selecting routing and siting locations; impacts on parking; impacts to foundations for older historic properties; minimizing impacts on residential neighborhoods; anticipated additional impacts due to remote work-from-home activities; potential rerouting away from residential areas; translation of notices and outreach materials; consideration of historic resources and green spaces; disruptions within the residential neighborhood near the Massachusetts Bay Transportation Authority ("MBTA") Grand Junction Railroad due to commercial development; density of residential population in the Hampshire/Columbia neighborhood; notices given to residents related to construction activities; the history of East Cambridge relative to red-lining; the impacts to businesses during construction; and potential impacts of electric and magnetic fields ("EMF") associated with the transmission lines.

As part of an initial review of the Company's filings, on July 20, 2022, and July 26, 2022, Siting Board staff issued preliminary information requests related to a potential alternative route

through Cambridge and Somerville to connect the proposed New Substation with the Somerville Substation. This route segment presented a potential new routing option, different from the proposed and alternative routes included in the Company's Petitions and identified in the Notice of Adjudication and Public Comment Hearing. On September 9, 2022, Eversource filed a Motion for Supplemental Notice requesting that the Siting Board authorize the issuance by the Company of a supplemental notice of this proceeding to owners of property and current residents along and near the potential new alternative route.

After requesting comments on the Company's Motion and receiving none, the Siting Board directed the Company to publish a supplemental notice for an additional remote public comment hearing to inform abutters to a new "Noticed Hybrid Alternative Route S15" proposed by the Company, as well as previously noticed abutters to the original routes proposed by the Company to the Somerville Substation.[6] On September 28, 2022, the Siting Board issued a Supplemental Notice of Adjudication and Public Comment Hearing ("Supplemental Notice") that established a second public comment hearing date of November 10, 2022. As directed by the Siting Board, the Company published the Supplemental Notice in the same manner required as the Original Notice including languages and other publication requirements.

The Siting Board conducted the supplemental remote public comment hearing on November 10, 2022. At the public comment hearing, the Siting Board heard comments from the Cambridge Redevelopment Authority ("CRA"), the commissioner of Cambridge Department of Public Works ("DPW"), and residents regarding the relative costs of route alternatives; disruption to residents during construction; constructability differences in alternative route options; support for the new hybrid route option from residents and the Cambridge City Council; potential scoring for the new route option; relative EMF values for the new route; mitigation measures for the original proposed route; and increased electric demands in the area. In addition to those oral

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[6] Eversource later characterized the Noticed Hybrid Alternative Route S15 as its preferred route option between the Somerville Substation and the New Substation. In its Brief, Eversource stated that the Company has defined Route S15 as the route that the Company proposes that the Siting Board approve for this transmission segment of the Project (Company Brief at 10, n.5).

comments, the Siting Board received numerous written comments. Interpretation services were provided in Spanish, Portuguese, Chinese, and Haitian Creole.

The Siting Board received additional petitions to intervene following the supplemental public comment hearing. SCAH provided a timely petition to intervene pursuant to G.L. c. 30, § 10A, which amended and superseded the previous petition filed on July 22, 2022 ("SCAH Amended Petition"). In addition, eleven individual residents filed petitions to intervene pursuant G.L. c. 30A, § 10, including: (1) Tuongvi Nguyen; (2) Dr. Serenus Hua; (3) Meghan Colgan; (4) Skooby Laposky; (5) M. Caleb Neelon[7]; (6) Raffaella Pasquale; (7) Kavish Gandhi; (8) Dr. Simona Bujoreanu; (9) Eric Connally; (10) Dr. Catherine Rich; and (11) Andrew Groh. All of the eleven individual petitioners also sought to participate as members of SCAH.[8] The Siting Board did not receive any Petitions to participate as a Limited Participant.

On July 14, 2023, the Presiding Officer granted the petitions to intervene filed by Cambridge, Somerville, and MIT pursuant to G.L. c. 30A, § 10. The Presiding Officer granted SCAH's petition to intervene, filed pursuant to G.L. c. 30A, § 10A, and limited the organization's intervention to matters relating to "damage to the environment" as defined in G.L. c. 214, § 7A with the rights set forth in 980 CMR 1.05(1).[9] See G.L. c. 30A § 10A; 980 CMR 1.05(1)(c) and (d). Finally, the Presiding Officer granted Tuongvi Nguyen; Dr. Serenus Hua; Meghan Colgan; Skooby Laposky; M. Caleb Neelon; Raffaella Pasquale; Dr. Catherine Rich; Andrew Groh; Kavish

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7 On July 24, 2023, Mr. Neelon provided notice of his desire to withdraw from the proceeding.

8 SCAH and the individual intervenors did not issue discovery or file briefs in this proceeding.

9 Individual members of SCAH were not granted intervenor status with the exception of those who filed separate petitions to intervene as individuals. See Presiding Officer Ruling on Intervention, July 14, 2023, at 14-16.

Gandhi, Dr. Simone Bujoreanu and Eric Connolly intervenor status as individuals pursuant to G.L. c. 30A, § 10.[10]

The Company sponsored the testimony of twenty-one witnesses: (1) Maija Benjamins, director of strategic project development; (2) Charles Eck, project manager at Burns & McDonnell; (3) Digaunto Chatterjee, vice president of system planning; (4) Lavelle Freeman, director of distribution system planning; (5) Juan Martinez, manager of distribution system planning; (6) Gerhard Walker, manager of advanced forecasting and modeling; (7) Todd Lanham, manager of project services; (8) Meredith Boericke, project manager in the Transmission Project Services Team; (9) Christopher Newhall, senior environmental specialist; (10) Christopher Soderman, director of transmission line engineering; (10) Michael Howard, managing principal, Epsilon Associates Inc.; (11) Michael Sutton, traffic engineer, Northeast Traffic Control Services; (12) Benjamin Cotts, principal engineer, Exponent; (13) John Zicko, director of capital projects engineering; (14) Allison Klein, lead engineer for the Underground Transmission Line Engineering Group; (15) Jamil Abdullah, manager for the Capital Projects Engineering Group; (16) Aaron Welles, project manager in the Transmission Right-of-Way Department; (17) Jacob Lucas, director of transmission planning; (18) David Burnham, director of transmission policy; (19) Ashley Botelho, director of distribution revenue requirements; (20) Timothy Ryan, financial consultant in the Transmission Rates and Revenue Requirements Department; and (21) Robert O'Neal, managing principal and acoustical engineer, Epsilon Associates, Inc.

MIT presented Carol Dennison, senior director and practice lead for the Water Business Line; and Andrew Boyd, chief engineer, both from WSP USA ("WSP"). In its prefiled testimony, MIT proposed three alternative routes in the area of its campus. WSP testified on engineering, cost, and feasibility issues relating to three route alternatives proposed by MIT including the Grand Junction North to Albany Street Segment, the Route B2A Wadsworth Street Segment, and the P13 Wadsworth Street Segment (together, "MIT Preferred Segments").

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[10] The New Substation, proposed transmission route, and the existing substations included in the Project are located in areas with environmental justice populations. See Exh. EV-3, at 11.

Cambridge and Somerville also sponsored witnesses. Cambridge presented testimony from Katherine Watkins, P.E., commissioner of the Cambridge DPW regarding the Company's outreach within Cambridge, the consultations among Eversource and stakeholders regarding routing and other Project matters in which Cambridge participated, and Cambridge's evaluation of the Project and routing options presented to the Siting Board. Somerville sponsored the testimony of Brian Postlewaite, P.E., the director of engineering for Somerville, regarding the Company's proposed routing through Somerville, specifically addressing Hybrid Alternate Route S15, including route variations, and expected developments in the Union Square and Boynton Yards area of Somerville. Mr. Postlewaite also addressed the integration of existing above-ground infrastructure owned by the Company and other entities into the Project and undergrounding that infrastructure.

On October 2, 2023, Eversource filed a motion requesting authorization to provide a second supplemental notice of adjudication regarding an additional route proposal for the Somerville Study Area segment of the overall Project.[11] The Company requested that the Siting Board allow the Company to provide a second supplemental notice to a limited number of owners of property and residents along and near two portions of the new Route S15 in Cambridge and Somerville.[12] See Section VI.B.2.a.i.

On October 5, 2023, MIT filed a Motion for a Supplemental Notice, requesting that if the Siting Board granted the Eversource Motion for a Second Supplemental Notice described above, the Siting Board should also order the Company to publish and distribute a similar notice for the MIT Preferred Segments. MIT asserted that providing public notice of the MIT Preferred Segments in conjunction with the most recent Eversource routing proposal, would allow for the expeditious construction of MIT's proposed route segment variations if the Siting Board deems

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11 See October 2, 2023 Eversource Motion for Supplemental Notice at 1.

12 The Company requested that the Siting Board allow the Company to provide a second supplemental notice of this proceeding to a limited number of owners of property and current residents along and near two portions of Route S15 in Cambridge and Somerville, which consisted of eleven new parcels potentially impacted by the proposed routing change.

them superior routing alternatives. A detailed discussion of those options is provided in Section V of this Decision.

On October 11, 2023, Eversource filed an opposition to MIT's Motion to Notice MIT's Preferred Segments. During evidentiary hearings on October 27, 2023, the Presiding Officer heard arguments on the MIT and Eversource motions for supplemental notice (Tr. 6, at 971-980). MIT asserted that its request would allow the Siting Board to approve the MIT proposed routes in an expeditious fashion if the Siting Board determined the MIT proposed routes to be clearly superior to the Company's proposed route alternatives in the vicinity of the MIT campus on the basis of cost, reliability, and environmental impacts (Tr. 6, at 974). Eversource opposed MIT's Motion based primarily on the delay that could be associated with any additional process necessary to evaluate the MIT alternatives, arguing that the timing of the need for the Project is immediate (Tr. 6, at 976-978). [13] Cambridge concurred with the Company's opposition (Tr. 6, at 980).

MIT stated its support for a potential deferral in a ruling on its Motion until the conclusion of briefing which could provide an opportunity for Siting Board staff to evaluate if there were any compelling reasons to provide any additional process necessary related to the MIT proposed routes, such as notice and additional adjudication to allow the MIT routes to be formally included as routes to be approved in a final decision by the Siting Board (Tr. 6, at 280).

The Presiding Officer granted the Eversource Motion for a Second Supplemental Notice on December 19, 2023. No comments or requests to participate were received in response to that notice. The Siting Board's ruling on MIT's Motion to Notice its proposed route segments is addressed in Section V.

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[13] Eversource noted in its written opposition to MIT's Motion that as applicant, the Company had no intention to construct the MIT routes, that the process necessary to fully evaluate the MIT route options would be significant (requiring the notice of 291 abutters), and that Eversource identified feasibility and constructability concerns with the routes proposed by MIT (Eversource Opposition to MIT's Motion for Supplemental Notice at 1-6). During the evidentiary hearings, the Siting Board granted the opportunity for both parties to provide surrebuttal and extensive record request responses to develop the evidentiary record on the MIT proposed routes including engineering details and cost estimates to aid in the evaluation of the MIT route options (Tr. 7, at 1164-1168).

The Siting Board issued four rounds of information requests to the Company and one to MIT and conducted ten days of evidentiary hearings, beginning on October 16, 2023, and ending on November 16, 2023, and issued numerous record requests. In addition, Eversource and MIT issued information requests, record requests, presented witnesses and cross-examined witnesses. In total, approximately 510 exhibits were entered into the evidentiary record in this proceeding. Timely briefs were submitted by Eversource, MIT and Cambridge regarding the Company's proposed Project and alternative transmission line routes proposed by MIT.[14]

After the conclusion of evidentiary hearings and the filing of briefs, Siting Board staff reviewed the record and drafted a Tentative Decision based on said record. On June 17, 2024, staff served a copy of the Tentative Decision on the Siting Board and all parties for review and comment. The parties were given until June 25, 2024 to file written comments. The Siting Board received timely written comments from the Company, Cambridge, and MIT.

On June 17, 2024, Siting Board staff issued a Notice of Siting Board Meeting in English, Spanish, Haitian Creole, Simplified Chinese, and Portuguese to all persons and entities on the service list, to 17 community-based organizations, and to state legislators for the area in which the Project would be located. The Siting Board conducted a public meeting to consider the Tentative Decision on June 27, 2024, with simultaneous interpretation provided in Spanish, Haitian Creole, Chinese, and Portuguese. Eversource, Cambridge, and MIT provided comment at the public meeting. After deliberation, the Board directed staff to prepare a Final Decision approving the Petitions, subject to conditions, as set forth below.

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

G.L. c. 164, § 69J provides that the Siting Board should approve a petition to construct if the Siting Board determines that the petition meets certain requirements, including that the plans for the construction of the applicant's facilities are consistent with the policies stated in

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[14] Initial briefs were filed by Eversource, MIT and Cambridge on December 8, 2023; reply briefs by the same parties were filed on December 22, 2023. No other parties filed briefs in this docket.

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; 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 or an ancillary structure which is an integral part of the operation of any transmission line which is a facility.

The Project consists of eight new 115 kV underground transmission lines that will be housed in a total of five new duct banks, totaling approximately 8.3 miles, in portions of Cambridge, Somerville and the Allston/Brighton area of Boston. Therefore, the proposed 115 kV transmission lines are facilities with respect to Section 69J. In addition, the New Substation is ancillary to the transmission lines to be constructed for the Project. Therefore, 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).

Under G.L. c. 164, §§ 69H, 69J, the Siting Board reviews the Company's filing to determine whether the Project would provide a reliable energy supply with a minimum impact on the environment at the lowest possible cost. Under G.L. c. 164, § 72, the Siting Board determines whether the proposed Project is necessary, serves the public convenience, and is consistent with the public interest. See Section VIII, below.

III. NEED FOR THE PROPOSED PROJECT

A. Standard of Review

In accordance with G.L. c. 164, § 69H, the Siting Board is charged with the responsibility for implementing energy policies to provide a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost. In carrying out this statutory mandate with respect to proposals to construct electrical transmission facilities in the Commonwealth, the Siting Board is required to evaluate whether there is a need for additional transmission resources. The Siting Board reviews the need for proposed transmission facilities to meet reliability, economic efficiency, or environmental objectives. G.L. c. 164, §§ 69H, 69J.

When demonstrating the need for a proposed transmission facility based on reliability considerations, a petitioner applies its established planning criteria for construction, operation, and maintenance of its transmission and distribution system. Compliance with the applicable planning criteria can demonstrate a "reliable" system. NSTAR Electric Company d/b/a Eversource Energy, EFSB 19-06/D.P.U. 19-142/19-143, at 10 (2022) ("Mid Cape Reliability"); 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").

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. Mid Cape Reliability at 10; Beverly-Salem at 10; Andrew-Dewar at 7. See also Town of Sudbury, 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. Mid Cape Reliability at 10-11; Beverly-Salem at 11: Andrew-Dewar at 7-8.

B. Overview of Project Area

Eversource described the Project as being an integrated, long-term solution to address reliability needs in areas of the City of Cambridge that are experiencing rapid economic development and sustained load growth (Exh. EV-2, at ES-i). The Project Area is roughly defined by the Cambridge/Somerville municipal boundary to the northeast, the Charles River to the east, south, and west, and the Harvard University campus to the northwest (Exh. EV-2, at 2-1). The Company's customers in the Project Area include many large biotechnology and laboratory facilities, a multitude of retail, hospitality and office customers, educational institutions (including Harvard University and MIT), medical facilities, and numerous residential customers (Exh. EV-2, at 2-1). Major new developments include Cambridge Center, Cambridge Research Park, Technology Square, and One Kendall Square, as well as several large lab and office buildings along Binney Street in Cambridge (Exh. EV-2, at 2-2).

Eversource stated that it must address the deficiency of firm distribution substation capacity in the Project Area, mitigate the potential for contingencies on existing transmission lines to cause outages to the entire Project Area for prolonged periods, and resolve transmission line overloads that would require customer load shedding in the Project Area under certain foreseeable contingencies (Exh. EV-2, at ES-i). Eversource maintains that these system reliability needs are significant and require immediate resolution to maintain a reliable system (Exh. EV-2, at ES-i).

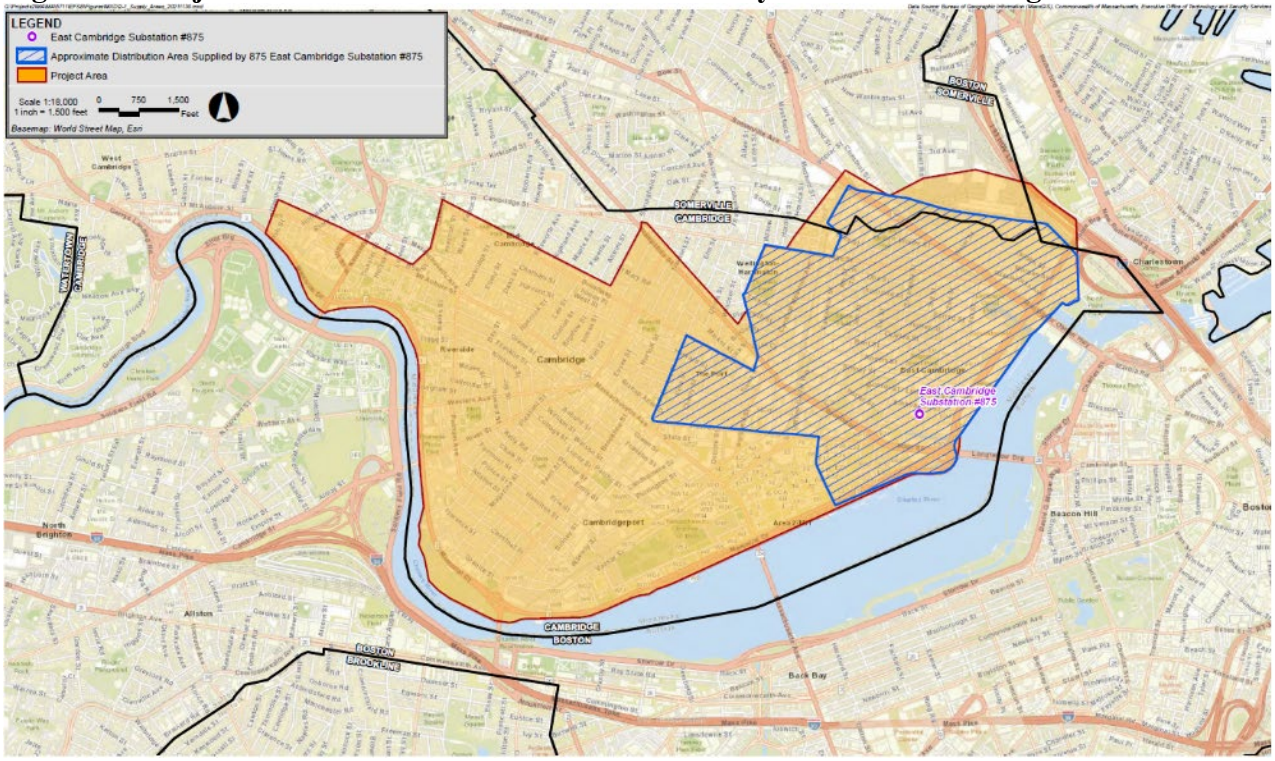
1. Project Area Transmission System

The Project Area contains the Putnam and East Cambridge Substations, which are both supplied from the North Cambridge Substation (Exh. EV-2, at 2-2). As shown in Figure 4 below, two 115 kV transmission lines (Lines 831-536 and 831-537) run from North Cambridge Substation to Putnam Substation (Exh. EV-2, at 2-4). North Cambridge Substation is also supplied by Blair Pond and Brighton Substation (Lines 509-530 and 329-531) (Exh. EV-2, at 2-4). The Putnam Substation supplies the East Cambridge Substation via two 115 kV lines (Lines 831-540 and 831-538) (Exh. EV-2, at 2-4). From East Cambridge Substation, a single 115 kV line (Line 875-539) connects to a substation at Vicinity's Kendall Generating Station (Exh. EV-2, at 2-4; Tr. 1, at 61).[15] The Company describes the Project Area as a "load pocket," which is an "electrically connected load area primarily supplied radially by a specific power source(s) (i.e., the load area

[15] Vicinity Energy operates a district heating system serving Cambridge and Boston. When it operates, Vicinity's Kendall Generating Station also has the potential to supply energy to the Project Area (Tr. 1, at 64). While Vicinity intends to retain electric generation capability of the three generation units in operation at the Kendall Generating Station (two of which are cogeneration units that produce steam supplied to Vicinity's district steam system), Vicinity Energy has announced its intention to install electric steam boilers and industrial-scale heat pump technology, that will require substantial amounts of power from the transmission system (RR-EFSB-4(1)). Vicinity Energy has the option to be served by Eversource through a state-jurisdictional retail rate or FERC-jurisdictional wholesale transmission rate, with completion of the Project and the existing radial transmission system being designated Pool Transmission Facility ("PTF") by ISO New England Inc. ("ISO-NE") (RR-EFSB-8, at 1; Tr. 2, at 212-213). Ultimately, the Company expects that Vicinity will obtain the necessary electricity as a FERC-regulated wholesale customer (Tr. 2, at 213).

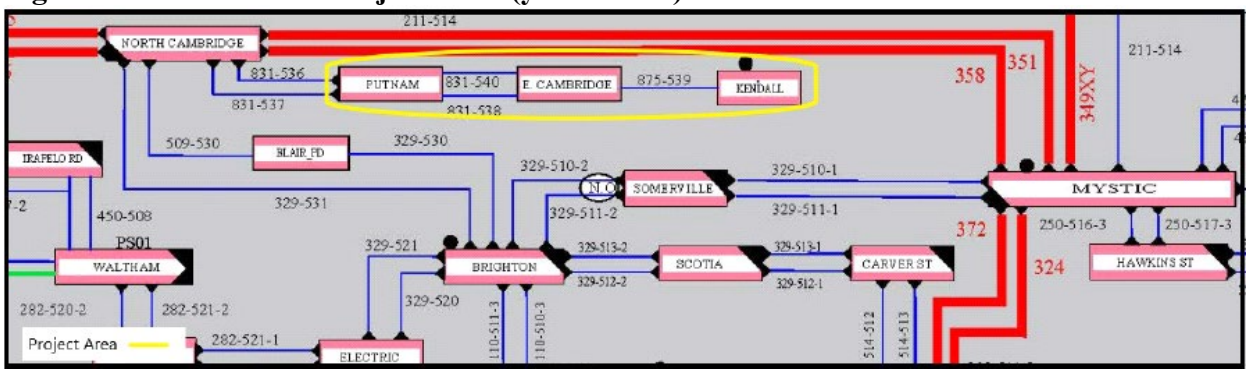
supplied by all the feeders from a specific substation)" (Exh. EV-2, at 2-2, n.5). The Company considers the East Cambridge Substation as the most at risk portion of the Project Area (Exh. EV-2, at 2-2). A distribution map of the Project Area, and the sub-portion served by the East Cambridge Substation, are shown in Figure 3 below.

Figure 3: Project Area and Distribution Area Served by the East Cambridge Substation



Source: Exh EV-2, at 2-3, Figure 2-1

Figure 4: Schematic of Project Area (yellow oval) Within Area Transmission Grid



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

2. Project Area Distribution System

The Project Area distribution system is mainly served by East Cambridge Substation and Putnam Substation (Exh. EV-2, at 2-5). East Cambridge Substation has three 115/14 kV step down transformers, with a total nameplate capacity of 187.5 MVA (Exh. EV-2, at 2-5). The substation does not currently have any transfer switching capability to adjacent stations (Exh. EV-2, at 2-5). According to Eversource, loading of any single transformer above 62.5 MVA would constitute an emergency loading (Exh. EV-2, at 2-5). Additionally, the long-time emergency ("LTE") ratings are 75 MVA for each of the transformer banks (Exh. EV-2, at 2-5). Upon loss of any one transformer, the load at the substation would be supplied via the remaining two transformers (Exh. EV-2, at 2-5). Therefore, the Firm Capacity – the total LTE rating of the remaining transformers – is 150 MVA (Exh. EV-2, at 2-5).

Putnam Substation has four 115/14 kV step down transformers, with three transformers having an LTE rating of 73 MVA and the fourth one having an LTE rating of 75 MVA (Exh. EV-2, at 2-5). The total nameplate capacity of the four transformers is 285 MVA, while the Firm Capacity of Putnam Substation is 211 MVA (Exh. EV-2, at 2-5). Putnam has no transfer capability beyond providing 34 MVA of interim load relief to East Cambridge Substation (Exh. EV-2, at 2-5). Somerville Substation, although beyond the Project Area, serves portions of distribution load in Cambridge with four 14 kV distribution tie lines each rated for 22 MVA (Exh. EV-2, at 2-6). Somerville Substation consists of two 115/14 kV transformers with a total capacity of 131 MVA, and a Firm Capacity of 75 MVA (Exh. EV-2, at 2-6).

C. Description of the Company's Demonstration of Need

1. System Reliability Criteria

Eversource indicated that its Electric Power System Planning Criteria and Standards provide a uniform approach to designing an efficient and reliable electric transmission and distribution system (Exh. EV-2, at 2-6). According to the Company, as a regulated utility, it has the obligation to provide reliable service in accordance with applicable safety codes and regulatory requirements (Exh. EV-2, at 2-6). The Company explained that the key objectives of its planning include building sufficient capacity to meet instantaneous demand, satisfy power quality/voltage

requirements within applicable standards, provide adequate availability to meet customer requirements, and deliver power with required frequency (Exh. EV-2, at 2-6). To meet those objectives, the Company designs its transmission system in accordance with North American Electric Reliability Corporation ("NERC") reliability standards, Northeast Power Coordinating Council ("NPCC") regional standards, and ISO New England ("ISO-NE") criteria (Exh. EV-2, at 2-6).

Eversource indicated that it plans its local transmission system consistent with applicable NERC, NPCC and ISO-NE standards, as well as its own internal planning standards (Exh. EV-2, at 2-7). As described above, the Project Area is a radially supplied load pocket. The transmission lines from the North Cambridge Substation that supply the Project Area are not classified as Pool Transmission Facilities ("PTF") but are NERC Bulk Electric System elements and are thus subject to criteria listed in NERC Reliability Standard TPL-001-4 "Transmission System Planning Performance Requirements" and the Company's Planning Criteria SYSPLAN 1 and SYSPLAN 15 (Exh. EV-2, at 2-7). SYSPLAN 1 and 15 define five N-1 and two N-1-1 contingency conditions, which the Company must plan for in its planning process (Exh. EV-2, at 2-8). The Company conducts a load-flow analysis to ensure that the occurrence of a single-contingency (N-1) or one contingency followed shortly thereafter by a second contingency (N-1-1), does not result in thermal limit violations for a transmission element beyond its Long-Term Emergency ("LTE") rating or violate acceptable system voltage limits (Exh. EV-2, at 2-8). Furthermore, NERC standard TPL-001-4 does not allow the Company to use non-consequential load loss[16] to address reliability issues for N-1 conditions, and SYSPLAN 15 states that consequential load loss greater than 50 MW is unacceptable (Exh. EV-2, at 2-9).

At the distribution system level, the Company's SYSPLAN 10 standard includes guidelines and criteria for how the Company plans and designs its bulk distribution substation and electric distribution facilities (Exh. EV-2, at 2-7). Eversource explained that its goal at this level is to automatically restore electric service to customers following the loss of supply to a Bulk

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16 Consequential load loss is load that is lost as a direct result of the loss of a transmission element, whereas non-consequential load loss is load that is not a direct result of the loss of a transmission element, but rather, an operational decision to drop that load (Tr. 1, at 161).

Distribution Supply Bus (Exh. EV-2, at 2-9). The Company stated that its planning standards ensure a higher degree of reliability in high-load density areas such as the Project Area by maintaining supply without power loss to Bulk Distribution Supply Buses following an N-1 contingency condition (Exh. EV-2, at 2-9). The Company explained that it includes its planning standards in its overall assessment of its system, which it submits to the Department annually (Exh. EV-2, at 2-10). See also D.P.U. 21-ARR-02. The Company represented that its distribution planning standards in SYSPLAN 10 dictate that under normal operating conditions and configurations, substation transformer loads should not exceed 75 percent of the normal rating and substation transformers should not exceed their LTE ratings after automatic bus restoral (Exh. EV-2, at 2-10).[17] The Company explained that should peak loads approach the 75 percent firm capacity threshold, its options include permanent load transfers to other substations or installing larger or additional transformers (Exh. EV-2, at 2-10).

2. System-Level Peak Load Forecast

The Company develops a ten-year peak load forecast as part of its substation planning process to assess system performance and substation capacity (Exh. EV-2, at 2-10). The Company forecasts system-level loads for each of its legacy operating service territories due to the unique characteristics of each area (Exh. EV-2, at 2-10). To predict the Company's system-level peak demand, Eversource uses an econometric model that analyzes historical peak demand as a function of peak-day weather conditions and the economy (Exh. EV-2, at 2-10). Eversource relies on a 90/10 extreme weather scenario that has a ten percent chance of being exceeded in any one year for its peak-day weather (Exh. EFSB-N-19, at 2). The model uses a three-day weighted temperature humidity index to forecast summer peak demand (Exh. EV-2, at 2-10). The Company uses Moody's Analytics to provide the economic input data for its forecasting model (Exh. EV-2,

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[17] Additionally, according to SYSPLAN 10, bulk transformer loads above LTE rating but (i) below Short Time Emergency ("STE") rating must be lowered below the LTE rating within 30 minutes, and (ii) below Drastic Action Limit ("DAL") rating must be lowered to below the LTE rating within five minutes (Exh. EV-2, at 2-7, n.11).

at 2-10). The resulting forecast of peak load is called the "trend forecast" which does not include adjustments for future energy efficiency ("EE"), solar, electric vehicles ("EV"), or large customer projects, known as "step loads," which are accounted for separately (Exh. EV-2, at 2-10).

Once Eversource finalized the system-level forecast, it developed a substation peak load forecast as a function of the substation's peak historical demand and peak load history and forecast (Exhs. EV-2, at 2-11; EFSB-N-19, at 4). The substation econometric model measures how each substation performs relative to the Eversource system, and then projects that relationship into the future (Exhs. EV-2, at 2-11; EFSB-N-19). Manual adjustments are made to individual substation forecasts for: (1) specific large development projects and expected changes in system operations that could not otherwise be predicted by the Operating Company's forecasts or the individual substation's share of those forecasts; (2) substation peak load forecasts are reduced for Company-sponsored EE and behind-the-meter solar installations; (3) substation peak load forecasts are increased for EV additions (Exhs. EV-2, at 2-11; EFSB-N-19). The Company provided ten-year forecasted summer peak loads for East Cambridge, Putnam, and Somerville Substations, as well as the forecast for the Project Area – encompassing Putnam and East Cambridge Substations (Exh. EV-2, at 2-11). See Tables 1, 2, 3 and 4 below.

The Company's forecasts anticipate a significant rise in light-duty passenger EV adoption and specific large development projects (step loads) (Exh. EV-2, at 2-11). Eversource explained that at East Cambridge Substation, it expected a cumulative 122.6 MVA in step loads as early as 2029 up from 29.8 MVA in 2023 (RR-EFSB-5).[18] See also Table 1 below. At Putnam Substation, the Company forecasted 24.2 MVA of cumulative step loads in 2027 up from 10.2 MVA in 2023 (RR-EFSB-5). Finally, at the Somerville Substation, the Company forecasted 25 MVA of cumulative step loads in 2026 up from 10.2 MVA in 2023 (Exh. RR-EFSB-5).

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[18] Eversource explained that new load additions included the continued build-out of the Cambridge Crossing development, MITIMCo's development of the 14-acre Volpe Center Site, and could include future transmission needs of Vicinity Energy (Exh. EV-2, at 2-15; RR-EFSB-8).

Table 1: East Cambridge Substation Forecast

Row Labels	EE	EV	Generation	PV	Step Load	Trend	Grand Total
2023	-0.4	0.0	5.0	-0.1	29.8	128.1	162.4
2024	-1.1	0.0	5.0	-0.2	57.3	128.8	189.9
2025	-1.7	0.1	5.0	-0.3	83.6	129.6	216.3
2026	-2.3	0.1	5.0	-0.4	106.6	130.4	239.4
2027	-2.9	0.2	5.0	-0.4	120.6	131.0	253.4
2028	-3.5	0.2	5.0	-0.5	122.6	131.6	255.4
2029	-4.1	0.4	5.0	-0.6	122.6	132.3	255.6
2030	-4.7	0.5	5.0	-0.6	122.6	133.0	255.8
2031	-5.3	0.7	5.0	-0.7	122.6	133.7	256.0
2032	-5.9	1.0	5.0	-0.7	122.6	134.5	256.5

Source: RR-EFSB-5.

Table 2: Putnam Substation Forecast

Row Labels	EE	EV	Generation	PV	Step Load	Trend	Grand Total
2023	-0.4	0.0	20.3	-0.1	10.2	133.5	163.5
2024	-1.1	0.1	20.3	-0.2	14.2	134.3	167.5
2025	-1.8	0.1	20.3	-0.3	18.2	135.2	171.6
2026	-2.5	0.1	20.3	-0.5	21.2	136.0	174.7
2027	-3.1	0.2	20.3	-0.6	24.2	136.6	177.7
2028	-3.8	0.4	20.3	-0.7	24.2	137.3	177.7
2029	-4.4	0.6	20.3	-0.9	24.2	138.1	177.9
2030	-5.0	0.8	20.3	-1.0	24.2	138.9	178.1
2031	-5.7	1.1	20.3	-1.1	24.2	139.6	178.4
2032	-6.3	1.5	20.3	-1.2	24.2	140.5	178.9

Source: RR-EFSB-5.

Table 3: Somerville Substation Forecast

Row Labels	EE	EV	Generation	PV	Step Load	Trend	Grand Total
2023	-0.2	0.0	0.0	-0.1	7.0	52.4	59.2
2024	-0.4	0.0	0.0	-0.1	15.0	52.4	66.9
2025	-0.7	0.0	0.0	-0.2	23.0	52.8	75.0
2026	-0.9	0.1	0.0	-0.2	25.0	53.2	77.1
2027	-1.2	0.1	0.0	-0.3	25.0	53.5	77.2
2028	-1.4	0.2	0.0	-0.3	25.0	53.8	77.3
2029	-1.6	0.3	0.0	-0.4	25.0	54.1	77.4
2030	-1.9	0.4	0.0	-0.4	25.0	54.5	77.6
2031	-2.1	0.6	0.0	-0.4	25.0	54.8	77.8
2032	-2.4	0.8	0.0	-0.5	25.0	55.1	78.1

Source: RR-EFSB-5.

Table 4: Project Area Forecast (combined Putnam and East Cambridge Substations)

Row Labels	EE	EV	Generation	PV	Step Load	Trend	Grand Total
2023	-0.8	0.1	5.0	-0.2	40.0	281.9	326.0
2024	-2.2	0.1	5.0	-0.4	71.5	283.5	357.5
2025	-3.5	0.1	5.0	-0.6	101.8	285.1	387.9
2026	-4.8	0.2	5.0	-0.8	127.8	286.7	414.1
2027	-6.0	0.4	5.0	-1.0	144.8	287.9	431.1
2028	-7.3	0.6	5.0	-1.2	146.8	289.3	433.2
2029	-8.5	0.9	5.0	-1.4	146.8	290.8	433.5
2030	-9.8	1.3	5.0	-1.6	146.8	292.2	433.9
2031	-11.0	1.8	5.0	-1.8	146.8	293.7	434.5
2032	-12.3	2.5	5.0	-2.0	146.8	295.3	435.4

Source: RR-EFSB-5.

3. Transmission System Needs

Eversource conducted load flow analysis for 2030, consistent with the Company's long-term planning horizon, to determine transmission system needs (Exh. EV-2, at 2-15). The Company used various generation-out-of-service cases to test its system (Exh. EV-2, at 2-15). As a result, the Company identified N-1 overloads on the North Cambridge to Putnam 115 kV transmission lines starting in 2022 (Exh. EV-2, at 2-15). See Table 5 below. The Company also identified LTE overloads under an N-1-1 analysis (Exh. EV-2, at 2-16). See Table 6 below. The Company explained that the overloads would require immediate actions such as load shedding, under SYSPLAN 10, to reduce the loading below LTE ratings to prevent damage to equipment (Exh. EV-2, at 2-16). However, NERC TPL-001-4, which does not allow non-consequential load loss, prohibits load shedding to address reliability issues for loss of a single transmission component (Exh. EV-2, at 2-16).

Table 5: 2030 N-1 Analysis Results – Worst Case Overloads

Monitored Element	Monitored Element Number	Contingency	% LTE (MVA)
North Cambridge to Putnam	831-536	N-1	162
North Cambridge to Putnam	831-537	N-1	164
Putnam to East Cambridge	831-538	N-1	105
Putnam to East Cambridge	831-540	N-1	105

Source: RR-EFSB-5, at 5

Table 6: 2030 N-1-1 Worst Case Transmission Overloads

Monitored Element	Monitored Element Number	Contingency	% LTE (MVA)
Brighton to Blair Pond	329-530	N-1-1	150
Brighton to North Cambridge	329-531	N-1-1	155
North Cambridge to Putnam	831-536	N-1-1	166
North Cambridge to Putnam	831-537	N-1-1	166
Putnam to East Cambridge	831-538	N-1-1	158
Putnam to East Cambridge	831-540	N-1-1	172

Source: RR-EFSB-5, at 5

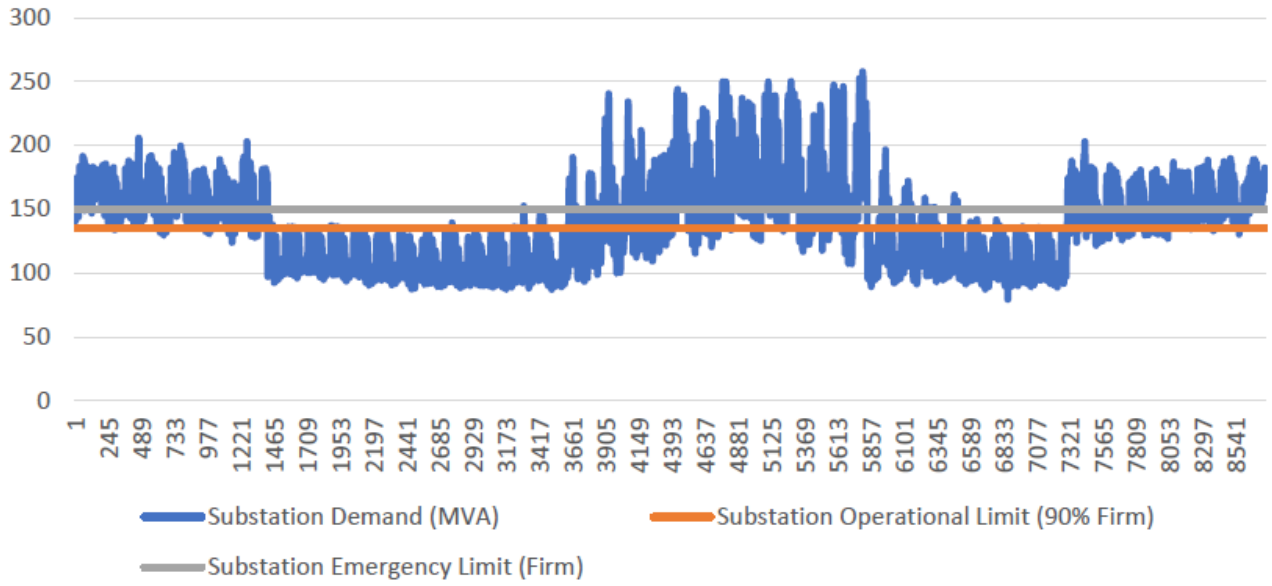
According to Eversource, there is a risk of loss of supply to Putnam and East Cambridge Substations under specific N-1-1 contingencies, with load at risk of loss increasing from 326 MVA in 2023 to 435.4 MVA in 2032 (RR-EFSB-5, at 4). Loss of supply at just the East Cambridge Substation is possible under certain N-1-1 contingencies, with peak load escalating from 190 MVA in 2024 to 256 MVA in 2032 (RR-EFSB-5).

4. Distribution System Needs

The Company explained that the distribution system in East Cambridge is or soon will be deficient according to criteria in SYSPLAN 10 (Exh. EV-2, at 218). Eversource stated that, without implementing interim load transfers described above, the loss of one of the 115/14 kV transformers at East Cambridge Substation would cause the substation to exceed its Firm Capacity, resulting in 29 MVA of load at risk in 2022 and 92 MVA of load at risk in 2030 (Exh. EV-2, at 2-17). The Company added that the two interim operational measures would only provide partial relief for East Cambridge Substation until 2028 (Exh. EV-2, at 2-18).

Eversource indicated that the distribution system need is more extensive than just meeting need at peak load levels (Exh. EV-2, 2-18). Thus, the Company conducted a distribution load-flow model for East Cambridge Substation for 2030 with associated 14 kV and 4 kV electric distribution circuits (Exh. EV-2, at 2-18 to 2-19). The Company assessed the MVA demand at both peak day and at every hour in a time-series model that accounts for every hour in a year – 8,760 hours (Exh. EV-2, at 2-19). The Company calculated 8,760 load-flow simulations for all three transformers at East Cambridge Substation, which showed that all three would be operating above their normal thermal limit of 75 percent of nameplate capacity for most hours of the year (Exh. EV-2, at 2-20). The Company also performed analysis of the entire East Cambridge Substation, which demonstrated that during the forecast period, East Cambridge Substation will be operating above operational and emergency limits during most of the year as well (Exh. EV-2, at 2-22 to 2-23). See Figure 5, below.

Figure 5: 2030 East Cambridge Substation Forecasted Transformer Loading Over Limits



Source: Exh. EV-2, Figure 2-6.

5. Interim Operational Measures

To address the risk of immediate and near-term distribution transformer overloads at East Cambridge Substation, the Company has implemented an interim operational measure – adding a fourth transformer at Putnam Substation (Exh. EV-2, at 2-23). The Company also plans to implement a second interim operational measure – adding a third transformer at Somerville Substation – in late 2024 (Exh. EV-2, at 2-23; Tr. 2, at 188). Despite these interim measures, the Company anticipates that the East Cambridge Substation capacity deficiency will recur by 2028 (Exh. EV-2, at 2-23). Moreover, the Company contends that the interim operational measures do not fully address all of the existing transmission reliability issues in the Project Area, particularly in the event of contingencies (Exh. EV-2, at 2-24). The Company explained that these interim measures are necessary actions given the unexpected delays in implementing the Project, as a permanent solution (Exh. EV-2, at 2-24). See also Section V.A.1, below.

The Company stated that the interim operational measures partially defer the identified substation and transformer N-1 and N-1-1 transmission overloads (Exh. EV-2, at 2-25). The first interim step was the 2020 expansion of the Putnam Substation through the addition of a fourth

transformer and related equipment (Exh. EV-2, at 2-24). The Company installed a fourth 62.5 MVA 115/14 kV transformer, a section of 14 kV distribution switchgear and a distribution duct bank from Putnam Substation to the Kendall Square area (Exh. EV-2, at 2-24). The addition of the fourth transformer with LTE capability of 65 MVA increased the Putnam Substation firm capacity from 146 MVA to 211 MVA, allowing for a total planned load transfer of 34 MVA from East Cambridge Substation to Putnam Substation (Exh. EV-2, at 2-24). According to the Company, this mitigation measure provides two years of relief until 2025 before East Cambridge Substation is overloaded again (Exh. EV-2, at 2-24, n.30).

The second interim measure, to be installed in late 2024, includes a third 62.5 MVA 115/14 kV transformer and two additional sections of 14 kV switchgear at Somerville Substation to relieve projected overloads in the Project Area (Exh. EV-2, at 2-24; Tr. 1, at 50-51). The third 115/14 kV Somerville Substation transformer would add an additional 75 MVA of Firm Capacity and permit the Company transfers additional loads to Somerville Substation from East Cambridge Substation between 2025 and 2027 (Exh. (Exh. EV-2, at 2-24 to 2-25). Eversource noted that Somerville is also experiencing rapid load growth that may limit the amount of transfer relief the Somerville Substation can provide after 2027 (Tr. 2, at 196).

D. Positions of the Parties

No parties contested the need for the Project. The City of Cambridge asserts that the timely completion of the Project is of critical importance to ensuring a reliable and sustainable energy supply in the face of growing electricity demands in Cambridge, and to the transition to a carbon neutral energy future for Cambridge (Cambridge Reply Letter at 1). In addition, MIT states its support for both the goals of the proposed Project and the need for the proposed Project (MIT Brief at 1).

E. Analysis and Findings on Need

Eversource asserts that the need for the Project is immediate and growing. The Company must adhere to NERC system reliability criteria for Bulk Electric System ("BES") elements even though the Putnam and East Cambridge 115 kV transmission facilities are not PTF facilities

(Exh. EV-2, at 2-7). The Company's Electric Power System Planning Criteria and Standards for transmission are aligned with NERC, NPCC, and ISO-NE transmission standards and criteria, while at the distribution level, the Company relies on its own SYSPLAN planning criteria. 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 it is clear that Eversource's existing transmission system does not currently meet the established reliability criteria. See e.g., Needham-West Roxbury at 13; Woburn-Wakefield at 17-18; Walpole-Holbrook at 16-17.

The Company provided a ten-year peak summer load forecast for the Project Area. The Siting Board finds that the Company has provided sufficient information to permit an understanding of its load forecasting methods, and that its forecast is reviewable, appropriate, and reliable for use in this proceeding to evaluate the Company's assertion of need. The Project Area encompasses the Company's existing Putnam and East Cambridge Substations and is supplied by two radial lines originating from the North Cambridge Substation as well as another from the Kendall Generation Station. The record shows that the East Cambridge Substation is at capacity, and load continues to grow in the area which it serves. The record also shows that the Company's system has exhausted all possible solutions to adequately transfer the load from the East Cambridge Substation. The record also shows that interim measures to mitigate load loss in the absence of a comprehensive solution like the Project, including the addition of a fourth transformer at Putnam Substation and a third transformer at the Somerville Substation, are insufficient.

The record shows emerging and ongoing transmission system reliability concerns from the risks of service loss due to specific N-1-1 transmission contingencies, and projected transmission line overloads from N-1 contingencies. These identified overloads include the two radial lines serving the Project area, which could lead to a complete loss of load to Putnam and East Cambridge Substations. At the distribution level, the East Cambridge Substation surpasses its firm capacity in all years of the Company's forecast period. The projections of demand for electricity continue to rise with building growth and existing decarbonization efforts through electrification of

heating and vehicles.[19] The Company claims that electric vehicles would add another 30 megawatts to reach 2050 goals. (Tr. 2, at 258).

The Project would enhance reliability and minimize the risk of outages by incorporating new transmission lines, a new substation, and upgrades to existing facilities. For these reasons, the Siting Board finds that the Project is needed to maintain a reliable supply of electricity in the Project Area.

IV. ALTERNATIVE APPROACHES TO MEETING THE IDENTIFIED NEED

A. Standard of Review

G.L. c. 164, § 69J requires a project proponent to present alternatives to the proposed facility, which may include: (1) other methods of transmitting or storing energy; (2) other sources of electrical power; or (3) a reduction of requirements through load management. In implementing its statutory mandate, the Siting Board requires a petitioner to show that, on balance, its proposed project is superior to such alternative approaches in terms of cost, environmental impact, and ability to meet the identified need. In addition, the Siting Board requires a petitioner to consider reliability of supply as part of its showing that the proposed project is superior to alternative project approaches. Mid Cape Reliability at 126-127; Andrew-Dewar at 24; Sudbury Hudson at 27.

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[19] Since the Petition was filed, Vicinity Energy has announced the eventual electrification of two boilers at 42 megawatts each at its Kendall Generating Station, for a total of 84 megawatts of new demand (however, the Eversource system is a summer peaking system) (Tr. 5, at 50, 64). The Company claims that the electrification of steam produced at the Vicinity Energy's Kendall Generating Station facility, using new industrial-scale heat pumps that will draw heat from the adjacent Charles River, is not driving the need for the Project (Tr. 1, at 81). This assessment is based on the fact that at present and through 2035, Eversource's transmission and distribution system is summer peaking, while the steam produced by Vicinity Energy predominantly serves a winter-peaking customer need (Tr. 1, at 64).

B. Company Analysis of Alternative Approaches to Meet Need

The Company conducted an evaluation of alternative approaches to address the reliability and capacity needs within the Project Area (Exh. EV-2, at 3-1). The Company assessed various means of meeting the identified requirements, including a "No-Build" option, wires alternatives, and non-wires alternatives ("NWAs") (Exh. EV-2, at 3-1). The Company dismissed the No-Build option as it would not resolve the transmission reliability and substation capacity needs identified (Exh. EV-2, at 3-1).[20] In terms of wires alternatives, the Company argues that the options it considered were inferior in terms of reliability, cost, and environmental impact (Exh. EV-2, at 1-5). Similarly, the Company determined that there were no viable NWAs that could adequately and economically fulfill the need requirements (Exh. EV-2, at 1-5). The Company argues that its analyses demonstrate that the construction of the Project offers the best approach to addressing the identified need (Exh. EV-2, at 1-5).

1. Wires Alternatives

The Company assessed four "wires alternatives," focusing on installation of equipment at alternative locations that could: (1) accommodate the addition of substation transformers with sufficient combined capacity to address the Project needs; and (2) be sufficiently close the both the transmission system and the Putnam/East Cambridge Load Pocket to be an effective solution (Exh. EV-2, at 3-2). Based on these criteria, the Company eliminated two alternatives, one involving installation of two new transformers at Prospect Street (a distribution switching station) plus three new transformers at Linwood Street (an Eversource work center location in Somerville), and the other, involving three new transformers (expandable to four) at Linwood Street (Exh. EV-2, at 3-3). Eversource viewed wires alternatives involving Linwood Street as less desirable, given

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[20] The Company stated that the no-build option would involve only implementing interim operational measures (Exh. EV-2, at 2-27). According to the Company, these interim solutions merely postpone the identified need, with the underlying need still requiring attention by 2028 (Exh. EV-2, at 3-1).

the greater distance from the Putnam/East Cambridge Load Pocket, and the need for substantially more distribution infrastructure, with resulting impacts to the community (Exh. EV-2, at 3-3).

Eversource selected two wires alternatives for further analysis: Alternative 1 is the Project (Exh. EV-2, at 3-3). Alternative 1 would allow the electrical load to be moved from East Cambridge Substation, thus eliminating projected overloads on the existing transformers at East Cambridge Substation (Exh. EV-2, at 3-3). Alternative 2 would involve installing three new transformers at Prospect Street Switching Station and two new transformers (expandable to three) at Linwood Street (Exh. EV-2, at 3-2).

To power the Alternative 2 substations, the Company would install eight new transmission lines in approximately 17.6 miles of new duct bank (Exh. EV-2, at 3-6). As stated above, Alternative 1 (the Project) is 8.3 miles long. See Section I.A. According to Eversource, Alternative 2, while offering increased substation capacity over present conditions, involves more complex construction and has greater community and environmental impacts compared to Alternative 1 (Exh. EV-2, at 3-10). Alternative 2 would require an additional crossing of Mystic River by horizontal directional drill ("HDD") in Everett and Somerville (Exh. EV-2, at 3-11). Table 7 below summarizes the environmental impact comparison of the two alternatives.

Table 7: Wires Alternatives Environmental Impact Comparison

Analyzed Criteria	Wires Alternative 1 (Project)	Wires Alternative 2
Affected Municipalities	3 (Cambridge, Somerville, Boston)	4 (Cambridge, Somerville, Boston, Everett)
Total Length of Route (miles)	8.3	17.6
Number of Residential Units Along Route	2,592	6,159
Number of Commercial / Industrial Units Along Route	396	1,217
Number of Sensitive Receptors Along Route	17	52
Number of Historic Resources Along Route	44	60
Wetland Resource Areas, Buffer Zones and Tidelands Crossed by the Route (linear feet)	10,364	37,891
Number of MassDEP Listed Contamination Sites Along Route	88	73
Length of Article 97 Lands Crossed by the Route (linear feet)	885	2,367
Number of Public Shade Trees Along Route	1,403	2,584
Number of Complex Crossings (e.g., railroad, waterway, highway)	10	15

Source: Exh. EV-2, at 3-12, Table 3-1.

Eversource stated that the planning grade estimate for Alternative 1 is approximately $1.47 billion, while Alternative 2 is $1.88 billion (Exh. EV-2, at 3-12). The Company added that Alternative 1 would be more reliable given its proximity to the load pocket, its network design that would eliminate the radial transmission line configuration serving East Cambridge, and the fact that it provides greater capacity under N-1-1 conditions than Alternative 2 (Exh. EV-2, at 3-9 to 3-11). According to the Company, Alternative 1 is superior to Alternative 2 because it would be more reliable, has fewer environmental impacts, and is less costly (Exh. EV-2, at 3-13; Company Brief at 60).

2. Non-Wires Alternatives

The Company evaluated four technologies for the NWAs analysis: (1) distributed generation ("DG,"); (2) battery energy storage systems ("BESS"); (3) energy efficiency ("EE"); and demand response ("DR") (together, "EE/DR"); and (4) solar photovoltaics ("PV") installations

(Exhs. EV-2, at 3-18; EV-3, at 6). According to the Company, a technically feasible NWA technology must effectively address the Project need with comparable reliability and response time as the Project (Exh. EV-2, at 3-18). The Company assessed the performance, duration, and response time of each NWA technology against peak-day profiles in the Project Area to model their dispatch capabilities (Exh. EV-2, at 3-18). The Company stated that the NWA resource must be able to operate during a contingency until the failed system element is repaired or until loads decrease below available system capacity (Exh. EV-2, at 3-18 to 3-19). Depending on the contingency, the Company explained that an outage period could last several days or even multiple weeks (Exh. EV-2, at 3-19).

The Company evaluated NWA solutions for both an N-1 distribution contingency[21] and an N-1-1 transmission contingency (Exh. EV-2, at 3-15).[22] The Company first considered the possible use of NWAs to solve the distribution contingency, with a needed injection of 92 MVA at the East Cambridge Substation under peak conditions forecast for 2030 (Exh. EV-2, at 3-15 to 3-16). Based on a targeted study for Cambridge, with Cambridge-specific customer characteristics, the Company determined that incremental demand reduction (over amounts included in the peak load forecast described in Section III) would be 5.7 MVA over the forecast period, leaving 86.3 MVA to be met with other feasible distributed resources (Exh. EV-2, at 3-19).

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21 The distribution contingency case reflects an N-1 contingency at the East Cambridge Substation, with loss of service on one of the three 62.5 MVA transformers, reducing the maximum capacity of this substation to 150 MVA (Exh. EV-2, at 3-14). Forecast peak loads in 2022 for the East Cambridge Substation already exceed its 150 MVA firm capacity (Exh. EV-2, at 3-15, Table 3-3). The forecast injection amount in 2030, required under N-1 conditions for the East Cambridge Substation, is 92 MVA (excluding interim load transfers that Eversource has used to manage the current capacity shortfall at East Cambridge Substation (Exh. EV-2, at 3-15; and Table 3-3).

22 The transmission contingency case represents an N-1-1 contingency resulting in the total loss of transmission supply to the Putnam/East Cambridge Load Pocket, which in turn would result in "islanded operation" – that is, operation in isolation from the bulk power system administered by ISO-NE (Exh. EV-2, at 3-14, n.41). This contingency could result from the failure of 115 kV lines that supply Putnam Substation from North Cambridge Substation, also cutting radial transmission downstream to the East Cambridge Substation (Exh. EV-2, at 3-14).

In considering the potential of PV to meet the capacity deficiency, the Company estimated the maximum PV installations in the Project Area if all rooftops hosted PV installations (Exh. EV-2, at 3-20). This analysis yielded an estimate of 47.8 MVA of PV nameplate capacity (Exh. EV-2, at 3-20). However, given the intermittent nature of PV, the Company estimated that the maximum incremental installed PV capacity would produce only about 116.5 MWhs during a typical summer day, which is less than ten percent of the East Cambridge energy need during a peak day (Exh. EV-2, at 3-20). Further, Eversource maintains that utility-scale PV solutions are not technically feasible in densely populated Project Area, given the land requirements to adequately size PV to meet the identified need (Exh. EV-2, at 3-20, n.45). Eversource determined that incremental PV capacity would reduce the net injection capacity to 77 MVA (Exh. EV-2, at 3-20)

The Company next considered the role that BESS could play in meeting NWAs injection requirements on the peak day (Exh. EV-2, at 3-21). To meet the full 77 MVA amount, the Company determined that approximately 1,126 MWh of storage capacity is necessary, given standard assumptions about battery discharging efficiencies (Exh. EV-2, at 3-21). The Company determined that this amount of storage capacity could not be charged reliably on peak days under the current system configuration given that the East Cambridge Substation is projected to use its full firm capacity on 317 days per year by 2030, with no spare capacity for recharging these additional BESS units (Exh. EV-2, at 3-22).

For the N-1-1 transmission contingency in the Putnam/East Cambridge Load pocket, an even more challenging prospect for a viable NWA solution, the Company assumed (contrary to its aforementioned study) that somehow the distribution contingency could be fully satisfied with 92 MVAs of NTAs, leaving a gap of 317.5 MVA to be satisfied through NTAs (Exh. EV-2, at 3-24). Once again, the Company determined that a combination of EE/DR, distributed solar PV, and BESS could not meet the remaining NWA injection requirements (Exh. EV-2, at 3-24). Net of additional capacity that could be provided by EE, DR, and PV (without considering feasibility), the Company estimated that an injection capacity requirement of 294 MVA would remain under the assumed transmission contingency (Exh. EV-2, at 3-26).

Due to technical and practical limitations in resolving the identified transmission and distribution contingencies, the Company argues that all NWA solutions it evaluated did not resolve

the need, and therefore it eliminated NWAs from further consideration (Exh. EV-2, at 3-28; Company Brief at 67-68). For example, the Company explained that no new distributed generation resources would be able to interconnect directly to the distribution system served by East Cambridge Substation without significant system upgrades (Exh. EV-2, at 3-22 to 3-23). Additionally, Eversource indicated that a high number of sites would be required for distributed generation, affecting the certainty and timeframe of the solutions (Exh. EV-2, at 3-23). The Company also stated that utility-scale generation would face "overwhelming" challenges associated with the availability and cost of land in Cambridge (Exh. EV-2, at 3-37).

C. Positions of the Parties

The City of Cambridge supports the Company's evaluation process and collaborative approach in selecting the Project (Cambridge Brief at 5 to 8). Neither MIT nor Somerville presented arguments on project alternatives on brief.

D. Analysis and Findings on Alternative Approaches

The Company's assessment of alternative approaches to the proposed Project included a review of potential wires and non-wires alternatives. The Company contends that Project is the optimal solution after it considered all relevant factors. The no-build option would not address the current and future needs for substation capacity and transmission reliability. Between transmission alternatives, the Project is superior to Alternative 2 because of its proximity to the load center for the Project, its shorter transmission line lengths, and lower cost.

Through its review of NWAs, Eversource demonstrated NWAs are simply not available at a scale that can provide a solution to the magnitude of the forecast capacity deficiencies that are expected to occur under distribution and transmission contingency conditions. The Company explained that implementing new generation sources, such as solar PV, with or without contributions from EE and DR and energy storage, would be impractical and infeasible to meet the identified need (Exh. EV-2, at 1-5). In addition, other factors such as cost, land availability, required system upgrades, and permitting obstacles all pose additional (and unquantified)

challenges for the NWAs in comparison with the Project (Exhs. EV-2, at 3-14 to 3-28; EV-3 at 6; Tr. 2, at 323-338).

Based on its review of non-transmission and transmission alternatives, 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.

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. Mid Cape Reliability at 39; 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.

The Siting Board requires that applicants consider a reasonable range of practical siting alternatives, and that proposed facilities be 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. NSTAR Electric Company d/b/a Eversource Energy, EFSB 16-02/D.P.U. 16-77, at 30 (2018)

("Needham-West Roxbury"), citing NSTAR Electric Company d/b/a Eversource Energy, EFSB 15-04/D.P.U. 15-140/15-141, at 65 (2018) ("Woburn-Wakefield"); 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 route selection process. Needham-West Roxbury at 30, citing Woburn-Wakefield at 65; Stoughton-Boston at 43-44.

B. New Substation Site Selection

1. Background

The Company first identified a need for a reliability solution in East Cambridge in 2014 (Exhs. EV-2, at 4-2; EFSB-PA-14). The Company initially sought a significant expansion of the existing Prospect Street Switching Substation in Cambridge[23] but decided that this location was infeasible due to community opposition (Tr. 2, at 317). The Company subsequently looked to other possible locations for a new or expanded substation by identifying potential locations of suitable size in proximity to East Cambridge (Exh. EV-2, at 4-2). As part of this search, the Company considered a range of factors for potential sites including ownership status, local zoning, community input, engineering and planning considerations, constructability, environmental impacts, and cost (Exh. EV-2, at 4-2).

2. Fulkerson Street Location

The Company's next candidate site was an 0.85-acre parcel at 135 Fulkerson Street in East Cambridge (Exhs. EFSB-PA-14; EV-2, Figure 4-1). The Company acquired the parcel in 2017 (Exh. EV-2, at 4-2). The Company discussed the Fulkerson Street location with various

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[23] The Prospect Street Switching Station is a distribution level switching station (Tr. 2, at 315). The switching station is primarily served by feeders from Somerville Substation (Tr. 2, at 197-198). Additionally, the Company explained that there are physical limitations at Prospect Street to having more than three transformers, resulting in a Firm Capacity of just 150 MVA (Tr. 2, at 342).

stakeholders, including neighborhood organizations such as the East Cambridge Planning Team, and the City of Cambridge Transportation and Public Utilities Committee and received generally negative feedback (Exh. EV-2, at Appendix 1-1).[24] Multiple city councilors also went on record to oppose this location for a substation given its proximity to an elementary school (Exh. EV-2, at 4-2; Tr. A at 21). The Company continued to search for a suitable substation location (Exh. EV-2, at 4-2).

3. Kendall Location (Project Location)

After discussions and meetings with the Cambridge city manager, Cambridge City Council, CRA, and private and community stakeholders, the Company identified an alternative site on a parcel of land owned by Boston Properties, Inc. ("BXP") within the Kendall Square Mixed Use Zoning District (Exh. EV-2, at 4-2). The parcel was occupied by the six-story Kendall Center Blue Garage at 290 Binney Street in East Cambridge and is being re-developed by BXP under the Kendall Square MXD Substation Plan ("BXP MXD Plan") with a mix of residential, commercial, and public open space (Exh. EV-2, at 4-5).[25] According to the Company, BXP has already demolished the Kendall Center Blue Garage structure (Tr. 2, at 261).

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[24] The current site of the former Blue Garage was included as a major new element of the Kendall Square Urban Redevelopment Plan ("KSURP") developed by the Cambridge Redevelopment Authority (Exh. EFSB-G-4 (1)). MEPA reviewed the KSURP project change which accommodated the construction of an electrical substation in an underground vault 100 feet below the proposed Center Plaza to be constructed within the footprint of the Blue Garage (Exh. EFSB-G-4(1) at 3). In January 2019, the Company presented the Fulkerson-version of the project to the East Cambridge Planning Team and "[t]he feedback from residents was that of general dissatisfaction…what followed were primarily questions and suggestions about where a hypothetical substation could be better sited" (Exh. EV-2, at Appendix 1-1). On June 25, 2019, the Cambridge Transportation and Public Utilities Committee expressed its disapproval of the Fulkerson Street location as well (Exh. EV-2, at Appendix 1-1).

[25] The residential portion of the BXP MXD Plan includes 439 units of housing at 121 Broadway; the commercial portion includes over 1 million square feet of commercial space, anchored by AstraZeneca at 290 Binney Street (Exhs. EFSB-R-3; EFSB-R-3(1)). A Project Change Certificate, issued by the EEA Secretary on November 8, 2021, noted that

In 2019 the Company reached agreement with BXP to reserve rights for a substation within the parcel of land being redeveloped for the BXP MXD Plan (Exh. EV-2, at 4-2). The New Substation would be located predominantly underground in this area, with a total footprint of approximately 35,000 square feet (Exh. EV-2, at 4-5). According to the Company, the Kendall Center Blue Garage site meets the Company's selection criteria for the location of the New Substation, as it is proximate to the East Cambridge load pocket, meets engineering, constructability, and environmental considerations, uses an innovative design in a highly urbanized area, and has received positive feedback from Cambridge and other stakeholders (Exh. EV-2, at 4-5).[26] The Company did not present an alternative location for the New Substation.

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the KSURP project proponent (the CRA) proposed to add 800,000 square feet of additional lab and office space to the redevelopment project in conjunction with inclusion of the underground Substation and relocation of electric distribution lines (Exh. EFSB-G-4(1) at 2-3). The CRA approved the Project Change on September 16, 2020, and the Cambridge City Council approved it on February 3, 2021 (Exh. EFSB-G-4(1) at 5). The City of Cambridge and other stakeholders viewed the Project Change, and the additional square footage it provided, as a solution to the prior difficulties of finding a suitable location for the Substation (Exh. EFSB-G-4(1) at 17-18). By providing BXP with the additional development rights, the CRA and the Cambridge City Council encouraged BXP to assume the costs of developing the underground vault to house to Substation, thereby relieving Eversource's ratepayers of the additional costs to place the Substation underground (Tr. 4, at 590-591).

[26] Under the BXP MXD Plan, BXP would construct the vault for the New Substation (Tr. 4, at 588). The Company has an agreement with BXP that grants Eversource the option to purchase the underground vault and associated easements (Exh. EV-2, at 5-44). If the Company does not exercise its option, the vault would be used by BXP for its own purposes (Exh. EV-2, at 5-44). The BXP MXD Plan received approval from the CRA through the KSURP Amendment 11 and a special permit by the Cambridge Planning Board (Exhs. EFSB-R-2, at 4; EFSB-G-4(1) at 5; Tr. 3, at 396). On November 8, 2021, the EEA Secretary issued a Certificate on the Third Notice of Project Change for the BXP MXD Plan (Exh. EFSB-G-4).

C. Company's Approach to Route Selection

1. Routing Analysis Objectives and Overview

Once the New Substation location was selected, Eversource considered routing options to connect the New Substation to four existing substations: East Cambridge, Putnam, Somerville, and Brighton. The Company described its method for siting new electric transmission lines as an "adaptive and iterative" approach to identify and evaluate possible routes for the proposed Project (Exh. EV-2, at 4-5). The Company's objective for the routing analysis is to identify the top transmission line routes for the Project that best balance environmental impact minimization (including both developed and natural environments, and constructability constraints), reliability, and cost (Exh. EV-2, at 4-5). The Company represented that its routing analysis for the Project is consistent with the process the Company has used previously and received approval from the Siting Board (Company Brief at 72, citing Exh. EV-2, at 4-5).

The Company's design objectives for the transmission line route selection process include the following: (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 (e.g., roadways, railroad) to the extent possible; (4) minimize/avoid potential impacts to the developed and natural environment; (5) minimize/avoid the need to acquire property rights wherever practicable; and (6) maximize the potential for direct routing options over circuitous routes (Exh. EV-2, at 4-6).

The Company's routing analysis consisted of the following steps:

- **Identification of Project Study Area:** The Company focused on the region of the New Substation site and existing substation facilities located in the East Somerville neighborhood, the Allston neighborhood of Boston, as well as the Riverside neighborhood of Cambridge (Exh. EV-2, at 4-6). The Company divided the overall Project Study Area into smaller individual Study Areas (Brighton, Putnam, Kendall, and Somerville) where transmission substations that would be interconnected to the New Substation are located (Exh. EV-2, at 4-6).

- **Development of Universe of Routes**: The Company identified numerous potential transmission line routing options that could connect the New Substation with the Brighton,

Putnam, East Cambridge,[27] and Somerville Substations, leading to a set of potential Project routes that it called its "Universe of Routes" (Exhs. EV-2, at 4-6, 4-19, Figure 4-4). The Company looked for existing linear corridors (e.g., existing rail, and roadway corridors) that could potentially facilitate construction of the new underground transmission lines and provide a reasonably direct route between the substation facilities (Exhs. EV-2, at 4-8). After initial review and screening, the Company identified 79 routes that it considered suitable for additional screening, including 42 routes within the Brighton Study Area, 5 routes within the Putnam Study Area, 14 routes within the Kendall Study Area, and 18 routes within the Somerville Study Area (Exh. EV-2, at 4-18).

- **Identification of Candidate Routes**: From the Universe of Routes, the Company narrowed the field to "Candidate Routes" within each individual Study Area that it asserts meet the need parameters for the Project and are consistent with the Company's objectives for the routing analysis (Exh. EV-2, at 4-6). As part of this process, the Company eliminated routes that it deemed were "clearly unsuitable or clearly inferior" relative to other routes considered by the Company (RR-MIT-1, at 2). In addition, the Company stated that it relied on stakeholder review and feedback on the Universe of Routes (and related route segments) in paring the list down to the Candidate Routes (RR-MIT-1, at 2). The Company used a multifaceted vetting process that included, but was not limited to, a combination of desktop and GIS analysis, document and plan review, meetings with regulatory agencies and stakeholders, site reconnaissance, general constructability assessments, cost considerations, deed research/property rights evaluations, presence of wetlands/waterways, traffic analyses, and a review of active and future planned developments and record drawings provided by stakeholders (e.g., utilities, roadway improvements, buildings, bridge designs, etc.) (Exh. EFSB-RS-22, at 3).

- **Environmental & Technical/Constructability Analysis**: As part of a formal route scoring process, the Company compared the potential for environmental (developed and natural) impacts and technical and constructability constraints for each of the Candidate Routes within each Study Area (Exh. EV-2, at 4-7).

- **Cost Analysis**: The Company compared the estimated costs for the Candidate Routes (Exh. EV-2, at 4-7).

- **Reliability Analysis**: The Company compared the reliability of the Candidate Routes (Exh. EV-2, at 4-7).

- **Selection of Routes**: Based on the results of the above analyses, the Company identified the routes and potential route variations within each Study Area that it viewed as best balancing

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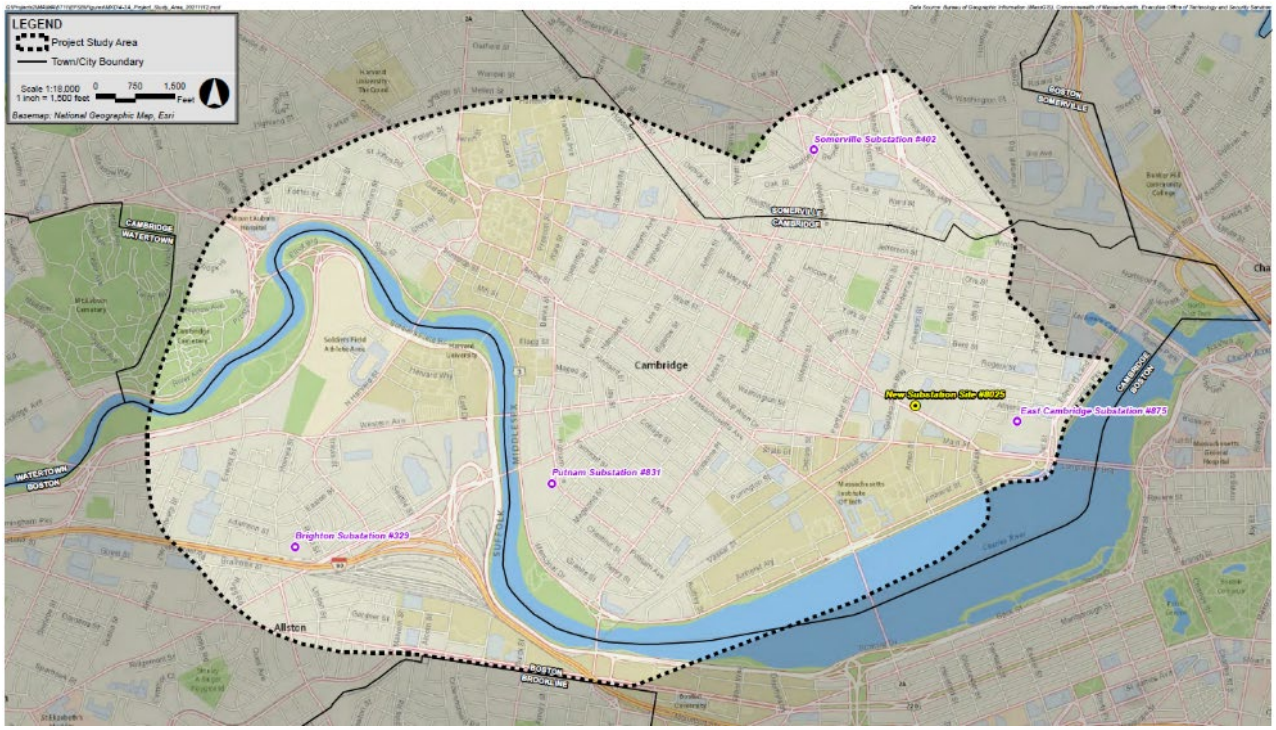
[27] The East Cambridge Substation serves the Kendall Study Area (Exh. EV-2, at 3-6, Figure 3-2)

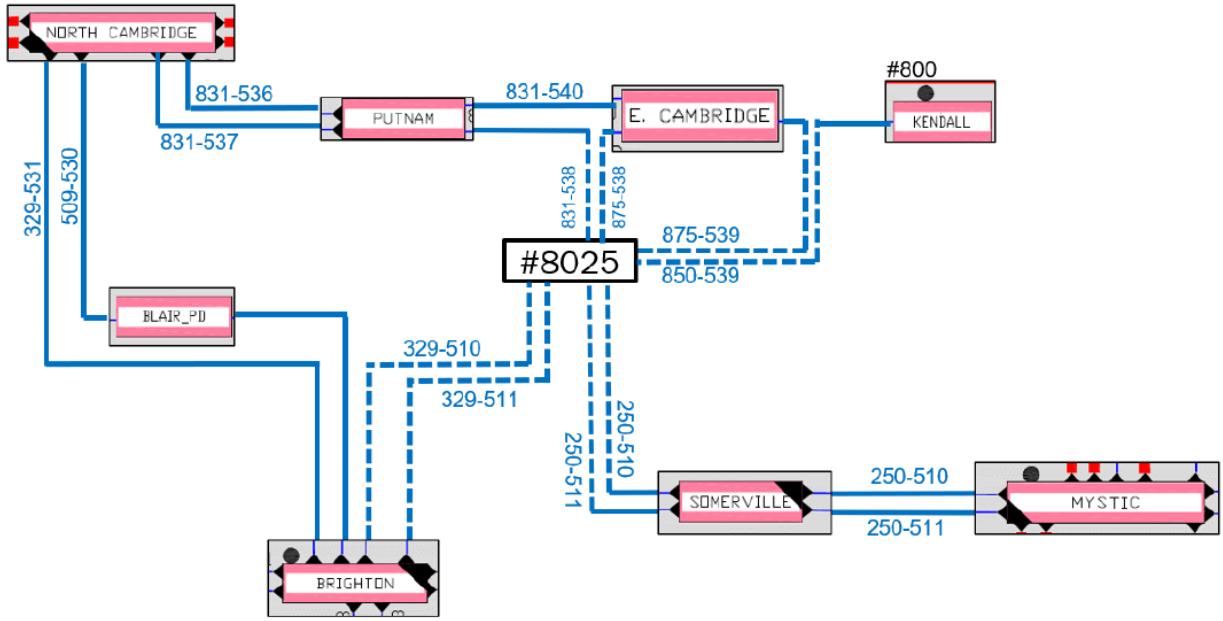
reliability, minimization of environmental impacts, constructability constraints, and cost (Company Brief at 72). This final route selection step yielded the Proposed Routes and Noticed Alternative Routes that the Company assessed in detail in Section VI, below (Exh. EV-2, at 4-7).

Figure 6: The Project Study Area



Source: Exh. EV-2, Figure 4-3A.

Figure 7: 115 kV Transmission Connections of the New Substation (#8025) to Project Area Substations



Source: Exh. EV-2, at 3-6, Figure 3-2)[28]

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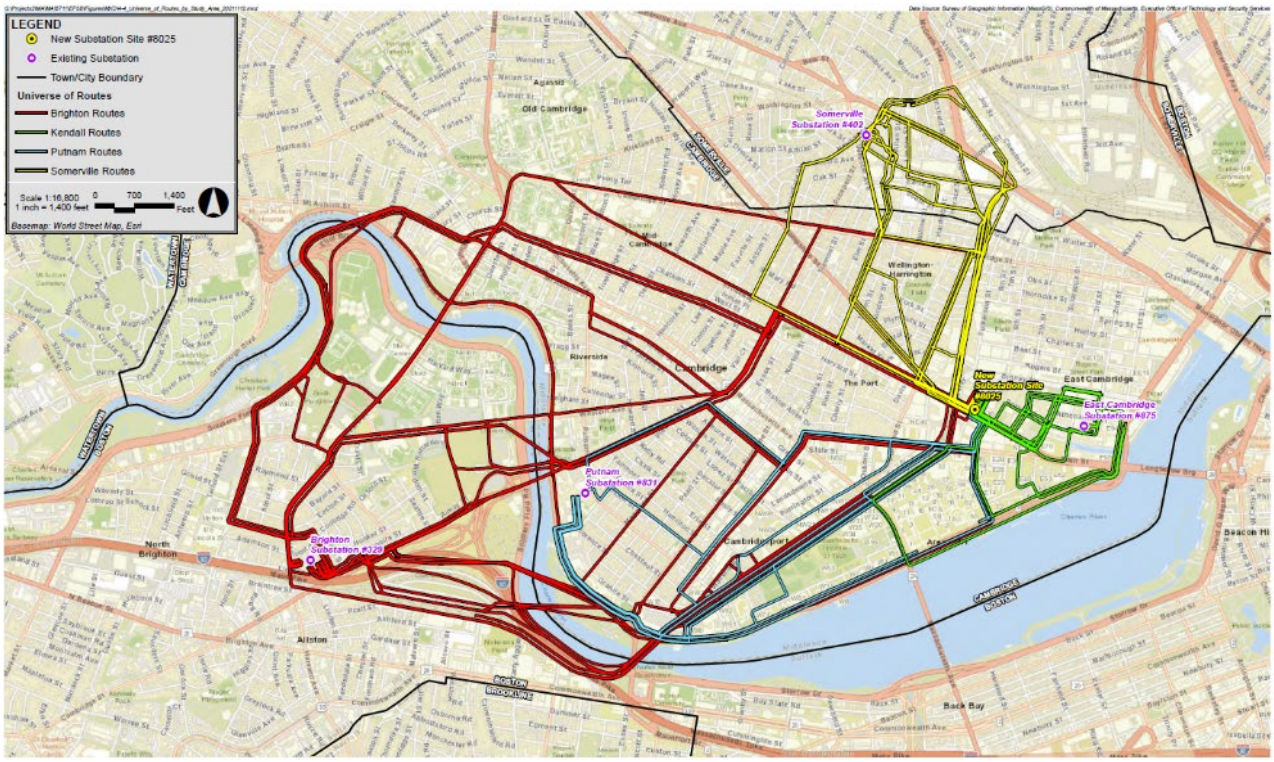
28 Kendall Generating Station (now owned by Vicinity Energy) is a gas-fired generating station (and substation) producing both electricity and steam through cogeneration, which supplies the bulk of the steam used in Vicinity Energy's steam network in the Cambridge, Somerville, and Boston area (RR-EFSB-4(1), at 8). Mystic Generating Station, a 1,413-MW generating facility, owned by Constellation, is scheduled to retire on May 31, 2024. Petitions of National Grid, Eversource Energy, and Until for Approval of Gas Supply Contracts with Constellation LNG, D.P.U. 24-25-B; D.P.U. 24-26-B; D.P.U. 24-27-B; D.P.U. 24-28-B at 7 n.7 (2024). The Mystic facility includes a major substation that will continue to operate after the adjacent generating facility closes, as part of the Ready Path Solution transmission project collaboration of Eversource and National Grid. Id. With load growth in coming decades, the Company anticipates a prospective transmission connection directly between the New Substation and the Mystic Substation (Tr. 1, at 148).

Figure 8: The Company's Universe of Routes



Source: Exh. EV-2, Figure 4-4.

2. Additional Considerations in Identifying the Universe of Routes

The Company reviewed U.S. Geological Survey maps, utility and roadway survey data, Massachusetts Geographic Information System ("MassGIS") data and aerial photography, as well as field reconnaissance to identify the Universe of Routes (Exh. EV-2, at 4-15). The Company also considered the presence and concentration of existing underground utility infrastructure (which is extremely dense in most of the Project Study Area) and to ensure there was adequate space for the future distribution lines required to connect to the New Substation (Exh. EV-2, at 4-17).

The installation of underground transmission lines, near other transmission lines (or any other heat source) for any appreciable length can potentially adversely affect the performance and design rating of the lines (Exh. EV-2, at 4-17). If the lines are close to each other, mutual heating of the lines could potentially reduce the rated current carrying capability of the transmission

facilities (i.e., derating existing lines and/or increasing the size of the conductor for the new line(s) to achieve required ratings) (Exh. EV-2, at 4-17). The Company noted that bringing five new underground transmission line duct banks to a single interconnection point at the New Substation presents several challenges (Exh. EV-2, at 4-15).[29]

In early 2019, the Company engaged with community representatives regarding the proposed project and the transmission cable routing possibilities (Exh. EV-2, at 4-7). Key stakeholders in this process included federal, state, and municipal officials, residents, business owners, and developers, as well as Harvard University and MIT (Exh. EV-2, at 4-7). According to Eversource, community feedback from focus groups played a significant role in the development and content of the routing analysis (Exh. EV-2, at 4-7). The Company was also mindful of near term and longer-term development plans such that installation of a new transmission line across private properties would not adversely affect the ability of the landowner(s) to develop the properties in the future (e.g., Harvard, MIT, several other private developers) (Exh. EV-2, at 4-17).

While the Company stated its intention to avoid/minimize the need to acquire property rights, the Company acknowledged using public and private properties can present opportunities to implement less intrusive routing alternatives or construction techniques that result in an overall net benefit to the affected properties (Exh. EV-2, at 4-17). The Company anticipated that properties scheduled for redevelopment can also present opportunities relative to the placement of needed utility infrastructure including siting of new transmission lines (Exh. EV-2, at 4-17). For example, within the Brighton Study Area, the MassDOT Allston Multimodal Project area is currently occupied by a CSX rail yard, the MBTA Worcester commuter rail main line, and Interstate Highway 90 ("I-90" or "Mass Turnpike") interchange, and is scheduled to undergo a major transformation (Exh. EV-2, at 4-17 to 4-18). The Company anticipated that with proper

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[29] The Company determined that two 115 kV transmission lines would be needed between the New Substation and the Brighton Substation and should be housed in separate duct banks that follow geographically diverse routes to enhance reliability (Exh. EV-2, at 4-17; Tr. 2, at 351-354; Tr. 5, at 907). The Company addressed this by dividing the Brighton Study area into East and West route segments and considering separate routing options for each (Exh. EV-2, at 4-17).

coordination and sequencing, these types of developments can present opportunities to avoid and minimize impacts during construction by locating new transmission lines within the layout of future roadway/utility corridors and previously developed and altered areas (Exh. EV-2, at 4-17). Other examples exist within the Somerville Study Area where adjacent properties in and around the existing Somerville Substation are scheduled to be redeveloped (Exh. EV-2, at 4-18).

After determining the 79 different route combinations in the Universe of Routes, the Company employed a screening methodology to yield a more manageable set of Candidate Routes for more direct comparison and analysis within each respective Study Area (Exh. EV-2, at 4-18). Among the Universe of Routes, the Company considered the following specific route segments in Cambridge (each of which later became a part of the MIT proposed routes): Main Street, Albany Street, Massachusetts Avenue, Grand Junction Railroad, and Wadsworth Street (Company Brief at 83, citing Exhs. EV-2, at Fig. 4-4, Tables 4-1 through 4-5; EV-2, Appendix 4-2; RR-MIT-1; Att. RR-MIT-1(1); Tr. 10, at 1556-57).

3. Screening Methodology

The Company applied a screening methodology to reduce the 79 routes in the Universe of Routes to 22 Candidate Routes for further analysis (Exh. EV-2, at 4-26). The Company stated that it first accessed publicly available data to review existing abutting land uses, including natural resources such as wetlands and protected open space as well as recreational areas (Exh. EV-2, at 4-18, 4-20). Then, the Company assessed general patterns and volumes of traffic for the routes (Exh. EV-2, at 4-20). Eversource developed cost estimates for addressing construction challenges, such as existing underground utility congestion and complex crossings (e.g., railroad tracks and subway tunnels, the Charles River, major roadways, and bridges) (Exh. EV-2, at 4-20). Feedback from municipal and state agencies, as well as from private landowners and stakeholder groups, helped inform Eversource's decisions as to which routes are considered unsuitable or inferior

relative to other available routes (Exh. EV-2, at 4-20).[30] Some of the key considerations used by Eversource in the route screening process are described below.

a. Municipal and Community Input

Once the New Substation Site emerged as a viable location, Eversource indicated that it began an extensive stakeholder engagement process to evaluate transmission line routing options (Exh. EV-2, at 4-7). The process began in late 2019, and to date has included more than100 meetings with a wide range of stakeholders including federal, state, and municipal officials, residents/business owners, developers, representatives from Harvard University and MIT, and other stakeholders to discuss routes under consideration for the new transmission lines. (Exh. EV-2, at 4-7; Tr. 3, at 384-385). Eversource described the engagement process as providing key input that played a significant role in the development and content of the routing analysis (Exh. EV-2, at 4-7). Community feedback and input from these meeting on the route selection process directly contributed to the Company's process of narrowing down routing options, and the resulting selection of the Preferred and Noticed Alternative Routes (Exh. EV-2, at 4-7).

b. MBTA

The Company indicated that MBTA subway and rail facilities in the Project Study Area are extensive and pose challenges to the design of the Project and route selection (Exh. EV-2, at 4-20 to 4-21). Project construction adjacent to, above, or below MBTA property requires consulting with the MBTA concerning its Railroad Operations Directorate ("Directorate,") which describes guidelines and procedures for construction on/near MBTA railroad property (Exhs. EV-2, at 4-21; MIT-1-11(2) Attachment).[31]

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30 The rationale for dismissing these 57 routes from further consideration is described by the Company in the Exhibit EV-2, Tables 4-1 through 4-5.

31 The MBTA Directorate contains a variety of additional requirements that must be satisfied for work in proximity to the MBTA's property, including 15-foot setbacks for parallel installations, as well as rise over run ratio requirements with respect to the depth and offset

The Company identified the MBTA Red Line tunnel as a particular concern given that the subway tunnel lies beneath Massachusetts Avenue and Main Street in Cambridge, and the Project cannot avoid crossing the Red Line tunnel to connect the New Substation with the Brighton and Putnam Substations (Exh. EV-2, at 4-20 to 4-21). The Company indicated that the shallow depth of the tunnel in certain locations has the potential to limit crossings (Exh. EV-2, at 4-20). In addition, the Company stated that there are dense adjacent utilities on either side of the tunnel (Exh. EV-2, at 4-20). Accordingly, the Company tried to avoid route segments paralleling or crossing the Red Line tunnel on Massachusetts Avenue and Main Street, if possible (Exh. EV-2, at 4-21). Where crossing the Red Line could not be avoided, the Company selected locations where the tunnel is deep enough to facilitate less complicated installations, such as open trench excavation above the tunnel ceiling (Exh. EV-2, at 4-21).

The Company also described challenges related to various MBTA commuter rail tracks (Exh. EV-2, at 4-21). The Somerville Study Area includes the MBTA Fitchburg main line, while the Brighton Study area includes the Framingham/Worcester line (Exh. EV-2, at 4-21). Additionally, the Grand Junction Railroad corridor, which runs through Somerville, Cambridge, and over the Charles River into Boston, and is a seldom used line for the MBTA, offered some potential co-location opportunities and challenges for line routing (Exh. EV-2, at 4-21).[32] Whenever possible, the Company avoided potential routes that would not be able to meet specifications in the MBTA Directorate without relief from the MBTA (Exh. EV-2, at 4-21). According to the Company, the MBTA indicated that it would consider granting relief for non-

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(Tr. 5, at 856-57). The Company would need to use sheeting and shoring in proximity to MBTA rail facilities to install its infrastructure in proximity to MBTA rail facilities (Tr. 5, at 856-57; Tr. 10, at 1503). For example, at the Company's typical depth of about six feet to the bottom of the Company's duct bank, it would require sheeting at an offset of 17.5 feet from the closest rail line (Tr. 5, at 856). To the extent the duct bank or manhole would need to be installed at deeper depths, the required offset is much greater (Tr. 5, at 857).

[32] According to Eversource, the Grand Junction Railroad is a "lightly used" commercial freight rail facility with two to four trains running per day through Cambridge (Exh. EV-2, at 4-65). The corridor is the only north-south rail connection east of Framingham and Worcester (Exh. EV-2, at 4-65). The Company characterized the train traffic on the corridor as maintenance related (Tr. 3, at 493).

perpendicular crossings of the "lightly used" Grand Junction Railroad corridor between Broadway and Medford/Gore Street in Cambridge (Exh. EV-2, at 4-21). The Grand Junction Railroad crosses the Charles River on a trestle bridge that was considered for the Brighton Study Area but was rejected by the Company given the bridge's uncertain future and structural concerns regarding the bridge bearing the weight of the transmission lines (Exh. EV-2, at 4-22).

c. Harvard and MIT

Harvard and MIT own significant amounts of property in the Project Area, including commercial, housing, parking lots, and athletic complexes, and also have extensive future redevelopment and expansion plans (Exh. EV-2, at 4-22). Harvard and MIT have requested that the Company design the Project in manner that would avoid the need to cross or make use of their properties and thereby constrain future redevelopment activities (Exh. EV-2, at 4-23). Specifically, MIT requested that Project routes avoid bisecting U.S. Department of Transportation John A. Volpe Center property ("Volpe Center Site") in Kendall Square or MIT properties between Vassar and Albany/Waverly Streets (Exh. EV-2, at 4-23). The Company also acknowledged that it was not suitable to locate a transmission line on the Grand Junction Railroad corridor between Main Street and Massachusetts Avenue due to the clearance issues created by the MIT Brain and Cognitive Sciences Building, as well as existing steam lines beneath these tracks serving MIT buildings (Exh. EV-2, at 4-21). Harvard requested that properties between Soldiers Field Road and North Harvard Street, and planned developments within the MassDOT Allston Multimodal Project area, be avoided by the Company (Exh. EV-2, at 4-23).

d. Public Roadway Availability

Eversource prioritizes established rights of way ("ROWs") and public roadways for underground transmission lines and avoids private property to the extent possible (Exh. EV-2, at 4-23). However, according to Eversource, some roadway segments proved to be infeasible or otherwise inferior due to constraints such as utility density (Company Brief at 91; Exh. EV-2, at 4-24). The Cambridge DPW recommended that the Company avoid Western Avenue, Main Street, Hayward Street, Albany Street, Cardinal Medeiros Avenue, and portions of River Street, Galileo

Galilei Way, Broadway, Binney Street, Hampshire Street, Harvard Street, and Harvard Square and Inman Square (Exh. EV-2, at 4-24). The Massachusetts Water Resources Authority ("MWRA") also has numerous sewer and water facilities, including large diameter sewer interceptor pipes in the Project Study Area (Exh. EV-2, at 4-24). The Company noted that other roadway segments with extensive steam tunnel and other utility infrastructure could prove to be significant routing impediments (Exh. EV-2, at 4-24).

Somerville informed the Company of the existence of infrastructure and planned roadway reconstruction work on Somerville Avenue between Medford and Prospect Street (Exh. EV-2, at 4-24). Similarly, Boston Water and Sewer Commission ("BWSC") staff informed the Company of existing electric distribution lines, as well as other utilities along Everett Street and Western Avenue (Exh. EV-2, at 4-24). In addition to space constraints, the Company noted that it also must consider exposure to heat sources that can adversely affect a transmission line (Exh. EV-2, at 4-25). The Company explained that it included a 10-foot buffer between existing steam and transmission lines to mitigate the effects of those heat-producing sources on transmission cables (Exh. EV-2, at 4-25).

e. Article 97 Land and Shade Trees

The Company attempted to avoid lands subject to Article 97 protection wherever possible (Exh. EV-2, at 4-25). [33] In some instances, such as crossing the Charles River, the Company explained that it did not have an option to avoid Article 97 lands (Exh. EV-2, at 4-25). To the extent practicable, the Company avoided routes that would require the removal of healthy public shade trees on sidewalks or adjacent areas (Exh. EV-2 at 4-25). The Company explained that public shade trees play an important role in improving urban heat island effects by providing shading and reducing hardscape surface temperatures (Exh. EV-2, at 4-25).

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[33] Article 97 requires, in part, that certain land or easements taken or acquired for natural resource purposes shall not be used for other purposes unless the Massachusetts Legislature approves the change by a two-thirds vote (Exh. EV-2, at 4-92).

f. Route Screening Results

While the Company strived to adhere to recommendations and guidance provided by the many stakeholders consulted during the route screening process, the Company stated that it was not feasible to avoid routes along some of the referenced roadways, private lands, open space and recreational areas and rail corridors given the complexities of routing five new transmission line duct banks in the densely developed Project Study Area (Exh. EV-2, at 4-25). In those instances, the Company deemed it necessary to carry forth certain routes for scoring purposes and more detailed analyses, knowing the constructability and permitting challenges associated with these routes (Exh. EV-2, at 4-25, 4-26). The Company identified 22 Candidate Routes across the four separate study areas that were advanced for more detailed analysis, scoring and ranking (Exh. EV-2, at 4-35).

4. Candidate Route Scoring Methodology

a. General Scoring Method

The Company compared the potential for environmental impacts and constructability constraints along the Candidate Routes within each Study Area, as well as the estimated costs and relative reliability of each of the Candidate Routes (Exh. EV-2, at 4-74). The Candidate Routes were evaluated and ranked within each Study Area, applying a scoring methodology based on several criteria (Exh. EV-2, at 4-74). After gathering data for each criterion for each Candidate Route, the Company identified the Candidate Route for the particular Study Area with the highest measure for each criterion (Exh. EV-2, at 4-103). All other routes/designs in that Study Area group were then compared against this reference number to arrive at an unweighted "raw ratio score" for each criterion for Candidate Route, on a scale of 0 to 1 (Exh. EV-2, at 4-103).[34] Cost estimates were also developed for each route, and the reliability of each Candidate Route was

[34] For example, if Route Z has the most Shade Trees that require removal (e.g., 15 trees) and Route Y requires ten Shade Trees to be removed, the unweighted ration score for Route Y is 10/15, or 0.66 (Exh. EV-2, at 4-103). A lower ratio score indicates a better/less impactful criterion measure for a Candidate Route (Exh. EV-2, at 4-103).

assessed (Exh. EV-2, at 4-74). The goal of the routing analysis was to identify routes that best balance reliability, cost, and minimization of environmental impacts (Exh. EV-2, at 4-74).

The Company applied higher weights to the evaluation criteria that it believed to be of higher significance (Exh. EV-2, at 4-103). The Company used a scale of 1 to 5 to reflect the degree of importance of each criterion, with 1 being the lowest weight and 5 being the highest weight (Exh. EV-2, at 4-103). Table 8 shows the applied weight to each category.

Table 8: Applied Weights for Scoring Criteria

	Scoring Criteria	Applied Weight
DEVELOPED ENVIRONMENT CRITERIA	Residential Land Use	5
	Sensitive Receptors	4
	Commercial / Industrial Land Use	1
	Transportation Impacts	5
	Historic and Archaeological Resources	2
	Potential to Encounter Subsurface Contamination	4
NATURAL ENVIRONMENT CRITERIA	Wetland Resource Areas, Buffer Zones and Tidelands	2
	Article 97 Authorization	5
	Public Shade Trees	3
TECHNICAL / CONSTRUCTABILITY CRITERIA	Existing Utility Density	5
	Complex Crossings	3

Source: Exh. EV-2, Table 4-11.

Scoring categories and associated weights included in the analysis were established by a panel of siting specialists, engineers, and other experts experienced in route evaluation and were based on both the panel's best judgment, as well as in consideration of the weighting of scoring criteria in a variety of previous projects (Exh. EFSB-R-5). The Company met extensively with stakeholders and considered the input of these parties when determining the scoring criteria and associated weights used in the environmental (developed and natural) and constructability analysis (Exh. EFSB-R-5).

b. Developed Environment Criteria

The Company used six subcategories as criteria to compare conditions and impacts to the surrounding developed or built environment: (1) residential land use; (2) sensitive receptors;

(3) commercial/industrial land use; (4) transportation impacts; (5) historic and archaeological resources; and (6) potential to encounter subsurface contamination (Exh. EV-2, at 4-75). Residential land use considers the number of residential units directly abutting the candidate route (Exh. EV-2, at 4-75). Eversource relied on a combination of MassGIS and field reconnaissance for its residential unit data, counting each individual residence as a unique residential unit for large multi-unit apartment or condominium complexes (Exh. EV-2, at 4-75).[35]

The Company defined sensitive receptors as police and fire stations, hospitals, schools, nursing homes/elder care facilities, funeral homes, places of worship, daycare facilities, district court buildings, and parks and recreation facilities (excluding Article 97 lands) (Exh. EV-2, at 4-76). The Company used a combination of MassGIS, aerial photography, internet search tools, Google Street View, and field verification to identify sensitive receptors (Exh. EV-2, at 4-76). Similar to university residential halls, when the Company located multiple sensitive receptors within a university campus, the Company did not count those receptors individually but counted the entire campus as one sensitive receptor under the category of "schools" (Exh. EV-2, at 4-76). The Company analyzed the environmental impacts to EJ populations and the Company's routing analysis strove to route the Project towards the existing and future nonresidential uses that are partially driving the need for the Project, and away from areas where residential land use or sensitive receptors (churches, schools, hospitals, libraries), Article 97 lands, and multimodal transportation would be disproportionately affected (Company Brief at 97, n.41, citing Exh. EFSB-CPC-3).

c. Natural Environment Criteria

The Company used three subcategories as criteria to compare conditions and impacts to the natural environment: (1) wetland resource areas, buffer zones, and tidelands[36]; (2) Article 97

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35 However, in the case of university residence halls, Eversource counted the entire complex as one residential unit (Exh. EV-2, at 4-75).

36 The evaluation of wetland resources identified in the Study Area includes those primarily associated with the Charles River including Riverfront Area, Inland Bank, Bordering

authorization; and (3) public shade trees (Exh. EV-2, at 4-92). The Company identified the jurisdictional wetland resource areas using a combination of field delineation, MassGIS and ArcGIS (Exh. EV-2, at 4-92).[37]

The Company assessed the Article 97 authorization criterion by evaluating the total length of route segments requiring Article 97 approval along each candidate route (Exh. EV-2, at 4-92). The Company counted the number public shade trees, as defined by G.L. c. 87, along each candidate route within the public way, including within adjacent public open spaces (Exh. EV-2, at 4-101).

d. Technical/Constructability Criteria

The Company defined the scoring criteria for technical and constructability considerations by assessing existing utility density and complex crossings (Exh. EV-2, at 4-101). According to Eversource, utility density considers the existing underground pipelines, utility conduits, and associated features including manholes and catch basins (Exh. EV-2, at 4-101). Additionally, the Company stated that the depth of facilities affects the available space to physically install the transmission conduits (Exh. EV-2, at 4-101). The Company's utility density assessment along the candidate routes included survey data compiled from utility companies, and municipal and institutional engineering departments (Exh. EV-2, at 4-101). The Company calculated existing utility density based on three factors: (1) estimated maximum useable corridor width; (2) number of utility crossings; and (3) number of heat generating sources (Exh. EV-2, at 4-101,102).

According to Eversource, the estimated maximum usable corridor width is defined as the maximum available underground space potentially available as measured horizontally between existing utilities in 100-foot-long sections along each candidate route (Exh. EV-2, at 4-102). The

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Vegetated Wetlands, Bordering Land Subject to Flooding (100-year floodplain), 100-foot Buffer Zone and jurisdictional tidelands regulated under Chapter 91 (Exh. EV-2, at 4-92).

37 The Company noted that other natural environment criteria, such as rare species habitat, were not included given the absence of such areas in the densely populated urban location of the Project and predominant use of roadway locations (Exh. EV-2, at 4-92; Tr. 3, at 534).

Company gave an "average useable corridor width rating" as a means of representing the average overall underground space using a rating of 1 and 5 (Exh. EV-2, at 4-102). The ratings were given based on the following parameters (without distinction by utility type): widths greater than 15 feet received a rating of 1, 10 to 15 feet, rating of 2; 6 to 9 feet, rating of 3; 4 to 5 feet, rating of 4; less than 3 feet, rating of 5 (Exh. EV-2, at 4-102). The Company stated that the "number of utility crossings" was a cumulative identification of existing utilities that intersected regardless of type, size, or depth for any given route (Exh. EV-2, at 4-102). Finally, the "number of heat-generating sources" referred to existing electric transmission and distribution lines, as well as steam lines regardless of size or depth (Exh. EV-2, at 4-102). Eversource represented that it determined the final ranking for utility density by combining the total number for each factor listed above (Exh. EV-2, at 4-102).

The Company defined complex crossings as having extended construction duration, and the potential for extended and severe construction impacts (Exh. EV-2, at 4-102). The Company included the following crossings in its scoring: Charles River, MBTA commuter rail tracks, Grand Junction Railroad tracks, I-90 ramps, and MBTA Red Line tracks (Exh. EV-2, at 4-102). The Company added that such crossings could cause a disruption to the public associated with construction noise, dust generation and the use of road shoulders to support construction (Exh. EV-2, at 4-102). The Company calculated the number of complex crossings by dividing the number of crossings by the greatest number of such crossings required for any individual candidate route within each individual study area (Exh. EV-2, at 4-103).

e. Cost

The Company created cost estimates for each Candidate Route (Exh. EV-2, at 4-121). Many factors can affect the cost of a transmission line project, including cost and availability of materials and equipment, labor, presence of contaminated soils, and potential for work hour restrictions or time-of-year restrictions imposed by project permits, the local community, or other entities (Exh. EV-2, at 4-121). Subsurface conditions such as the type and depth of soil and rock that must be excavated to install the duct bank could also significantly affect project cost (Exh. EV-2, at 4-121). In addition, the cost is influenced by the proximity of existing distribution and

transmission lines and the density of underground utilities (Exh. EV-2, at 4-121). Waterbodies, like the Charles River, or other features that may need to be traversed by trenchless or other more complex crossing options, could also significantly affect project cost (Exh. EV-2, at 4-121).

The cost estimates include transmission line design, substation connections, survey, environmental compliance, environmental mitigation, siting and permitting, construction management, public outreach, risk contingency, and other potential associated costs (Exh. EV-2, at 4-121).[38] For each Study Area, the Company developed more precise "planning grade" cost estimates (-25%/+25%) based on preliminary engineering drawings for the top scoring routes (i.e., the Company's preferred routes) (based on environmental and constructability criteria); for the other candidate routes, the Company relied on "conceptual cost estimates" (-25%/+50%) based on conceptual engineering drawings (Exh. EV-2 at 4-121 to 4-124).

f. Reliability

The Company considered whether there is a difference in the Candidate Routes regarding the reliability of the proposed New Lines (Exh. EV-2, at 124). The Company determined that because all of the Candidate Routes are underground and have relatively small differences in design, they do not exhibit in any substantial difference in the level of reliability risk (Exh. EV-2, at 124). Accordingly, the Company did not assign a reliability score or ranking to any of the Candidate Routes (Exh. EV-2, at 124).

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[38] Specific categories the Company used for cost estimation included: (1) material; (2) labor and equipment; (3) right of way (building/land); (4) engineering/permitting; (5) financing/AFUDC; (6) escalation; and (7) contingency (Exh. MIT-2-1, at 2-3). As requested by MIT, Eversource also provided cost estimates for sub-segments of its routes (such as the Vassar Street Segment of Route B29F West) using a linear approach that prorated the overall cost of the route by the length of the sub-segment (Exh. MIT-2-1, at 1-3). Eversource acknowledged that the resulting cost estimate for a route sub-segment would not be at the same "Planning Grade" level of accuracy (+/- 25%) as the overall route from which it was derived using the length-based cost proration (Exh. MIT-2-1, at 1).

5. Geographic Diversity

The Company stated that it prioritized maintaining geographically diverse corridors to minimize the potential for a single contingency event to cause the failure of multiple transmission lines at once (Exh. EV-2, at 4-25). However, in situations where this was not possible, the Company attempted to ensure that a particular route segment could accommodate two new electric transmission line duct banks and splice vaults (Exh. EV-2, at 4-25). The Company claims that the Brighton Study Area necessitated a separate evaluation of potential routes leaving the New Substation onto Broadway Avenue to ensure it contained some measure of geographic diversity (Exh. EV-2, at 4-17).[39]

D. Route Selection by Study Area

Based on the method described above, the Company calculated for each Candidate Route the relevant raw data, ratio scores, and weighted scores for each environmental and constructability/technical criterion (Exh. EV-2, at 4-74). The Company tallied the individual weighted scores for each criterion for each Candidate Route, to yield the total weighted score (Exh. EV-2, at 4-74 to 4-75). The Company then ranked the routes in each Study Area, based on their total weighted scores (a lower weighted score is better) (Exh. EV-2, at 4-74 to 4-75). The Company compared the estimated costs of construction for each route and ranked the routes as well (Exh. EV-2, at 4-74). Finally, based on an evaluation of the overall rankings with respect to the natural environment, developed environment, constructability, overall environmental score, reliability, and cost, the Company selected the top two candidates for each Study Area (or sub area for Brighton) (EV-2, at 4-124 to 4-126). The Company named the route it deemed best overall as the "preferred route" and the second best, a "noticed alternative route" (Exh. EV-2, at 4-124).

The tables below summarize the key route selection information, scoring, and ranking determinations by the Company that it used to ultimately proceed with a preferred route and

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[39] The Company cited the importance of geographic diversity when it retained Route S11C as one of the top two Somerville routes despite it having the highest cost of the scored routes (Exh. EV-2, at 4-128).

noticed alternative route for each Study Area. The Company's preferred routes (often, with the lowest total weighted scores, and the lowest estimated costs) are shaded in green; noticed alternative routes, are shaded in yellow.

1. Brighton East

In the Brighton East Study Area, the Company identified four Candidate Routes: B2A East, B25 East, B25A East, and B31 East (Exh. EV-2, at 4-35 to 4-43). The Company determined that Candidate Route B2A received the best overall score, is more direct, and is the least expensive option in the Study Area and utilizes existing roadway corridors (Exh. EV-2, at 4-35 to 4-43). Accordingly, given its overall superiority in the route selection process, the Company chose Candidate Route B2A as the Preferred Route (along with Route Variation B2AN) and Candidate Route B31 as the Noticed Alternative Route in the eastern portion of the Brighton Study Area (Exh. EV-2, at 4-35 to 4-43).

Table 9: Brighton East Candidate Routes Scores and Estimated Costs

Table 9	Brighton East Candidate Routes Scores and Estimated Costs															
Candidate Route		Human Environment Crieteria					Natural Environment Criteria				Constructability & Technical Criteria		Total Score	Route Length (Miles)	Cost in millions	Rank
		Residential	Commercial and Industrial	Sensitive Receptors	Historic & Archaeological Resources	Transportation Impacts	Wetland Resource Area and Buffer Zone Crossings	Potential to Encounter Subsurface Contamination	Article 97	Public Shade Trees	Utility Density	Complex Crossings				
Weight		5	1	4	2	5	2	4	5	3	5	3				
B-2A East	Raw Score	0.22	0.54	0.4	0.32	0.77	0.66	0.69	0.37	0.54	0.52	1	6.02	2.9	$ 194.0	1
	Weighted Score	1.08	0.54	1.6	0.65	3.84	1.32	2.75	1.85	1.62	2.58	3	20.82			
B-25 East	Raw Score	1	1	1	1	0.9	1	1	1	1	1	1	10.9	5.49	$ 290.8	4
	Weighted Score	5	1	4	2	4.51	2	4	5	3	5	3	38.51			
B-25A East	Raw Score	1	1	1	0.97	0.87	1	0.88	1	0.98	0.97	1	10.67	5.4	$ 288.4	3
	Weighted Score	5	1	4	1.94	4.37	2	3.5	5	2.95	4.87	3	37.62			
B-31 East	Raw Score	0.47	0.81	0.6	0.4	1	0.68	0.88	0	0.62	0.76	1	7.22	3.26	$ 199.60	2
	Weighted Score	2.34	0.81	2.4	0.81	5	1.36	3.5	0	1.87	3.82	3	24.9			

Sources: Exh. EV-2, Table 4-33, Table 4-13 and 4-12B.

2. Brighton West

In the Brighton West Study Area, the Company identified four Candidate Routes: B-24 West; B-24A West; B-29F West; and B-30 West (Exh. EV-2, at 4-43 to 4-51). The Company determined that Candidate Route B29F received the best overall score and is the least expensive route option (Exh. EV-2, at 4-43 to 4-51). Candidate Route B30 received the second-best overall

score and ranked second with respect to cost (Exh. EV-2, at 4-43 to 4-51). The Company assessed Candidate Route B29F as the overall superior route in the in the Brighton West Study Area given its lowest score, cost, and length, and selected it as the Preferred Route (Exh. EV-2, at 4-129). The Company chose Candidate Route B30 as the Noticed Alternative Route given is next lowest score, cost, and length (Exh. EV-2, at 4-43 to 4-51).

Table 10: Brighton West Candidate Routes Scores and Estimated Costs

Table 10	Brighton West Candidate Routes Scores and Estimated Costs															
Candidate Route		Human Environment Crieteria					Natural Environment Criteria				Constructability & Technical Criteria		Total Score	Route Length (Miles)	Cost in millions	Rank
		Residential	Commercial and Industrial	Sensitive Receptors	Historic & Archaeological Resources	Transportation Impacts	Wetland Resource Area and Buffer Zone Crossings	Potential to Encounter Subsurface Contamination	Article 97	Public Shade Trees	Utility Density	Complex Crossings				
Weight		5	1	4	2	5	2	4	5	3	5	3				
B-24 West	Raw Score	0.9	0.99	1	0.99	0.69	0.56	0.63	1	0.96	0.91	1	9.63	4.14	$229.80	3
	Weighted Score	4.5	0.99	4	1.98	3.44	1.12	2.5	5	2.88	4.57	3	33.99			
B-24A West	Raw Score	0.9	1	1	0.98	0.68	0.56	0.58	1	1	1	1	9.71	4.05	$228.70	4
	Weighted Score	4.51	1	4	1.96	3.42	1.12	2.33	5	3	5	3	34.35			
B-29F West	Raw Score	0.19	0.15	0.24	0.11	1	1	1	0	0.63	0.78	0.75	5.85	3	$194.00	1
	Weighted Score	0.97	0.15	0.95	0.22	5	2	4	0	1.89	3.91	2.25	21.33			
B-30 West	Raw Score	1	0.77	1	1	0.95	0.28	0.63	0	0.8	1	0.75	8.17	3.43	$215.40	2
	Weighted Score	5	0.77	4	2	4.73	0.57	2.5	0	2.41	5	2.25	29.22			

Source: Exh. EV-2, Table 4-34 and Table 4-12A.

3. Putnam

In the Putnam Study Area, the Company identified three Candidate Routes: P11, P12, and P13 (EV-2, at 4-51 to 4-56). Candidate Routes P13 and P11 emerged as the top two routes in the Putnam Study Area. The Company assessed Candidate Route P13 as the best scoring, most direct, and lowest cost alternative in this Study Area (Exh. EV-2, at 4-127). Candidate Route P11 ranked second on overall scoring and cost estimates (Exh. EV-2, at 4-127). Accordingly, the Company identified Candidate Route P13 as the Preferred Route and Candidate Route P11 as the Noticed Alternative Route in the Putnam Study Area (Exh. EV-2, at 4-127).

Table 11: Putnam Candidate Routes Scores and Estimated Costs

Table 11	Putnam Candidate Routes Scores and Estimated Costs															
Candidate Route		Human Environment Crieteria					Natural Environment Criteria				Constructability & Technical Criteria		Total Score	Route Length (Miles)	Cost in millions	Rank
		Residential	Commercial and Industrial	Sensitive Receptors	Historic & Archaeological Resources	Transportation Impacts	Wetland Resource Area and Buffer Zone Crossings	Potential to Encounter Subsurface Contamination	Article 97	Public Shade Trees	Utility Density	Complex Crossings				
Weight		5	1	4	2	5	2	4	5	3	5	3				
P-11	Raw Score	0.98	0.62	1	1	1	0.88	0.56	0	0.82	0.68	1	8.54	0.87	$ 56.7	2
	Weighted Score	4.88	0.62	4	2	5	1.77	2.25	0	2.46	3.4	3	29.38			
P-12	Raw Score	1	1	1	0.5	0.97	1	1	0	1	1	1	9.47	1.44	$ 80.5	3
	Weighted Score	5	1	4	1	4.85	2	4	0	3	5	3	32.85			
P-13	Raw Score	0.98	0.5	1	0.5	0.58	0.86	0.25	0	0.38	0.47	1	6.52	0.49	$ 37.6	1
	Weighted Score	4.9	0.5	4	1	2.89	1.71	1	0	1.14	2.35	3	22.5			

Source: Exh. EV-2, Table 4-35 and Table 4-12D.

4. Kendall

In the Kendall Study Area, the Company identified five Candidate Routes: K5A, K6A, K10, K11, and K12 (Exh. EV-2, at 4-51 to 4-56). The Company determined that Candidate Route K5A is the lowest cost route but ranks third overall from a scoring perspective (Exhs. EV-2, at 4-127; EFSB-R-7). The Company stated that it selected the final alignment of Route K5A in close consultation with, and the support of, the owner of the development rights (MITIMCo) and Cambridge to avoid and minimize potential impacts to future development plans on the Volpe Center Site, minimize impacts to public shade trees, address significant utility congestion and planned utility upgrades in Broadway and Third Street (Exhs. EV-2, at 4-127; EFSB-R-7). The Company determined that Candidate Route K11 ranks first overall from a scoring perspective but is one of the more expensive routes to construct within the Kendall Study Area primarily because of the anticipated easement costs associated with obtaining rights to install and operate the transmission line in three private roads (Potter Street, Fifth Street, Munroe Street) (Exhs. EV-2, at 4- 127; EFSB-R-7). While the Kendall Study Area is very compact, the Company noted that Candidate Route K11 provides geographic diversity relative to Candidate Route K5A (Exhs. EV-2, at 4- 127; EFSB-R-7). In consideration of these factors, the Company selected Candidate Route K5A as the Preferred Route and Candidate Route K11 as the Noticed Alternative Route in the Kendall Study Area (Exhs. EV-2, at 4- 127; EFSB-R-7).

Table 12: Kendall Candidate Routes Scores and Estimated Costs

Table 12	Kendall Candidate Routes Scores and Estimated Costs															
Candidate Route		Human Environment Crieteria					Natural Environment Criteria				Constructability & Technical Criteria		Total Score	Route Length (Miles)	Cost in millions	Rank
		Residential	Commercial and Industrial	Sensitive Receptors	Historic & Archaeological Resources	Transportation Impacts	Wetland Resource Area and Buffer Zone Crossings	Potential to Encounter Subsurface Contamination	Article 97	Public Shade Trees	Utility Density	Complex Crossings				
Weight		5	1	4	2	5	2	4	5	3	5	3				
K-5A	Raw Score	0.91	0.88	0.8	0.6	1	1	0.86	0	0.91	0.87	0	7.82	0.59	$ 48.6	3
	Weighted Score	4.56	0.88	3.2	1.2	5	2	3.43	0	2.72	4.35	0	27.33			
K-6A	Raw Score	1	1	1	0.9	1	1	1	0	1	1	0	8.9	0.67	$ 59.2	5
	Weighted Score	5	1	4	1.8	5	2	4	0	3	5	0	30.8			
K-10	Raw Score	0.91	0.58	0.8	0.7	0.81	1	0.81	0	0.71	0.83	0	7.16	0.63	$ 66.3	2
	Weighted Score	4.56	0.58	3.2	1.4	4.04	2	3.24	0	2.14	4.17	0	25.32			
K-11	Raw Score	0.63	0.53	0.8	0.8	0.69	1	0.86	0	0.69	0.83	0	6.83	0.61	$ 72.1	1
	Weighted Score	3.14	0.53	3.2	1.6	3.47	2	3.43	0	2.08	4.15	0	23.6			
K-12	Raw Score	0.72	0.65	1	1	0.75	1	1	0	0.92	0.95	0	7.99	0.69	$ 80.0	4
	Weighted Score	3.58	0.65	4	2	3.76	2	4	0	2.76	4.75	0	27.5			

Source: Exh. EV-2, Table 4-36 and Table 4-12E.

5. Somerville

In the Somerville Study Area, the Company initially identified six Candidate Routes: S1A, S11C, S12, S13, S13A, and S14 (Exh EV-2, at 4-62 to 4-74). During the proceeding, at the suggestion of the Siting Board and based on input from the SCAH resident group, the Company investigated a seventh Candidate Route in the Somerville Study Area, which ultimately became known as Preferred Route S15 (Exhs. EFSB-P-1; SCAH-1-6; Att. SCAH-1-6(1); EFSB-RS-19; EFSB-RS-19(S1); EFSB-RS-19(S2)). Preferred Route S15 is largely a re-optimization of different routes and route segments otherwise included as Candidate Routes S1A, S11C, and S12 in the Somerville Study Area (Exhs. EFSB-P-1; Att. EFSB-P-1(5); EFSB-RS-19; Att. EFSB-RS-19(1); Tr. 1, at 33).

The Company determined that Candidate Routes S1A and S11C were the top two routes in the Somerville Study Area during the Company's initial route selection process (Exh. EV-2, at 4-128). Candidate Route S1A received the best overall score and is the second least expensive (Exh. EV-2, at 4-128). Candidate Route S11C received the second-best overall score (within ½ point to Candidate Route S1A); however, it is the most expensive of all the routes considered (Exh. EV-2, at 4-128). The Company retained Candidate Route S11C as one of the top two routes in this Study Area for its geographic diversity and utilization of off-road segments along the Grand

Junction Railroad corridor including potentially collocating with a future municipal multi-use pathway project (Exh. EV-2, at 4-128).

During the proceeding, the Company identified Route S15 as the Preferred Route in this Study Area and retained Candidate Routes S1A and S11C as Noticed Alternative Routes (Exhs. SCAH-1-6; EFSB-RS-19; EFSB-RS-19(1); EFSB-RS-19(S1); EFSB-RS-19(S2)). Although Route S15 is the second most expensive route, the Company determined that it has the lowest environmental score by a significant margin and would result in the lowest potential for impacts of the seven Candidate Routes evaluated within the Somerville Study Area (Exhs. SCAH-1-6; SCAH-1-6(1); EFSB-RS-19(S1)). In addition, the Company noted that Route S15 was developed in close coordination with both Cambridge and Somerville,[40] who each affirmatively support Route S15 relative to the alternatives (Exhs. CAM-KW-1, at 2; SOM-BCP-1, at 3; Tr. 1, at 33-34; Tr. 5, at 793-94).

Table 13: Somerville Candidate Routes Scores and Estimated Costs

Table 13	Somerville Candidate Routes Scores and Estimated Costs															
Candidate Route		Human Environment Crieteria					Natural Environment Criteria				Constructability & Technical Criteria		Total Score	Route Length (Miles)	Cost in millions	Rank
		Residential	Commercial and Industrial	Sensitive Receptors	Historic & Archaeological Resources	Transportation Impacts	Wetland Resource Area and Buffer Zone Crossings	Potential to Encounter Subsurface Contamination	Article 97	Public Shade Trees	Utility Density	Complex Crossings				
Weight		5	1	4	2	5	2	4	5	3	5	3				
S-1A	Raw Score	0.61	0.87	0.43	0.2	0.76	0	0.86	0	0.64	0.51	0.5	5.38	1.25	$ 98.6	2
	Weighted Score	3.07	0.87	1.71	0.4	3.8	0	3.44	0	1.92	2.53	1.5	19.25			
S-11C	Raw Score	0.41	0.8	0.43	0.8	0.36	0	1	3	0.31	0.74	1	8.85	1.56	$ 130.0	3
	Weighted Score	2.03	0.8	1.71	1.6	1.79	0	4	0	0.93	3.71	3	19.58			
S-12	Raw Score	0.37	0.85	0.71	0.3	0.62	0	1	0	0.84	0.95	0.5	6.13	1.48	$ 111.0	4
	Weighted Score	1.84	0.85	2.86	0.6	3.08	0	4	0	2.51	4.73	1.5	21.96			
S-13	Raw Score	1	0.85	1	0.65	1	0	0.53	0	0.98	0.83	0.25	7.08	1.57	$ 99.4	6
	Weighted Score	4.98	0.85	4	1.3	5	0	2.11	0	2.93	4.16	0.75	26.09			
S-13A	Raw Score	1	0.86	1	1	0.94	0	0.72	0	1	1	0.25	7.78	1.82	$ 113.8	7
	Weighted Score	5	0.86	4	2	4.7	0	2.89	0	3	5	0.75	28.21			
S-14	Raw Score	0.79	1	0.71	0.15	0.7	0	0.89	0	0.79	0.67	0.5	6.2	1.38	$ 99.3	5
	Weighted Score	3.94	1	2.86	0.3	3.52	0	3.56	0	2.37	3.35	1.5	22.39			
S-15	Raw Score	0.42	0.71	0.29	0.1	0.3	0	1	0	0.33	0.56	1	4.7	1.35	$ 123.2	1
	Weighted Score	2.11	0.71	1.14	0.2	1.51	0	4	0	0.98	2.8	3	16.44			

Source: Exh. EV-2, Table 4-37 and Table 4-12C.

40 In addition to close consultation with Cambridge and Somerville, the Company has also undertaken significant coordination with the MBTA to confirm a mutually agreeable alignment and crossing of MBTA facilities along Route S15 (Exhs. SCAH-1-6; EFSB-RS-19; Tr. 5, at 794; RR-MIT-3; Att. RR-MIT-3(1); Att. RR-MIT-3(2)).

E. Positions of the Parties

In addition to Eversource, only Cambridge and MIT submitted briefs on route selection.

1. MIT

a. MIT Alternative Routes

In its testimony, MIT's witnesses from WSP recommended three route alternatives to portions of the Eversource preferred Brighton and Putnam routes that pass through the MIT campus: the (1) Grand Junction North to Albany Street Segment ("GJN+A Segment") variation for a portion of the Company's preferred Brighton West route, Route B29F West; (2) the B2A Wadsworth Street Segment variation for a portion of the Company's preferred Brighton East route, Route B2A East; and (3) the P13 Wadsworth Street Segment variation for the Company's preferred Putnam route, Route P13 (Exh. MIT-WSP-1, at 5, 6). On October 5, MIT filed a motion requesting that the Siting Board order Eversource to publish and distribute notice of the MIT Preferred Segments in the event the Board grants a separate Eversource motion to notice a Company-proposed variation for Route S15 in Somerville ("MIT Motion on Notice").[41] On brief, MIT stated that it had decided to withdraw the two Wadsworth Street Segment alternatives it proposed, and would only seek Siting Board review of its GJN+A Segment proposal (MIT Brief at 3).[42] Therefore, the Siting Board does not consider MIT's Wadsworth Street segments further. Figure 9 below depicts MIT's proposed GJN+A Segment and its deviation from Eversource's preferred Route B29F West (also called the Vassar Street Segment).

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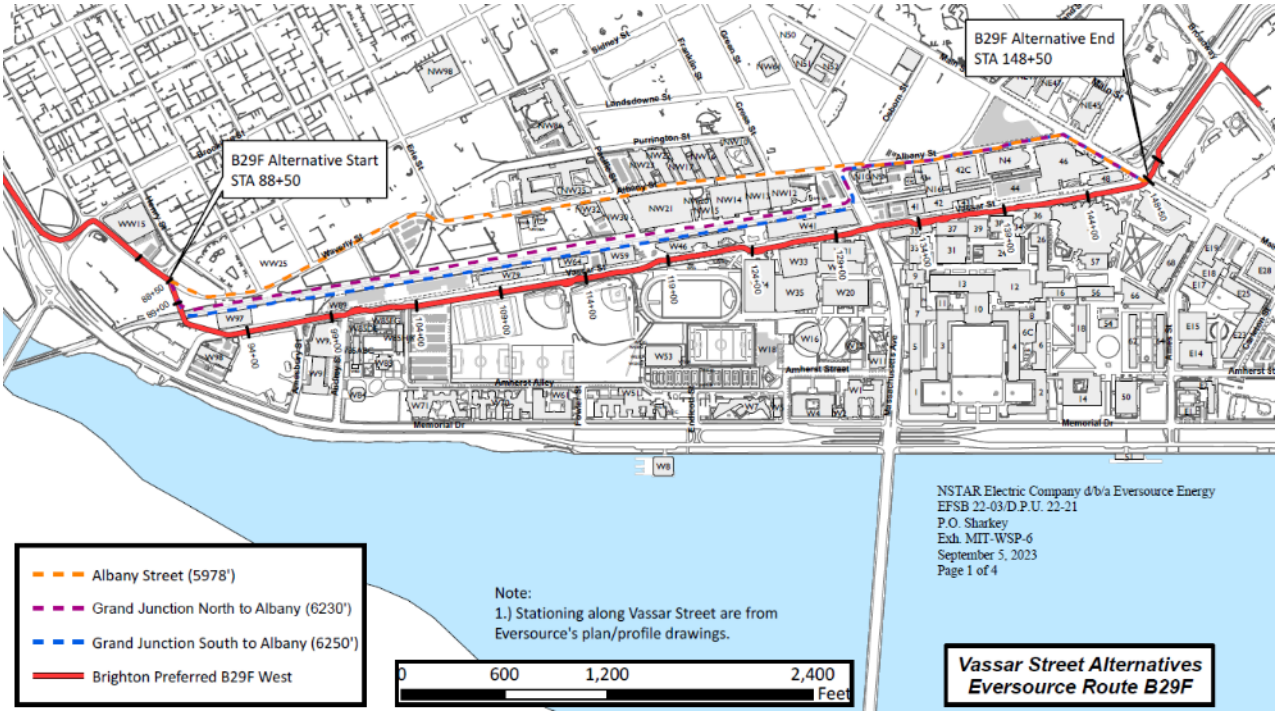
41 The Presiding Officer granted the Eversource motion for the supplemental S15 Route variation notice on December 19, 2023. The Siting Board rules on the MIT Motion on Notice in this decision at Section V.E.f, n.60.

42 MIT has concluded that if Eversource agrees to specific mitigation measures, it should be possible to mitigate the most troublesome potential adverse impacts on Ames Street (MIT Brief at 3).

The GJN+A Segment begins at Eversource's preferred Route B29F West at the Waverly Street/Sidney Street intersection (shown as "B29F Alternative Start" on Figure 9, below) and extends northeast into and along the north side of the Grand Junction Railroad corridor for 4,156 linear feet until reaching Massachusetts Avenue (Exh. MIT-WSP-1, at 22). Once on Massachusetts Avenue, it proceeds north for 210 linear feet to Albany Street, then proceeds in a northeasterly direction on Albany Street for 1,285 linear feet to Main Street (Exh. MIT-WSP-1, at 22). The route then turns in a southeasterly direction on Main Street for 569 linear feet and connects back to Route B29F West at the intersection of Main Street and Vassar Street (shown as "B29F Alternative End" on Figure 9) (Exh. MIT-WSP-1, at 22). The total length of MIT's alternative is 6,230 feet (approximately 1.2 miles), compared with Eversource's Vassar Street Segment, which is approximately 6,000 feet (Exh. MIT-WSP-1, at 22).

Figure 9: MIT Proposed Alternative and Eversource Route B29F West



Source: Exh. MIT-WSP-6.

MIT retained WSP to evaluate impacts and risks to MIT associated with the Project's transmission line segments that pass through the MIT campus and to assess options for mitigating such impacts and risks (Exh. MIT-WSP-1, at 3). In addition, MIT tasked WSP with evaluating

whether there are alternative route segments for the Project's proposed MIT area locations that, on balance, present superior alternatives to those proposed by Eversource (Exh. MIT-WSP-1, at 3). WSP subsequently recommended the GJN+A Segment in lieu of the Vassar Street segment ("Vassar Street Segment") of Route B29F West proposed by Eversource (Exh. MIT-WSP-1, at 6).

WSP's analysis of the Vassar Street Segment focused on potential impacts to the MIT Central Utilities Plant ("MIT CUP") and its main distribution lines located on Vassar Street, which provide chilled water, steam, and electricity via a microgrid throughout the campus (Exh. MIT-WSP-1, at 9-11). In addition, telecommunications duct banks and fiberoptic/network lines that service the campus cross over and run along Vassar Street (Exh. MIT-WSP-1, at 11). Based on the critical nature of these utilities, and the density of such facilities in and along Vassar Street, WSP concluded that any disruption resulting from the Project could have a catastrophic impact on MIT's buildings, occupants, and research operations (Exh. MIT-WSP-1, at 9). While WSP identified some measures to reduce these risks, it concluded that, with over 90 existing MIT utilities in the Vassar Street Segment, the most serious adverse impacts could not be avoided (Exh. MIT-WSP-1, at 18).

Next, WSP identified potential alternatives to the Vassar Street Segment, using an approach that it described as similar to the one used by Eversource (Exh. MIT-WSP-1, at 4-5). To identify potential routing options, WSP used maps, utility and survey data, MassGIS, City of Cambridge GIS, MIT GIS, MIT project documents (such as sub-surface investigations, building designs, and as-built drawings), and other field reconnaissance information (Exh. MIT-WSP-1, at 21). WSP indicated that it consulted with the City of Cambridge, the MBTA, and the MWRA (Exh. MIT-WSP-1, at 21). WSP identified four alternatives to the Vassar Street Segment, of which it deemed the GJN+A Segment to be best (Exh. MIT-WSP-1, at 21).

To vet its alternative route segments, WSP employed a scoring methodology that was intended to replicate the Eversource route scoring methodology (Exh. MIT-WSP-1, at 23). WSP made one adjustment to the Company's approach to address what it described as a "data gap" in which the Company did not include an analysis of the street trees along Vassar Street (Exh. MIT-

WSP-1, at 24).[43] In order to be conservative, WSP contends that it made no other changes to Eversource's scoring approach (Exh. MIT-WSP-1, at 24). WSP's route scoring yielded a weighted score of 21.22 for the GJN+A Segment as compared to 29.26 for the Vassar Street Segment (Exh. MIT-WSP-1, at 25). WSP described these results as demonstrating that the GJN+A Segment has fewer impacts than the Vassar Street Segment, and that Eversource overlooked or eliminated "clearly superior alternatives" (Exh. MIT-WSP-1, at 27).

In scoring the MIT candidate segments, WSP used the same eleven criteria and the same weighting factors selected by Eversource (Exh. MIT-WSP-1 at 23). For each MIT candidate segment, MIT provided the data and analyses used to calculate its route scoring criteria: Residential Land Use, Sensitive Receptors, Commercial/Industrial Land Use, Transportation Impacts Historic/Archaeological Resources, Potential to Encounter Subsurface Contamination, Wetland Resources, Article 97, Shade Trees, Existing Utility Density and Complex Crossings (Exhs. MIT-WSP-23 and WSP-24). WSP's route scoring yielded a weighted score of 21.22 for the GJN+A Segment as compared to 29.26 for the Vassar Street Segment (Exh. MIT-WSP-1, at 25). WSP described these results as demonstrating that the GJN+A Segment has fewer impacts than the Vassar Street Segment, and that Eversource overlooked or eliminated "clearly superior alternatives" (Exh. MIT-WSP-1, at 27).

For the cost comparison, WSP initially adopted the linear methodology employed by the Company in Response to Exhibit MIT-2-1 (Exh. MIT-WSP-1, at 27). Specifically, WSP used the

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43 WSP identified other alleged shortcomings of the Eversource route scoring but did not modify them in its own scoring approach. For example, WSP contends that Eversource considered the entirety of the MIT campus as a single sensitive receptor, and therefore significantly understated the total construction impact (Exh. MIT-WSP-1, at 21). In addition, WSP noted that Eversource collected traffic data on Vassar Street during the pandemic, which is not representative of current conditions (Exh. MIT-WSP-1, at 29). Although, WSP asserts that the GJN+A has significantly less traffic than Vassar Street, it could not reasonably quantify this under current conditions for comparison with the data Eversource collected during the pandemic for Vassar Street (Exh. MIT-WSP-1, at 29). Instead, WSP assumed equivalent traffic scores between GJN+A and the Vassar Street Segment (Exh. MIT-WSP-1, at 29). MIT asserts that even Eversource conceded that traffic impacts on Vassar Street will be more severe (MIT Brief at 10, n.10, citing Exh. EFSB-RS-26).

Company's estimated costs for the Brighton Preferred Route B29F West ($194.0M), the Brighton Preferred Route B2A ($194.0M) and the Putnam Preferred Route P13 ($37.6M) to calculate a cost per linear foot for each route and then multiplied that cost per linear foot by the length of the appropriate MIT preferred segments (Exh. MIT-WSP-1, at 27). This linear cost approach assumes that the cost of materials is the same for all alternatives per linear foot and that all factors impacting constructability are also the same (Exh. MIT-WSP-1, at 28). However, WSP has concluded that there are several key differences in construction risk factors between the MIT and Eversource alternatives that will have a significant impact on cost (Exh. MIT-WSP-1, at 27). Specifically, WSP identified four main construction risk factors that apply to all the segments: utility density, the depth of the transmission mains, distribution of traffic, bicyclist and pedestrian and project duration (Exh. MIT-WSP-1, at 28).

For reliability of supply, WSP adopted the Company's assessment of reliability of supply as set forth in the Analysis: "All Candidate Routes are located underground and have relatively small differences in design that do not result in any substantial difference in the level of reliability risk" (Exh. MIT-WSP-1, at 28, citing Exh. EV-2, at 4-124). Thus, MIT represented that the same logic would apply to each of the MIT preferred segments, and MIT deemed them all to have equal reliability (Exh. MIT-WSP-1, at 28).

b. MIT Arguments

i. Overview and Standard of Review

MIT supports the goals and need for the Project and voices a willingness to assume a "fair share of the Project's adverse impacts along with the rest of the Cambridge community" (MIT Brief at 1). However, MIT does not believe that any mitigation plan can adequately minimize the impacts of the Project on Vassar Street given the "extraordinary amount of utility density located there" (MIT Brief at 3). MIT argues that construction on Vassar Street could last for more than two years, with burdensome traffic, noise, and 24-hour-a-day dewatering facility operations during construction (MIT Brief at 5). MIT proposes that the Siting Board approve the Project but substitute the GJN+A Segment for the Vassar Street Segment of Route B29F West (MIT Brief at 7).

MIT raises the question of what standard of review should apply to a transmission line (or segment) proffered by an intervenor for the Siting Board's review and approval (MIT Brief at 6). MIT contends that it must demonstrate that its proposed route segment is a clearly superior option balancing environmental impacts, cost, and reliability (MIT Brief at 6). Based on its interpretation of Siting Board precedent in Woburn-Wakefield, MIT asserts that the primary test for whether an intervenor proposed alternative route is clearly superior is how it fares in route scoring (MIT Brief at 7). MIT claims that a scoring methodology is a "logical and objective way of determining whether the project proponent's site selection process overlooked a clearly superior option" as proposed by an intervenor (MIT Brief at 7-8). MIT notes that in Woburn-Wakefield, the Siting Board also considered other factors for intervenor-proposed routes, such as cost and reliability (MIT Brief at 8).

ii. Route Scoring and Cost

MIT claims it employed the same route scoring methodology as Eversource, and that Eversource does not dispute the validity of the MIT scoring (MIT Brief at 9, n.8). MIT argues that the GJN+A Segment (with a score of 21.22) is "clearly superior" to the Vassar Street Segment (with a score of 29.26) and that it also fared better in 10 of 11 criteria used for scoring, including Constructability/Technical on which Eversource placed great emphasis (MIT Brief at 10).

MIT contends that its cost analysis of the GJN+A Segment versus the Vassar Street Segment is based on Eversource's data as a starting point, with adjustments to reflect obvious differences in the respective route segments for "key cost factors" such as utility density, excavation depths, and traffic (MIT Brief at 17). MIT maintains that the GJN+A Segment costs approximately $30 million less than the Vassar Street Segment (MIT Brief at 15, citing Exh. EFSB MIT-12). In response to Eversource's contention that the GJN+A Segment costs $31.2 more than Vassar Street Segment, MIT faults Eversource for never presenting a fully detailed cost comparison of the two route segments (MIT Brief at 17, citing Exh. EFSB-C-10, at 2). MIT disputes three specific factors cited by Eversource regarding its assessment of the GJN+A Segment costs: (1) $20 million of additional land acquisition costs; (2) $9 million in additional cost for steel sheeting to facilitate installation along the rail corridor; and (3) $2.2 million in additional cost

for the extra 200-foot length for GJN+A (MIT Brief at 17-18). MIT rejects all three of Eversource's cost adjustments for the GJN+A Segment as erroneous (Exh. MIT-WSP-1, at 17).[44]

iii. Eversource Consideration of MIT Route Segment

MIT argues that Eversource improperly overlooked and rejected MIT's GJN+A Segment (MIT Reply Brief at 1-2). MIT contends that Eversource never included the GJN+A Segment in its route screening analysis, either in its entirety or by sub-segment (MIT Brief at 25). MIT also argues that the record shows that the GJN+A Segment is not included in the Universe of Routes, nor can its presence somehow be "cobbled together by sub-segment within multiple routes" (MIT Brief at 25).[45]

MIT disputes Eversource's claim the GJN+A Segment was rejected by Eversource due to alleged constructability concerns (MIT Brief at 25). MIT maintains that Eversource used this argument as "after the fact construct" to obscure the fact that the Company never evaluated the GJN+A Segment in its route selection (MIT Brief at 25). MIT also calls Eversource's constructability rationale for supposedly screening out the GJN+A segment illogical, given that MIT's route scoring showed the GJN+A Segment to be superior to the Vassar Street Segment on

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44 MIT contends that because it had committed to provide land rights at no cost, the land acquisition costs for the GJN+A Segment would be no more than $250,000 for just an MBTA easement (MIT Brief at 17-18, citing Exh. MIT-WSP-Surrebuttal-1, at 5). For steel sheeting, MIT asserts that Eversource overestimated the length required, and that the actual added cost is about $1.9 million (MIT Brief at 18). MIT also rejects Eversource's added cost figure for the extra 200-foot route length as being a simplistic linear extrapolation, rather than WSP's more-detailed calculation, showing no increase in cost (MIT Brief at 18-19).

45 MIT acknowledges that the record does contain "some indication" that Eversource avoided the entire length of Albany Street given its utility density and the intended MWRA North Charles River Relief Project (MIT Brief at 28, n.32). However, MIT faults Eversource for improperly eliminating this sub-segment given that Cambridge only recommended avoiding Albany Street "to the extent practicable" (MIT Brief at 28, n.32). MIT points out that Eversource did not apply Cambridge's recommendation on which streets to avoid consistently across its Universe of Routes (MIT Brief at 28, n.32).

technical/constructability criteria using a methodology similar to Eversource's own (MIT Brief at 25).[46] MIT also contends that sub-segments of the GJN+A Segment that were included among the Universe of Routes that Eversource eliminated for other reasons "that have nothing to do with the small portion of the Grand Junction North to Albany Street Segment included therein" (MIT Brief at 29).

MIT challenges the constructability arguments Eversource used to reject further consideration of the GJN+A Segment:

- Compound Bends/Curves The GJN+A Segment includes one horizontal compound bend or curve (an "S" curve) where the Grand Junction Rail corridor turns left onto Massachusetts Avenue and then right on Albany Street (MIT Brief at 31, citing Exh. Attachment COM-MIT-24(1)). MIT maintains that Eversource's assertion that this is an insurmountable challenge is not credible given "far more challenging compound curves" in other routes, including the Vassar Street Segment and Route S15 (Hybrid Alternative) (MIT Brief at 31-33).

- Utility Density MIT notes that Eversource cites utility density as a rationale for eliminating the Grand Junction Railroad sub-segment of the GJN+A Segment (MIT Brief at 33, citing RR-MIT-1). MIT argues that Eversource's position is contradicted by the fact that the Vassar Street Segment has "far more complex utility density" and heat-generating sources than the GJN+A Segment (MIT Brief at 33, citing Exhs. MIT-WSP-23(1) and Attachment MIT-1-28(1)). Relying on a variety of existing GIS and other data sources, MIT contends that the Vassar Street Segment has 527 utility crossings, 74 of which are heating-generating sources such as transmission lines, distribution lines, or steam lines (Exh. MIT-WSP-23, at 11). Conversely, for the GJN+A Segment, MIT contends that the comparable figures are 114 utility crossings with 20 being heat-generating sources (Exh. MIT-WSP-23, at 11). Further, MIT contends that Eversource's own designs show that there are 30 instances where parallel utility lines (of 20 linear feet or more) would horizontally cross the Eversource Vassar Street Segment duct bank (Exh. MIT-WSP-23, at 11). MIT argues that "a significant portion of these utilities will likely require relocation to enable the transmission line installation" (Exh. MIT-WSP-

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[46] MIT asserts that Eversource's "constructability" argument against the GJN+A Segment is an attempt to develop a "new and unfair ad hoc standard to disqualify a clearly superior alternative that Eversource disfavors" (MIT Brief at 30). In particular, MIT contends that Eversource fails to put the constructability challenges of GJN+A Segment in context by comparing them to the Eversource route alternatives and creating an "illusion" that the MIT route segment is "uniquely fraught with technical problems" (MIT Brief at 31). MIT maintains that Eversource's constructability standard is "anecdotal and offers no quantifiable metrics for evaluating the comparative constructability issues among alternative routes" (MIT Brief at 31).

Surrebuttal-1, at 10). In contrast, MIT asserts that only two utility relocations may be required for the GJN+A Segment (Exh. MIT-WSP-Surrebuttal-1, at 10-11).

- MWRA Sewer in Albany Street Sub-Segment MIT disputes Eversource's contention that the MWRA sewer line in Albany Street between Portland Street and Massachusetts Avenue warrants elimination of the GJN+A Segment (Exh. MIT-WSP-Surrebuttal-1, at 12; Exh. MIT-WSP-20). MIT notes that it had conversations with MWRA regarding the design of the GJN+A Segment and its proximity to the MWRA infrastructure in Albany Street, MWRA did not identify any "fatal flaws" (MIT Brief at 34, citing Exh. MIT-WSP-Surrebuttal-1, at 12). MIT also contends that the MWRA's as-built survey shows relatively little utility density in that part of Albany Street (MIT Brief at 34, citing Exh. MIT-WSP-21).

- Segment Parallel to Red Line Tunnel on Main Street MIT rejects Eversource's concerns regarding a 440-foot sub-segment that runs along Main Street parallel to the Red Line Tunnel (MIT Brief at 34, citing Exh. MIT-SWP-Surrebuttal-2). MIT argues that Eversource offered two candidate routes (P11 and P12) with 500-foot sub-segments along Main Street; therefore, rejecting the GJN+A Segment for a having similar alignment is not credible (MIT Brief at 34-35, citing Exh. EV-2 at 4-51, 4-53).

- Trenchless Crossing Underneath the Red Line Tunnel MIT dismisses Eversource's criticism of the GJN+A Segment crossing underneath the Red Line tunnel at the intersection of Main Street and Vassar Street as "not credible" given that the Vassar Street Segment also proposes a trenchless crossing of the Red Line at same location as does the GJN+A Segment (MIT Brief at 35, citing Exh. MIT-WSP-6).

- Construction Along the Grand Junction Rail Corridor MIT views Eversource's concerns about the GJN+A Segment's use of the Grand Junction Railroad corridor as inconsistent with Eversource's proposed use of the same rail corridor (at a different location) on its Route S15 hybrid route, including the use of "extensive sheet-piling" (MIT Brief at 36, citing Exh. EFSB-P-1). MIT commends Eversource for its skill in working with the MBTA to obtain a waiver from the Directorate and suggests that this would be feasible for the GJN+A as well (MIT Brief at 36).

iv. Timeliness of MIT Proposal, Due Process, Project Timing

In response to Eversource's concerns about the timing of MIT's alternative route segment proposal, MIT maintains that its proposal was timely, and that Eversource's argument is also not supported by the record or the protections in G.L. c. 30A (MIT Brief at 37, citing Tr. 6, at 977). First, MIT contends that Eversource's argument is moot given that it acknowledged that even if MIT had presented its alternative route proposal earlier, Eversource would not have advanced the MIT proposal for quantitative evaluation and public notice (MIT Brief at 37, citing Tr. 9,

at 1447[47]). Thus, MIT contends, "the issue of whether MIT should have (or even could have) presented its route segment alternatives earlier than when it did is irrelevant here as the proceeding would be in the exact same posture regardless" (MIT Brief at 37-38).

MIT describes the pre-filing route selection discussions between the Company and MIT and asserts that MIT representatives never provided any approval or agreement regarding the Eversource-proposed routes (MIT Brief at 38-40, citing Exh. EFSB-MIT-1). MIT contends that at the outset of the introductory meetings in 2020, MIT representatives offered "a variety of cautions for almost every route Eversource presented" particularly regarding the Vassar Street Segment (MIT Brief at 38, citing Exh. EFSB-MIT-1). MIT contends that as late as January 28, 2021, route design was still "preliminary" and that Vassar Street was only an "option" (MIT Brief at 38, citing Exh. Attachment MIT-1-4(1)). MIT notes that between January 28, 2021, and September 2021, Eversource and MIT held a series of 25 weekly meetings with MITIMCo[48] regarding issues of concern to MITIMCo (MIT Brief at 38-39, citing Exh. EFSB-MIT-1). MIT emphasizes the different areas of responsibility of MIT Academic staff and MITIMCo and contends that Eversource understood these differences (MIT Brief at 39). MIT contends that not until September 30, 2021, did MIT become aware of the "significant advance" of Eversource's design along Vassar Street, which "caused MIT deep concern" (MIT Brief at 39). In a November 2021 meeting, MIT questioned Eversource on its selection of the Vassar Street Route and asked why other routes had been discarded, to which Eversource suggested that MIT "participate in the Siting Board process" (MIT Brief at 40, citing Exh. EFSB-MIT-1). MIT contends that it was clear at that time that Eversource was "locked into its route preferences and was not interested in discussing changes" before filing its Siting Board petition (which was filed in March 2022) (MIT Brief at 40, citing Exh. EFSB-MIT-1).

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47 MIT appears to reference Tr. 9, at 1413.

48 "MITIMCo" manages MIT's investment real estate holdings in Cambridge; "MIT Academic" refers to the MIT university academic and operations units, including its campus utility services (Exh. EFSB-MIT-1).

MIT argues that if the Siting Board agrees with Eversource that MIT presented its route segments too late to warrant consideration by the Siting Board, then the Siting Board would be depriving MIT of due process in violation of G.L. c. 30A (MIT Brief at 41). MIT indicates that it felt a need to ensure that its alternative route proposal was sufficiently detailed and sourced, so that it could be compared fairly with Eversource's preferred routes (MIT Brief at 41). MIT contends that it needed to obtain key information from Eversource to develop its proposal and did so promptly once MIT was granted party status in this proceeding (MIT Brief at 41). Then, it finalized its route proposal in strict accordance with the procedural schedule and filed it in September 2023 (MIT Brief at 41). MIT submits that the Siting Board should consider establishing a prospective policy regarding review of alternative routes presented by intervenors (MIT Brief at 42).

If the Siting Board requires Eversource to adopt the GJN+A Segment, MIT suggests that the additional design work could be completed in less than a year and would not impact the overall Project schedule or jeopardize the reliability of supply (MIT Brief at 43). Given the quality of the various data sources used by MIT in developing its proposal, MIT contends that Eversource could complete a Level B survey[49] and a Plan and Profile for the GJN+A Segment within six months (MIT Brief at 47). MIT asserts that the time to design the GJN+A Segment could only delay the completion of the Project if the GJN+A Segment design and construction would take longer than the New Substation – which is to be completed by June 2029 (MIT Brief at 48). MIT argues that such a delay is not plausible, even under the most extreme predictions (MIT Brief at 48).

MIT also rejects Cambridge's position regarding constructability problems for the GJN+A Segment, asserting that the City failed to raise those issues in early discussions with MIT and the Company on routing options (MIT Reply Brief at 16). Finally, MIT warns the Siting Board against setting a "dangerous" precedent by allowing a municipality to use its permitting powers as a veto to reject a clearly superior route offered by an intervenor (MIT Reply Brief at 20-21).

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[49] A level B survey is a "planning-grade" survey obtained using additional subsurface detection equipment, like electromagnetic tracing or ground-penetrating radar, to points in a Level C survey to map the utility lines between the points (Tr. 9, at 1398).

2. City of Cambridge

In its brief, Cambridge argues that the Company utilized an extremely thorough and detailed process to evaluate and narrow the various route options, and that the Company proactively engaged with stakeholders and incorporated their input (Cambridge Brief at 1). Cambridge also asserts that the routes proposed by MIT are not clearly superior to the Company's routes (Cambridge Brief at 1). Cambridge states that the thorough analysis conducted by Eversource ensured that no superior route options were overlooked (Cambridge Brief at 4-5). In addition, Cambridge contends that the routes proposed by MIT should be viewed with skepticism considering the relative inexperience of the WSP consultants compared to the Eversource engineering team (Cambridge Brief at 9). Cambridge rejects MIT's characterization of its proposed route options as clearly superior to Eversource's proposed routes, describing the MIT route options as not viable (Cambridge Brief at 4). Cambridge urges the Siting Board to reject MIT's proposed alternative routes and approve Eversource's Vassar Street Segment, emphasizing the need for the timely completion of Eversource's proposed Project to meet the reliability needs (Cambridge Reply at 1-2).[50]

3. Company Response

a. Overview and Standard of Review

The Company views the question of whether it overlooked or eliminated a "clearly superior" route in its route selection process for the Project as the central legal issue in this proceeding (Company Reply Brief at 4). Eversource concurs with MIT that the university bears the obligation to prove that its proffered route is clearly superior to the routes proposed by Eversource (Company Reply Brief at 7). The Company asserts that it has demonstrated the appropriateness of its route selection process, consistent with Siting Board standards, and that the

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50 The Cambridge City Council approved a resolution on November 21, 2023, requesting MIT to withdraw its proposed routes from further consideration in this proceeding (Company Reply Brief at 13, citing Exhs. EFSB-RS-20(S3); Att. EFSB-RS-20(S3)(1)).

evidence overwhelmingly establishes that the Company's proposed routes are the best routes for constructing the Project (Company Reply Brief at 4). Accordingly, Eversource urges the Siting Board to approve the Project as proposed, and to reject MIT's routing arguments (Company Reply Brief at 4).

Based on Siting Board precedent, Eversource describes route selection as a methodical approach to identifying potential routes that includes casting a broad initial net that is narrowed down based on, among other factors, input from ROW owners, affected state agencies, and municipal officials that ensures applicants do not overlook clearly superior routes (Company Reply Brief at 4-5, citing Stoughton-Boston at 43-44 and Woburn-Wakefield at 66). Eversource asserts that its route selection process in this proceeding was comprehensive, methodical, iterative, and collaborative, having identified 79 potential routes and route segments and rigorously reviewing those routes in accordance with both qualitative and quantitative considerations (Company Reply Brief at 5).

b. Pre-Filing Engagement

The Company maintains that its route selection process involved extensive opportunities for stakeholders, such as Cambridge and MIT (and others), to provide meaningful input early on and throughout the Company's route selection process (Company Reply Brief at 5). Prior to its filing with the Siting Board in March 2022, the Company engaged in over 100 meetings, including over 30 with Cambridge and MIT, over multiple years (Company Reply Brief at 5, citing Exhs. EV-2, Appendix 4 1; MIT-1-1; MIT-1-4; Att. MIT-1-4(1)). The Company asserts that there can be no serious question that these meetings occurred on the very issues that MIT now contests, and that MIT had ample opportunity throughout the process to express concerns it now raises, and failed to do so (Company Reply Brief at 6).

The Company notes that Siting Board precedent places importance on an applicant's active pre-filing engagement with key stakeholders and consideration of their input as part of the routing process (Company Reply Brief at 24-25, citing Woburn-Wakefield at 71). The Company laments that after three years of unprecedented engagement with MIT, without a "whiff of any proposed alternatives from MIT," only then did the university finally put forward its alternative routing proposals (Company Reply Brief at 24-25). The Company appears particularly unsympathetic to MIT's explication of its organizational structure and the disparate responsibilities among the "MIT

Academic" and MITIMCo staff attendees of these meetings as justification for any shortcomings in the participation by MIT's representatives at these meetings with Eversource (Company Reply Brief at 6, n.3). If the MIT representatives who attended meetings were not in a position to offer substantive input on the Project or failed to keep their superiors informed of information exchanged at the meetings, Eversource maintains it was MIT's responsibility, not the Company's (Company Reply Brief at 6, n.3).

Despite alleging missed opportunities for MIT to suggest alternative routes prior to the filing of the Petition, Eversource accepts that MIT, as a party, can file testimony, make such proposals, and argue its case in a Siting Board proceeding, consistent with G.L. c. 30A due process rights (Company Reply Brief at 24-25). However, Eversource also points out that any such testimony is subject to scrutiny and investigation regarding its credibility, accuracy, and reasonableness (Company Reply Brief at 25). The Company contends that MIT had ample opportunity to present its case, and due process was provided (Company Reply Brief at 25).

Eversource points out that MIT did not dispute the Company's detailed Eversource-MIT meeting notes in any material way and that MIT had every opportunity in the proceeding to present evidence from its officials who were present (Company Reply Brief at 25). Eversource cites these notes extensively in documenting the transparency of its process, statements made by MIT representatives, and the failure of MIT to provide input on the proposals that it later filed with the Siting Board in its testimony (Company Reply Brief at 24-25, 20). For example, Eversource's meeting notes from April 17, 2020 indicate that "both MIT and the City of Cambridge suggested that Vassar Street was potentially a better option than Grand Junction Railroad given utility constraints, although Vassar is also congested and to be evaluated further by Eversource" (Company Brief at 121, n.52, citing Exhs. EFSB-RS-22, at 5; MIT-1-4; Att. MIT-1-4(1) at 7).

The possible use of Vassar Street to reach the Brighton Substation continued to be discussed at subsequent Eversource-MIT meetings, with clear indications that MIT both understood the proposal and did not raise objections or express any reservations (Exhs. EFSB-RS-22, at 5-6; MIT-1-4(1) Att. at 14-15 [July 28, 2020 meeting notes] and MIT-1-4(1) Att. at 25 [January 28, 2021 meeting notes]). In particular, the January 28, 2021, meeting notes indicated that "MIT did not express any reservations about the current preliminary design and recommended

that a follow up meeting be scheduled as the design approaches 70%" (Exh. MIT-1-4(1) att., at 25). Moreover, "Eversource understood that the MIT attendees were keeping their management apprised in a manner that the Company could rely upon the communications made at such meetings" (Exh. EFSB-RS- 22, at 6).

Eversource provided maps of its "top candidate routes" to MIT by email on February 24, 2021, including two Brighton West routes, one of which used Vassar Street (Exh. MIT-1-4(1) att. at 25). Eversource asked MIT: "Let us know if these don't work for your needs" (Exh. MIT-1-4(1) att. at 25). Eversource provided updated maps to MIT on August 9, 2021, showing the "B-29F Route Variation" that continued to use Vassar Street but crossed the Grand Junction corridor further west (Exh. MIT-1-4(1) att. at 125). The August 16, 2021 meeting notes indicate that the discussions evolved "landing on B29F as the route that is to be advanced" (Exh. MIT-1-4(1) att. at 135). At the August 19, 2021 meeting, MIT indicated its "Preference was B29F [the Vassar Street Segment] over B29D and [B29]E because it avoided the Cal-Paint site and had less potential to constrain MIT's future development plans" (Exh. MIT-1-4(1) Att. at 139).

The first record indication that MIT wanted Eversource to consider an MIT-specified alternative to the use of Vassar Street appears in the November 10, 2021, meeting notes (Exh. MIT-1-4(1) Att. at 169). At that meeting, MIT asked "why can't we go down Albany Street?" (Exh. MIT-1-4(1) Att. at 169). Eversource responded that "MWRA infrastructure was the main reason" and that Eversource "will provide additional details of why we can't go down Albany" (Exh. MIT-1-4(1) att. at 169). MIT asked to "test viability of the GJR corridor" and Eversource responded that "it was evaluated and removed from consideration early as there were conflicts" and that "the details are in the filing tables of the petition" (Exh. MIT-1-4(1) Att. at 169).[51] The Company explained to MIT that it was close to finalizing the petition for submission to the Siting Board based on the analysis, data, and input it had previously received (Exh. EFSB-RS-22, at 7). In the November 10, 2021 meeting, MIT asked Eversource to schedule an "engineering related

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[51] MIT's view of the November 10, 2021 meeting was that "it was clear to MIT that Eversource was locked into its route preferences and was hoping to satisfy MIT's concerns by looking in more detail at the exact placement of the routes in Vassar Street and in Ames Street" (Exh. EFSB-MIT-1, at 4).

page turn style meeting" to discuss the Company's proposed route along Vassar Street (Exh. MIT-1-4(1) Att. at 169). The Company offered to review the Vassar Street drawings and walk MIT through the design, and did so at a subsequent meeting on November 18, 2021 (Exhs. EFSB-RS-22, at 7; MIT-1-4(1) Att. at 174). At the meeting, an MIT attendee asked for additional information about "why the Albany and GJR routes were dismissed early in the routing process" (MIT-1-4(1) Att. at 174). Eversource responded that "we have the NDA so we can share, like we've done on other areas of the project relative to MIT" (MIT-1-4(1) Att. at 174).

Eversource submitted its Siting Board petition on March 10, 2022, and continued to meet with MIT (on April 5, 2022, August 1, 2022 and December 5, 2022) (Exh. EFSB-RS-22, at 7). The Company contends that MIT did not inform the Company at any of these meetings: (1) that MIT would oppose the routes proposed in the Siting Board filing; (2) that MIT had route variations it wished to proffer for Eversource's consideration; or (3) the route variations that MIT had identified (Exh. EFSB-RS-22, at 7).

c. Fatal Flaws and Other Challenges

The Company asserts that MIT's route is not a clearly superior option and that it contains several fatal flaws (Company Reply Brief at 7). The Company maintains that in the route selection process, a basic first principle is an assessment of whether a route is a viable and feasible technical solution that can address the underlying need in a timely and reliable manner (Company Reply Brief at 9). The Company recounts Siting Board precedent in which certain intervenor-proposed routes were dismissed prior to scoring due to fatal flaws (Company Reply Brief at 7-8, citing Woburn-Wakefield at 42, n.39, 66). Eversource contends that "the Company fully and fairly evaluated segments of the Grand Junction Corridor, Massachusetts Avenue, Albany Street and Main Street," which comprise the GJN+A Segment (Company Reply Brief at 6).[52]

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[52] Eversource disputes MIT's contention that the Company did not identify or assess the GJN+A Segment in its entirety or in its sub-segments (Company Reply Brief at 12, n.11, citing MIT Brief at 26-30). The Company cites RR-MIT-1 and its attachments as confirming that "each of the MIT segments was appropriately considered during the route

Eversource maintains that "segments associated with MIT's proposed route variations along Main Street, Massachusetts Avenue, Albany Street, and the Grand Junction Railroad were eliminated for good and appropriate reasons" prior to selecting the most promising candidate routes for scoring (Company Brief at 121; RR-MIT-1 at 2). For example, Eversource notes that the GJN+A Segment includes almost 1,200 feet along the Grand Junction Railroad corridor between Pacific Street and Massachusetts Avenue (Company Reply Brief at 11-12). The Company asserts that MIT's own assessment of the overlapping Pacific Street-to-Main Street segment of the Grand Junction corridor eliminated it from further consideration due to: (1) a high degree of utility density on the eastern portion of the tracks that would pose serious constructability challenges; and (2) the presence of MIT-owned steam lines that must be avoided (Company Reply Brief at 11, citing Exh. MIT-SWP-1, at 5). Eversource contends the same logic applies to the GJN+A Segment's use of the rail corridor between Pacific Street and Massachusetts Avenue (Company Reply Brief at 11-12).

The Company points to the Cambridge DPW director's testimony as presenting other issues afflicting the GJN+A Segment Company Reply Brief at 12. These include utility congestion, risk to existing underground infrastructure, and other construction challenges, which led DPW Director Watkins to conclude that the MIT routes are not viable and, in her estimation, would not be permitted by the City of Cambridge (Company Reply Brief at 12, citing Exh. CAM-KW-1, at 4; Tr. 8, at 1228-30, 1237). Eversource contends that by MIT's own admission, Cambridge is a key stakeholder with respect to locating utility infrastructure in city streets, and that if proposed routes were not acceptable to the Cambridge DPW "we would look for alternative routes" (Company Reply Brief at 12, citing Tr. 7, at 1115-16). Eversource also regards as significant the recently approved Cambridge City Council resolution requesting MIT to withdraw its proposed routes from further consideration in this proceeding (Company Reply Brief at 13, citing Exhs. EFSB-RS-20(S3); Att. EFSB-RS-20(S3)(1)).

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selection process" (Company Reply Brief at 11-12, citing Att. RR-MIT-1(1); Tr. 5, at 859-861; Tr. 8, at 1271-74; Tr. 10, at 1553-57).

The Company reaffirms its testimony, which provided a systematic critique of the MIT route and illustrated a variety of vexing technical and construction challenges, including: conflicts with existing utilities; serious questions concerning line ratings given mutual heating; unresolved questions regarding the placement of manholes; utility relocations that could not be accommodated; and an inability to comply with the MBTA Directorate (Company Reply Brief at 13-14, citing Exhs. EFSB-RS-22; Att. EFSB-RS-22(1); RR-MIT-1; Tr. 5, at 863-69; Tr. 9, at 1,403-04).

Eversource disagrees with MIT's suggestion that the Grand Junction Railroad corridor is somehow a clear and unencumbered ROW, or that there is room "outside the MBTA 15-foot buffer zone for most of the route segment" (Company Reply Brief at 15, citing MIT Brief at 16). The Company's detailed review of MIT's proposed alignment in the railroad corridor (which Eversource found to be based on outdated, incomplete, and conflicting data sets) showed that there are 0.38 miles (2,000 feet) where the proposed MIT route would be within the 15-foot buffer zone of the tracks, and in some cases as close as 2.5 feet, and thus, squarely in conflict with the MBTA Directorate (Company Reply Brief at 15, citing Tr. 5, at 867-69, 875-76, 945; see Exhs. COM-MIT-24; Att. COM-MIT-24(1)).

The Company claims that regardless of how appealing the Grand Junction Railroad may appear, there is no viable means of getting there given Cambridge's clear feedback on avoiding the use of connecting segments on Albany Street and Main Street (Company Reply Brief at 14). In addition, because the Company's design is at the plan and profile stage, and WSP's design is "barely at the universe-of-routes level", the Company argues that any numeric comparisons between the routes proposed by MIT (e.g., number of utility crossings, required utility relocations, etc.) "are hollow comparisons" because "the quality of the designs are not equivalent" (Company Reply Brief at 14; Tr. 9, at 1400-04). Contrary to MIT's argument that these various considerations "create an unfair ad hoc constructability test", Eversource maintains that they are a basic and proper component of the route selection process, and that MIT's routes are not clearly superior to any other route (Company Reply Brief at 14, citing MIT Brief at 30-37).

Eversource did not provide a numerical tally of utility crossings and heat-generating sources for the GJN+A Segment or a numerical comparison to the Vassar Street Segment.

Moreover, Eversource notes that unlike its vetting of the Vassar Street Segment, WSP failed "to conduct basic engineering evaluations" on mutual line heating, the ability to achieve required ampacity ratings, and appropriate placement of manholes (Company Reply Brief at 14). Eversource noted that simple statistics on the presence of other heat-producing sources in a transmission corridor would not be as important as the proximity of such sources and magnitude of the heating impact – even for a very short distance – that could necessitate a line derating or redesign of the cable (Tr. 5, at 871-872).

Eversource notes that MIT's testimony offered little more than scoring to consider environmental impacts (Company Reply Brief at 20, citing Exh. MIT-WSP-1, at 29-32). The Company submits that because WSP's proposed routes cannot pass the initial qualitative screening phase of the Company's route selection process, including a basic feasibility/viability assessment, "WSP's scoring and cost analysis of both its routes and the Company's proposed routes are neither relevant nor meaningful" (Company Brief at 120, n.51). Eversource cites the Woburn-Wakefield decision as validating the practice that an applicant is justified in dismissing certain intervenor-proposed routing alternatives prior to screening due to "fatal flaws" (Company Reply Brief at 8). If a given segment is not viable, and that segment is essential to the overall route, then the entire route is not viable, notwithstanding whatever potential merit exists regarding other segments (Company Reply Brief at 11). Eversource argues that route feasibility must be viewed holistically, and each segment of a proposed route must be viable in order for the entire route to be viable (Company Reply Brief at 11). The Company acknowledged that given the densely developed urban environment of the Project Study Area it was not feasible in all instances to avoid all such general constraints (Company Brief at 94).

d. Route Scoring

The Company challenges MIT's assertion that "Eversource's silence [on scoring] is a tacit admission that the Grand Junction North to Albany Street Segment scores far better than the Vassar Street Segment using the Eversource Scoring Methodology" (Company Reply Brief at 17, citing MIT Brief at 4). Rather, the Company contends, the entire scoring exercise undertaken by MIT is irrelevant and meaningless given the threshold viability concerns that the MIT Preferred

Segments did not and could not overcome (Company Reply Brief at 17). Indeed, scoring such a route would be misleading because the scoring methodology is intended to compare only viable routes that can reasonably achieve the Project's and the Siting Board's objectives of maximizing reliability, while achieving an appropriate balance of minimizing environmental impacts and cost (Company Reply Brief at 17).

Notwithstanding its rejection of MIT's use of route scoring to advance the GJN+A Segment, Eversource does respond to some of MIT's arguments about alleged deficiencies in the Company's route scoring for Route B29F West, including the Vassar Street Segment. In response to MIT's criticism that Eversource's scoring considered MIT to be a single sensitive receptor, Eversource's witness argued that the Company "looked at the campuses of both MIT and Harvard holistically and the services they predominantly provide to users of their campuses" (Tr. 2, at 363-364). Eversource asserts that MIT's argument would not change its perspective on this issue (Tr. 2, at 363-364). Regarding potential traffic impacts on Vassar Street, Eversource notes that it is unsurprising that potential traffic impacts in general would be less for off-road variations along the Grand Junction Railroad corridor as opposed to Vassar Street (or other streets) (Company Reply Brief at 21, n.23, citing Exh. EFSB-RS-26). Nonetheless, Eversource contends that traffic is just one of many considerations in the overall balancing of the relative reliability, cost, and environmental impacts of different route alternatives (Company Reply Brief at 21, n.23).

e. Cost

The Company views MIT's cost-related arguments as similarly lacking (Company Reply Brief at 18). Eversource argues that MIT's cost estimate can hardly be considered "detailed" in any meaningful way (Company Reply Brief at 18). The Company cites its testimony that Eversource has learned a lot of important lessons over the last 15 to 20 years as it has developed, engineered, cost-estimated, and actually constructed underground transmission lines, and that credible cost estimates are directly contingent upon that plan and profile design of how deep construction needs to go (Company Reply Brief at 18). According to Eversource, a "cost estimate is only as good as the inputs used" (Tr. 9, at 1453).

Eversource contends that MIT's witnesses are not experts in underground transmission line engineering (Tr. 7, at 1106), and that the level of engineering detail in their proposed design was, in their own words, "schematic" and, "not much more than a line on the map" (Tr. 7, at 1047, 1,126; Tr. 9, at 1453-1455). Eversource extols the Company's team of experts who have successfully constructed similar underground transmission lines in similar urban environments such as Boston, Somerville, Everett, and Chelsea, among others (Tr. 3, at 533-535; Tr. 9, at 1452) and compares them favorably to MIT's witnesses (Company Reply Brief at 14, n.12). In short, Eversource asserts that MIT's claims that its route is approximately $30 million less than the Company's is without merit and dubious at best (Company Reply Brief at 19).

The Company explained that, lacking a detailed engineering design of MIT's routes developing quality, credible cost estimates is difficult (Exh. EFSB-C-10). Nonetheless, the Company indicated there were at least ten different cost considerations regarding the GJN+A Segment route that would likely result in an increase of costs "at a minimum" of approximately $31.2 million (Exh. EFSB-C-10 at 10).

f. Reliability

The Company rejects MIT's claim that the reliability of the GJN+A Segment is comparable to the Vassar Street Segment simply because both are underground routes (Company Reply Brief at 18, n.19, citing MIT Brief at 5). Eversource contends that to make a credible assessment regarding the relative reliability considerations, more detailed engineering designs are necessary for the GJN+A Segment to assess its proximity to heat sources, which can negatively affect the rating of the transmission line, and limit the ability of the circuit to provide the required ampacity and capacity requirements (Company Reply Brief at 18, n.19, citing Exh. MIT-1-3). The Company makes similar arguments for other reliability considerations, such as the distance from adjacent transmission line duct banks, the number of S-curves and tight bends, and the number of splice points required for the cable (Tr. 9, at 1395-1396). The Company emphasizes that reliability also involves the confidence with which the Company will be able secure needed permits and approvals from applicable state and local bodies for the segment (Company Reply Brief at 18, n.19

citing, Colonial Gas Company d/b/a KeySpan Energy Delivery New England, EFSB 05-2, at 103-04 (2006)).

g. Project Timing with MIT Route

Finally, Eversource argues there would be significant and unavoidable delays if MIT's proposed route were to be accorded formal, further consideration in this proceeding (Company Reply Brief at 16). Even if Eversource were to concede (which it does not) that the additional design work needed could be done in six months or less, as posited by MIT, Eversource notes that such design work is merely one piece of the overall permitting puzzle and does not account for renewed consultations with Cambridge (Company Reply Brief at 26, citing Exhs. CAM-KW-1; EFSB-RS-20(S3); Att. EFSB-RS-20(S3)(1)). In addition, the process involves much more than just an updated routing design – it also includes substantial outreach with affected stakeholders, coordination with relevant municipal bodies, detailed cost estimation, re-noticing of the new route to meet requirements of the Siting Board, and the prospect of additional review by new parties and potential opponents (Company Brief at 127-130; Exh. EFSB-RS-22). Eversource faults MIT for ignoring these essential prerequisites (Company Reply Brief at 26). And, after all of that, if Eversource found itself in a position of pursuing a route that could not be permitted locally, it would inevitably necessitate the filing of a separate petition by the Company for a certificate from the Siting Board pursuant to G.L. c. 164, §§ 69K-69O, which would add another layer of contentious and unnecessary process and at least another year of delay, without accounting for the possibility of appeals (Company Reply Brief at 26-27).

Finally, Eversource dismisses MIT's argument that design, engineering and construction of the GJN+A Segment would not alter the critical path of the Project, which focusses on the New Substation (Company Reply Brief at 27). Eversource asserts that it cannot procure *any* equipment for the Project until it has final Siting Board approval (Company Reply Brief at 27, citing G.L. c. 164, §§ 69G, 69J). To this end, the Company has made clear its need for a final decision from the Siting Board in this proceeding by no later than June 2024 because its construction schedule is: (1) closely coordinated with a dynamic and complex set of circumstances with BXP, Cambridge, and other developers; and (2) highly dependent on market realities and supply chain lead times for

critical Project components (Company Reply Brief at 27). While the Company appreciates MIT's optimism on timing matters, the Company respectfully suggests that such optimism is completely unfounded (Company Reply Brief at 28).

F. 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. Needham-West Roxbury at 21; Woburn-Wakefield at 64; Boston Edison Company d/b/a NSTAR Electric, EFSB 04-1/ D.P.U. 04-5/04-6, at 43-44 (2005). 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 route selection process. Needham-West Roxbury at 21; Woburn-Wakefield at 65; Boston Edison Company, EFSC 89-12A, at 34-38 (1989).

The Company began its search in 2014 to site a new or expanded substation to serve growing loads and address reliability issues in the Greater Cambridge area. After several unsuccessful efforts, including a possible expansion of the existing Prospect Street Switching Station in Cambridge, and a potential new substation on Fulkerson Street in East Cambridge, Eversource worked in close collaboration with City of Cambridge and BXP to identify the current proposed location for the New Substation at 290 Binney Street, Cambridge. At this site, the former Kendall Center Blue Garage is now being redeveloped by BXP under the BXP MXD Plan, which would include the New Substation in an underground vault as part of a major mixed use redevelopment project. The record in this proceeding indicates that this location for the New Substation has been extensively vetted and well received by the Cambridge community, in contrast with the earlier substation sites considered by Eversource in Cambridge mentioned above.

As described in Section IV above, the Siting Board finds that various project alternatives (including other potential substation locations) are inferior to the Project and Eversource's New Substation location in meeting the needs of the Greater Cambridge load area. Additional review of

the New Substation, to consider and mitigate its environmental impacts, follows in Section VI, below.

With the New Substation location identified as the central component of the Project, the Company commenced its route selection process. The Company outlined route selection objectives to best balance environmental impact minimization, cost, and reliability. The Company divided the Greater Cambridge study area into subareas relating to four existing distribution substations (Brighton, Putnam, East Cambridge, and Somerville Substations) that would interconnect with the New Substation. The Company followed well-established methods approved previously by the Siting Board to identify and evaluate routing possibilities: (1) development of a Universe of Routes (79 in total) that could provide the necessary routes between the New Substation and existing substations; (2) identification of Candidate Routes, winnowed down from the Universe of Routes using qualitative screening; (3) environmental/technical/constructability analysis, using a route scoring approach similar to those reviewed previously by the Siting Board; (4) cost analysis; and (5) reliability analysis, resulting in a selection of preferred and noticed alternative Candidate routes for detailed further evaluation. The Company identified routing criteria, and weighted those criteria to conduct a quantitative analysis of the Candidate Routes. The Company's use of this general approach did not elicit any objections from parties, and the Siting Board finds it to be appropriate. However, as noted below, MIT has questioned the application of the Company's route selection approach and suggested a route variation to one segment of one of the Eversource-proposed routes. A detailed analysis of the impacts, cost, and reliability of the preferred and noticed alternative routes that resulted from the Company's route selection process, and mitigation measures and conditions imposed by the Siting Board, are described below, in Section VI.

As noted by MIT, the major unresolved issue in this proceeding concerns an approximately one-mile segment of one route, Route B29F West, which connects the New Substation to the Brighton Substation. For MIT, this route raises serious concerns given its use of public roadways, particularly Vassar Street, which bisects the MIT campus in a location where there are currently considerable underground utilities; buildings and other facilities used for MIT academic, operational, and research purposes; and students, faculty, workers, and other campus visitors. As

noted above, MIT concurs with the need for the Project, supports the Project, and accepts the general method used by Eversource in this proceeding for route selection. However, MIT has proffered a route segment, the GJN+A Segment, that it urges Eversource and the Siting Board to adopt as a "clearly superior" segment to the Vassar Street Segment of Route B29F West. But for the Vassar Street Segment, MIT expresses no other objections to Eversource's Route B29F West.

Below, the Siting Board addresses: (1) the appropriate standard of review to be applied to intervenor-sponsored routes; (2) how MIT's route was considered and addressed by the Company; and (3) a substantive assessment of MIT's route and comparison with Eversource's Vassar Street Segment. The Siting Board concludes that Eversource's route selection methodology did not overlook any clearly superior routes, including MIT's proposed route.

1. Standard of Review

MIT raises several questions regarding the Siting Board's standard of review for assessing an intervenor-proposed route alternative for a transmission line (or a segment thereof) (MIT Brief at 6). Although MIT is not the petitioner, it asserts that it is presenting a proposed route segment for the Siting Board's review and approval in the same manner as a petitioner (MIT Brief at 6). Therefore, MIT postulates that it must demonstrate that its proposed route segment is a clearly superior option, balancing environmental impacts, cost and reliability (MIT Brief at 6). MIT also observes that it found no precedent where the Siting Board determined an intervenor's route alternative to be "a clearly superior option," although the opposite has occurred (MIT Brief at 7, citing Woburn-Wakefield at 67-69). Eversource concurs that MIT has the burden to prove its route is clearly superior to Eversource's, but takes exception to any notion that MIT is somehow like a petitioner, or has any responsibility for developing, constructing, or operating the proposed Project, or bears Eversource's duty to provide its customers with safe and reliable electric service (Company Reply Brief at 8, n.6).

In response to MIT's query, the Siting Board concurs with MIT that the Siting Board has made determinations of whether an intervenor sponsored route is "clearly superior" but has not found a route that meets that standard. See e.g., Woburn-Wakefield at 27, n.22. The term "clearly superior" is not defined in Siting Boards statutes and regulations, nor has this term been defined

judicially for the Board. The Siting Board provides the following guidance on the term "clearly superior."[53]

A logical definition of the phrase "clearly superior" in this context begins with the expectation that such an alternative route must be capable of meeting the Siting Board's longstanding route selection precedent: that routes "are sited in locations that minimize cost and environmental impacts while ensuring a reliable energy supply." Mid Cape Reliability at 39; Beverly-Salem at 38-39; Andrew-Dewar at 43. Because these three objectives are not necessarily all optimal for any single route, the Siting Board has also articulated that these factors are considered "on balance" in its determination of route superiority.[54]

However, the concept of a "clearly superior" route is not fully captured by reference to the reliability, environmental impact, and cost assessments that underlie many areas of the Board's jurisdictional authority. The use of the word "clearly" in the phrase adds an additional element that warrants consideration. Some common synonyms for the word "clearly" include: "certainly," "definitely," "undoubtedly," and "inarguably," among others. See *Merriam-Webster.com* (accessed May 31, 2024). On the other hand, the legal concept of "clear and convincing evidence" means that the evidence is highly and substantially more likely to be true than untrue; the fact finder must be convinced that the contention is highly probable. See Colorado v. New Mexico, 467 U.S. 310, 316 (1984). "Clearly superior" does not connote comparable or equivalent, nor is it satisfied by a simple preponderance of the evidence (more likely than not). What is "clearly superior" is based on specific facts.

Thus, the phrase "clearly superior," when applied to the Board's consideration of an alternative route candidate, strongly suggests that the Board must have a high degree of confidence

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53 The Siting Board does not see any reason to distinguish the use and meaning of the phrase "clearly superior" with respect to an alternative route (or segment), whether such route is presented by an applicant, parties, stakeholders, or the Siting Board itself.

54 Siting Board statutes, regulations and case precedent do not define or prescribe a particular "on balance" methodology of weighing these three factors in making an assessment of overall route superiority. Such evaluations are case-specific and guided by the record evidence. See Town of Sudbury v. EFSB, 487 Mass. 737 (2021).

that the alternative route is superior. This aspect of the phase "clearly superior" has considerable importance in a case such as this where the determination to be made by the Board involves a proposed route that has gone through extensive planning, design, and engineering, versus and an intervenor-proposed alternative route, which is at a much earlier, conceptual stage, with many unanswered design, planning, and permitting questions. This issue is considered further, below.

Eversource is correct that when a transmission line is proposed by a utility applicant, there are unique public service obligations involved and, we would also note, substantial organizational resources and capabilities incumbent utilities bring to bear in designing, building, and operating transmission facilities. Although parties proposing an alternative route must establish that their alternative route is clearly superior, the incumbent utility also bears a burden of proving that it did not overlook or eliminate a clearly superior route from further consideration.[55] Ultimately, Eversource must prove that its route selection process is consistent with Siting Board standards: that it developed and applied a reasonable set of standards for route selection.

2. Consideration of the GJN+A Segment During Company Route Selection

MIT contends that Eversource never included the GJN+A Segment in its route screening analysis, either in its entirety or by sub-segment (MIT Brief at 25). MIT also argues that the record shows that the GJN+A Segment is not included in the Universe of Routes, nor can its presence somehow be "cobbled together by sub-segment within multiple routes" (MIT Brief at 25). MIT also maintains that "there is no record support that Eversource considered any

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[55] Given the significant resources and capabilities available to incumbent utility applicants, the Board directs such companies to make informational resources available to others, as appropriate, to help in their assessment or design of potential route alternatives. In this proceeding, the record demonstrates that Eversource shared extensive amounts of information with MIT during its consultations, as requested by MIT. This guidance is intended to better inform alternative routes proposed by non-applicants, particularly those with limited resources. Such assistance by utility applicants is vital to ensure that route alternatives can be adequately detailed and considered in Board proceedings. Additionally, the Board also urges applicants to welcome routing suggestions from prospective parties and stakeholders as early as possible in the pre-filing process, and to carefully and adequately evaluate and document any such proposals brought to the applicant's attention.

alternative routes or route segments beyond those included in the Universe of Routes" (MIT Brief at 26). Eversource disputes MIT's contention that the Company did not identify or assess the GJN+A Segment in its entirety or in its sub-segments during the Company's route selection process (Company Reply Brief at 12, n.11, citing MIT Brief at 26-30). Nevertheless, Eversource faults MIT for failing to inform the Company over the course of three years, and over 30 meetings, that MIT had route variations in mind, or that such route variations would be submitted to the Siting Board during this proceeding (Company Reply Brief at 5; Exh. EFSB-RS-22, at 7).

Before addressing MIT's contention that Eversource overlooked the GJN+A Segment in its route selection process, it is helpful to consider the context of this proceeding. As the record demonstrates, the Greater Cambridge Energy Program is an enormously complex and costly project, which involves challenging construction in a densely populated, urban environment with extensive utility and transportation infrastructure. To its credit, Eversource has undertaken an extensive outreach effort since the inception of the Project to get input from key stakeholders, including municipal officials, state agencies, businesses, universities, and residents. In total, the Company held over 100 meeting and events, including over 30 with MIT representatives, over a span of three years. The lynchpin of this Project – the New Substation – is a tangible and noteworthy outcome of the collaboration among Eversource, the City of Cambridge, BXP, and community groups.

Notes of meetings between Eversource and MIT (which MIT does not dispute in any significant way) appear to indicate open discussions, mutual problem solving, and sharing of detailed (and, in some cases, confidential) technical information. This type of earnest stakeholder engagement reflects what the Siting Board has urged applicants to do in many proceedings, over the course of many years (see, e.g., Woburn-Wakefield; East Eagle).

While there are no formal Siting Board rules or protocols that govern the type of stakeholder meetings held between Eversource and MIT, it is clear that MIT had the opportunity and failed to: (1) specifically object to the Vassar Street Segment; (2) describe the GJN+A Segment, or specify its interest; or (3) specifically ask Eversource to assess the GJN+A Segment through route scoring or more detailed design and engineering studies. Moreover, the meeting notes also make clear that Eversource provided MIT with a clear understanding of the Company's

growing focus on the Vassar Street Segment from the inception of discussions in March 2020, with ample opportunities for MIT to raise concerns, object, or seek route alternatives, which it repeatedly failed to do.[56]

While a petitioner has the burden to not overlook "clearly superior" routes, it is also reasonable to expect that participating stakeholders believing there to be a clearly superior route or location alternatives suggest them to the applicant (or the Siting Board) at the earliest possible opportunity. Early awareness of route alternatives by the applicant (and the Siting Board) can only help to better ensure a full evaluation of their merit. [57] Eversource explained the urgency of Project need and the intended Project schedule to the MIT representatives on multiple occasions prior to filing its Petition. Given the urgency of Project need, any delay that affects in-service dates, also directly compromises reliability. As MIT correctly notes, reliability is one of the three central factors that the Siting Board considers as to whether a route is "clearly superior."

The record indicates that except for the Albany Street sub-segment between Main Street and Portland Street, the GJN+A Segment shares overlapping sub-segments with other routes listed on the Universe of Routes (Exh. EV-2, 4-19, at Figure 4-4; RR-MIT-1(1)). However, as MIT contends, there is no indication in the record that Eversource considered the GJN+A Segment in its entirety prior to MIT's submission of WSP's testimony on September 5, 2023 (Exh. WSP-1). We also concur with MIT that there is no evidence in the record to establish that Eversource

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56 The record shows that MIT Academic representatives were present at the very first documented Project-related meeting with Eversource on March 20, 2020 (Exh. MIT-1-4(1) Att. At 3). If the MIT (or MITIMCo) representatives who attended subsequent Project meetings were not in a position to offer substantive input on the Project or failed to keep MIT management apprised of information exchanged at the meetings, the Siting Board views that as MIT's responsibility, not the Company's.

57 The prefiled testimony filed by MIT on September 5, 2023 was the first instance in which the Siting Board was informed by MIT of its opposition to the Vassar Street Segment and its preference for the GJN+A Segment. MIT did not offer written or oral comments at either public comment hearing held by the Siting Board. MIT's petition to intervene, submitted on July 20, 2022, articulated a variety of ways MIT anticipated that it would be substantially and specifically affected by the Project. The intervention petition did not mention MIT's interest in a route alternative using the GJN+A Segment.

specifically considered any routes beyond those listed in the Universe of Routes, nor did Eversource represent that it did so.

The voluminous factual record contains sometimes conflicting evidence on whether Eversource "overlooked" the GJN+A Segment in its route selection process. MIT challenges the notion that the aggregation of sub-segments included in the Universe of Routes constitutes a "holistic" evaluation of the GJN+A, particularly when these other routes may have been rejected for reasons that have nothing to do with the GJN+A area of overlap. A more reasonable conclusion is that Eversource evaluated the GJN+A Segment to a substantial degree, but not in its entirety, and for most, but not all of its individual sub-segments (i.e., not the 600-foot length of Albany Street between Main Street and Portland Street, which is less than ten percent of the GJN+A Segment).

The record also indicates that the GJN+A Segment does not conform with multiple elements of the Eversource's route selection criteria including: (1) instructions from Cambridge DPW to avoid Main Street and Albany Street; (2) the presence of MBTA rail and subway lines that requires that the Company comply with or obtain waivers from the MBTA Directorate; (3) compound S-curves on Massachusetts Avenue between Albany Street and the Grand Junction Railroad corridor; (4) conflicts with present and future MWRA sewer infrastructure on Albany Street; (5) the need for easement agreements with the MBTA for use of the Grand Junction Railroad corridor; (6) utility density of heat-producing sources along the Grand Junction Railroad corridor; (7) statements made by MIT staff who questioned the use of the Grand Junction Railroad corridor in meetings with Eversource; (8) increased costs for land rights, sheet piling, and additional route length; and (9) a more circuitous, less linear horizontal route alignment. Eversource appropriately cited these and other factors in its decision to exclude the GJN+A Segment (and its subsegments) from further consideration.

As the Siting Board has noted previously, the number of route alternatives, even in a defined geographic area, is nearly infinite. It is not practical, expected, or required for an applicant to evaluate every single routing possibility imaginable. See e.g., Woburn-Wakefield at 66. The Siting Board has never required an applicant to score every possible route, and it is not practical to do so for a vast number of route candidates. Based on the qualitative route screening criteria

articulated by the Company, Eversource contends, with sensible logic, that it decided to forego further consideration of the GJN+A Segment and its sub-segments. Whether this decision occurred during the initial ideation of potential routes, or during the development of the Universe of Routes, is not entirely clear from the record. However, what is clear, is that Eversource had sufficient qualitative justification for elimination of the GJN+A Segment and its sub-segments, and it cannot be fairly said to have overlooked the GJN+A Segment in its route selection process.[58]

Based on the analysis above, the Siting Board finds that Eversource did not overlook the GJN+A Segment in its route selection process. Next, we turn to an assessment of whether the GJN+A Segment is clearly superior to the Vassar Street Segment of Route B29F West.

3. Route Superiority: GJN+A vs. Vassar Street Segments

In addressing the question of route superiority between MIT's GJN+A Segment and Eversource's Vassar Street Segment, the main areas of dispute involve the use of route scoring methods, as well as focused consideration of specific technical/construction matters environmental impacts, cost, reliability, and ease of permitting.

a. Route Scoring

Based on its interpretation of Siting Board precedent in Woburn-Wakefield, MIT asserts that the primary test for whether an intervenor-proposed alternative route is clearly superior is how it fares in route scoring (MIT Brief at 7). MIT argues that the GJN+A Segment (which WSP gave a score of 21.22) is "clearly superior" to the Vassar Street Segment (with a WSP score of 29.26) and that it also fared better in 10 of 11 criteria used for scoring. The Company contends that the entire scoring exercise undertaken by MIT is irrelevant and meaningless given the threshold viability concerns that the MIT Segment did not and could not overcome (Company Reply Brief at

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[58] MIT's argument that Eversource overlooked the GJN+A Segment is substantially diminished by the fact that the university itself failed to specifically propose it over the course of 30+ meetings with Eversource.

17). The Company maintains that scoring such a route would be misleading because a route scoring methodology is intended to compare only viable routes (Company Reply Brief at 17).

MIT has chosen to substantially replicate Eversource's route scoring methodology, with minimal changes, to have a common, data-driven tool to quantitatively compare these two route segments. While this is conceptually appealing, Eversource points out that route scoring is not an appropriate tool for comparing any and all routes – first and foremost, they must all be viable routes that do not exhibit "fatal flaws." Eversource maintains that GJN+A Segment has several fatal, or at least very serious flaws, that preclude the usefulness of its route scoring.

A familiar aspect of the route selection process in Siting Board proceedings is that applicants generate many routing options through desktop analysis of maps and other field data, consultations with key stakeholders, and community input. This route "ideation" phase is followed by an initial qualitative screening process, leading to an expansive first set of route possibilities known as the "Universe of Routes." The Universe of Routes is typically the first formal delineation of potential routes. Most of these potential routes are discarded using additional qualitative analysis (without formal costing or scoring) before being winnowed down to a list of "candidate routes," which are then scored and costed in a more quantitative and rigorous manner.

There are various reasons that have been cited in this and past cases to screen out certain routes before scoring, including: serious construction challenges or physical obstacles, prohibitive costs relative to available alternatives; property access/control hurdles; regulatory prohibitions; and other factors. The Siting Board has long approved the practice of applicants relying on relevant factors and sound judgment to qualitatively screen out potential routes from a nearly infinite set of routing possibilities, before route scoring or more detailed assessments of cost and environmental impacts are conducted. In this case, Eversource has followed these established practices, and cited constructability concerns (among others) as its chief reason for eliminating further consideration of

the GJN+A segment, despite MIT's objections. To resolve the question, we therefore consider the constructability arguments and related issues below.[59]

b. Constructability

An obvious consideration in assessing the constructability of the GJN+A segment in comparison with the Vassar Street Segment relates to the state of engineering knowledge for each segment. While MIT has done a commendable job in aggregating a variety of existing data sources to evaluate the GJN+A Segment, there are currently no engineering designs or plans for the GJN+A Segment and the route lacks nearly all details on duct bank and manhole alignments, depth, vetted construction methods, and permit agency documentation. In contrast, the Vassar Street Segment, is now at the 70 percent design stage, with detailed plan and profile drawings, showing the specific alignment and placement of duct banks and manholes relative to other above-ground and below-ground infrastructure. Eversource has also made significant progress on obtaining necessary land rights and confirming that the B29F West Route (including the Vassar Street Segment) would be compliant with key permit/approval requirements of the MBTA, the MWRA, Cambridge, and DCR, among others. Given the many unknowns surrounding the GJN+A Segment, a comparison between the Vassar Street Segment and the GJN+A Segment is inherently speculative and uncertain, and this presents an obvious challenge in proving that GJN+A Segment is "clearly superior." As noted above, a "clearly superior" route is not just a route that could be superior, but rather it is "highly and substantially more likely to be true than untrue; highly probable" that the route *is* superior.[60]

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[59] Although applicants initially screen out potential routes using qualitative factors and professional judgment, this decision is subject to inquiry and review by other parties and the Siting Board. Stakeholder perspectives expressed during the pre-filing stage should also be important considerations in helping to inform the route selection process for applicants.

[60] That an alternative route proposed by a non-applicant is often at a much more conceptual level than the applicant's proposed route is not necessarily determinative of whether the alternative route is deemed by the Siting Board to be "clearly superior" or not for purposes

The Siting Board views the issue of utility crossings and heat-producing sources as inconclusive. While the basic numerical information appears to favor the GJN+A Segment, this is not dispositive of a constructability (or operational) advantage for GJN+A Segment. The reason is that we do not know where the GJN+A Segment duct bank and manholes would be placed, and their proximity to underground utility crossings and heat-generating sources. While additional engineering and surveys might ultimately bear out MIT's position on this issue, the evidence today does not allow the Board to presuppose that this will be the result.

The record also provides numerous areas of concern about the constructability of the GJN+A Segment, along much of its entire length. At its eastern terminus, the GJN+A Segment faces several challenges in crossing Main Street and the Red Line tunnel that runs underneath, making a sharp turn west along Main Street, going underneath the Grand Junction Railroad corridor crossing at Main Street, and making a sharp left turn onto Albany Street. In comparison with the Vassar Street Segment, which will cross Main Street using an open trench above the Red Line tunnel and continue straight on Vassar Street, both Eversource and WSP agree that the GJN+A Segment will need a trenchless crossing underneath both the Red Line tunnel and the Grand Junction Railroad crossing at Main Street. Trenchless crossings require large jacking and receiving pits, which the record shows will be very difficult to place along Main Street where there are significant existing utilities on either side of the Red Line tunnel (that could require relocation), and heavy road traffic (Tr. 8, at 1226). In view of these difficulties, the City of Cambridge instructed Eversource to avoid running Project transmission lines parallel to Main Street. Eversource regards the Main Street construction for the GJN+A Segment as difficult, unvetted, and infeasible (Tr. 5, at 851). The record supports Eversource's assessment. In contrast, MIT offers no reliable evidence to demonstrate that these construction challenges along Main Street should be disregarded by the Board.

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of route selection standard of review. Such a determination would depend on the degree to which record evidence establishes that the alternative route meets the high bar of being "clearly superior" to the applicant's proposal.

Continuing to Albany Street, the City of Cambridge has also directed Eversource not to place a transmission line in that roadway given an existing major MWRA sewer line, and future plans to expand the sewer line to reduce combined sewer overflows from Cambridge and Somerville into the Charles River and maintain MWRA's facilities (Tr. 8, at 1239-1240). Eversource also noted concerns about the advanced age and condition of the existing MWRA infrastructure, that are not reflected in route scoring (Tr. 5, at 822). The City of Cambridge advised Eversource to use Vassar Street rather than Albany Street (Tr. 5, at 830). While the MWRA may be willing to issue a permit for a transmission line in proximity to its sewer line, this is far from assured, and the record provides ample evidence to conclude this may not occur absent a Certificate issued by the Siting Board in a future proceeding.

The record shows that turning from Albany Street onto Massachusetts Avenue and then onto the Grand Junction Corridor involves very sharp bends (smaller than 90-degree angles) and S-curves that present significant engineering concerns to both Eversource and the City of Cambridge. These bends create cable pulling tension and side wall pressures between the cable and the conduit that can deform cables during installation, or during operational use due to thermomechanical stress (Tr. 5, at 899). To address this issue, both Eversource and WSP agree that two manholes must be placed to splice cables at these intersections. However, WSP has not engineered the necessary manholes, nor verified that placement and construction within the Massachusetts Avenue area is even possible. Given existing utility density in the area and heavy traffic, these are significant and valid concerns. Again, the record supports Eversource's view that the sharp bends at Massachusetts Avenue pose serious constructability challenges for the GJN+A Segment.

The use of the Grand Junction Railroad corridor is another major focus of Eversource's concerns about the constructability of the GJN+A segment, due to a host of factors including: (1) proximity to the active rail line; (2) non-compliance with the MBTA Directorate; (3) costly, time-consuming and difficult engineering and construction to install and maintain steel sheeting to protect MBTA rail lines and underlying terrain; (4) the need to acquire land rights from the MBTA, MIT and others to place the duct bank and necessary manholes; and (5) the density of adjacent existing utilities, including heat-producing sources that could affect performance of the

cable; and (6) the likelihood of extensive utility relocations to use the corridor (Tr. 5, at 850-878). In addition, Cambridge, which is currently working to develop a multi-use community path on the edge of on the rail corridor, also advised Eversource to avoid use of the Grand Junction Corridor (Cambridge Brief at 6).

MIT contends that the GJN+A Segment duct bank would be within 15-feet of the edge of the active Grand Junction railroad track for only about 875 feet (between Massachusetts Avenue and Pacific Street (Tr. 7, at 1051). MIT argues that Eversource vastly overstates the extent of sheet piling that would be required under the MBTA Directorate, and the cost (MIT Brief at 17-18). MIT also rejects Eversource's argument that adjacent utility lines are numerous or would pose a serious impediment to design and construction of the line (MIT Brief at 33).

The Siting Board notes that the MBTA Directorate does not impose a uniform setback requirement; to the extent that the duct bank or manhole needs to be installed at deeper depths, the required offset is much greater (Tr. 5, at 857). We also note that because of the lack of engineering design detail for the GJN+A Segment, the record does not provide a detailed understanding of the proximity of the duct bank to the railroad tracks, or the depth at which the duct bank would need to be placed in the corridor. Accordingly, the Board is not convinced that MIT has accurately assessed the extent to which the GJN+A Segment would encroach on the MBTA Directorate's "Zone of Influence" and require more complicated and costly sheet piling or other means of addressing the MBTA concerns. The record does not provide meaningful assurance that the MBTA would be willing to grant approval or lease its corridor for the GJN+A Segment, given its close proximity to an active rail corridor.

In the Siting Board's view, the information provided by MIT, and significant unknowns regarding the GJN+A Segment, make it impossible to conclude that this segment is "clearly superior" to the Vassar Street Segment based on constructability considerations. There are certainly challenges associated with the Vassar Street Segment, given the extensive utility infrastructure present, but these have now been identified and quantified with a high degree of precision, and none constitutes "fatal flaws" as depicted in the detailed plans. The record offers little or no confidence as to what would result from more advanced engineering and designs for the GJN+A Segment – if it proves to be feasible at all. In any event, the Siting Board cannot conclude

from the record that the GJN+A Segment is "clearly superior" to the Vassar Street Segment regarding constructability.

Similar considerations pertain to cost analysis of the two route segments, owing in part to their disparate stages of design. There is a much higher level of certainty associated with the Vassar Street Segment given its advanced state of design and engineering. In addition, the Siting Board shares Eversource's concern that several aspects of the GJN+A Segment could be much more expensive than WSP estimates – if they are even constructible. For example, construction in the vicinity of the MBTA Red Line and Grand Junction Railroad, as noted above, are particular areas of concern about the accuracy of WSP's cost estimates. In sum, given the disparate information for the two route segments, the Siting Board cannot conclude that the GJN+A Segment would have any cost advantages relative to the Vassar Street Segment, and therefore it would not be "clearly superior" from a cost standpoint.

Finally, with respect to reliability, the Siting Board has serious concerns about the ability of the GJN+A Segment to meet the Project need in a timely manner. The time required to design and engineer the GJN+A Segment could range from MIT's seemingly optimistic assessment of six months to Eversource's more cautious (but probably realistic) estimate of two years, or more. In addition, supplemental Notice of the GJN+A Segment requested by MIT (and required for the Siting Board to be able to approve a route for construction) could elicit new procedural delays from new (or prior) intervenors, additional discovery, hearings, and a future Siting Board decision. Further, the City of Cambridge has expressed strong reservations to the GJN+A Segment and has clearly stated that it may not be willing to issue necessary permits[61]. As Eversource noted, this could precipitate the need for a subsequent Certificate proceeding, which could add a substantial amount of additional time to the permitting phase. Given the urgent need for additional energy

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61 Cambridge has played an active, important, and constructive role in the evolution of the proposed Project from its involvement in facilitating the co-location of the New Substation in the BXP redevelopment, to its role in providing engineering information and guidance for route selection. While the Siting Board accords substantial weight to the recommendations of Cambridge, the Board also exercises independent judgment in reviewing such recommendations in conjunction with other evidence and arguments in the proceeding.

resources in the Greater Cambridge area, such lengthy potential delays would pose a significant threat to reliable electric service to customers. It is obvious that a less reliable route option is not one that is "clearly superior" to other, more reliable options.[62]

Considering the above reasons, the Siting Board finds that the GJN+A Segment is not clearly superior to the Vassar Street Segment of the Eversource B29F West Route. Accordingly, the Siting Board does not advance the GJN+A Segment further for detailed evaluation in the following sections of this decision. Analysis of the impacts of Eversource's proposed and noticed alternative routes, and how those impacts will be minimized and mitigated, are considered below.

4. Conclusion on Selection of Preferred and Noticed Alternative Routes

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

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[62] On October 5, 2023, MIT filed a Motion for a Supplemental Notice, requesting that if the Siting Board granted the Eversource Motion for a Second Supplemental Notice described above, the Siting Board should also order the Company to publish and distribute a similar notice for the MIT Preferred Segments. MIT asserted that noticing the MIT Preferred Segments in conjunction with the most recent Eversource routing proposal, would allow for the expeditious construction of MIT's proposed route segment variations if the Siting Board deems them to be superior routing alternatives. Eversource opposed MIT's Motion to Notice its proposed route segments. During evidentiary hearings on October 27, 2023, the Presiding Officer heard arguments on the Eversource Motion and MIT Motion (Tr. 6, at 971-980). Eversource opposed MIT's Motion, arguing the immediacy of the need for the proposed Project and the delay that would be associated with providing both procedural requirements for noticing the proposed MIT routes and the additional investigation that the Company would need to develop in order to notice those routes. At that time, MIT and Eversource agreed to a deferral of a ruling on MIT's Motion until the completion of hearings and the filing of briefs. Tr. 5, at 974-980. Cambridge concurred with Eversource's position. As noted above, the Siting Board has reviewed the merits of the remaining route option proposed by MIT and determined that based on the record, the GJN+A Segment does not merit further evaluation to warrant granting MIT's request for notice and additional investigation at this time. Therefore, the Siting Board denies MIT's Motion.

impacts, while ensuring reliability of supply. In past decisions, the Siting Board has found various criteria, including, but not limited to, natural resources, land use, community impact, cost, and reliability criteria, to be appropriate for identifying and evaluating route options for transmission lines and related facilities. Sudbury-Hudson at 71; Needham-West Roxbury at 21; Woburn-Wakefield at 65. 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. Sudbury-Hudson at 71; Needham-West Roxbury at 21; Woburn-Wakefield at 65.

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 it has 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. The route selection methods used by the Company in this proceeding are generally consistent with those used for other projects and accepted by the Siting Board.[63] 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 energy supply.

VI. ANALYSIS OF THE PROJECT ELEMENTS

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. Park City Wind, LLC, EFSB 20-08/D.P.U. 20-56/20-57, at 58 (2023) ("Park City Wind"); Mid Cape Reliability at 50-51; Beverly-Salem at 41-42. To evaluate the proposed facility, the Siting Board first determines whether the petitioner has

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63 This Siting Board's acceptance of this general route selection methodology was upheld on appeal by the Massachusetts Appeals Court. See Town of Winchester v. EFSB, 98 Mass.App.Ct. 1101 (2020). See also Town of Sudbury v. EFSB, 487 Mass. 737 (2021).

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. Park City Wind at 58; Mid Cape Reliability at 50-51; Beverly-Salem at 41-42.

B. Descriptions of the Project Elements

1. New Substation

The New Substation would be built on a 1.67-acre parcel owned by BXP, of which the New Substation would occupy 0.8 acres (Exhs. EV-2, at 5-43; EFSB-PA-14, at 2).[64] As part of the BXP MXD Plan, a public open space would be located directly above the New Substation (Exhs. EV-2, at 5-43; EFSB-R-3(1)). Except for vent stacks, a freight elevator headhouse and a stair access headhouse, the New Substation would be completely underground (Exh. EV-2, at 5-43). The vent stacks would be approximately 35 feet high, with air exiting from the side and top of a stack (Exh. EFSB-SU-12(2) at 23, Tr. 8, at 1350-1351). See Exh. EFSB-SU-12(2) for cross section view of one vent stack. The New Substation would include three control rooms with protective relay and control equipment, communication equipment, and control batteries (Exh. EV-2, at 4-1). The New Substation would enclose 115- kV gas-insulated switchgear ("GIS"), three 90 MVA 115/14-kV transformers and associated switchgear, with space to add a fourth transformer and associated switchgear for use in the future (Exh. EV-2, at 1-2, 4-1).[65]

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64 According to the Company, the New Substation requires an estimated total gross floor area of 170,800 square feet or 3.92 acres (Exh. EFSB-R-2). The Company explained that it would meet the total gross area requirement by building multiple levels below grade (Exh. EFSB-R-2, at 3).

65 Based on the Company's 2021 load forecast, the addition of a fourth transformer is projected beyond 2031 (Exh. EFSB-R-4). Major equipment required for a potential fourth transformer would include switchgear, a 90 MVA transformer, 115 kV switchgear bus sections, associated capacitor banks, and a shunt reactor (Exh. EFSB-R-4).

2. Underground Transmission Lines

a. Somerville Routes

i. Route S15 (Company's Preferred Route)

Route S15 is the Company's preferred route for which the Company seeks approval among the Somerville route options (Exh. EFSB-RS-19(S1)). Following the first public comment hearing, in July 2022, Siting Board staff issued a preliminary information request asking the Company to evaluate the efficacy of a hybrid of Routes S11C, S1A and S12 (Exh. EFSB-P-1). After evaluation, including positive feedback from stakeholders, the Company determined that the resulting hybrid route the "Noticed Hybrid Alternative Route S15" warranted further consideration as a potentially superior route for this area of the Project (Exh. EFSB-P-1). Accordingly, on September 9, 2022, the Company filed a motion requesting authorization for a supplemental notice of the proceeding to owners and current residents along the hybrid route. The Board issued a supplemental notice on October 12, 2022, and conducted a second public comment hearing on November 10, 2022 for Route S15. Following further stakeholder engagement, including the City of Somerville, and engineering feasibility studies, on October 2, 2023, the Company filed a motion to publish a second supplemental notice of the proceeding to the owners and residents of eleven parcels along and near a small portion of an updated variation of Route S15 (Exh. EFSB-RS-19(S1) at 1). The Siting Board approved the Company's motion for supplemental notice, and the Notice issued on December 19, 2023.

Route S15 traverses Cambridge and Somerville for a total distance of 1.31 miles (Exh. EFSB-RS-19(S1) at 2). The route heads west from the New Substation Site in Cambridge onto Broadway for about one block before turning north onto Galileo Galilei Way for approximately 400 feet and then turning west to the Grand Junction Railroad corridor onto land owned by the City of Cambridge (Exh. EFSB-RS-19(S1) at 2). From this point northward, the route collocates with the future alignment of the City of Cambridge's Grand Junction Multi-Use Path (Exh. EFSB-RS-19(S1) at 2). The route then exits the Grand Junction Railroad corridor at Medford Street/Gore Street and continues for about 300 feet on Medford Street before heading west on South Street (Exh. EFSB-RS-19(S1) at 2). The route then follows South Street and turns

north onto Windsor Street (Exh. EFSB-RS-19(S1) at 2). From Windsor Street, the route crosses beneath the MBTA Fitchburg Commuter Rail and Green Line Extension tracks in a northerly direction (Exh. EFSB-RS-19(S1) at 2). After crossing the tracks, the route travels in a westerly direction following Charlestown Street for about 200 feet and extending through the D2 Union Square Revitalization development ("D2 Site") before connecting with the Somerville Substation (Exh. EFSB-RS-19(S1) at 2).

(a) Route S15 Variation

At the request of the City of Somerville, the Company has retained a route variation that moves in a westerly direction from South Street to Windsor Street, across a private parcel occupied by an auto parts salvage facility (Exh. EFSB-RS-19(S1) at 2-3). The variation would then turn north onto Windsor Street for about 200 feet where it aligns with the trenchless crossing location at the end of Windsor Street (Exhs. EFSB-RS-19(1), EFSB-RS-19(S1) at 3). This variation was requested by the City of Somerville to allow flexibility in the event South Street is relocated according to existing redevelopment plans for the area (Exh.EFSB-RS-19 (S1) at 3). See Figure 10 below.

Figure 10: Route S15 Variation

Source: Exh. EFSB-RS-19(1).

ii. Route S1A (Noticed Alternative Route)

Route S1A is approximately 1.25-miles long, connecting the New Substation to the existing Somerville Substation (Exh. EV-2, at 5-3). This route heads west from the New Substation onto Broadway for about one block before turning northwest onto Hampshire Street (Exh. EV-2, at 5-3). From Hampshire Street, the route heads north on Columbia Street into Somerville to the intersection with Windsor Place (Exh. EV-2, at 5-3). The route crosses Windsor Place and heads north across the Fitchburg Route Main Line MBTA commuter rail tracks (Exh. EV-2, at 5-3). After crossing the tracks, the route travels in a westerly direction across the D2 Site, parallel to the MBTA railroad tracks and the MBTA's Green Line Extension Union Square train station platform, turning north running parallel to Prospect Street, and then west across Prospect Street where it enters the Somerville Substation (Exh. EV-2, at 5-6).

iii. Route S1 (Route Variation)

Route S1 follows the same alignment described above for Route S1A, except that it travels in a northwesterly direction around the eastern edge of the site of the MBTA's new Union Square train station platform, across the D2 Site, generally following the approximate alignment of two future roadways associated with the development, identified as Milk Alley and Bennett Court (Exh. EV-2, at 5-6). The route then crosses over Prospect Street and accesses the Somerville Substation from the east (Exh. EV-2, at 5-6). According to Eversource, Route S1Variation could minimize potential construction sequence, coordination and site restoration challenges associated with ongoing construction on the D2 Site (Exh. EV-2, at 5-149).

iv. Route S11C (Noticed Alternative Route)

Route S11C is approximately 1.56-miles long, connecting the New Substation to the Somerville Substation (Exh. EV-2, at 5-8). This route heads west from the New Substation onto Broadway for about one block before turning north onto a parcel of land owned by the City of Cambridge abutting the east side of the MBTA Grand Junction Railroad corridor (Exh. EV-2, at 5-8). The route continues north on the City of Cambridge owned properties parallel to the east side

of the MBTA Grand Junction Railroad corridor (Exh. EV-2, at 5-8). From Broadway to Medford Street in Somerville, the route collocates with the potential future alignment of Cambridge's Grand Junction Multi-Use Path, which requires crossing from City of Cambridge-owned land on the east side of the existing railroad corridor to City of Cambridge-owned land on the west side of the railroad corridor (Exh. EV-2, at 5-8). After crossing Medford Street, Route S11C continues north along the western edge of the MBTA ROW up to the intersection of the Grand Junction Railroad tracks and the MBTA commuter rail tracks (Fitchburg Route Main Line) (Exh. EV-2, at 5-8). The route would then cross beneath the MBTA commuter rail tracks and McGrath Highway (Route 28) to reach an Eversource-owned parcel of land on Linwood Street (Exh. EV-2, at 5-8). The transmission line would then turn northwest onto Linwood Street, Washington Street and Prospect Street where it connects with the Somerville Substation (Exh. EV-2, at 5-8).

b. Kendall Routes

i. Route K5A (Company's Preferred Route)

The Company's preferred route (designated as Route K5A) is approximately 0.6 miles long, connecting the New Substation to the existing East Cambridge Substation (Exh. EV-2, at 5-3). The route leaves the New Substation and heads east onto Broadway before turning northeast along the Volpe Center Site and travels onto Third Street near Potter Street intersection (Exh. EV-2, at 5-3). The route crosses the Volpe Center Site to avoid utility congestion in parts of Third Street and specifically the Third Street/Broadway intersection (Exh. EV-2, at 5-3). The route then turns east onto Linskey Way and then south onto Second Street where it connects to the East Cambridge Substation (Exh. EV-2, at 5-3)

ii. Route K11 (Noticed Alternative Route)

Route K11 is approximately 0.6-miles long connecting the New Substation to the existing East Cambridge Substation (Exh. EV-2, at 5-8). This route heads east from the New Substation onto Broadway before turning north across the abutting Volpe Center Site to Potter Street (Exh. EV-2, at 5-8). From Potter Street, the route heads north onto 5th Street and west onto Munroe Street before crossing over Third Street onto Linskey Way (Exh. EV-2, at 5-8). The route follows

Linskey Way in an easterly direction before turning south onto Second Street to its interconnection point within the East Cambridge Substation (Exh. EV-2, at 5-8).

c. Putnam Routes

i. Route P13 (Company's Preferred Route)

The Company's preferred route (designated as Route P13) is approximately 0.49 miles long, and located entirely within Cambridge (Exh. EV-2, at 5-3). This route heads east from the New Substation in East Cambridge onto Broadway and south on Ames Street (Exh. EV-2, at 5-3). The route follows Ames Street through the Main Street intersection and the MBTA Red Line subway tunnel beneath it, to the intersection with Memorial Drive (Exh. EV-2, at 5-3). At Memorial Drive, the route ends in a "T" configuration with the line spliced into existing Eversource transmission line(s) to the east and west on Memorial Drive (Exh. EV-2, at 5-3).

ii. Route P11 (Noticed Alternative Route)

Route P11 consists of 0.87 miles completely within the City of Cambridge (Exh. EV-2, at 5-7). From the New Substation, the route begins by heading east onto Broadway Street and south on Ames Street until reaching Main Street (Exh. EV-2, at 5-7). Upon reaching Main Street the line travels parallel to the MBTA Red line subway tunnel before crossing onto Vassar Street and travels south until reaching Massachusetts Avenue (Exh. EV-2, at 5-7 to 5-8). From there it continues southeast until reaching Memorial Drive where it splices into an existing transmission line (Exh. EV-2, at 5-7 to 5-8).

d. Brighton East Routes

i. Route B2A East (Company's Preferred Route)

The Company' preferred route (designated Route B2A East) is approximately 2.9-miles long, heading east from the New Substation to the existing Brighton Substation (Exh. EV-2, at 5-6). This route heads east from the New Substation onto Broadway before turning south onto Ames Street (Exh. EV-2, at 5-6). The route follows Ames Street through the Main Street intersection, and the MBTA Red Line subway tunnel beneath it, to the intersection with Memorial Drive (Exh.

EV-2, at 5-6). At Memorial Drive, the route turns to the west following the east bound lane to the Massachusetts Department of Conservation and Recreation's ("MassDCR's") Magazine Beach property (Exh. EV-2, at 5-6). At Magazine Beach, the route crosses beneath the Charles River into Boston via HDD (Exh. EV-2, at 5-6). After crossing beneath the Charles River, the route follows the general alignment of an anticipated new street, referred to as the Lincoln Street Connector, that is proposed to be constructed as part of MassDOT's Allston Multimodal Project (Exh. EV-2, at 5-6). From there, the route goes onto Cambridge Street, following Cambridge Street to Empire Street and Lincoln Street, where it terminates at the Brighton Substation (Exh. EV-2, at 5-6).

ii. Route B2AN East (Route Variation)

The Company also evaluated a route variation, Route B2AN East, as a workaround route across the Allston Multimodal Project site should that project not advance to construction, while also minimizing potential future development constraints to the present landowner (Harvard University) should it seek to develop its property in the future (Exh. EV-2, at 4-38, 5-2, 5-6, 5-103). The Company stated that the Allston Multimodal Project was already engaged in the environmental permitting process through MassDOT (Exh. EFSB-RS-17). The Company indicated that, as MassDOT has not identified significant design changes for the Company's route design to date, it is likely that the Company would use Route B2A East (Exh. EFSB-RS-17).[66]

iii. Route B31 East (Noticed Alternative Route)

Route B31 East is approximately 3.26-miles long, heading east to connect the New Substation to the existing Brighton Substation (Exh. EV-2, at 5-8). Leaving the New Substation, the route follows Ames Street to the intersection with Memorial Drive (Exh. EV-2, at 5-8). At

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66 The Company's MEPA Environmental Notification Form ("ENF") Certificate also noted that the use of Route B2AN East would require coordination with the MBTA regarding the design, construction, and maintenance of the route (Exh. EV-3, at 11). In addition, the Certificate stated that the portion of route alignment outside the layover yard access driveway would need to account for structures to support future air rights development (Exh. EV-3, at 11).

Memorial Drive, the route turns to the west (following the east bound lanes of Memorial Drive) to the Reid Rotary at the Boston University Bridge, continuing west on Memorial Drive to the River Street Bridge (Exh. EV-2, at 5-9). At this location, the route turns to the west across the River Street Bridge, over the Charles River, and onto Cambridge Street in Boston (Exh. EV-2, at 5-9). On the Boston side of the Charles River, the route would cross over the I-90 ramps following the approximate location of Cambridge Street reconstructed at-grade as part of MassDOT's Allston Multimodal Project (Exh. EV-2, at 5-9).[67] After passing through a short stretch of wooded, undeveloped land (approximately 500 feet) adjacent to the roadway shoulder, the route transitions back onto Cambridge Street until it reaches Lincoln Street (Exh. EV-2, at 5-9). The route follows Lincoln Street to the Brighton Substation (Exh. EV-2, at 5-9).

e. Brighton West Routes

i. Route B29F West (Company's Preferred Route)

The Company's preferred route (designated Route B29F West) is approximately 3.0 miles long, heading west from New Substation to the existing Brighton Substation (Exh. EV-2, at 5-7). This route heads west from the New Substation onto Broadway before turning south onto Galileo Galilei Way to Vassar Street (Exh. EV-2, at 5-7). The route follows Vassar Street before crossing northwest through a parking lot owned by MIT and the MBTA (Exh. EV-2, at 5-7). From the parking lot, the route would cross the Grand Junction Railroad to a parking lot on a second parcel of land owned by MIT (Exh. EV-2, at 5-7). The route then follows Waverly Street to Brookline Street through the Reid Rotary at the Boston University Bridge, continuing west on Memorial Drive to the River Street Bridge (Exh. EV-2, at 5-7). At this location, the route turns to the west across the River Street Bridge, over the Charles River, and onto Cambridge Street in Boston (Exh. EV-2, at 5-7). On the Boston side of the Charles River, the route would cross over I-90 ramps following the approximate location of Cambridge Street reconstructed at-grade as part

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[67] As described above, the Company is coordinating with MassDOT on Project construction through MassDOT's Allston Multimodal Project (Exh. EFSB-RS-17). MassDOT has reviewed Route B2A East and has not identified significant design changes required (Exh. EFSB-RS-17).

of MassDOT's Allston Multimodal Project (Exh. EV-2, at 5-7). After passing through a short stretch of wooded, undeveloped land (approximately 500 feet) adjacent to the roadway shoulder, the route transitions back onto Cambridge Street until it reaches Lincoln Street (Exh. EV-2, at 5-7). Finally, the route follows Lincoln Street to Brighton Substation (Exh. EV-2, at 5-7).

ii. Route B30 West (Noticed Alternative Route)

Route B30 West is approximately 3.43 miles long, heading west from the New Substation to the existing Brighton Substation (Exh. EV-2, at 5-9). Leaving the New Substation, the route heads west on Broadway before turning south onto Prospect Street and then west onto Green Street (Exh. EV-2, at 5-9). The route follows Green Street to Putnam Avenue where it turns north and then west onto Mt. Auburn Street (Exh. EV-2, at 5-9). The route follows Mt. Auburn Street to John F. Kennedy Street (Exh. EV-2, at 5-9). The route then heads south along John F. Kennedy Street to the Anderson Memorial Bridge over the Charles River (Exh. EV-2, at 5-9). On the Boston side of the Charles River, the route follows North Harvard Street to Franklin Street and Lincoln Street before terminating at the Brighton Substation (Exh. EV-2, at 5-9).

3. Substations Upgrades

The Project also includes work at five existing substations to accommodate the New Lines: Somerville Substation, Putnam Substation, East Cambridge Substation, Brighton Substation, and North Cambridge Substation (Exh. EV-2, at 1-7 to 1-8).[68] Except for the reconfiguration of the transmission line on Memorial Drive (see discussion in subsection c), the Company stated that all ancillary project work would be performed within the existing substation fence lines (Exh. EV-2, at 5-50 to 5-52).

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[68] The Company refer to these upgrades as "work at existing substation facilities," "ancillary substation work," ancillary facilities," "ancillary modification to existing substation facilities," and "remote stations modification projects" in different parts of its Petition (Exh. EV-2). For clarity, the Siting Board refers the same upgrades as "substations upgrades" in this decision.

a. Somerville Substation Upgrades

Project-related work at the Somerville Station would comprise installing new below-grade duct banks, above-grade cable terminations (in the location of the existing terminators), cable pulling/termination, and control and protection changes (Exh. EV-2, at 5-51).

b. East Cambridge Substation Upgrades

To integrate the New Substation into the transmission system, the Company would disconnect the output cable of the Vicinity Energy Generating Unit ("Vicinity Energy") from the 115 kV bus at East Cambridge Substation and connect it directly to the New Substation (Exh. EV-2, at 5-50). The Company would connect a new 115 kV line from the New Substation to the switching position formerly utilized by the Vicinity Energy (Exh. EV-2, at 5-50 to 5-51). Work would consist of reconfiguring duct banks in the station yard, cable pulling/termination, and control and protection changes (Exh. EV-2, at 5-51).

c. Putnam Substation Upgrades

The Company proposes to reconfigure the 115 kV lines supplying the Putnam Substation at a location outside of the station footprint on Memorial Drive (Exh. EV-2, at 5-50). Work at this substation facility would consist of protection and control changes (Exh. EV-2, at 5-50).

d. Brighton Substation Upgrades

Project-related work at the Brighton Substation would consist of installing new below-grade duct banks, above-grade cable terminations (in the location of the existing terminators), cable pulling/termination, and control and protection changes (Exh. EV-2, at 5-51).

e. North Cambridge Substation Upgrades

The 115 kV bus at North Cambridge Substation is the source of the two 115 kV supply lines to Putnam Substation (Exh. EV-2, at 5-51). To balance flows on the transmission system, the Company would install air-core current limiting reactors ("CLRs") at North Cambridge Substation

near the location of the existing line terminations (Exh. EV-2, at 5-51). In addition to the installation of the CLRs and their associated foundations, the Company would replace a small section of air-insulated bus with GIS bus to achieve required electrical clearances (Exh. EV-2, at 5-51). There would also be modifications to protection and control equipment (Exh. EV-2, at 5-51).

4. Underground Distribution System Upgrades

The Company would also install a set of 36 distribution feeders and associated duct banks and other equipment that connects the New Substation to the existing distribution network in public ways immediately adjacent to the New Substation (Exh. EV-2, at 5-52).[69] The Company considered the distribution work between the New Substation and the first manhole outside the New Substation, which would be the connection point to the existing distribution conduit system, to be part of the ancillary project work jurisdictional to the Board (Exh. EFSB-G-2, at 1-2). The Company explained that it would eventually upgrade distribution feeders beyond the first manhole regardless of whether the New Substation and proposed transmission lines are built, and the distribution work would provide benefits outside of its relationship to the New Substation and New Lines (Exh. EFSB-G-2, at 1-2).

C. General Description of Project Construction

1. Construction Schedule

The Company anticipated construction of the Project commencing in 2024, which would occur over five years (Exh. EV-2, at 5-25). The Company anticipated that it would construct the shorter and more direct Kendall and Putnam Routes first due to their proximity to each other and

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69 While Eversource asserts distribution lines are not jurisdictional to the Siting Board's review under G.L. c. 164, §§ 69J, 72, as part of the Project, the Company noted that Eversource provided information about its build-out of the electric distribution system to identify the full scope of facilities that would be constructed in concert with the Project (Exh. EV-2, at 1-1).

the New Substation construction in Kendall Square, before the longer and more complex Brighton and Somerville routes (Exh. EV-2, at 5-25 to 5-26). The Company estimated that the longer routes would take approximately 36 to 42 months to construct (Exh. EV-2, at 5-25). The Company anticipated that its contractors would employ multiple work crews, assigned to several active work zones, to maintain this construction schedule (Exh. EV-2, at 5-25; Tr. 8, at 1334-1335).

According to BXP's schedule for its Redevelopment Project, construction of the underground vault is scheduled between the third quarter of 2023 and the fourth quarter of 2026 (Exh. EFSB-CM-4(1)). Following the transfer of the BXP-constructed substation vault, New Substation construction would extend to the end of 2028 (Exh. EFSB-CM-3(1)). The New Substation work, including testing, commissioning and phased energization of distribution and transmission lines, would take approximately five years to complete (Exhs. EV-2, at 5-44, EFSB-CM-4 at 1).

2. Construction Hours

Typical construction work hours would be from 7:00 a.m. to 7:00 p.m. Monday through Friday and from 9:00 a.m. to 6:00 p.m. on Saturdays (Exh. EV-2, at 5-25 to 5-26).[70] The Company will set construction hours along the routes to minimize the adverse impacts on residents, businesses, and sensitive uses such as schools and student residence halls, ensure optimal vehicle and truck traffic flow, and reduce daytime impacts to commuters and abutters (Exh. EV-2, at 5-26). However, the Company may need to perform certain work on a limited basis outside of normal work hours, including at night, on Sundays, and on holidays given: (1) traffic congestion during daytime hours; (2) other construction projects; (3) work requiring scheduled outages; and (4) work requiring continuous operation (such as concrete pouring) (Exh. EV-2, at 5-26).

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70 The Company stated it will develop final construction hours in accordance with local noise ordinances, and in coordination with the municipalities and stakeholders, including MassDOT, MWRA, MassDCR, and the MBTA (Exh. EV-2, at 5-25 to 5-26).

3. New Substation

As part of the BXP MXD Plan, BXP will construct an underground vault consisting of concrete slurry walls, floors, stairwells, elevator, fire suppression system infrastructure, and minimal lighting systems (Exh. EV-2, at 5-44).[71] Eversource will construct the New Substation within the underground vault, including the building support systems such as ventilation, fire protection systems, oil spill containment systems for transformers, circuit breakers, relay and control equipment, communication equipment and batteries, switchgear, and any necessary grounding equipment and lighting (Exh. EV-2, at 5-44). The Company indicated that the equipment and many auxiliary systems proposed for the New Substation are identical to what the Company uses in its other indoor substations (Exh. EFSB-SU-26).

During construction of the New Substation, Eversource would transport equipment into the subterranean vault via the freight elevator, the equipment removal hatch, and the intake/exhaust stacks before louvers are installed (Exh. EFSB-SU-16). According to Eversource, the phases of work for the New Substation include:

- Mechanical, electrical, plumbing ("MEP") and building systems installation;
- Substation equipment installation;
- Equipment integration;
- Testing and commissioning; and
- Phased energization of transmission and distribution lines (Exh. EFSB-CM-4).

4. Underground Transmission Lines

The Company described the construction sequence for the underground transmission lines in five general steps: (1) installation of erosion and sediment controls; (2) installation of manholes/splice vaults; (3) trenching and duct bank installation; (4) cable pulling, splicing, and

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71 BXP would also transfer to Eversource the ownership of transmission and distribution duct banks within the limits of the site, distribution cable pulling chambers, and a grounding system (RR-EFSB-16(1) at 65).

testing; and (5) restoration (Exh. EV-2, at 5-9). While the Company would use open cut trenching methods along most segments of the proposed transmission lines routes, it also proposed to use two different trenchless crossing techniques for certain challenging segments (see Exh. EV-2, at 5-12, 5-14).

The Company stated that it would minimize construction impacts by limiting the duration of construction, timing the construction in a manner that is least impactful to the landowner and users of the properties, and restoring disturbed areas to their preexisting condition or better as soon as practicable following construction (Exh. EV-2, at 5-23 to 5-24). According to Eversource, it would work closely with the landowners to refine the schedule, develop construction management plans, and prepare site-specific restoration details prior to the start of construction (Company Brief, at 19; Exh. EV-2, at 5-23 to 5-24).[72]

a. Installation of Erosion and Sediment Controls

The Company stated that it would first install temporary erosion and sediment control measures between work areas and environmentally sensitive areas prior to soil disturbing activities and will regularly inspect and maintain such measures during construction (Exh. EV-2, at 5-10). Erosion and sediment controls include straw bales, silt fence, compost filter tubes, straw wattles, as well as catch basin inlet protection (Exh. EV-2, at 5-10).[73] In addition, the Company would install inlet protection on stormwater catch basins along the Project routes in the immediate vicinity of active trenching, excavation, or other construction activities involving sediment disturbance (Exh. EV-2, at 5-10).

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72 The Company stated that, when working in proximity to abutting structures along all portions of the routes, it would employ sheeting and shoring on excavated trenches to ensure their stability (Exhs. EFSB-CM-7; SCAH-1-1). The Company would document the condition of adjacent structures and, for trenchless crossing operations, implement vibration monitoring as best management practices (Exhs. EFSB-CM-7; -SCAH1-1).

73 Eversource includes its *Best Management Practices Manual for Massachusetts and Connecticut* as an attachment to the Petition (see Exh. EV-2, Appendix 5-7). Eversource stated that it would install the proposed erosion and sediment controls in accordance with this manual (Exh. EV-2, at 5-10).

b. Installation of Manholes/Splice Vaults

The Company would install concrete splice vaults (also referred to as manholes) prior to or in parallel with trenching and installation of the duct bank (Exh. EV-2, at 5-10). The depth of the splice vaults would vary by location (Exh. EV-2, at 5-10). The Company would space the splice vaults approximately 1,500 to 1,800 feet apart, depending upon the location of the duct bank, physical constraints, and pulling tensions (Exh. EV-2, at 5-10). According to Eversource, especially tight and complex turns would require the placement of additional manholes to maintain proper pulling tension and sidewall pressure (Tr. 10, at 1510 to 1514). The Company stated that, on average, it would take approximately seven to ten days to install a splice vault, and that this duration may include relocating existing utilities in the way (Exh. EV-2, at 5-10). The Company would work closely with the local municipal officials and utility owners on such relocations (Exh. EV-2, at 5-10).

c. Trenching and Duct Bank Installation

According to the Company, each underground transmission line would consist of a duct bank – a series of conduits enchased within a common thermal concrete envelope (Exh. EV-2, at 5-12).

i. Open Cut Trenching

Transmission line trenches would be generally four feet wide and five and one half to eight feet deep, though on occasion they may be wider and deeper to avoid utilities or other obstacles (Exh. EV-2, at 5-12). The first step of open cut trenching is saw-cutting the pavement to define the parameters of the trench for asphalt removal and trench excavation (Exh. EV-2, at 5-12). Prior to saw-cutting the pavement, the Company would mark the width of the trench on the street, then contact Dig Safe and mark the location of existing utilities (Exh. EV-2, at 5-12).

The next step is the removing pavement and soil materials with a backhoe/excavator and loading them into a dump truck (Exh. EV-2, at 5-12). Subsequently, the Company would excavate the trench to the required depth with a backhoe/excavator, or by hand or vacuum excavation to

avoid disturbing existing utility lines and/or service connections (Exh. EV-2, at 5-12). The Company stated that it would send pavement materials to an asphalt batching plant for recycling and send soil materials to an off-site facility for recycling, reuse, or disposal (Exh. EV-2, at 5-12). The Company would also remove larger rocks encountered during excavation by mechanical means and send them to an off-site facility for recycling, reuse, or disposal (Exh. EV-2, at 5-12). The Company stated that it would not typically stockpile soil along the edge of the roadway, to avoid reducing the size of the required work area and the potential for sedimentation or the creation of nuisance dust (Exh. EV-2, at 5-12).

Once a section of the trench is prepared, the Company would either (1) assemble each of the conduit sections inside the trench, or (2) pre-assemble them, lower them into the trench (Exh. EV-2, at 5-14). Then, the Company would fill the area around the conduit with high-strength thermal concrete to create a duct bank, followed by backfilling the trench with fluidized thermal backfill (Exh. EV-2, at 5-14; Tr. 9, at 1404-1405). The pace of trench construction may be slower in areas where: (1) there is higher existing utility density, unanticipated obstructions exist, such as ledge or rock; (2) an increase in the trench depth is needed; or (3) there are higher traffic volumes (Exh. EV-2, at 5-14). The Company indicated that it would plate open trenches under construction each night to allow traffic to pass during non-working hours (Tr. 8, at 1307).

ii. Trenchless Crossings

The Company stated that it would use trenchless crossing techniques where obstructions to open-cut trenching exist such as a railroad tracks, wetlands, or waterbodies (Exh. EV-2, at 5-14). The Company proposed to use two types of trenchless crossing techniques in this Project – pipe jacking and HDD (Exh. EV-2, at 5-14). The Company proposes to use the pipe jacking for crossing at various points along the Grand Junction Railroad and MBTA commuter rail lines (Exh. EV-2, Tables 5-3, 5-4). The Company would coordinate with the MBTA, MassDOT, municipal officials and landowners on the timing of the railroad crossing work (Exh. EV-2, at 5-22). Pipe jacking consists of three main steps: (1) bore pit and receiving pit excavation; (2) bore hole drilling and casing jacking; and (3) pipe installation inside the casing (Exh. EV-2, at 5-

21). The Company would fill the casing with thermally designed fluidized fill prior to cable installation (Exh. EV-2, at 5-21).

The Company proposes to use the HDD method on Route B29F West for crossing the Charles River (Exh. EV-2, at 5-14 to 5-17). According to the Company, the HDD method (1) reduces surface disturbance in environmentally sensitive areas such as protected cultural natural resource areas, waterways, and wetlands; (2) avoids other existing infrastructure such as roadways railroads, and utilities; and (3) attains depths required, such as under federal navigation channels (Exh. EV-2, at 5-14).

HDD cable installation method includes five stages: (1) establishment of temporary workspace areas for entry and exit sites; (2) pilot boring; (3) reaming; (4) casing installation; and (5) demobilization and site restoration (Exh. EV-2, at 5-17). The Company would first establish temporary workspace areas on either side of the crossing location, such as the entry location at Magazine Beach and the exit location in the MassDOT Allston Multimodal Project site (Exh. EV-2, at 5-17). The entry location would have drilling equipment and related equipment such as excavators, drill pipe skids, fractionation tanks for decant water, pumps, generators, while the exit location would be a larger workspace to accommodate the drill pipe stringing process and other equipment (Exh. EV-2, at 5-17). The Company would surround the workspace areas with sediment control devices and construction fencing (Exh. EV-2, at 5-17). To minimize impacts to the recreational fields on Magazine Beach, the Company proposed to split the temporary workspace area at the entry location on either side of the Magazine Beach entrance driveway, with a shallow excavated trench across the driveway for power conduits and drilling fluid transfer piping (Exh. EV-2, at 5-18).

After the workspace areas are prepared, the Company would bring a temporary drill rig to the entry location and position the rig to drill at the desired angle (Exh. EV-2, at 5-20). The drill rig would push and rotate the drill pipe, which is connected to the drill bit, along a pre-determined path from the entry location toward the exit location (Exh. EV-2, at 5-20). The drill rig would continuously pump a drilling fluid, a mixture of water and bentonite clay, through the drilling pipe to the cutting head for lubrication, bore stabilization, cooling, and hauling the cuttings back to the drill rig (Exh. EV-2, at 5-20). At the drill rig, a piece of separation equipment would remove the

cuttings and recycle the drilling fluid for reuse (Exh. EV-2, at 5-20). The pilot bore stage would be complete when the drill bit exits the ground surface at the exit location (Exh. EV-2, at 5-20).

The drilling fluid is not considered toxic but, if released to the surface or other sensitive environmental resource areas, the mud-like fluid can impact plants and less mobile benthic organisms, particularly in an aquatic environment like the Charles River (Exh. EV-2, at 5-21). The Company presented a "Preliminary Inadvertent Return Contingency Plan" that it would use in the event it encountered this situation during construction (Exh. EV-2, at 5-21; see Exh. EV-2, Appendix 5-4). The Company would then enlarge the pilot bore by pulling reaming tools of successively larger diameter from the exit location toward the entry location until the pilot bore reaches a diameter suitable for casing installation (Exh. EV-2, at 5-20).

Next, the Company would attach the "pullback section", a prefabricated bundle of HDPE pipes, behind the reaming assembly at the exit location, then pull the assembly through the bore to the drilling rig at the entry location without stopping, so as to minimize the risk of bore collapse and/or loss of momentum (Exh. EV-2, at 5-20 to 5-21). The Company would demobilize the drilling equipment and restore both entry and exit locations upon completion of the HDD Installation (Exh. EV-2, at 5-21).

d. Cable Pulling, Splicing, and Testing

After the installation of duct banks and prior to cable installation, the Company would: (1) install the cables section-by-section between sequential splice vaults; (2) splice all cable sections along the same route together; and (3) field-test the cables (Exh. EV-2, at 5-22 to 5-23). The Company would also install a pulling line through the conduit to pull the transmission line cables individually between the splice vaults (Exh. EV-2, at 5-22 to 5-23). According to Eversource, this entire process typically takes three days for each set of three cables and is repeated until all cables are installed (Exh. EV-2, at 5-22 to 5-23).

For cable splicing, the Company would set up a specialized splicing van, which would include a portable air conditioning unit that may be needed to control the moisture content in the splice vaults, as well as a portable generator equipped with a muffler to minimize noise (Exh. EV-2, at 5-23). The Company estimated that the splicing of all three cables at each vault typically

requires 48 to 60 hours, which it typically divides into four or five extended (twelve-hour workdays) at each splice vault location but, may require a continuous 24-hour process (Exh. EV-2, at 5-23). Once the transmission cable is installed and the splicing completed, the Company would then pull and splice the communications fiber cable in the communication handholes in a similar fashion to the transmission cable (Exh. EV-2, at 5-23).

The Company would restore disturbed areas to their preexisting condition or better as soon as practicable following construction in accordance with the Department's "Standards to be Employed by Public Utility Operators When Restoring and of the Streets, Lanes, and Highways in Municipalities" (D.T.E. 98-22) and municipal standards (Exh. EV-2, at 5-23). The Company would use specific restoration plans for the following special off-road areas:

- Magazine Beach Site Alterations at Magazine Beach from the construction of Route B2A East would generally be limited to the temporary staging and laydown areas around the HDD entry site (Exh. EV-2, at 5-24). The Company would restore the areas with loam and an appropriate seed mix as approved by MassDCR (Exh. EV-2, at 5-24). The Company would also restore the adjacent Dr. Paul Dudley White Bike Path (bituminous pavement), sidewalk, lighting grassed shoulder areas to their preexisting condition in consultation with MassDCR (Exh. EV-2, at 5-24). The Company stated that it would advance the final restoration details in consultation with MassDCR as part of the Project's Construction Access Permit review process (Exh. EV-2, at 5-24).

- D2 Site Approximately 700 linear feet of Route S1A would cross the D2 Site by the MBTA Union Square station (Exh. EV-2, at 5-24). The Company would restore the affected areas (in coordination other projects in the vicinity) including pavement and curbing restoration, landscaping, loam and seed, lighting, fencing, and plaza hardscape and pedestrian walkway restoration (Exh. EV-2, at 5-24). The Company would develop final restoration details in consultation with the landowner and the MBTA, as appropriate, as part of the licensing process and written access agreements with the landowner (Exh. EV-2, at 5-24).

- Volpe Center Site 423 linear feet of transmission line associated with Route K5A would cross the Volpe Center Site that MIT has proposed to redevelop (Exh. EV-2, at 5-24). The area is currently comprised of grass, paved parking areas, and shade trees bordering the property line (Exh. EV-2, at 5-24). The owner of the development and the City of Cambridge have not yet finalized the Volpe Center Site design details but have decided that a portion of the area would ultimately be turned into public open space (Exh. EV-2, at 5-24 to 5-25). The Company would restore the affected area in coordination with the status of construction on the Volpe Center Site, likely including some combination of pavement, sidewalk and curbing restoration, landscaping, tree plantings, loam and seed, and pedestrian walkway restoration (Exh. EV-2, at 5-25). The Company would develop the final restoration details in consultation with the owner of the development rights and Cambridge (Exh. EV-2, at 5-25).

5. Underground Distribution Feeders

The underground construction process for distribution feeders from the New Substation to manholes on Binney Street is similar to underground transmission line work although the work zones would generally be more compact, and the concrete duct banks and manholes smaller (Exh. EV-2, at 5-52). After installation, the Company will restore roads according to the Department's Road Restoration Standards and municipal standards (Exh. EV-2, at 5-52).

6. Construction within the Grand Junction Railroad ROW

Part of Route S15 and Route S11C would run within the Grand Junction Railroad ROW (Exh. SCAH-1-6(1) at 4 and 6). In addition, Route S1A, Route B2A East, Route B31 East, and Route B29F West would also involve work within the railroad ROW (Exhs. SCAH-1-6(1) at 2; EV-2, at 5-22 and 5-6). Consequently, construction of these routes would require permission from the MBTA and conformance with the construction specifications and standards of the MBTA Directorate (Exh. EV-2, at 4-21; Tr. 5, at 961-963).[74] The Directorate specifications are intended to provide general guidelines and safeguards to work mentioned above (Exh. EFSB-RS-22(2) at 3). The MBTA reserves the right to make exceptions to these specifications on a case-by-case basis (Exh. EFSB-RS-22(2) at 3). According to the Company, the MBTA indicated that it would consider granting certain relief from the Directorate specifications, such as non-perpendicular crossings (Exh. EV-2, at 4-21). The Directorate requires that location and dimensions of jacking, boring, or tunneling pits provide details of their sheeting and shoring (Exh. EFSB-RS-22(2) at 52 to 54). The Directorate requires that pits are fenced, lighted, and otherwise protected as directed by the Railroad Company(s) (Exh. EFSB-RS-22(2) at 53).

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74 The MBTA could grant relief to specific specifications and standards of the Directorate (Exh. EV-2, at 4-21; Tr. 5, at 860-861). The Company stated that the trenchless crossing underneath the Grand Junction Railroad corridor (part of Route B29F West) would require relief from the Directorate specifications for non-perpendicular crossings and the MBTA would consider granting such relief provided certain design and construction measures were employed (Exh. EV-2, at 4-21).

D. New Substation

1. Environmental Impacts

a. Land Use, Historic Resources, and Cultural Resources

According to the Company, land use adjacent to the New Substation site includes pharmaceutical companies, biotechnology laboratories and office space (Exh. EV-2, at 5-43). A hotel is located to the south on the opposite side of Broadway (Exh. EV-2, at 5-43). On the same side are the Danny Lewin public park and two parking garages (Kendall Center Yellow and Green Garages) (Exh. EV-2, at 5-43). The Loughrey Walkway and bike path is east of the site between Broadway and Binney Street (Exh. EV-2, at 5-43).

The BXP site is being developed to house residential, commercial, and public open spaces (Exh. EFSB-CM-4(1)). Eversource stated that the Project is subject to review by the Massachusetts Historical Commission ("MHC"), in compliance with G.L. c. 9, §§ 26-27C (Exh. EV-2, at 4-82). After examining the Massachusetts Cultural Resource Information System, the Company did not identify historic and archeological resources within or adjacent to the New Substation site (Exh. EV-2, Figs. 4-28 A through D). Similarly, the Company does not report any MassDEP-listed Oil and Hazardous Material sites after reviewing the MassDEP database (Exh. EV-2, Figs. 4-29 A through D). The Company did not identify any public shade trees on-site, nor Article 97 land at the BXP site (Exh. EV-2, Figs. 4-31 A through D).

b. Water and Wetlands

The New Substation site is not located near any wetlands, jurisdictional tidelands, waterways, or mapped habitat areas requiring reviews and approvals from state or local regulatory agencies (Exhs. EV-2, at Figure 4-30C and Figure 4-30B; EFSB-SU-25). The Company committed to implementing sediment and erosion control on the Project, as discussed in Section VI.C.4.a. With regard to stormwater and snowmelt, the envelope for the New Substation would be sealed against street flooding from heavy rains, clogged drains, and snow melt and would also be equipped with four pump sets to remove water and other fluids from the various substation levels

(Exhs. EFSB-SU-2, EFSB-SU-5). In addition, three pumps at the lowest level would discharge any water build-up in the Company's stormwater management system at the building exit point, with emergency backup power for pumping (Exh. EFSB-SU-5). The Project would be designed to maintain the pre-redevelopment drainage patterns to the maximum extent practicable (Exh. EFSB-SU-18, at 2).

The Company committed to implementing a Stormwater Pollution Prevention Plan ("SWPPP") prepared in accordance with the conditions and requirements detailed within the U.S. EPA Construction General Permit for the BXP site (Exh. EFSB-S-1). The SWPPP would detail implementation of stormwater management and pollution prevention measures under the supervision of the Company and its construction contractor (Exh. EFSB-S-1). Comprehensive drainage studies were conducted as part the BXP MXD Plan campus Stormwater Control Permit process with the Cambridge DPW (Exh. EFSB-SU-18, at 2). Stormwater runoff from the BXP site impervious area and adjacent roadways would be collected in area drains and catch basins, then conveyed to Cambridge's drainage system (Exh. EFSB-SU-18, at 2). Under a waiver[75] from the Cambridge DPW, the BXP MXD Plan is required to mitigate the difference between the pre-construction 2-year 24-hour storm event and a post-construction 10-year 24-hour storm event (Exh. EFSB-SU-18, at 2). Eversource committed that stormwater management features incorporated into the design of the residential and commercial buildings neighboring the New Substation would mitigate runoff from the BXP MXD Plan campus, which includes the New Substation project, in accordance with the DPW waiver (Exh. EFSB-SU-18, at 2).

As discussed earlier, the New Substation would be constructed up to 110 feet below the existing grade at the site, whereas the groundwater table is approximately 10 to 12 feet below existing site grades (Exhs. EFSB-SU-1; RR-EFSB-12). The Company stated that the existing

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75 The City of Cambridge DPW issued a waiver granting the MXD development relief from Cambridge stormwater regulations that require new developments to mitigate the difference between the post-construction 25-year 24-hour storm event and the pre-construction 2-year 24-hour storm event (Exh. EFSB-SU-18, at 2). The waiver allows the MXD development project to mitigate the difference between the post-construction 10-year 24-hour storm event and the pre-construction 2-year 24-hour storm event (Exh. EFSB-SU-18, at 2).

groundwater table could cause groundwater infiltration through the walls of below grade structures (Exh. EFSB-SU-1). The New Substation includes design elements to address groundwater (Exh. EFSB-SU-1). According to the Company, the slurry wall of the underground concrete vault would be four feet thick and designed for lateral fluid pressures from an ultimate load case consisting of a fully flooded, saturated soil condition (Exh. EFSB-SU-4). The Company added that soil erosion around the concrete vault would not compromise the structural stability of the underground substation because of the open space above the vault, i.e., an unloaded condition (Exh. EFSB-SU-4). According to the Company, the slurry wall would extend 100 feet below grade and would be embedded into bedrock (Exhs. EFSB-SU-4; EFSB-SU-21). The Company explained that such construction would provide a water cutoff and, in the case of a water leak, eliminate any hydrostatic pressures from building up below the New Substation (Exh. EFSB-SU-4). Furthermore, the Company stated that any localized pressures that could be applied perpendicular to the wall from a fluid leak would not compromise the integrity of the concrete vault (Exh. EFSB-SU-4).

The Company stated that conduits leaving the New Substation would be sealed against water entry using plugs that can withstand expected hydrostatic pressure (Exh. EFSB-SU-2). Other mitigation measures include water stops between the wall panel joints, and the installation of an under-slab drainage system below the lowest level of the New Substation (Exh. EFSB-SU-2). The under-slab drainage system will relieve groundwater pressure and limit its infiltration (Exhs EFSB-SU-1; EFSB-SU-2). Eversource committed to inspect the water seal during construction to verify compliance with engineering requirements (Exh. EFSB-SU-1).

c. Climate Resiliency

According to the Company's analysis, the New Substation site is located outside the current 100-year floodplain according to FEMA mapping (Exh. EV-2, at 5-45). As required by MEPA's Protocol on Climate Change Adaption and Resiliency, the Company submitted a copy of the output report generated from the Resilient Massachusetts Action Team ("RMAT") Climate Resilience Design Standards Tool (Exh. EV-2, Appendix 6-1 at 32). The Company also reviewed the Cambridge Flood Viewer Tool, and the Sea Level Rise and Coastal Flooding Viewer prepared

by the Massachusetts Office of Coastal Zone Management ("CZM") (Exh. EV-3, at 14). According to the Company's analysis, the area around the New Substation could experience flooding from heavy precipitation events under the 2030 and 2070 100-year storm events and from sea level rise/storm surge in the 2070 100-year storm event (Exh. EV-3, at 14).

To address the risk of flooding due to storm surge and sea level rise, the Company proposed placing all New Substation openings to the surface above an elevation of 25 feet Cambridge City Base ("CCB")[76] (Exhs. EFSB-SU-3; EV-2, at 5-46), sealing conduits with plugs intended to withstand projected hydrostatic pressures, and directing storm water flows from the open space above the station away from the New Substation (Exh. EV-2, at 5-46). The Company also represented that it would use deployable flood barriers in the future if necessary (Exh. EV-2, at 5-46).

d. Noise Impacts

Given the New Substation's predominantly underground location, the Company expects the operational sound level on the surface to be minimal (Exh. EV-2, at 5-44, 5-45). According to Eversource, the preexisting ambient noise in the vicinity of the New Substation was between 67.7 and 70.7 A-weighted decibels ("dBA") (Exh. EFSB-SU-22). According to the Company, the existing noise conditions in the vicinity of the proposed BXP MXD Plan residential and commercial buildings currently exceed allowable noise limits as per Cambridge Noise Ordinance (Exh. EFSB-SU-9).

The New Substation's primary sources of sound generation external to the envelope are the proposed air intake and exhaust systems (Exh. EV-2, at 5-45). Within the underground vault, the Company identified the transformers in the New Substation as a main source of noise (Exh. EFSB-SU-7). The New Substation's transformers require all pumps and fans to be in service during

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[76] Cambridge City Base is a standard vertical datum used by the City of Cambridge which is 11.65 feet below the North American Vertical Datum (NAVD) of 1988, which is approximately 0.3 feet above the mean sea level (MSL) in the Boston area. See https://www.cambridgema.gov//media/Files/publicworksdepartment/Engineering/floodviewer2022faqandlayerdefinitions.pdf.

operation (Exh. EFSB-SU-6). The Company emphasized that the fans will be installed in a lower level of the New Substation and any sound to the adjacent environment would be transmitted through the duct work (Exh. EFSB-SU-14). According to the Company, factory sound tests of a transformer having the same electrical and physical characteristics resulted in a measurement of 70 dBA two meters (approximately 6.5 feet) from the transformer (Exh. EFSB-SU-6). The Company identified other "noisy" equipment in the New Substation (Exh. EFSB-SU-7). Among these, the Company asserted that the fire pump, water mist pump and the emergency generator, the noise levels which exceed Cambridge Noise Ordinance limits, would be limited in operation (Exh. EFSB-SU-7).

The Company submitted a noise analysis for the New Substation that modeled Project-generated noise with and without mitigation (Exh. EFSB-SU-22(2)).[77] The Company modeled sound levels at noise-sensitive uses near the Project site where the Cambridge Noise Control Ordinance would apply, including within the future park above the New Substation (Exh, EFSB-SU-22(2) at 1). The Company indicated that the sound produced at grade level would only be from the New Substation exhaust ventilation air flow and substation sounds that propagate through the ventilation duct work (Exhs. EFSB-SU-10; EFSB-SU-14). The estimated Project-generated sound at the intake stack, with mitigation, was 56 dBA, and 62 dBA at the exhaust stack (which is incorporated into the stair access headhouse) (Exh. EFSB-SU22). The Project-generated sound at the freight elevator head house, with mitigation, was estimated to be approximately 48-54 dBA (Exhs. EFSB-SU-22; EFSB-SU-22(2)). The Company asserts that because the proposed noise generated from the New Substation is below existing noise levels, it would not cause any further increase in sound levels (Exh. EFSB-SU-9). The Company further contends that its estimates of Project-generated noise levels at modeled noise receptors are within the noise code limits

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77 The Company explained that these sound measurements were made within the Kendall Blue Garage which existed earlier (Exh. EFSB-SU-22). The Company's assumptions for the analyses assumed no operating emergency generator (or the associated ventilation fans), and no operating shunt reactors (or the associated ventilation fans) (Exh. EFSB-SU-22). In addition, although there are a total of four transformer vaults, the reduced capacity assumption for the alternate analyses assumes that only three of the four transformers (and associated ventilation fans) are operating at any given time (Exh. EFSB-SU-22(2) at 2).

established by the Cambridge Noise Control Ordinance and also consistent with the MassDEP Noise Policy (Exh. EFSB-SU-22(2) at 4 and 5).

The Company committed to mitigate noise through a combination of quieter fans and an intake/exhaust shaft sound attenuator bank design (Exh. EV-2, at 5-45). Regarding noise from within the New Substation, the Company emphasized that the New Substation would be completely enclosed in a subterranean vault with the roof covered by at least four feet of overburden, including a finished plaza area and sound from the substation would only propagate through the ventilation duct work (Exh. EFSB-SU-10). As discussed earlier the Company's estimate of sound levels at the ventilation stacks are 56 dBA at the intake stack and 62 dBA at the exhaust stack above ground, which is less than the existing ambient sound levels at the site, and therefore there would be no increases in the existing sound levels at the site (Exhs. EFSB-SU-22; EFSB-SU-9).

The Company stated that it would meet permitted noise level exposure for workers, as per Occupational Safety and Health Administration ("OSHA") standard Occupational Noise Exposure, 29 CFR 1910.95 and 1926.52 (Exh. EFSB-SU-22). The Company committed that it would calculate sounds levels within the New Substation during operation to implement the Hearing Conservation Program (Exh. EFSB-SU-8). The Company stated that the New Substation design had not progressed to the point where sound levels in the spaces within the New Substation envelope could be calculated but committed to share this information when available (Exh. EFSB-SU-8).

During construction, the Company anticipates that the loudest piece of construction equipment used by the Company would be a crane (RR-EFSB-19). The Company stated that the maximum noise level from the crane to be approximately 83 dBA 50 feet from the activity (RR-EFSB-19). The Company's estimate of the maximum sound level at the property line during Eversource's construction is approximately 89 dBA (RR-EFSB-19). Eversource explained that, while the precise position of the crane is not certain, the crane would be located at ground level above the New Substation site and would not be closer than 25 feet to the property line (RR-EFSB-19).

e. Visual Impacts

The Company stated that the New Substation would not result in any significant visual impacts because it is proposed to be located predominantly underground (Exh. EV-2, at 5-45). The New Substation's above-ground components have been integrated into BXP's public park design (Exh. EV-2, at 5-45). The CRA and the Cambridge Planning Board would ultimately be responsible for reviewing and approving the final public park design details and surface treatments as part of BXP's local permit application process (Exh. EV-2, at 5-45). However, the Company expects that the open space would likely include landscaping, and public amenities such as benches and light recreation (Exh. EV-2, at 5-45). As described earlier, the New Substation site was previously a multistory parking garage (Exh. EV-2, at 5-43).

f. Air Impacts

The Company proposed to use switchgear with GIS technology for the New Substation (Exh. EV-2, at 5-44). With GIS, the switchgear is enclosed in sulfur hexafluoride ("SF_6"),[78] which allows the phase spacing of the electronic components to be very close and protects the components from outside contamination (Exh. EV-2, at 5-44). GIS switchgear using SF_6 enables the placement of the New Substation in a fraction of the land area that would otherwise be required for a conventional open-air substation (Exh. EV-2, at 5-44).

The Company plans to dissipate most of the heat generated within the New Substation via forced mechanical ventilation, and control-room generated heat through vapor-compression refrigeration cycles (Exh. EFSB-SU-19, at 2). According to the Company, all air would be exhausted through an exhaust stack in the northwest corner above the plaza level (Exh. EFSB-SU-13). For above ground air impacts, the Company modeled air flows out of the exhaust shaft

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78 SF_6 is of particular concern as a greenhouse gas ("GHG") because of its potency and long atmospheric lifetime. See, 310 CMR 7.72. SF_6 is 23,900 times more potent than carbon dioxide, the most common GHG. MassDEP regulates the use and emissions of SF_6 in gas-insulated switchgear under 310 CMR 7.72, which the Company is obligated to follow.

(RR-EFSB-32(1) at 13). The Company's model included interactions with proposed buildings and prevailing wind flow patterns (RR-EFSB-32(1)).[79]

Eversource indicated that at maximum, heat rejection exhaust air would be discharged at 108 degrees Fahrenheit at the exhaust louvers (Exh. EFSB-SU-13). The Company explained that the warmer air exiting the New Substation through the vent stacks would quickly rise due to convection effects (RR-EFSB-33). Therefore, the Company indicated that pedestrians at ground level would primarily encounter ambient temperatures (RR-EFSB-33). The Company represented that only a pedestrian less than a foot from the exhaust structure may encounter warmer air temperatures, of no more than 108 degrees Fahrenheit (RR-EFSB-33).[80]

g. Safety and Hazardous Waste

According to Eversource, Institute for Electrical and Electronics Engineers ("IEEE") Standard 979-2012, entitled "Guide for Substation Fire Protection" would apply to the fire safety design of the New Substation (Exh. EFSB-SU-20). The Company confirmed that these guidelines cover fire safety considerations for all substations including underground substations (Exh. EFSB-SU-20).[81] The Company's design for the underground New Substation incorporated fire safety requirements that are identical to that of a high-rise, windowless indoor substation (Exh. EFSB-

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79 The Company explained it used outdoor weather criteria from the ASHRAE 2017 Handbook for Boston for its ventilation system design (Exh. EFSB-SU-13). The design criteria adopted included a summer dry bulb temperature of 90.6 degrees Fahrenheit and a winter dry bulb temperature of 7.7 degrees Fahrenheit (Exh. EFSB-SU-13).

80 For context, the Company explained that dry sauna temperatures typically range from 176 to 220 degrees Fahrenheit (RR-EFSB-33).

81 The IEEE guidelines submitted by the Company, cover the following topics: (1) fire protection considerations for substation sites; (2) fire protection for substation buildings; (3) fire protection for substation; and (4) fire protection for substation equipment (Exh. EFSB-SU-20(1) at 11, 12).

SU-20). The Company engaged with the Cambridge Fire Department to obtain its input on the design (Exh. EFSB-SU-20).[82]

The fire safety design for the New Substation includes fire containment and fire suppression features (Exh. EFSB-SU-20). Fire containment measures proposed by the Company include the placement of stairwells in fire-rated, pressurized cores; compartmentalization of the New Substation to the extent practicable (i.e., equipment in dedicated fire rated rooms); and provisioning for fire stopping in openings and use of fire dampers in ventilation systems (Exh. EFSB-SU-20). Fire suppression measures proposed by the Company include equipping control rooms with clean agent systems, equipping transformer and reactor vaults with high-pressure water mist systems and manually activated foam systems as a backup, and protecting the rest of the New Substation with a sprinkler system (Exh. EFSB-SU-20). The Company stated that given the thickness of the walls and roof of the substation envelope (range between 36" and 48") and the fire suppression systems designed, the Company does not believe that a fire in the underground vault could propagate to adjacent utility lines and uses (Exh. EFSB-SU-20).

The Company explained that in the event of a fire within the New Substation, the fire alarm system would activate, shutting off the fans for the zone where the smoke is detected as well as closing the dampers (Tr. 9, at 1372). The fire would then be controlled by use of extinguishers locally or through the fire suppression systems installed (Tr. 9, at 1372). The smoke evacuation system would then be manually activated under the direction of the Cambridge Fire Department (Tr. 9, at 1372).

The Company submitted a copy of the report "Fire Protection Evaluation of Network Substations" that was prepared following a March 2012 incident at the Company's Scotia Street Substation in Boston (RR-EFSB-25). The Company stated that findings from the report were an important input for the New Substation Fire Protection Plan (RR-EFSB-25). Eversource represented that the design of the transmission lines to the proposed New Substation and physical

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[82] The Company committed that the New Substation design would incorporate lessons learned from the 2012 fire at the Company's Scotia Street Substation (Exh. EFSB-SU-20) but did not specifically identify what among the recommended practices would be adopted for the New Substation (see RR-EFSB-25(1) Appendix G at 149 to 158).

separation of electrical equipment in the New Substation are improvements over the Scotia Street Substation design that will reduce fire risks and impacts (RR-EFSB-25). The Company committed to sharing its fire hazard analysis when available (Exh. EFSB-SU-20). This analysis would study the propagation of fire in and around the underground vault (Exh. EFSB-SU-20). According to the Company, the fire hazard analysis would also help determine measures to improve fire containment (Exh. EFSB-SU-20).

According to the Company, it did not expect vibration levels detectable by humans from operation of the New Substation, on the plaza level or in adjacent buildings (Exh. EFSB-SU-11). The Company based this claim on its experience operating other substations that share party walls with hotels, retail space, offices, and homeless shelters (Exh. EFSB-SU-11). The Company observed that except for the 1.5 MW emergency generator (commonly used in commercial installations), the New Substation would utilize the same equipment as other indoor substations (Exh. EFSB-SU-11).

h. Traffic

The Company provided a list of future and ongoing construction projects within 0.50 miles of the New Substation site (Exh.EFSB-T-3). The Company also stated that it held meetings with BXP, BXP's contractor, and the City of Cambridge to discuss future construction activities around the New Substation site (Exh. EFSB-T-4). The Company committed that it would conduct detailed coordination of construction traffic management with BXP and Cambridge once project construction schedules were confirmed (Exh.EFSB-T-4). The Company will also use a construction phase outreach plan, described below. See Section VII.C.3.a.

i. Magnetic Fields

The Company analyzed the magnetic field impacts associated with the New Substation, feeder transmission and distribution lines, as well as bus work within the Substation (Exh. EV-2, at 5-46). The Company indicated that the predominant source of magnetic fields from the New Substation at the public plaza above would be the conductors from the main transformers to the 14 kV metal clad gear (Exh. EFSB-SU-15). The Company observed that these conductors would

be attached to the ceiling of the New Substation envelope and are closest to the users of the plaza area above (Exh. EFSB-SU-15). According to the Company, the magnetic-field levels around the New Substation would decrease rapidly with distance from these sources (Exh. EV-2, at 5-46).

According to the Company, residential area impact at the closest residential occupancy floor of the BXP MXD Plan, yielded a magnetic field level of approximately 2.8 milliGauss ("mG") at average loading and 3.78 mG corresponding to peak loading values (Exh. EV-2, at 5-46). According to the Company, these values fall within the typical range of background magnetic field levels in a home (Exh. EV-2, at 5-46).

In the Company's discussion of non-residential area impacts, the Company modeled values at: (1) the exit point where the distribution lines move into a parking garage north of the New Substation; (2) in the space between the new residential building to the south and the new commercial building to the north; and (3) representative locations of adjacent buildings (Exh. EV-2, at 5-49). A summary of the calculated magnetic field levels is provided in Table 14 below.

Table 14: Modeled Magnetic Field Levels at Average Loading at the New Substation[83]

Location of Measurement	Measurement at Average Loading (mG)
Closest residential occupancy	2.8
Distribution lines exit to parking garage	3.8 to 26
Between the new residential building to the south and the new commercial building to the north	2.3 and 42, with an overall spatial average of about 12
Representative locations of adjacent building	6.1 or less

Source: Exh. EV-2, at 5-46, 5-49

The Company asserts that all calculated magnetic fields are far below the international exposure reference values by the International Committee on Electromagnetic Safety ("ICES") and

83 All measurements at a height of 1 meter (3.28 feet) above ground.

the International Commission on Non-Ionizing Radiation Protection ("ICNIRP") (Exh. EV-2, at 5-50).[84]

2. Cost

The current planning grade cost estimate (i.e., -25%/+25%) for the New Substation, equipment provided by Eversource is $714.6 million (Exh. EFSB-C-3; Tr. 4, at 582). The Company explained that approximately $456.5 million of this cost relates to the transmission portion and $258.1 million relates to the distribution portion (Exh. EFSB-C-3). The Company explained that it considered typical categories of materials and supplies, labor (both internal and external), engineering and permitting, allowance for funds used during construction, inflation, insurance, and contingencies for unforeseeable conditions in estimating these costs (Company Brief at 26).

The Company stated that the cost to Eversource (and eventually, its customers) for the land easement and construction of the vault for the New Substation (i.e., not the substation equipment) by BXP reflects a negotiated arrangement that set land and the substation enclosure costs at a figure comparable to what would have been incurred by Eversource had it used the Fulkerson Street site for a new substation (Exh. EFSB-C-9; Tr. 4, at 582). The land easement and vault construction costs at the BXP MXD Plan site are, in fact, significantly higher than the comparable estimated costs for the land and a substation enclosure at the Fulkerson Street site (Exhs. EFSB-C-3; EFBS-C-9). However, the BXP-Eversource contractual provisions and lower price offered to the Company for the land and constructed vault benefitted from the enhanced development rights conferred by the City of Cambridge to BXP in a special permit that incorporated the New Substation as part of the BXP MXD Plan design (Tr. 4, at 590-591). Thus, the City of Cambridge helped Eversource to secure the New Substation Site without additional financial burden to Eversource's customers relative to the Fulkerson Street location (Tr. 4, at 590-591).

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[84] The international exposure value for the general public to 60-Hz magnetic fields is 9,040 mG per ICES and 2,000 mG per ICNIRP (Exh. EV-2, at 5-50).

3. Reliability

In Section III above, the Siting Board found that the New Substation is needed for reliability reasons. The New Substation improves reliability by (1) providing needed capacity while being strategically located near the existing Project Area load pocket, and (2) allowing for expansion to accommodate long-term load growth (Exh. EV-2, at 3-9, 3-10). As described above, BXP has included the New Substation in its redevelopment plans with active involvement of the City of Cambridge (Exhs. EV-2, at 4-2).[85] The most recent construction schedule shows that the underground vault is scheduled to be constructed between second half of 2023 to the last quarter of 2026 (Exh. EFSB-CM-4(1)). The contract between the Company and BXP includes provisions to ensure the quality of the BXP vault design and construction (RR-EFSB-16(1) at 54-63).

4. Analysis and Findings

a. Land Use, Historic Resources, and Cultural Resources

The New Substation construction would be integrated into the BXP construction schedule which began in 2022 and extends to 2027. As integrated with the BXP MXD Plan, there would be no change in land use type due to the New Substation. The record shows that construction of the New Substation and associated transmission and distribution line duct banks would occur within the fence line of the BXP parcel. The record also shows that there are no historic or archeological sites, MassDEP Oil and Hazardous Material sites or public shade trees associated with the New Substation. Therefore, the Siting Board finds that land use impacts associated with the construction of the New Substation for the Project would be minimized.

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85 The Cambridge City Council provided unanimous approval of the necessary rezoning required for the BXP MXD Plan, including the New Substation, in February 2021 (Exh. EFSB-R-2, at 2).

b. Water and Wetlands and Climate Resiliency

The New Substation site is not located near any wetlands, jurisdictional tidelands, waterways, or mapped habitat areas. A separate stormwater drainage system would serve the open plaza area and convey water to the city's stormwater system. The record shows that the drainage system is based on comprehensive drainage studies conducted as part the Mixed-Use Development District Campus Stormwater Control Permit process with the Cambridge DPW. Eversource will also maintain pre-redevelopment drainage patterns to the extent practicable and use the same stormwater discharge points as the pre-redevelopment condition. Therefore, the Siting Board finds that the New Substation would not result in any permanent or temporary impacts to water and wetland resources.

The Siting Board notes that the groundwater table around the New Substation site is only ten to twelve feet below grade, making the New Substation susceptible to groundwater infiltration and groundwater pressure on its walls. The record shows that BXP and the Company will take a number of measures to prevent flooding of the subterranean vault, including: (1) sealing transmission line conduits with hydrostatic, pressure-resistant plugs and installing water stops between wall panel and mill panel joints for fit; (2) installing an under-slab drainage system; (3) directing all infiltrate to a dewatering system that conveys the infiltrate to the stormwater system; (4) using four-foot-thick vault walls designed to withstand lateral fluid pressures under flooded and fully saturated soil conditions, embedded into bedrock at a depth of at least 100 feet or more below ground; and (5) identifying the option of deploying flood barriers in the future.

Given the possible risk of water infiltration of the vault due to the high groundwater table, the Board directs the Company to develop a maintenance protocol to: (1) assess performance of the sealant joints on a periodic basis; (2) identify remediation measures if required; and (3) report incidents and any remediation measures as soon as flaws are identified to authorities having jurisdiction, including the Board. The Board also directs the Company to provide a summary of the requirements BXP must abide by for its drainage system design. The Company shall submit this information to the Siting Board within 90 days before Project operation.

The New Substation Site is not prone to flooding at present. The Company used a design flood elevation of 13.85 feet NAVD88 (or 25.5 feet above the Cambridge City Base datum). This

design flood elevation has a safety margin more than six feet over FEMA recommended seven feet NAVD88 for the FEMA Zone X within which the New Substation site is located. However, the record shows that the New Substation site could experience flooding from heavy precipitation events under 2030 and 2070 100-year storm events or storm surge.

The Board notes that stormwater system design for the BXP MXD Plan was allowed a waiver by the Cambridge DPW, by which BXP is required to design for a 10-year 24-hour storm event instead of a 25-year 24-hour storm event in Cambridge stormwater regulations. However, the Company commits to implementing a number of measures aimed at preventing flood waters from reaching critical areas of the New Substation, as described above.

Given the high groundwater levels at the location of the New Substation, as well as the first-of-its-kind underground location of the New Substation, the Siting Board directs the Company to review Cambridge and the state's projections of sea level rise on a periodic basis and submit a report to the Siting Board analyzing the necessity, appropriateness, and cost of implementing additional flood mitigation measures at the New Substation to protect the New Substation from risks due to flooding, every five years following commissioning of the Project. In preparing each report, the Company shall consult with agencies including, but not limited to, the City of Cambridge, Office of Coastal Zone Management, Massachusetts Emergency Management Agency, and the Department of Environmental Protection. The report shall also include a discussion of any environmental impacts related to the proposed mitigation measures.

c. Noise Impacts

The record shows that operational noise levels above the New Substation would be similar to current ambient noise levels. The record also shows that the estimates of Project-generated noise at a future residential building, a future commercial building, and the future park would be within the limits of the City of Cambridge Noise Control Ordinance. Certain emergency equipment would exceed the Noise Control Ordinance but would be used only during fire safety drills, for firefighting or during an event of total station blackout. To mitigate above-ground operational noise emanating from the vent stacks and fans, the Company committed to using

quieter fans, sound attenuator banks in the intake/exhaust shaft design and installing fans at a lower level and directing sound generated through the duct work.

With regard to the construction phase, the Company's estimate for maximum sound level at the property line is approximately 89 dBA. The record shows that Eversource's typical construction work hours would be from 7:00 a.m. to 7:00 p.m. Monday through Friday and from 9:00 a.m. to 6:00 p.m. on Saturdays. The Siting Board directs the Company to limit construction to the above schedule. Work requiring longer continuous duration than allowed by normal construction hours allow, such as cable splicing, is exempted from this condition. The Siting Board also directs the Company to coordinate with the cities of Boston, Cambridge, and Somerville, and MassDOT or other jurisdictional agencies, to determine facilities and areas, such as schools and school grounds, where additional construction hour limitations that are narrower than weekdays 7:00 a.m. to 7:00 p.m. and Saturdays from 9:00 a.m. to 6:00 p.m. may be appropriate to mitigate noise or other concerns. The Company shall also communicate at least 48 hours in advance with the cities of Boston, Cambridge, Somerville, and MassDOT when it plans to employ longer continuous duration activities.

Should the Company need to extend construction work beyond the above-noted hours and days, except for emergency circumstances on a given day necessitating extended hours, Eversource shall obtain written permission from the relevant municipal authority before the commencement of such work and provide the Siting Board with a copy of such permission. If Eversource and city 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 New Substation would be minimized.

d. Traffic

The Board notes that the traffic impacts from operation of the New Substation are likely to be minimal. The Board encourages the Company to coordinate traffic management due to construction on the site with BXP, and other construction projects in the area, to the extent

feasible. The record also shows that Eversource has committed to developing and submitting TMPs and TTCPs for the Project. The Board directs the Company to submit the TMPs and TTCPs 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.

The record shows that the Company plans to have a construction phase outreach plan to keep abutters and other stakeholders informed of construction. See Section VII.C.3.a. The Siting Board directs the Company to develop the outreach plan for the Project in consultation with the cities of Boston, Cambridge, and Somerville, 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, as necessary.

With the implementation of the above conditions, the Siting Board finds that traffic impacts of the New Substation would be minimized.

e. Visual Impacts

The New Substation would not result in any significant visual impacts because it is predominantly underground. The record shows that the area above the New Substation would become a park as part of the BXP MXD Plan. The CRA and the Cambridge Planning Board are responsible for approving the final public park design details and surface treatments as part of BXP's local permit application process. The Board directs the Company to submit a copy of the approved design when available. While the record shows that the design of the open space area has not been finalized, it is expected that the design would include amenities for the public and

additional green space. The Siting Board views this as a visual improvement over the previous condition of the site, which hosted a multistory parking garage. The Siting Board finds that visual impacts of the New Substation would be minimized.

f. Air Impacts

The Company has made a number of commitments to limit potential air impacts of the construction of the Project, including a commitment to implement construction BMPs for dust suppression and control and to comply with state law, regulations, and requirements concerning air pollution/air quality standards, anti-idling requirements, diesel retrofits, and ULSD fuel. The record shows that the Company proposes to use GIS switchgear with SF_6 gas in the New Substation. The use of SF_6 is regulated by MassDEP in accordance with 310 CMR 7.72, which places limits on the maximum allowable leakage rate of SF_6 from GIS equipment. The Siting Board notes that SF_6 is a potent greenhouse gas identified among those with significant global warming potential. The Board encourages Eversource to employ alternatives to SF_6 and hydrofluorocarbons for the Project, to the extent such products are commercially available and efficacious.

The record shows that heated air generated within the New Substation vault would be directed to the exhaust stack located in the northwest corner in the plaza above ground. Pedestrians who come within a foot from the exhaust structure could encounter air temperatures of up to 108 degrees Fahrenheit. This impact would diminish rapidly with increased distance from the exhaust structure. For context, the typical temperatures of a dry sauna are between 176 and 220 degrees Fahrenheit, therefore, the Siting Board views the possible maximum temperature of 108 degrees Fahrenheit that could be encountered, which would be unlikely since the vent stacks are 35 feet high, as not likely to cause harm. Nevertheless, to ensure both the well-being and comfort of the general public, we direct the Company to place appropriate and visible signage at the exhaust structure.

The Siting Board finds that with the above mitigation and conditions, the air impacts of the New Substation would be minimized.

g. Safety and Hazardous Waste

The record shows that IEEE guidelines would apply to the fire safety design of the New Substation. The Company will conduct a fire hazard analysis and commits to sharing it with local public safety authorities including the Cambridge Fire Department and to coordinate related response actions with those authorities to develop its Fire Protection Plan. The record shows that the four-foot-thick slurry walls along with fire suppression systems employed should prevent fire propagation to adjacent structures/utilities. Fire containment features, outside the thick substation envelope include: (1) the placement of stairwells in fire-rated, pressurized cores; (2) compartmentalization of the New Substation to the extent practicable (i.e., equipment in dedicated fire rated rooms); (3) provisioning for fire stopping in openings; and (4) use of fire dampers in ventilation systems (Exh. EV-2, at 5-44). Fire suppression measures include: (1) equipping control rooms with clean agent systems; (2) equipping transformer and reactor vaults with high-pressure water mist systems and manually activated foam systems as a backup; (3) protecting the rest of the New Substation with a dual interlock pre action sprinkler system; (4) placing stairwells in fire-rated cores and equipment in dedicated fire-rated rooms (5) provisioning fire stopping materials; and (6) using fire dampers in ventilation systems.

The Siting Board directs the Company to seek approval from the Cambridge Fire Department and other relevant jurisdictional authorities on all aspects of substation fire safety design including: (1) fire protection considerations on the site including emergency access; (2) fire protection for substation building; (3) fire protection for substation including construction material, water supply, emergency access/exit corridors and fire extinguisher requirements; (4) fire protection for substation equipment; and (5) life safety. In addition, the Board directs the Company to develop an emergency response plan ("ERP") that is specific to the New Substation in coordination with the Cambridge Fire Department. The Company shall file the New Substation ERP 30 days prior to operation of the New Substation.

The Siting Board directs the Company to submit to the Siting Board the approvals from all relevant jurisdictional authorities regarding its Fire Protection Plan along with its Fire Hazard Analysis when they are available. The Board directs the Company to submit its most recent ERP before beginning construction work for the New Substation.

The record shows that there are no MassDEP listed MCP sites at the New Substation location. Eversource will store chemicals and fuel equipment away from sensitive areas. Additionally, the Company will implement a spill response plan to address potential spills of these chemicals or fuels. The Siting Board encourages the Company 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).

Based on the record, the Siting Board finds the construction of the New Substation would minimize hazardous waste and safety impacts.

h. Magnetic Fields

The Company determined that magnetic field levels would range from 5.0 mG and 6.7 mG at the western eastern edges of the property line, respectively at average load condition; at peak load conditions, magnetic field values would be 7.8 mG and 10.0 mG at the western and eastern edges, respectively. At the closest proposed residential floor of the BXP MXD Plan, the magnetic field level calculated is approximately 2.8 mG at average loading, and 3.78 mG at peak loading condition. At the exit point where the distribution lines move into a parking garage north of the New Substation the Company reported magnetic fields levels between 3.8 mG to 26 mG at average loading. Measurements at representative locations of adjacent building for average loading was found to be 6.1 mG or less. The record shows that these values are order of magnitude below international health-based guidelines for magnetic field levels, and generally consistent with levels the Siting Board has approved in numerous prior proceedings.

Based on the record of the design and operation of the Project, the Siting Board finds that magnetic field impacts at the New Substation would be minimized.

i. Cost

The record shows that the cost of the New Substation to the Company and its ratepayers would be comparable to that at the previously considered Fulkerson Street location, which is a magnitude lower than the estimated cost of the underground substation. The Siting Board credits the involvement of the City of Cambridge and CRA with helping to achieve this important

outcome, while simultaneously minimizing both environmental impacts and costs of the New Substation. Accordingly, the Siting Board finds that the New Substation minimizes costs.

j. Reliability

The record shows that the Project at the current New Substation site would provide the forecasted needed capacity, while being strategically located near the existing load center and allowing for easier expansion to accommodate long-term load growth. The record also shows that the vault that would house the New Substation is in the process of being constructed as part of the BXP MXD Plan schedule. The current New Substation site was selected following positive input from the City of Cambridge and other stakeholders; and the location has also received unanimous approval of necessary rezoning required by the Cambridge City Council. The Company committed to design and site planning to address flooding scenarios due to potential sea level rise and storm surges, and the Siting Board has also imposed a condition for periodic reviews of flooding risk and mitigation.

The Siting Board finds the New Substation at its current location would ensure reliable service to customers.

E. Underground Transmission Lines

1. Environmental Impacts

a. Land Use, Historic Resources, and Cultural Resources

i. Common Impacts

(a) Land Use Impacts

The Company stated that none of its Preferred Routes and Noticed Alternative Routes would permanently affect adjacent land uses as the Company would install the transmission lines entirely underground (Exhs. EV-2, at 5-73, 5-93, 5-113, 5-138, 5-156; SCAH-1-6(1) at 13). Temporary impacts to residents, businesses and sensitive receptors could include traffic disruption, including road closings and construction noise (Exhs. EV-2, at 5-73, 5-93, 5-113, 5-138, 5-156 to 5-157; SCAH-1-6(1) at 13). The Company contends that transmission line laying along routes

with directly abutting residential properties is likely to cause more temporary impacts during construction (see e.g., Company Brief at 258). A summary of the land use abutting the various routes in consideration is provided in Table 15.

Table 15: Predominant Land Uses Along the Transmission Routes

Routes	Total Area within 100 feet of Route (acres)	Predominant Land Use (acres) within 100ft of Route					
		Residential	Commercial	Industrial	ROW	Open Lands (Water)	Tax exempt
Somerville Routes							
S15	34.36	4.14	6.11	7.66	7.26	4.13	4.92
S1A	31.05	9.18	7.96	4.49	5.19	2.65	1.28
S11C	39.30	5.26	11.50	5.51	8.80	1.86	5.71
Kendall Routes							
K5A	15.97	1.38	5.65	3.13	1.73	1.28	2.90
K11	15.61	1.48	3.62	2.63	1.40	0.63	5.85
Putnam Routes							
P13	12.84	0.33	2.66	0.32	3.89	0.00	5.64
P11	21.77	0.00	2.97	0.75	5.55	0.86	11.30
Brighton East Routes							
B2A	71.74	1.18	5.13	10.79	20.91	2.62 (6.51)	21.40
B31	107.15	2.54	10.01	2.28	51.48	7.30 (6.81)	23.21
Brighton West Routes							
B29F	74.16	2.73	11.33	4.87	13.57	10.30 (1.90)	24.28
B30	84.16	21.39	19.42	3.56	12.97	4.63 (0.62)	18.63

Note: The Company's preferred routes are bolded
Sources: Exhs. EV-2, Tables 5-10, 5-21, 5-31, 5-41; SCAH-1-6(1), Table 5-51(s)

According to the Company, industrial and commercial areas are more conducive to transmission line placement (see e.g., Company Brief at 258). The Company stated that it would

minimize these types of impacts with construction Best Management Practices ("BMPs"), Traffic Management Plans ("TMPs"), and restricted work hours to reduce noise traffic and air quality impacts to surrounding land uses during construction (Exh. EV-2, at 5-73, 5-93, 5-113, 5-138, 5-157; Exh. SCAH-1-6(1) at 13).

(b) Sensitive Receptors

The Company acknowledged that, depending on their location, sensitive receptors could be affected by temporary construction impacts such as traffic disruption, property access, noise, and dust (Exhs. EV-2, at 5-75, 5-94, 5-114, 5-139, 5-158; SCAH-1-6(1) at 15). In response, the Company would take appropriate measures to allow safe and unencumbered access to all abutting properties and develop TMPs in consultation with municipal officials and abutters (e.g., MIT representatives) that would detail site access preservation (Exhs. EV-2, at 5-75, 5-94, 5-114, 5-139, 5-158; SCAH-1-6(1) at 15).

(c) Public Shade Trees

The Company provided a count of the public shade trees within the public way along each transmission route (Exhs. EV-2, Tables 5-12, 5-23, 5-33, 5-43; SCAH-1-6(1), Table 5-53(s)). See Table 16, below.

Table 16. Numbers of Public Shade Trees within the Public Way along Transmission Routes

Routes		Number of Public Shade Trees within the Public Way along the Route
Somerville	**S15**	59
	S1A	173
	S11C	84
Kendall	K5A	136
	K11	104
Putnam	**P13**	115
	P11	248

Routes		Number of Public Shade Trees within the Public Way along the Route
Brighton East	**B2A**	524
	B31	606
Brighton West	**B29F**	455
	B30	580

Note: The Company's preferred routes are bolded.
Source: Exhs. EV-2, Tables 5-12, 5-23, 5-33, 5-43; SCAH-1-6(1), Table 5-53(s).

The Company would avoid public shade tree removal to the maximum extent practicable but there remains a potential for some impacts to public shade trees encountered along each transmission line route (Exhs. EV-2, at 5-75 to 5-76, 5-95, 5-115, 5-140; SCAH-1-6(1) at 16). The Company would implement the following measures to protect public shade trees for all routes used in the Project:

(1) Prior to construction, the Company will meet with the local Tree Warden to confirm the location and condition of public shade trees and other trees along the route, review BMPs, and finalize a monitoring and mitigation plan for the protecting the trees during construction (Exh. EV-2, at 5-76);

(2) The Company will erect bark, limb, and root protection to trees that the Company encountered within 15 feet of trench edges and use special precaution to protect tree roots from the placement of thermal backfill (Exh. EV-2, at 5-76);

(3) The Company will erect and maintain a temporary fence around the perimeter of individual tree pits for the duration of construction and, if the Company needs to excavate within any tree pit areas, consult the Tree Warden to determine whether the Company must hire a qualified arborist to conduct root pruning (Exh. EV-2, at 5-76); and

(4) If the Company cannot reasonably avoid impacts to trees and vegetation, the Company will replace them in a manner approved by the property owner(s) or Tree Warden (Exh. EV-2, at 5-77).

(d) Cultural Resources

The Company assessed that anticipated little to no impact to cultural resources for Project transmission line construction (Exhs. EV-2, at 5-83, 5-101, 5-122, 5-145 to 5-146, 5-164 to 5-165; SCAH-1-6(1) at 24). The Company anticipated: (1) no impacts to cultural resources from

underground installation of transmission line within the existing paved limits of roadway and sidewalks; (2) low potential for impacts to cultural resources from off-road work, such as on the Magazine Beach property, along the Grand Junction Railroad corridor, and a short stretch of Route B29F from the River Street Bridge to Cambridge Street in Boston; and (3) low potential for impacts to cultural resources from work on road bridges that are on the MHC's inventory list, including River Street Bridge and Anderson Bridge, given that the Company would conduct the transmission line work within the roadway deck of the bridges and avoid any alterations to the façade of the bridges (see Exhs. EV-2, at 5-83, 5-101, 5-122, 5-145 to 5-146, 5-164 to 5-165; SCAH-1-6(1) at 25).

The Company committed to working with the MHC through Section 106 of the National Historic Preservation Act and the State Historic Register Review processes if the transmission line work were to have impacts on historic and archaeological resources (Exhs. EV-2, at 5-84, 5-101, 5-124, 5-146, 5-165; SCAH-1-6(1) at 25).

(e) Article 97 Lands

Only one of the Project routes (Route B2A East) involves work on Article 97 lands – at Magazine Beach (including a small section of the adjacent Dr. Paul Dudley White Bike Path) – and requires an easement from DCR for such work as well as Article 97 legislative approval (Exhs. EV-2, at 5-124; EV-3, at 12). The Company represents that adding the new transmission line duct bank would not permanently change the character of the property and that, in consultation with DCR, the Company would restore affected areas to their preexisting condition or better (Exh. EV-2, at 5-125). The Company would coordinate with DCR on the timing and schedule of the installation to ensure that impacts to users of these recreational facilities are minimized to the extent practicable (Exh. EV-2, at 5-125). The Company estimated that the Project would require an easement of between one-half and one acre at Magazine Beach, based on Eversource's minimum requirements to install and maintain the underground transmission line (Exh. EV-2, at 5-125).

Eversource anticipates addressing the "no-net loss" goal of the Article 97 and the related EEA Article 97 Land Disposition Policy by providing DCR with compensatory land of equal value

(Exh. EV-2, at 5-125). Eversource stated that there is no readily available land currently owned by the Company or available for purchase in the Project vicinity (Exh. EV-2, at 5-125). However, Eversource has identified seven parcels of land it owns adjacent to DCR properties in the western part of Massachusetts that could potentially be exchanged with DCR (Exh. EV-2, at 5-125). DCR's review of these parcels is ongoing, as well as other potentially suitable parcels (Exh. EV-2, at 5-125).

ii. Somerville Routes

The three Somerville Routes S1A, S11C and S15 are 1.25, 1.6 and 1.31 miles, respectively (Exhs. SCAH-1-6(1) at 2, 4; EFSB-RS-19(S1) at 2). Route S15 passes along fewer sensitive receptors at two compared to three each for Routes S1A and S11C (Exh. SCAH-1-6(1) Table 5-52). As described above, the Route S15 Variation follows Route S15 except for an approximately 400-foot segment on South Street across a private parcel occupied by an auto parts salvage facility (Exhs. EFSB-RS-19(S1) at 2-3; EFSB-RS-19(1)).[86]

The Company maintained that Route S11C and Route S15 would involve some tree and vegetation removal, particularly adjacent to the Grand Junction Railroad, which is not required for Route S1A (Exh. SCAH-1-6(1) at 16). The Company stated that Route S15 involves work near the fewest historic properties (3 sites) compared to Route S1A (5 sites) and Route S11C (17 sites) (Exh. SCAH-1-6(1) Table 5-53(S)). As presented in Table 15 above, the Company identified Route S15 as having least impact on residential land use (in acres), although Route S11C would impact fewer residential units (370) compared to Route S15 (384) (Company Brief at 258). The Company stated that Routes S15 and S11C present opportunities for co-location with the Cambridge Multi-Use Path along the Grand Junction Rail corridor, and Route S15 offers additional opportunity to co-locate with planned development along and in the vicinity of the South Street in Somerville (Exh. SCAH-1-6(1) at 9).

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[86] The Siting Board refers to both Route S15 and the Route S15 Variation in its description and analysis in the following sections.

Accordingly, the Company made the following determinations among Routes S1A, S11C, and S15 for land use impacts. The Company determined that Route S15 is superior to S11C and S1A for land use impacts (Exh. SCAH-1-6(1) at 13).

Table 17. Eversource's Somerville Routes Land Use Impact Comparison

Category Criteria	Route S1A	Route S11C	Route S15
Land Use	-	-	+
Sensitive Receptors	-	-	+
Public Shade Trees	+	-	-
Cultural Resources	-	-	+
Article 97	=	=	=

Source: Exh. SCAH-1-6(1) at 13, 15, 16, 24, 25.

iii. Kendall Routes

The Company stated that Route K5A and Route K11 both cross the Volpe Center Site and have comparable areas of residential land use within 100 feet (Exh. EV-2, at 5-91 to 5-93). The Company noted that multi-family residential land use along Route K5A consists of two apartment complexes, while Route K11 passes by one apartment complex (Exh. EV-2, at 5-91). The Company notes that Route K5A and Route K11 would each pass by the same four sensitive receptors (Exh. EV-2, at 5-94).

The Company maintained that, while Route K11 encounters fewer public shade trees (104) than Route K5A (136), aside from anticipated removal of several shade trees at the routes' transition onto the Volpe Center Site and several more within the Volpe Center Site, the potential for additional shade tree impacts is low for both routes (Exh. EV-2, at 5-95). Following stakeholder engagement, the Company proposes to align Route K11 so that it will avoid a mature row of deciduous trees bordering the Loughrey Walkway and Bike Path along the western property line of the Volpe Center Site (Exh. EV-2, at 5-95). The Company maintained that, while Route K5A passes by fewer historic properties (6 sites) than Route K11 (8 sites), the two routes shared many common historic inventory points and the Company anticipates neither routes would result

in cultural resource impacts (Exh. EV-2, at 5-101). The Company stated that both Route K5A and Route K11 do not intersect or pass by any inventoried archeological sites (Exh. EV-2, Table 5-26).

Accordingly, the Company made the following determinations between Routes K5A and K11 for land use impacts. The Company determined that Route K5A and Route K11 are comparable for land use impacts (Exh. EV-2, at 5-93).

Table 18. Eversource's Kendall Routes Land Use Impact Comparison

Category Criteria	**Route K5A**	**Route K11**
Land Use	=	=
Sensitive Receptors	=	=
Public Shade Trees	=	=
Cultural Resources	=	=
Article 97	=	=

Source: Exh. EV-2, at 5-91, 5-94, 5-95, 5-101.

iv. Putnam Routes

The Company stated that both routes share similar adjacent land uses, including the MIT campus, but their different length (Route P13 at 0.49 miles versus Route P11 at 0.87 miles) is a differentiating factor in the duration and extent of transmission line construction (Exh. EV-2, at 5-73).[87] The Company contends the shorter Route P13 would result in fewer potential impacts during construction because it would involve less trenching and backfilling, as well as potentially fewer splice vault installations near the identified land uses (Exh. EV-2, at 5-73). A detailed analysis that the Company conducted in the Route Selection section indicated a comparable number of residential units directly abutting Route P11and Route P13 (Exh. EV-2, at 5-72 to 5-73). Both routes would impact the same sensitive receptors (Exh. EV-2, at 5-74). The Company

87 In the Petition (Exh. EV-2), the Company reported inconsistent lengths of the Putnam Routes. Evidence throughout the record, including a statement in the Company Brief at 176, indicates that Route P13 is 0.49 miles long and Route P11 is 0.87 miles long.

asserts that Route P13 would encounter fewer public shade trees than Route P11 and thus have fewer potential impacts (Exh. EV-2, at 5-75 to 5-76).

The Company anticipated no impacts on cultural resources from either route (Exh. EV-2, at 5-83). The Company stated that Route P13 intersects two historic inventory points and passes by two other inventory points adjacent to the route (Exh. EV-2, Table 5-16). The Company stated that Route P11 intersects one historic inventory point and passes by seven other inventory points adjacent to the route (Exh. EV-2, Table 5-16). According to the Company, neither route intersects nor passes by any inventoried archeological sites (Exh. EV-2, Table 5-16).

Accordingly, the Company made the following determination between Routes P13 and P11 for land use impacts. The Company determined that Route P13 and Route P11 are comparable for land use impacts (Exh. EV-2, at 5-73).

Table 19. Eversource's Putnam Routes Land Use Impact Comparison

Category Criteria	**Route P13**	**Route P11**
Land Use	+	-
Sensitive Receptors	+	-
Public Shade Trees	+	-
Cultural Resources	=	=
Article 97	=	=

Source: Exh. EV-2, at 5-73, 5-74, 5-76, 5-83, 5-84.

v. Brighton East Routes

The Company noted that residential land use along both Brighton East routes is relatively low, primarily concentrated around the Brighton Substation area (Exh. EV-2, at 5-110). The Company focused its comparison of land use impacts between the two routes on segments where they diverge (Exh. EV-2, at 5-112). The Company stated that it would minimize impacts to Magazine Beach and the Charles River with the use of the HDD construction method for its Route B2A East (Exh. EV-2, at 5-112). In contrast, Route B31 East would require open-cut trenching on Memorial Drive through developed areas to the River Street Bridge, which include commercial, industrial, and tax-exempt land uses (Exh. EV-2, at 5-112).

The Company maintained that Route B2A East passes by fewer sensitive receptors (4) than Route B31 East (6) (Exh. EV-2, Table 5-36). The Company stated that sensitive receptors encountered by Route B31 East include the Al Bustan Pre-School located near the River Street Bridge on Memorial Drive, where work would likely occur at a slower pace due to the bridge crossing (Exh. EV-2, at 5-114). The Company stated that, in addition to Route B2A East encountering fewer public shade trees (524) than Route B31 East (606), Route B2A would avoid the potential removal of 2 or 3 public shade trees located near the shoulder of Cambridge Street (Exh. EV-2, at 5-115).

The Company maintained that, while Route B2A East passes by fewer historic properties (19) and archaeological sites (2) than Route 31 East – historic properties (24) and archaeological sites (3), Route B2A East's off-road HDD work on the Magazine Beach property would have a greater potential for cultural resource impacts than B31 East's within-roadway-deck work on the River Street Bridge (Exh. EV-2, Table 5-36 and at 5-122 to 5-124). The Company stated that Route B31 East would not require Article 97 approval whereas Route B2A East would involve work on up to an acre of Article 97 lands on Magazine Beach (Exh. EV-2, at 5-124).

Accordingly, the Company made the following determinations between Routes B2A East and B31 East for land use impacts. The Company stated that Route B2A East is superior to Route B31 East on land use impacts (Exh. EV-2, at 5-112).

Table 20. Eversource's Brighton East Routes Land Use Impact Comparison

Category Criteria	**Route B2A East**	**Route B31 East**
Land Use	+	-
Sensitive Receptors	+	-
Public Shade Trees	+	-
Cultural Resources	-	+
Article 97	-	+

Source: Exh. EV-2, at 5-112, 5-114, 5-115, 5-124.

vi. Brighton West Routes

The Company stated that Route B30 West would involve construction near an additional 6.8 acres of mapped commercial and industrial land uses, as well as an additional 18.99 acres of mapped residential use areas – land uses that would be more likely affected by construction impacts (Exh. EV-2, at 5-137). The Company maintained that Route B29F West passes by fewer sensitive receptors (5) than B30 West (21) (Exh. EV-2, Table 5-42). The Company stated that Route B29F West, while potentially require the removal of 2 or 3 public shade trees located near the shoulder of Cambridge Street, encounters fewer public shade trees (455) than Route 30 West (580) (Exh. EX-2, Table 5-43 and at 5-140).

The Company maintained that both routes would involve work on an MHC-listed bridge but only within the roadway deck and, thus, would not result in any alterations or modifications to the façades of the bridges (Exh. EV-2, at 5-145 to 5-146). While Route B29F West requires a small stretch of off-road work from the River Street Bridge to Cambridge Street in Boston, it is substantially outnumbered by Route B30 West in historic properties (10 vs. 92) and archeological sites (3 vs. 6) encountered (Exh. EV-2, at 5-145 and Table 5-46).

Accordingly, the Company made the following determinations between Routes B29F West and B30 West for land use impacts. The Company asserts Route B29F West is superior to Route B30 West on cultural resource impacts (Exh. EV-2, at 5-146).

Table 21. Eversource's Brighton West Routes Land Use Impact Comparison

Category Criteria	Route B29F West	Route B30 West
Land Use	+	-
Sensitive Receptors	+	-
Public Shade Trees	+	-
Cultural Resources	+	-
Article 97	=	=

Source: Exh. EV-2, at 5-137, 5-139, 5-140, 5-146.

b. Water and Wetlands

i. Common Impacts

(A) Impacts on Waterbodies and Wetlands

The Company described three categories of route segments: (1) segments involving transmission line construction either above or under wetlands and waterbodies; (2) segments involving transmission line construction outside of wetlands but within various types of wetland buffers; and (3) segments beyond wetlands and wetland buffers (see Exhs. EV-2, at 5-81 to 5-82, 5-99, 5-118 to 5-120, 5-143 to 5-144; SCAH-1-6(1) at 22).[88] The Company indicated that none of the routes in consideration would have a direct impact on wetlands, including the segments of the Brighton East and Brighton West routes that cross Charles River, where direct wetland impacts are avoided either by limiting construction work within the roadway deck of the respective bridge or by using the HDD method under the waterbody (see Exh. EV-2, at 5-81, 5-99, 5-118 to 5-119, 5-143 to 5-144; SCAH-1-6(1) at 22). Nevertheless, except for the Somerville Routes, every preferred and noticed alternative route involves Chapter 91 jurisdictional land (see Exhs. EV-2, at 5-81 to 5-82, 5-99, 5-118 to 5-119, 5-143 to 5-144; SCAH-1-6(1) at 22). The River Street and Anderson Bridge crossings would require a 401 Water Quality Certificate and/or Chapter 91 License or Minor Modification(s) from MassDEP (Exh. EV-2, Table 6-1).

The Company stated that, while there is a low potential for temporary impacts to occur along segments outside of wetlands but within various types of wetland buffers, the Company would minimize such impacts by implementing mitigation measures against sediment and erosion, including the development and maintenance of a SWPP, coordination with and inspection by Eversource's environmental monitors, training for construction contractors, installation of catch basin inlet protection such as silt sacks in addition to the sediment and erosion controls described

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88 "Land Under Water", "Land Under Waterways and Waterbodies", or "LUW" is a related but distinct type of wetland resource in the Company's discussion about HDD (see Exh. EV-2, at 5-55, 5-119).

previously in Section VI.C.4.a (Exh. EV-2, at 5-26 to 5-28, 5-81, 5-99, 5-118 to 5-119, 5-143 to 5-144, 5-163).[89]

(a) Dewatering Discharge

With regard to open excavation/trenching, the Company stated that it could encounter groundwater that it would typically "recharge" back into the adjacent subsurface either by discharging to the nearby ground surface via a filter bag or "dewatering corral" (in which straw bales would be placed underneath and around the perimeter of the dewatering bag, forming a "corral" around the bag) (Exh. EV-2, Appendix 6-1, Att. A at 30). At locations where on-site recharge is not an option, the Company could use a vacuum truck to pump out and appropriately dispose/recycle the groundwater encountered, after testing (Exh. EV-2, Appendix 6-1, Att. A at 30). For larger amounts of groundwater (greater than 50,000 gallons per day), the Company could discharge the groundwater into municipal stormwater and sewerage systems after coordinating with and receiving written approval from the corresponding municipality, the MWRA and the U.S. Environmental Protection Agency ("US EPA") (Exh. EV-2, Appendix 6-1, Att. A at 30).

(b) Climate Resiliency

The Company maintains that underground transmission lines are inherently resilient to the potential effects of climate change (Exh. EV-2, Appendix 6-1, Att. A at 34). Not only do underground transmission lines avoid adverse weather conditions (e.g., wind and precipitation) that traditional overhead transmission line infrastructures are exposed to, but they also require less frequent maintenance and repairs than above-ground transmission lines (Exh. EV-2, Appendix 6-1, Att. A at 34-35). In addition, the Company indicated that the Project's underground lines would not be affected by flooding or submersion in water, nor would they exacerbate any existing flooding situations (Exh. EV-2, Appendix 6-1, Att. A at 35). The Company explained that the Project would not involve any fill or permanent aboveground structures in the 100-year floodplain,

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89 The Company analyzed potential impacts on waterbodies and wetlands by route but not potential impacts from dewatering discharges, which is generally discussed below.

and that the use of HDD beneath the Charles River and Magazine Beach (including the mapped 100-year floodplain limits) avoids changes to surface grades where flood storage is presently provided (Exh. EV-2, Appendix 6-1, Att. A at 35). Further, the Company stated that it will treat manholes/splice vaults and all equipment within them with damp-proofing and corrosion control measures (Exh. EV-2, Appendix 6-1, Att. A at 35). The Company would drain any rainwater from the manholes prior to maintenance or routine inspections (Exh. EV-2, Appendix 6-1, Att. A at 35).

ii. Somerville Routes

The Company indicated that neither Route S15, Route S1A, nor Route S11C involve work in or near wetlands and wetland resources or buffers, and therefore are equivalent regarding impacts to waterbodies and wetlands (Exh. SCAH-1-6(1) at 22).

iii. Kendall Routes

The Company stated that while Routes K5A and K11 both involve approximately ten linear feet section of filled tidelands (a Chapter 91 jurisdictional area presently occupied by other utilities near the East Cambridge Substation), the two routes are entirely within previously developed areas and would not involve any alterations to wetland resource areas (Exh. EV-2, at 5-99). The Company stated that it would protect catch basin inlets with silt sacks during construction on either route (Exh. EV-2, at 5-99). Therefore, the Company argues that Route K5A and Route K11 are equivalent on impacts to waterbodies and wetlands (Exh. EV-2, at 5-99).

iv. Putnam Routes

Routes P13 and P11 would involve comparable lengths of work area in filled tidelands along Memorial Drive (see Exh. EV-2, at 5-81 to 5-82). The Company stated that it would implement similar mitigation measures against sediment and erosion for either route (Exh. EV-2, at 5-82). The Company argues that Route P13 and Route P11 would have generally equivalent water and wetland resource impacts (Exh. EV-2, at 5-82).

v. Brighton East Routes

The Company stated that Route B2A East would involve alteration to Land Under Water along the HDD tunnel under the Charles River and its shorelines (Exh. EV-2, at 5-119). However, Eversource indicated that this would not have direct impact to surface wetland features including a freshwater bordering vegetated wetland ("BVW") located along the shoreline of Magazine Beach (Exh. EV-2, at 5-119). While the Company would locate the HDD entry and exit pits outside any protected wetland buffers, other elements of HDD construction would involve work in two types of wetland buffers – Riverfront Area (62 linear feet) and Bordering Land Subject to Flooding (508 linear feet) (Exh. EV-2, at 5-118 to 5-119). Other segments along Memorial Drive would involve construction work within the 100-foot Buffer Zone (6,358 linear feet) associated with Inland Bank and Chapter 91 jurisdictional filled tidelands (7,038 linear feet) (Exh. EV-2, at 5-118 to 5-119).

The Company stated that Route B31 East would avoid direct impacts to wetland resource areas associated with the Charles River by crossing over the river on the River Street Bridge, within the roadway deck (Exh. EV-2, at 5-119). The bridge crossing and transmission line installation work would involve work in the Riverfront Area (410 linear feet), 100-foot Buffer Zone (7,774 linear feet) associated with Inland Bank, Bordering Land Subject to Flooding (9 linear feet), and Chapter 91 jurisdictional filled tidelands (7,949 linear feet) (Exh. EV-2, at 5-119).

The Company argues that Route B31 East is superior to Route B2A East regarding impacts to waterbodies and wetlands (Exh. EV-2, at 5-119).

vi. Brighton West Routes

The Company stated that Route B29F West would avoid direct impacts to wetland resource areas associated with the Charles River by crossing over the river on the River Street Bridge, within the roadway deck (Exh. EV-2, at 5-143 to 5-144). The transmission line installation at the bridge crossing would involve work in the Riverfront Area (410 linear feet), 100-foot Buffer Zone (1,672 linear feet) associated with Inland Bank, and Bordering Land Subject to Flooding (9 linear feet) (Exh. EV-2, at 5-143). The rest of the transmission line installation work on portions of River Street and Cambridge Street adjacent to the River Street Bridge, and Memorial Drive would also include Chapter 91 jurisdictional filled tidelands (1,124 linear feet) (Exh. EV-2, at 5-143).

The Company stated that Route B30 West would avoid direct impacts to wetland resource areas associated with the Charles River by crossing over the river on the Anderson Bridge, within the roadway deck (Exh. EV-2, at 5-143 to 5-144). The transmission line installation at the bridge crossing would involve work in the Riverfront Area (291 linear feet), 100-foot Buffer Zone (449 linear feet) associated with Inland Bank, and Bordering Land Subject to Flooding (19 linear feet) (Exh. EV-2, at 5-143). The rest of the transmission line installation work on portions of JFK Street and North Harvard Street adjacent to the Anderson Bridge, and Memorial Drive would also include Chapter 91 jurisdictional filled tidelands (104 linear feet) (Exh. EV-2, at 5-143).

The Company indicated that both routes would avoid wetland resource areas associated with the Charles River by crossing over the waterway on bridges but would involve work in the 100-foot Buffer Zone associated with Inland Bank, Riverfront Area, and Chapter 91 jurisdictional tidelands (Exh. EV-2, at 5-143 to 5-144). Nevertheless, the work would be limited to the bridge crossings and installation in roadway segments, which the Company will restore to preexisting conditions following construction (Exh. EV-2, at 5-143 to 5-144). Accordingly, the Company asserts that Route B29F West and Route B30 West are equivalent for impacts to waterbodies and wetlands (Exh. EV-2, at 5-144).

c. Noise Impacts

i. Common Impacts

The Company stated that noise from the Project construction would be similar to other typical public works projects (Exh. EV-2, at 5-77). According to the Company, during Project construction, the highest noise levels generated would typically range from 57 to 83 dBA at 50 feet (Exh. EV-2, Table 5-13). The Company stated that within a residence or other building structure 50 feet away with windows open, the typical noise levels would range from 40 to 66 dBA (Exh.

EV-2, Table 5-13).[90] Noise during trenching and resurfacing would result in localized, short-term increases in noise levels near the work sites (Exh. EV-2, at 5-77).

The Company anticipated that open cut trenching would typically take seven to ten days at any one location (Exh. EV-2, at 5-77). Cable splicing activities, involving generators, portable HVAC units, and cable-pulling motors, typically require 48 to 60 hours to complete at each manhole location, ordinarily taking place over four or five 12-hour workdays but could also be continuous (Exh. EV-2, at 5-77).

Regarding HDD construction noise, the Company indicated it would be comparable to the transmission line construction, with the drilling rig typically being the loudest piece of equipment (Exh. EV-2, at 5-116). Regarding pipe jacking, the Company indicated that noise would be similar to noise levels for open trench construction, with a rock hammer being the loudest piece of equipment (RR-EFSB-19, at 1).

The Company proposes to mitigate noise impacts by coordinating the timing and sequencing of work with local and state officials, and MIT, as well as using low-noise or muffled equipment (Exhs. EV-2, at 5-79 to 5-80, 5-96, 5-117, 5-141, 5-160; SCAH-1-6(1) at 18). The Company could also use physical noise barriers such as portable sound walls (Exh. EV-2, at 5-79 to 5-80).[91]

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90 The Company indicated that a building or residence will provide significant attenuation of associated construction sound levels, with a typical outdoor-to-indoor sound level reduction of 27 dBA during the winter (windows closed), and 17 dBA during the summer (windows open) (Exh. EV-2, at 5-77 to 5-78).

91 The Company stated that temporary physical noise barriers, including free-standing frames with either acoustical blankets or right walls attached, function by blocking the line-of-sight from nearby residence (Exh. EV-2, at 5-80). However, the Company cautioned that the use of these barriers could substantially restrict movement within the work zone, slow the pace of construction, increase construction duration at a particular location, introduce additional safety risk into the work environment, and expand the work zone and thus the scope of road closures (Exh. EV-2, at 5-80). The Company also described the efficacy of these barriers as minimal when applied to typical urban street construction (Exh. EV-2, at 5-80).

The Company compared noise impacts between routes by: (1) identifying any sensitive land uses in proximity to the route, (2) identifying any sensitive receptors adjacent to the route, and (3) considering the total length of the route (see e.g., Exhs. EV-2, at 5-79).

Table 22: Residential Units (within 50 feet) and Sensitive Receptors along Routes

Routes	Somerville			Kendall		Putnam		Brighton East		Brighton West	
	S15	S1A	S11C	K5A	**K11**	**P13**	P11	**B2A**	B31	**B29F**	B30
# of Residential Units	48	433	59	1,008	401	298	297	311	388	402	1,190
# of Sensitive Receptors	2	3	3	4	4	2	2	4	5	4	20

Note: The Company's preferred routes are bolded

Source: Exhs. EV-2, at 5-73 to 5-74, 5-79, 5-93 to 5-94, 5-96, 5-113 to 5-114, 5-116, 5-138 to 5-141, 5-157 to 5-160; SCAH-1-6(1) at 13 to 15, 18.

ii. Somerville Routes

The Company argued that because Route S15 would involve work near fewer residential units and also passes by fewer sensitive receptors than either Route S1A or Route S11C, Route S15 is superior to the other routes as it would have less noise impacts (Exh. SCAH-1-6(1) at 18).

iii. Kendall Routes

Considering that Route K11 would involve work near 607 fewer residential units, the Company maintains that Route K11 is superior to Route K5A for noise impacts (Exh. EV-2, at 5-96).

iv. Putnam Routes

While both routes are comparable in number of residential units and sensitive receptors, the Company contends that given the longer distance of Route P11, constructing Route P11 would

result in additional noise impact during construction (Exh. EV-2, at 5-79). Accordingly, the Company submits that Route P13 is superior to Route P11 for noise impacts (Exh. EV-2, at 5-79).

v. Brighton East Routes

The Company indicated that sound generated from HDD equipment along Route B2A East is generally comparable to the transmission line construction equipment (Exh. EV-2, at 5-116). The Company also stated that it will seek to work at Magazine Beach during the off-season winter months when there is less recreational activity (Exh. EV-2, at 5-116).

Considering that Route B31 East has the potential to disrupt 77 additional residences and one additional sensitive receptor, and the Company's mitigation of HDD work on Magazine Beach, the Company argues that Route B2A East is superior to Route B31 East for noise impacts (Exh. EV-2, at 5-116).

vi. Brighton West Routes

Because Route B30 West would involve work near more than three times as many residential units and five times as many sensitive receptors, the Company asserts that Route B29F West is superior to the Noticed Alternative Route B30 West for noise impacts (Exh. EV-2, at 5-141).

d. Traffic

i. Common Impacts

The Company stated that traffic management measures, including the use of police details, temporary roadway closures and detours, and temporary lane closures or shifts, would be required regardless of the route selected (Exh. EV-2, 5-89). The Company stated that each of the routes would require implementation of TMPs and close coordination with the local officials and state agencies, to ensure that transportation impacts are minimized (Exh. EV-2, 5-89). The Company will also develop Temporary Traffic Control Plans ("TTCPs") consistent with the Federal Highway Administration Manual of Uniform Traffic Control Devices for Streets and Highways, and the MassDOT "Work Zone Safety" publication (Exh. EV-2, at 5-69 to 5-70).

In the Project's MEPA ENF Certificate, the Secretary noted that MassDOT had identified significant challenges to the design of the Project (specifically Routes B2A East and B29 West) due to the Allston Multimodal Project, which was in the planning and preliminary design stages (Exh. EV-3, at 1, 10-11). The ENF Certificate anticipated that any such issues would be addressed during subsequent permitting (Exh. EV-3, at 1). The Secretary instructed the Company to continue to coordinate with MassDOT as the design of the Allston Multimodal Project progresses and to make the necessary modifications to the Routes B2A East and B29F West (Exh. EV-3, at 11).[92] In September 2023, the Company indicated that in its ongoing discussions with MassDOT, MassDOT did not suggest any significant design changes to the Company's B2A East and B29F West Routes (Exh. EFSB-RS-17).

ii. Somerville Routes

The Company noted that although Route S1A is the shortest of the three routes, most of Route S1A follows local roads in dense residential neighborhoods or commercial and industrial businesses (Exh. SCAH-1-6(1) at 2, 4). The Company stated that 0.61 miles of Route S15 and 0.79 miles of Route S11C is located offroad (Exh. SCAH-1-6(1) at 2 to 4). The Company indicated that Routes S15 and S11C would minimize the extent of transportation impacts to dedicated bicycle facilities, on-street parking, pedestrian crossings, and roadway closures and detours (Exh. SCAH-1-6(1) at 9).

According to the Company, Routes S15 and S11C would provide collocation opportunities with the City of Cambridge's planned Grand Junction Multi-Use Path along the Grand Junction Railroad ROW (Exh.SCAH-1-6(1) at 10). The Company represented that coordination with the MBTA during construction of Route S11C and Route S15 along the Grand Junction Railroad corridor would be manageable as train traffic along the corridor was low, and the Company has obtained positive feedback from the MBTA during consultation meetings (Exh. SCAH-1-6(1)

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92 The Secretary indicated that if the evaluated routes become technically infeasible, the Company may have to consider other routes and file a Notice of Project Change with the MEPA Office (Exh. EV-3, at 11).

at 9). As the only north-south rail connection east of Framingham and Worcester, the Grand Junction Railroad is a lightly used rail facility with two to four trains running per day through Cambridge (Exh. SCAH-1-6(1) at 4). With regard to public transportation, the Company asserts that public transportation impacts would be greater along Route S1A route than Route S15 and Route S11C (Exh. SCAH-1-6(1) at 9).

Between Route S15 and Route S11C, the Company argues that construction along Route S15 would be least impactful because Route S15 would provide more opportunities for collocating with other planned projects than along Route S11C (Exh. SCAH-1-6(1) at 9; Company Brief at 252, 253). These opportunities for collocation include: (1) work on South Street in coordination with Somerville relative to future roadway alignment work; and (2) roadway installation work for the Boynton Yards project (Exh. SCAH-1-6(1) at 9; Company Brief at 252). Route S15, unlike Route S11C, also avoids work through commercial and industrial areas along Linwood Street and Washington Street in Somerville (Exh. SCAH-1-6(1) at 9).

Overall, the Company assesses Route S15 as superior to Route S11C and Route S1A regarding traffic impacts (Exh. SCAH-1-6 (1) at 9)).

iii. Kendall Routes

The two Kendall routes share common segments on Linskey Way and Second Street (Exh. EV-2, at 5-90). However, Route K11 would involve less work on Broadway and Third Street while also using three low-traffic private road segments (Fifth Street, Potter Street, Munroe Street) (Exh. Ev-2, at 5-90). The Company contends that Route K11 is superior to Route K5A for traffic impacts (Exh. EV-2, at 5-90).

iv. Putnam Routes

The Company maintained that the potential impacts on Memorial Drive during construction would be the primary differentiator between the two Putnam routes (Exh. EV-2, at 5-69). Route P13 could likely be constructed with temporary lane closures and curb use restrictions on Memorial Drive and Ames Street, while Route P11 would likely require the temporary closure and detour of the entrance and exit ramps to and from Memorial Drive to Massachusetts Avenue

(Exh. EV-2, at 5-69). According to Eversource, the closure of the ramps would also potentially disrupt public service for the Charles River Transportation Management Authority EZ Ride Shuttle and present challenges to over-height vehicles trying to avoid the low clearance under Massachusetts Avenue (Exh. EV-2, at 5-69). Due to the aforementioned disruption and challenges presented by Route P11, alongside Route P13's shorter length, number and sizes of intersection crossings, and lower potential impacts to pedestrians and cyclists during construction, the Company asserts that Route P13 is superior to Route P11 for traffic impacts (Exh. EV-2, at 5-69).

v. Brighton East Routes

The Company indicated that the HDD crossing and related offroad work is the primary differentiating factor between the two routes (Exh. EV-2, at 5-109). By using the HDD crossing under the Charles River and Magazine Beach, Route B2A East avoids work on the River Street Bridge and adjacent I-90 ramps, and reduces work on Memorial Drive and Cambridge Street (Exh. EV-2, at 5-109).

The Company stated that the HDD crossing portion of Route B2A East does not involve work in local roadways nor create transportation impacts, except for the transition from Memorial Drive across the Dr. Paul Dudley White Bike Path and sidewalk onto Magazine Beach (Exh. EV-2, at 5-104 to 5-105). The Company will coordinate with MassDCR, MassDOT, and Harvard regarding the HDD work proposed on Magazine Beach and the Allston Multimodal Project site, including construction setups and sequencing near the adjacent Dr. Paul Dudley White Bike Path (Exh. EV-2, at 5-109 to 5-110).

The Company noted that the MassDOT Allston Multimodal Project, which is still evolving, may involve reconfigurations of the Massachusetts Turnpike, Soldiers Field Road, and Cambridge Street (Exh. EV-2, at 5-9 and 5-105). MassDOT has expressed some concern regarding the route alignments within the Allston Multimodal Project, including concern about Route B2A's alignment with the future Lincoln Street Connector (Exh. EV-3, at 1, 10).[93] Since September

[93] The future Lincoln Street Connector, which Route B2A East would follow, will be classified as "controlled access" as it will be part of the highway interchange (Exh. EV-3,

2023, the Company has been conducting ongoing consultations with MassDOT, which has not proposed any significant changes to the Company's routes to date (Exh. EFSB-RS-17). Rather than counting MassDOT's concern as traffic impacts, Eversource characterized the transmission line construction on the Allston Multimodal Project site as an opportunity to collocate with future development activities (Exh. EV-2, at 5-169).

For Route B31 East, the Company would coordinate with MassDOT and MassDCR regarding planned repairs and improvements to the River Street Bridge (Exh. EV-2, at 5-110).

Considering B2A East's shorter length, less work on public roadways, potential impacts to pedestrians and bicycle use during construction, and the aforementioned opportunity to collocate with future development activities, the Company argues that Route B2A East is superior to Route B31 East for traffic impacts (Exh. EV-2, at 5-109).

vi. Brighton West Routes

Route B30 West is almost a half-mile longer than Route B29F West and could thus potentially cause significantly more transportation impacts during construction to dedicated bicycle lanes (6.4 miles versus 3.4 miles), intersection crossings (68 versus 24), pedestrian crossings (65 versus 31) and public bus routes (Exh. EV-2, at 5-134). The Company stated that the River Street Bridge is also scheduled to be rehabilitated by MassDOT, and Eversource is

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at 10). MassDOT stated that the Company would have to locate electric transmission line manholes for access/maintenance rights outside roadway travel lanes (Exh. EV-3, at 10). Further coordination with MassDOT/Federal Highway Administration ("FHWA") will be necessary to confirm feasibility of installing transmission line within the "controlled access" highway ROW (Exh. EV-3, at 10). MassDOT also indicated that the alignment of Route B2A East must be located outside the proposed bridge abutment foundations of the two bridges over the Lincoln Street Connector (Exh. EV-3, at 10). MassDOT recommended that the route be buried underneath the northern shoulder of Lincoln Street and not be within any portion of the proposed railroad ROW (Exh. EV-3, at 10). Finally, MassDOT stated that the depths of the proposed transmission lines will need to take into account major existing and proposed MWRA, BWSC and MassDOT drainage and sewer lines (Exh. EV-3, at 11).

coordinating directly with MassDOT engineers to collocate with this rehabilitation (Exh. EV-2, at 5-122 to 5-124).

The construction schedule of Route B29F West is dependent upon removal of the Cambridge Street bridge and at-grade re-alignment of the roadway (Exh. EV-2, at 5-7). The Cambridge Street re-alignment would occur during late stages of the Allston Multimodal Project due to the need to maintain I-90 ramp connections until the realigned highway and ramp connections are accessible (Exh. EV-3, at 64). River Street and Cambridge Street are major utility corridors and Eversource will need to consult with MassDOT, DCR, MWRA and the Boston Water and Sewer Commission during the design and construction phases of the Project (Exh. EV-3, at 64).

Route B29F West would cross the Grand Junction Railroad via a trenchless crossing constructed by the pipe jacking method, which would have no impacts on railroad operation (Exh. EV-2, at 5-21 to 5-22). The Company contends that Route B29F West is superior to Route B30 West for traffic impacts (Exh. EV-2, at 5-135).

e. Visual Impacts

The Company stated that all of the Project's transmission lines would be underground and the Company would restore all roadways and offroad sites disturbed and altered by the transmission line construction to the same condition or better, pursuant to state and local standards as well as agreements with landowners (Exh. EV-2, at 1-1, 5-23). The Company also stated that it would make every effort to minimize impacts by limiting the duration of construction and timing the construction in a manner that is least impactful to the landowner and users of the properties and restoring the disturbed areas as soon as practicable following construction (Exh. EV-2, at 5-23 to 5-24). See also Section VI.E.1.i.c above (public shade tree impacts).

f. Air Impacts

The Company discussed air quality impacts from construction, including construction and excavation dust, and emissions from construction vehicles and equipment (Exh. EV-2, at 5-28). The Company proposed the following mitigation measures for air quality impacts: (1) using

covered dump trucks to move soil out of the construction zone; (2) keeping temporary soil stockpiles at offsite stage and layout areas; (3) installing anti-tracking pads, regular sweeping of pavements, using water-spraying trucks on adjacent roadway surfaces and, for off-road work zones, at all points of egress to public roads; (4) retrofitting 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 US EPA-verified or equivalent emission control devices); (5) using ultra-low sulfur diesel ("ULSD") fuel in diesel-powered construction equipment; and (6) complying with state vehicle-idling law (G.L. c. 90, § 16A) and MassDEP regulations (310 CMR 7.11(1)(b)) except when idling is necessary (Exh. EV-2, at 5-28). The Company did not address air impacts of each route.

g. Safety and Hazardous Waste

i. Safety

The Company stated that it will design, build, and maintain the facilities for the Project so they adhere to all applicable federal, state, and local regulations, and industry standards and guidelines established for the protection of the public (Exh. EV-2, at 6-1 to 6-2). See also Section VII.B.2 below. For example, the Company will abide by the Massachusetts Code for the Installation and Maintenance of Electric Transmission Lines (220 CMR 125.00), as well as OSHA requirements (Exh. EV-2, at 6-1). The Company will also design the facilities in accordance with design codes and guides published by the Department, IEEE, the American Society of Civil Engineers, the American Concrete Institute, and the American National Standards Institute (Exh. EV-2, at 6-1). Following the construction of the facilities, the Company will clearly mark all transmission structures and substation facilities with warning signs to alert the public to potential hazards (Exh. EV-2, at 6-1).

A key aspect of construction safety that involves public road users is road safety.[94] Transmission line construction taking place within the MBTA railroad ROW would require permission from the MBTA and conform to the construction specifications and standards of the MBTA Directorate, which also includes work safety standards such as the requirement of flagman and liability insurance (Tr. 5, at 961-963; Exh. EFSB-RS-22(2)). As the Company's health and safety measures encompass the entire Project, the Company did not address safety of each route.

ii. Hazardous Waste

(B) Construction

Eversource's construction of the Project would be subject to the Company's BMP manual, which addresses emergency cleanup and spill containment in the event of a fuel or other chemical spill (Exh. EV-2, Appendix 5-7, at 4-2). The Company stated that spill kits for such cleanup and containment would be kept on site and accessible at all times; the spill kits contain multiple absorbent socks, pillows, wipes, and temporary disposal bags (Exh. EV-2, Appendix 5-7, at 4-2). The Company would also require that all storage and refueling of equipment and vehicles be at least 100 feet away from sensitive areas such as wetlands (Exh. EV-2, Appendix 5-7, at 4-1). The Company will also regularly check equipment for evidence of leaks (Exh. EV-2, Appendix 5-7, at 4-1). As the transmission line would use XLPE-insulated cables, it would not contain dielectric oil (Tr. 5, at 944). The Company stated that the bentonite clay that the Company would use in HDD work underneath the Charles River is naturally occurring and non-toxic (Exh. EV-2, at 5-17).

(C) Subsurface Contamination

The Company stated that excavation associated with the transmission line construction has the potential to encounter contaminated soils or groundwater from historical releases or fill (Exhs. EV-2, at 5-80, 5-97, 5-117, 5-141; SCAH-1-6(1) at 19). The Company reviewed the MassDEP

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94 As mentioned in the Section VI.E.1.d.i, the Company is developing TMPs in consultation with the corresponding municipalities, state agencies with jurisdiction, and private landowners.

waste site online database to determine the potential to encounter subsurface contamination directly abutting each route (Exh. EV-2, at 4-82 to 4-87). The Company identified various MassDEP-listed sites along the Project routes (Exhs. EV-2, at 5-80 to 5-81, 5-97 to 5-98, 5-117 to 5-118, 5-142; SCAH-1-6(1) at 19 to 21).[95] In the event Eversource encounters contaminated soils, contaminated groundwater, or other regulated materials during open trench excavation, it will manage such soils and materials pursuant to the Utility-Related Abatement Measure ("URAM") provisions of the Massachusetts Contingency Plan ("MCP"), including contracting with a Licensed Site Professional ("LSP") as necessary, consistent with 310 CMR 40.0460 (Exh. EV-2, at 5-10).

The Company presented a summary of the MassDEP Listed sites in the Table below.

Table 23: MassDEP Listed Sites along the Routes

Routes	Somerville			Kendall		Putnam		Brighton East		Brighton West	
	S15	S1A	S11C	K5A	**K11**	**P13**	P11	**B2A**	B31	**B29F**	B30
Number of MassDEP Listed Sites	21	20	13	12	10	2	3	6	9	11	9

Note: The Company's preferred routes are bolded

Source: Exhs. EV-2, Tables 5-14, 5-15, 5-24, 5-25, 5-34, 5,35, 5-44, 5-45; SCAH-1-6(1) Tables 5-54(S), 5-55(S), 5-56(S).

(1) Somerville Routes

In consideration of the many common sites[96] shared among the three routes or between each pair of the routes, the Company asserts that Route S1A, Route S11C, and Route S15 are

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95 Mass.gov, 2019. "Regulation – 310 CMR 40.0000: Massachusetts Contingency Plan". Dated 12/27/2019. URL: https://www.mass.gov/regulations/310-CMR-4000-massachusetts-contingency-plan.

96 The Board compares Tables 5-54(S) through 5-56(S) on Exh. SCAH-1-6(1) and observes that the numbers of common MassDEP-listed sites among the three routes or each pair of the routes different from the Company's observation: Out of the 29 listed sites (there is one duplicate entry 3-0019742 on Table 5-54(S)), six are common among all three routes, eight

comparable for potential impacts from encountering subsurface contamination (Exh. SCAH-1-6(1) at 21-22). In addition to the procedures concerning contaminated soils or groundwater discussed previously, the Company will adhere to MassDEP's "Best Management Practices for Controlling Exposure to Soil During the Development of Rail Trails" when collocating Route S11C and Route S15 with Cambridge's future multi-use pathway along the Grand Junction Railroad corridor (Exh. SCAH-1-6(1) at 22).

(2) Kendall Routes

The Company stated that both routes involve work within the limits of the former Cambridge Gas and Light Company Manufactured Gas Plant ("MGP") in Kendall Square (Exh. EV-2, at 5-97). The Company observed that the numbers of abutting MassDEP-listed sites are comparable between the two routes (Exh. EV-2, at 5-98). Accordingly, the Company argues that Route K5A and Route K11 are comparable for potential impacts from encountering subsurface contamination (Exh. EV-2, at 5-98).

(3) Putnam Routes

The Company considered the numbers of abutting Mass-DEP-listed sites to be comparable between the routes and, accordingly, maintains that they are generally equivalent for potential impacts from encountering subsurface contamination (Exh. EV-2, at 5-81).

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are common only between Routes S1A and S15, three are common only between Routes S11C and S15, and none are common only between Routes S1A and S11C. Among these common sites, ten are associated with the D2 Site, of which five are common among all three routes, another five are common only between Routes S1A and S15, and none is common only between Routes S11C and S15, nor only between Routes S1A and S11C.

(4) Brighton East Routes

Given that Route B2A East would involve work near fewer MassDEP-listed sites, the Company contends that it is superior to Route B31 East for potential impacts from encountering subsurface contamination (Exh. EV-2, at 5-118).

(5) Brighton West Routes

The Company argues that because Route B30 West would involve work near fewer sites, it has a lower potential to encounter subsurface contamination during construction and hence is superior to Route B29F West for potential impacts from encountering subsurface contamination (Exh. EV-2, at 5-143).

h. Magnetic Fields

The Company used an EMF model to estimate the magnetic field levels for five proposed transmission duct bank configurations, one per each Project Route/duck bank segment between the New Substation and corresponding existing substation (Exh. EV-2, at 5-40).[97] The Company would use optimal phasing of the six cables within each duct bank to minimize magnetic fields (Exh. EV-2, Appendix 5-6, at 9). At average loading with the duct banks installed at Eversource's standard minimum burial depth of 30 inches, the magnetic field levels directly above the duct bank along four of the five Project Routes/duck bank segments are 49 mG or less, decreasing to 3.4 mG or less at 25 feet from the duct bank centerline (Exh. EV-2, at 5-41).

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97 The term "transmission line", "duct bank", and "route" were used in a different context in the EMF Report (Exh. EV-2, Appendix 5-6) than in the Company's Petition (Exh. EV-2). The Board rephrased the Company's statements in this section for clarity. Moreover, the Company stated in Exh. EV-2, at 5-40, that the five transmission duct bank configurations contain eight transmission lines, but this statement omitted the explanation in the EMF Report (Exh. EV-2, Appendix 5-6, at 6 n. 1) that three of the five duct banks are double-circuit duct banks and the remaining two are single-circuit duct banks – thus, a total of eight circuits/transmission lines in five Project routes/duct bank segments.

In the remaining Project Route/duct bank segment between the New Substation and the existing East Cambridge Substation (Preferred Route K5A and Noticed Alternative Route K11), the transmission line loading is forecast to be higher than that for other routes due to Vicinity Energy's operation as both a generator and user of electricity (Exh. EV-2, at 5-41). Consequently, the calculated magnetic field level at average loading is also higher at 121 mG, decreasing to 8.4 mG at 25 feet from the duct bank centerline (Exh. EV-2, at 5-41). The Company calculated that magnetic field levels for all Project Routes/duct bank segments would be approximately 50 percent higher at peak loading (Exh. EV-2, at 5-41). For the bridge crossings associated with Route B29F West and Route B30 West, where the cables would be closer to the road surface, the Company calculated that magnetic field levels would be 50 percent higher directly above the duct bank than in other locations along Project Routes/duct bank segments (Exh. EV-2, at 5-42).

Table 24 below shows the calculated magnetic field levels for buried duct bank at average loadings.

Table 24: Calculated Magnetic Field Levels Above Ground for Duct Banks buried at 30 inches below ground, at Average Loading[98]

Project Route/Duct Bank Segment	Highest Magnetic Field Level (mG)	
	At +/- 25 feet	Above Duct Bank
Putnam Routes (P11/P13)	1.3	6.5
Kendall Routes (K5A/K11)	8.4	121
Somerville Routes (S1A/S11C)[99]	0.4	2.1
Brighton West Routes (B29F/B30)	1.5	6.0
Brighton East Routes (B2A/B31)	1.5	6.0

Source: Exh. EV-2, at 5-42, Table 5-5.

98 All measurements at a height of one meter (3.28 feet) above ground.

99 Route S15 was not modeled for magnetic field levels (Exh. SCAH-1-6(1). Route S15 supplemental analysis, does not include a discussion of magnetic field impacts.

The Company stated that magnetic fields associated with the Project would be similar along alternative route alignments for each Project Route/duct bank segment (Exh. EV-2, at 5-42). The Company observed that even directly above the underground transmission lines at minimum burial depth and peak loading, the model magnetic field levels are far below the international exposure limits of 9,040 mG established by the International Committee on Electromagnetic Safety (ICES, 2019) and 2,000 mG recommended by the International Council on Non-Ionizing Radiation Protection (ICNIRP, 2010) (Exh. EV-2, at 5-42).

i. Positions of the Parties

i. MIT

(a) Brighton East and Putnam Routes

As described in Section I.B, MIT had initially suggested two alternative segments along Wadsworth Street – one for Route B2A East and another for Route P13 – to avoid transmission line construction on Ames Street (MIT Brief at 3). MIT later withdrew its recommendation for the Wadsworth Street alternatives (MIT Brief at 3). Nevertheless, MIT suggested a list of mitigation measures that it claims could mitigate the most troublesome potential adverse impacts on Ames Street (MIT Brief at 3). Specifically, MIT requests: (1) duct bank depth specifications to provide flexibility for future uses; (2) a construction schedule that accommodates MIT's academic calendar events, alongside weekly construction updates and advance notices on changes to construction hours; (3) police details at each area of construction that impacts traffic and access; (4) use of backfill material that would allow hand tool excavation for areas with high concentration of MIT utility crossings to facilitate future excavation efforts; and (5) a third-party quality assurance/quality control program for all construction impacting MIT, as well as the ability of MIT to inspect all such areas prior to backfill (MIT Brief at 3 and Appendix A). MIT also requests the Siting Board to order the Company to execute a Memorandum of Understanding ("MOU") with MIT that incorporates the mitigation described (MIT Brief at 3).

(b) Brighton West Routes

As noted above, in the context of advocating for the GJN+A Segment, MIT made several observations about the environmental impact of the Vassar Street Segment of Route B29F West. MIT contends that there are numerous sensitive receptors on Vassar Street, including multiple classrooms and libraries, two daycare centers, and ten research buildings whose critical activities, according to MIT, are particularly sensitive to any disturbances including vibration, dust and noise (MIT Brief at 20). MIT also alleges that construction along Vassar Street will be protracted, taking over two years given the "vast and complex" underground utility density in the area (MIT Brief at 21). MIT argues that the Company's underestimates the severity of the transmission line construction traffic impacts on Vassar Street, which it alleges would be both severe and prolonged (MIT Brief at 22). MIT disagrees with the Company that rush-hour traffic can be accommodated by stopping work and covering trenches with metal plates; MIT states that such construction would reduce traffic flow capacity by half on a street with heavy foot, bike, and vehicular traffic, including delivery vehicles, emergency services, and multiple MIT shuttle routes (MIT Brief at 22-23). MIT claims that the noise impacts on Vassar Street would be severe, with noise levels as high as 83 dBA lasting years and necessarily occurring during the academic year, potentially affecting the quality of classroom learning (MIT Brief at 23). MIT refers to the likelihood of dewatering, which could generate a sound level as high as 67 dBA, occurring 24 hours a day, which MIT asserts would "further" exacerbate the already severe noise impacts (MIT Brief at 23).

ii. City of Cambridge

As described in Section I.B, the City of Cambridge expressed support for Route S15 among the Somerville routes in the Siting Board's second public comment hearing. Specifically, the commissioner of the Cambridge DPW spoke in favor of the route (Second Public Comment Hearing Transcript at 117-118). Additionally, a Cambridge city councilor spoke in favor of Route S15 as well in opposition to Route S1A (Second Public Comment Hearing Transcript at 125).

iii. City of Somerville

While Somerville did not submit briefs, in prefiled testimony, Somerville's witness noted the importance of increased electrical transmission to support the growth of electrical demand in the region (Exh. SOM-BCP-1, at 3).[100] Eversource states that Somerville is supportive of the choice of Route S15 and has worked closely with the Company to facilitate the identification of transmission line routes through the Boynton Yards re-development area (Exhs. SCAH-1-6(1) at 28; EFSB-RS-19; EFSB-RS-19(1); also see Exh. SOM-BCP-1 at 3). Somerville's witness stated that Route S15 would result in substantial impacts in Somerville, both temporary during construction, and permanent by occupying space in public streets already congested with existing utilities (Exh. SOM-BCP-1, at 3). He asserted that Somerville is working to remedy these impacts in negotiations for a Host Community Agreement ("HCA") (Exh. SOM-BCP-1, at 3).

Somerville requests that the Siting Board impose certain conditions on Eversource regarding the proposed routes in Somerville including the following requirements: (1) install sufficient duct bank capacity to allow Eversource and other private overhead utilities to be placed underground and remove the existing utility poles along the proposed route in Somerville; (2) continue to coordinate design alignments and details throughout the construction of the Project; and (3) apply for permits, easements and licenses required by Somerville, and comply with the related approval conditions (Exh. SOM-BCP-1, at 3-5).

In support of the first request, Somerville's witness states that Somerville requires all new construction to service all new buildings via underground utilities (Exh. SOM-BCP-1, at 4). He also notes that certain streets along the proposed route are narrow and include existing overhead utilities (Exh. SOM-BCP-1, at 4). He contends that timely coordination of the proposed transmission line duct bank design and construction for the Project with sufficient duct bank capacity to underground all overhead utilities, including lines operated by other entities, would minimize the potential impact of subsequent construction associated with undergrounding those

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100 In response to questions from staff, Mr. Postlewaite stated that Somerville held discussions with Eversource regarding routing over the last three and one-half years and supported the routes proposed by the Company (Tr. 8, at 1245-1246).

other overhead facilities (Exh. SOM-BCP-1, at 4). Somerville's witness identified telecommunication lines as well as overhead electric lines as the existing infrastructure that Somerville seeks to place underground (Tr. 8, at 1252). He also stated that the Company had presented concerns regarding the cost and complexity of executing that work, but he believed that Eversource was evaluating whether Somerville's request to consolidate the overhead lines into the duct bank activities related to the Project would be feasible and identifying the steps that would be necessary to meet that goal (Tr. 8, at 1253-1254).

With regard to the second request, Somerville noted that throughout the Boynton Yards and Union Square area, both Somerville and private developers are designing and reconstructing the infrastructure (Exh. SOM-BCP-1, at 4).[101] He argued that design coordination among all parties is essential as any changes may directly impact the routing and construction of the proposed transmission line (Exh. SOM-BCP-1, at 4). Somerville's witness pointed to South Street between Medford Street and Harding as the most challenging section with three sewer lines, a large water line, and a gas line in addition to the contemplated duct bank installation for the Project (Tr. 8, at 1249-1250). He stated that the alignment for the South Street segment as likely to change and hoped that the Company would have the flexibility to work with Somerville as the design evolved (Tr. 8, at 1257-1259).

Finally, in addressing the third request, Somerville's witness explained that at minimum the Project should obtain a Grant of Location and/or easements from the Somerville City Council, and Street Occupancy and Trench Permits from the Somerville Engineering Division (Exh. SOM-BCP-1, at 4). He stated that these licenses, easements, and permits may impact the techniques, alignments, mitigations, and communications executed during construction within the affected areas (Exh. SOM-BCP-1, at 4-5).

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101 The Company describes the developers of Boynton Yards as supportive of the Project and that Eversource has undertaken to meet the needs of the community (Company Brief at 272).

iv. Company Response

(a) Brighton East and Putnam Routes

The Company commits to minimizing impacts to MIT and the broader community to "the extent practicable" and collaborating with MIT, Cambridge, and Somerville to develop a mutually agreeable set of construction protocols but argued that there is no supporting precedent for the Siting Board to mandate a contractual agreement through an MOU as requested by MIT (Company Reply Brief at 23). Eversource noted that many topics that form the basis of MIT's MOU request have already been discussed between the parties and will be developed in further consultation with Cambridge (Company Reply Brief at 23).

(b) Brighton West Routes

The Company contends that MIT's analysis of environmental impacts, which Eversource describes as no more than four pages of an unsubstantiated conclusory statement from MIT's pre-filed written testimony, pales in comparison to the Company's (Company Reply Brief at 20-21). The Company argues that it developed its construction schedule with full recognition of the challenges to be confronted on Vassar Street and takes seriously MIT's concerns about direct impacts on its campus and community by appropriately identifying and proposing measures to mitigate environmental impacts (Company Reply Brief at 21). Moreover, the Company contends that the construction pace would likely be faster than assumed by MIT, especially if the Company were to employ multiple crews (Company Reply Brief at 21; also see Tr. 8, at 1334-1335). In addition, the Company argues that MIT has undertaken similar construction of utility infrastructure on Vassar Street in recent years, which contradicts its claim that the proposed transmission line construction would cause unmanageable or deleterious harm to the MIT Campus (Company Reply Brief at 22; also see Tr. 8, at 496, 525-528, 1306-1307). The Company commits to working with MIT to minimize impacts along Vassar Street (Company Reply Brief at 21).

The Company calls MIT's concerns about construction noise seriously overstated (Company Reply Brief at 21). Although the Company anticipates that dewatering facilities would be needed, including instances of 24-hour dewatering, the Company explains that dewatering is typically done on a daily basis with mobile equipment (Company Reply Brief at 22; also see Tr. 8,

at 1314). Moreover, the Company maintains that the sound levels at whatever levels would be at least 27 dBA less indoors with windows closed (Company Reply Brief at 22; also see Tr. 4, at 679).

(c) Somerville Requests

Eversource states that the Company is currently reviewing the scope of work that would be required to move existing overhead utilities within segments of the Boynton Yards development area to underground facilities in connection with ongoing discussions related to mitigation (Exh. EFSB-G-11, at 1). However, Eversource noted that due to engineering, system, and other technical requirements, requests to underground existing above-ground infrastructure often require substantial work, well beyond the boundaries of the target area, and as such, estimated costs associated with this additional work are not yet available (Exh. EFSB-G-11, at 1).

Eversource committed to continue discussions with Somerville to identify and resolve issues related to the potential scope of the undergrounding effort requested by Somerville within the Boynton Yards area (Exh. EFSB-G-11, at 1). In responding to information requests, Eversource noted that the Company expects to continue these discussions with the City of Somerville as the Project proceeds through the permitting process (Exh. EFSB-G-11, at 1). Eversource stated that the Company's goal is to coordinate construction efforts wherever possible (Exh. EFSB-G-11, at 1). As details on the viability and cost of this additional work become available, the Company pledges to work with Somerville staff to maximize efficiencies and minimize impacts to the Project construction schedule to accommodate the Somerville proposal (Exh. EFSB-G-11, at 1).

However, the Company cautioned that the scope of undergrounding portions of existing overhead utility facilities will often require work activities well beyond the specific location of the overhead facilities being undergrounded (Exh. EFSB-G-11, at 1). This is primarily due to considerations of the interconnections and reliability within the larger distribution network and to the customers being served by the distribution line, particularly as the utilities located on the overhead structures are not limited to the Company's infrastructure (Exh. EFSB-G-11, at 1).

Eversource noted that to the extent individual connections to distribution customers need to be modified to underground services, this is typically a cost borne by the customers and would require that property owners hire an electrician to perform the work on private property (Exhs. EFSB-G-11, at 2). In addition, the schedules associated with this additional work depend on outage scheduling and coordination of the existing facilities already in service (Exh. EFSB-G-11, at 1-2).

By meeting with Somerville, as well as the developers of the Boynton Yards and Union Square area, the Company contends its Project team was able to modify the Project routes to accommodate imminent development plans (Exh. EFSB-G-12). Eversource notes the Company is not aware of any conflicts with the development plans in the Boynton Yards and Union Square areas that would significantly impact routing or construction of the Project, as currently proposed (Exh. EFSB-G-12).

2. Cost

a. Company's Description

The Company provided planning grade cost estimates (i.e., -25%/+25%) for each preferred route and noticed alternative route, shown in Table 25 below (Exhs. EV-2; SCAH-1-6(1); EFSB-RS-13; EFSB-RS(S2)). The Company estimated the cost of each route based on length, surface conditions, and subsurface conditions (Exh. EFSB-RS-13, at 12). The Company: (1) quantified the materials required for each route for excavation, backfill, soil disposal, cable, vaults, splices and all other components necessary; (2) applied historical cost data to calculate cost where budgetary pricing was not available; (3) included easements and soil disposal costs based on route analysis; (4) requested budgetary pricing from local vendors for typical duct bank configurations set in urban conditions and high impact crossings; and (5) applied contingency appropriate with the level of detail for each route (Exh. EFSB-RS-13, at 12-13).

Table 25: Estimated Costs of the Company's Preferred and Noticed Alternative Routes

Route	Length (Miles)	Cost ($ Millions)
Putnam Routes		
Route P13 (Ames Street)	0.49	$37.6
Route P11 (Massachusetts Avenue)	0.87	$56.7
Kendall Routes		
Route K5A (Linskey Way)	0.59	$48.6
Route K11 (Fifth Street)	0.61	$72.1
Brighton East Routes		
Route B2A East	2.91	$194.0
Route B31 East	3.26	$199.6
Brighton West Routes		
Route B29F West	3.00	$194.0
Route B30 West	3.43	$215.4
Somerville Routes		
Route S15	1.31 approx.	$125.3[102]
Route S1A (Hampshire Street/D2 Site)	1.25	$98.6
Route S11C (Grand Junction Multi-Use Pathway)	1.56	$130.0

Note: The Company's preferred routes are bolded

Sources: Exhs. EV-2, at 4-32 to 4-34, 5-85, 5-102, 5-127, 5-147; SCAH-1-6(1) at 26; EFSB-RS-13; EFSB-RS-19(S2).

102 In Exh. EFSB-RS-19(S2), the Company updated the estimated cost for Route S15, which increased from $123.2 million to $125.3 million.

b. Positions of the Parties

i. MIT

MIT argues that while the Company's methodology using unit costs to estimate route costs based on distance may be appropriate for an average city street, the methodology underpredicts the probable costs of more challenging segments, such as those with higher density of utilities (Exh. EFSB-MIT-12, at 1-2). MIT argues that greater utility densities require deeper excavation, more supporting structures, longer construction durations and concomitant needs for traffic mitigation (MIT Brief at 15; Exh. EFSB-MIT-12, at –1-2). Accordingly, WSP adjusted the relevant construction costs in the Company's estimate – increasing costs associated with temporary facilities, traffic maintenance/mitigation, trenching and duct banks and contingency by five-fold for the 600 feet of the Vassar Street Segment in front of the MIT CUP (MIT Brief at 15-16). WSP estimated that the 6,000-feet Vassar Street Segment of Route B29F West would cost $90.33 million rather than $73.18 million (Exh. EFSB-MIT-12(1)).

ii. Company Response

The Company argues that the Company's well-established team of experts, who have successfully constructed similar underground transmission lines in similar urban environments, renders MIT's critique of Eversource's cost assessments as lacking merit and dubious at best (Company Reply Brief at 18-20).

3. Reliability

The Company indicated that it examined the reliability of the routes at both the route selection stage and environmental impact comparison stage, and stated that all the routes are independently reliable (Exhs. EV-2, at 4-124, 5-85, 5-102, 5-128,-5-147, SCAH-1-6(1) at 27). The Company explained that because all of the Candidate Routes are underground and have relatively small differences in design, they do not exhibit in any substantial difference in the level of reliability (Exh. EV-2, at 4-124).

4. Analysis and Findings

a. Land Use, Historic Resources, and Cultural Resources

For land use impacts, the Siting Board notes that none of the Company's routes would change land uses adjacent to the transmission lines. There would be no anticipated impacts to archaeological sites and cultural along routes as all routes, except at Magazine Beach, will be constructed within an existing roadway. The Company proposes to develop BMPs, TMPs, and work hour schedules in consultation with municipal officials and abutters as a reasonable and adequate mitigation measure for minimizing land use impacts. The Siting Board views the necessary mitigation and potential impacts of the inroad construction of the routes to be substantially similar. With the implementation of these mitigation measures, and any additional measures described below, the Siting Board finds that the land use impacts from the transmission lines would be minimized.[103]

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[103] The Board notes that the Company quantified certain land use impacts along the various routes in terms of acres impacted, rather than numbers of residential, commercial, and industrial units. The Board finds that unit-based measures better reflect the impact levels than acres, and directs the Company and other applicants to use such measurements in future proceedings.

i. Somerville Routes

Table 26. Somerville Routes Land Use Impact Comparison

Category Criteria	Route S1A	Route S11C	Route S15
Route Length[104]	+	-	+
Residential Abutting Uses	-	+	-
Sensitive Receptors	-	-	+
Article 97 Lands	=	=	=
Shade Trees and Tree Removals	-	-	+
Co-development Opportunities	-	-	+
Historic Properties	-	-	+
Public and Municipal Support	-	-	+

Based on the land use impact comparison above, the Board finds that Route S15 is preferrable to Routes S1A or S11C. With the implementation of mitigation described above, the Siting Board finds that Route S15 is superior to Route S1A and Route S11C with regard to land use impacts.

104 Route S15 has a minor route variation requested by the City of Somerville that would add 200 feet on Windsor Street in Somerville and traverse a private parcel that currently houses a salvaged auto parts facility (Exh. EFSB-RS-19(S1) at 2-3). The additional 200 feet do not change the analysis for Route Length in this table.

ii. Kendall Routes

Table 27. Kendall Routes Land Use Impact Comparison

Category Criteria	Route K5A	Route K11
Route Length	=	=
Residential Abutting Uses	=	=
Sensitive Receptors[105]	=	=
Article 97 Lands	=	=
Shade Trees and Tree Removals	=	=
Co-development Opportunities	=	=
Historic Properties	+	-
Municipal Support	+	-

Based on the land use impact comparison above, the Board finds that Route K5A is slightly preferable to Route K11 in terms of land use impacts. With the implementation of mitigation described above, the Siting Board finds that Route K5A is superior to Route K11 with regard to land use impacts.

105 Eversource chose to collectively count the MIT Campus as a single sensitive receptor. While the Board generally agrees with the Company's approach in analyzing potential impacts on sensitive receptors, the extensive area and connective nature of a university campus, alongside the variety of subordinate land uses, ranging from teaching facilities to student dormitories, could be better considered through a more detailed approach to account for the locus of all activities and land uses while avoiding double-counting.

iii. Putnam Routes

Table 28. Putnam Routes Land Use Impact Comparison

Category Criteria	Route P13	Route P11
Route Length	+	-
Residential Abutting Uses	=	=
Sensitive Receptors	=	=
Article 97 Lands	=	=
Shade Trees and Tree Removals	+	-
Co-development Opportunities	=	=
Historic Properties	+	-
Municipal Support	+	-

Based on the land use impact comparison above, the Board finds that Route P13 is preferable to Route P11 in terms of land use impacts. With the implementation of mitigation described above, the Siting Board finds that Route P13 is superior to Route P11 with regard to land use impacts.

iv. Brighton East Routes

Table 29. Brighton East Routes Land Use Impact Comparison

Category Criteria	Route B2A East	Route B31 East
Route Length	+	-
Residential Abutting Uses	+	-
Sensitive Receptors	+	-
Article 97 Lands	+	-
Shade Trees and Tree Removals	+	-
Co-development Opportunities	+	-
Historic Properties	+	-
Municipal Support	+	-

Routes B2A East and B31 East share a common alignment over long segments and diverge only between Magazine Beach and the western end of the MassDOT Allston Multimodal Project site (at Lincoln Street) based on their river crossing methods. Based on the land use impact comparison above, the Board finds that Route B2A is preferable to Route B31 in terms of land use impacts. With the implementation of mitigation described above, the Siting Board finds that Route B2A is superior to Route B31 with regard to land use impacts. Given that the Company may make minor adjustments to the route alignment as the Project progresses and the sensitivity of the Magazine Beach property and the Allston Multimodal Project, the Siting Board directs the Company to submit as a compliance filing (1) a statement and map depicting the final alignment of Route B2A East, and (2) a statement from MassDCR and MassDOT acknowledging such final alignment.

v. Brighton West Routes

Table 30. Brighton West Routes Land Use Impact Comparison

Category Criteria	**Route B29F West**	**Route B30 West**
Route Length	+	-
Residential Abutting Uses	+	-
Sensitive Receptors	+	-
Article 97 Lands	=	=
Shade Trees and Tree Removals	+	-
Co-development Opportunities	+	-
Historic Properties	+	-
Municipal Support	+	-

Based on the land use impact comparison above, the Board finds that Route B29F West is preferable to Route B30 West in terms of land use impacts. With the implementation of mitigation described above, the Siting Board finds that Route B29F West is superior to Route B30 West with regard to land use impacts.

b. Water and Wetlands; Climate Resiliency

The majority of the transmission line construction would occur in existing roadway (including the road deck of bridges) and, except for the unanticipated inadvertent returns from HDD work, would not have direct impacts on water and wetlands. The Board views the quantitative count of wetlands and water resources as differentiating factors between route options for each Project Area and uses them to make findings on which route is superior. The record shows that the Company has proposed sediment and erosion controls, as an integrated part of the construction process for all construction methods to minimize impacts on waterbodies and wetlands. The record also shows that the Company will implement an SWPPP in compliance with its National Pollution Discharge Elimination System ("NPDES") Construction General Permit. Unless otherwise noted, the Siting Board views the necessary mitigation and potential impacts of the inroad construction of the routes to be substantially similar. The Board finds that, with implementation of the Company's proposed mitigation measures, impacts on waterbodies and wetlands from the transmission lines would be minimized.

Examining the Company's analysis of the climate resiliency of the proposed underground transmission lines and considering all routes, including the HDD segment Route B2A East, the Board considers all routes to be comparable for Climate Resiliency.

i. Somerville Routes

None of the three considered routes for the Somerville study area would involve work in or near wetlands and wetland buffers. On this basis, the Siting Board finds the three Somerville routes comparable in terms of impacts to water and wetlands.

ii. Kendall Routes

Both Routes K5A and K11 would involve work within previously developed areas, and neither would involve any alterations to wetland resource areas. Both routes would cross the same Chapter 91 jurisdictional areas in East Cambridge currently occupied by existing utilities. On this basis, the Board finds that both the routes are comparable in terms of impacts to water and wetlands.

iii. Putnam Routes

Both Route P13 and Route P11 would involve work only within existing roadways and would have no wetland impacts. Therefore, the Siting Board finds that both routes are comparable for impacts to waterbodies and wetlands.

iv. Brighton East Routes

Route B31 East would cross the Charles River within the roadway deck of the River Street Bridge and, thus, avoid direct impacts to wetland resource areas, whereas Route B2A East would use the HDD method to cross under the Charles River and also avoid direct impacts to wetland resource areas. Both routes would involve work within a roughly comparable length (between 7,000 and 8,000 linear feet) of overlapping wetland buffers, including Riverfront Area, Bordering Land Subject to Flooding, 100-feet Buffer Zone associated with Inland Bank, and Chapter 91 jurisdictional filled tidelands.

The Board concurs with the Company that both construction work within the road deck of the bridge and HDD are good methods in crossing the Charles River, without direct impacts on wetland resource areas. The Board also agrees with the Company that the below-ground alteration via HDD for Route B2A East does impact Land Under Water, which is not affected by Route B31 East. Therefore, the Siting Board views Route B31 East as superior to Route B2A East in terms of wetland and water impacts.

v. Brighton West Routes

The Company would limit construction work associated with both routes to roadways and within the road deck of existing bridges across the Charles River and, therefore, avoid having any impacts on wetland resource areas. Accordingly, the Siting Board finds Route B29F West and Route B30 West to be comparable on impacts on waterbodies and wetlands.

c. Noise Impacts

The record shows that the Project's construction noise as measured indoor at abutting buildings, while noticeable, would not be extraordinary in an urban environment such as the Project Area. The noise would also be temporary as the construction work progresses along each transmission line route. The record shows that the Company would use noise mitigation measures such as requiring the use of newer, lower noise equipment, and if needed, portable sound walls. In Section VI.d.4.d above, the Board required the Company to develop a construction outreach plan that includes a complaint process for abutters. The Siting Board also encourages the Company to work with abutters, especially residential properties, to implement additional temporary noise mitigation should the need arise. Unless otherwise noted, the Siting Board views the necessary mitigation and potential impacts of the inroad construction of the routes to be substantially similar. With the implementation of mitigation measures, the Siting Board finds that the noise impacts of the construction of the transmission lines would be minimized.

i. Somerville Routes

As noted previously, Route S15 passes by the fewest sensitive receptors and residential units. Therefore, Route S15 would have the least potential for noise to impact residences during construction, as compared to Routes S1A and Route S11C, and the Siting Board finds Route S15 to be superior to the two other routes for noise impacts.

ii. Kendall Routes

The record shows that K11 passes by 607 fewer residential units than does Route K5A. Therefore, the Siting Board finds that Route K11 would be less disruptive and is superior to Route K5A for noise impacts.

iii. Putnam Routes

Regarding MIT's criticism against the Company's analysis of noise impacts Route P13's use of Ames Street, the Board disagrees with MIT that the Company has understated such noise impacts. The Board notes the Company's recognition of MIT concerns, and the Company's

willingness to continue working with MIT to minimize noise (and other) impacts along Ames Street. In addition, in its brief, MIT dropped its recommendation to consider a variation for Route P13.

While both routes pass by comparable numbers of residential units and sensitive receptors, Route P11 is longer. Therefore, the Siting Board finds that Route P13 is superior for noise impacts.

iv. Brighton East Routes

Route B2A East passes by 77 fewer residential units and one fewer sensitive receptor than does Route B31 East. Although the record shows that sound generated from HDD equipment is generally comparable to the transmission line construction equipment, the Company would seek to further minimize noise impacts by conducting work on Magazine Beach during the off-season winter months when there is lower recreational activity. Moreover, the Board recognizes that there are no residential units or sensitive receptors on the Magazine Beach's side of Memorial Drive and close to the HDD entry site, nor anywhere near the HDD exit site at the Allston Multimodal Project site. Accordingly, the Siting Board finds Route B2A East is superior to Route B31 East for noise impacts.

Regarding MIT's criticism of the Company's analysis of noise impacts Route B2A East's use of Ames Street, the Siting Board disagrees with MIT that the Company has understated such noise impacts. The Board notes the Company's recognition of MIT concerns, and the Company's willingness to continue working with MIT to minimize noise (and other) impacts along Ames Street. In addition, in its brief, MIT dropped its recommendation to consider a variation for Route B2A East.

The Board considers the Company's coordination with and timely notice to MIT and other sensitive receptors according to its construction outreach plan (see Section VI.D.4.d), as well as other land uses sensitive to noise impacts, as a vital element of minimizing the inevitable noise impacts. The Siting Board recognizes the importance of noise mitigation to MIT, and relies on the Company's willingness to work with MIT to mitigate noise impacts to the extent practicable. As such, the Company would minimize noise impacts along Route B2A East.

v. Brighton West Routes

Route B29F West passes by 788 fewer residential units and 16 fewer sensitive receptors than Route B30 West. Moreover, Route B29F is 0.43 miles shorter in length (3 miles vs. 3.4 miles). Recognizing that Route B30 West also goes past more commercial, industrial, and tax-exempt land uses, the Siting Board finds that Route B29F West is superior to Route B30 West for noise impacts.

d. Traffic

The Siting Board notes that there will be no traffic impacts due to the post-construction operation of the transmission lines other than from general maintenance. The Siting Board agrees with the Company's analysis of traffic impacts based on the roadway characteristics, traffic volumes, and impacts to public transportation routes, as well as its assessment of unique transportation elements such as the various railroad crossings and the multimodal path proposed alongside the Somerville Routes. The record shows that the Company will develop TMPs and TTCPs and finalize them after detailed designs of the Project routes are sufficiently advanced. With the implementation of mitigation measures, the Siting Board finds that the traffic impacts of construction of the transmission lines would be minimized.

i. Somerville Routes

The record shows that for Routes S11C and S15, there would be fewer abutting residential land uses and larger portions (40 to 50 percent) of the routes being off-road compared with Route S1A. Between Route S11C and Route S15, Route S15 is shorter and allows for opportunities to collocate with work on South Street in coordination with Somerville and a developer, and areas that are already scheduled to be redeveloped for the Boynton Yards project. Therefore, the Siting Board finds that Route S15 is less impactful on traffic than Route S1A and Route S11C, and, thus, is the superior route.

ii. Kendall Routes

The record shows that Route K5A and Route K11 are of comparable length and share segments. The record describes the differentiating factor between the two routes as the relative amount of work related to each route on busy thoroughfares Broadway and Third Street. Route K11 would involve less work on Broadway and Third Street and follows three additional private road segments – along Fifth Street, Potter Street and Munroe Street. Hence, the Siting Board finds that Route K11 is superior to the Route K5A for traffic impacts.

iii. Putnam Routes

After considering the traffic characteristics, including traffic counts and presence of public transportation routes, of streets involved in both routes, the Board agrees with the Company's findings that Route P13 is more direct and shorter in length than Route P11. Furthermore, the closure of the Memorial Drive ramps to Massachusetts Avenue would have a greater traffic impact than would disruption of the intersection between Memorial Drive and Ames Street. Therefore, the Siting Board finds that Route P13 is superior to Route P11 for traffic impacts.

iv. Brighton East Routes

Route B2A East, by crossing under the Charles River via HDD, would avoid construction on a critical river crossing – the River Street Bridge. Reviewing the Company's route evaluation and scoring analysis, the Board finds that Route B2A East would have fewer impacts on pedestrian, bike, and vehicular traffic, as well as on public transportation routes than Route B31 East. This includes avoiding Route B31 East's work on a major stretch of Cambridge Street with highway ramps to and from the Massachusetts Turnpike.

The ENF Certificate for the Project noted potential conflicts between the Allston Multimodal Project and Route B2A East (as well as Route B29F West) as identified by MassDOT. The record shows that the design of the Allston Multimodal Project continues to progress and that the Company is in discussions with MassDOT with regard to route alignments. The Company reported that, as of September 2023, MassDOT has not required any significant changes to the route alignments, and that it would likely use Route B2A East as opposed to a variation Route

B2AN East, which assumes the Allston Multimodal Project would not be built. The Siting Board directs the Company to continue to work closely with MassDOT on coordinating construction and to inform the Siting Board of any significant changes to route alignments from its discussions.

With these considerations, the Siting Board finds that Route B2A East is superior to Route B31 East for traffic impacts.

v. Brighton West Routes

Compared to Route B29F West, Route B30 West is longer, affects more streets with bus routes and bicycle lanes, has more intersections and pedestrian crossings, and would generally have more traffic impacts. At the same time, Route B29F West would involve crossing the MBTA Grand Junction Railroad. However, the Company proposed to use pipe jacking trenchless crossing method to avoid disruption to rail operations. Therefore, the Siting Board finds that Route B29F West is superior to Route B30 West for traffic impacts. As noted above, the Siting Board also requires the Company to continue coordinating with MassDOT regarding possible impacts from Route B29F West.

MIT argues that the Company understated traffic impacts associated with Route B29F because, according to MIT, due to high utility density and construction complexity, the transmission line construction along Vassar Street would take years and create long-term disruption to traffic, including traffic affiliated with the MIT Campus. The Company counters that the pace of the transmission line construction could be much quicker if the Company were to employ multiple crews. The Siting Board directs the Company to address MIT's concerns by employing multiple crews, where practicable, subject to any required approval from the City of Cambridge. The Board also expects the Company to coordinate and communicate closely with MIT, MITIMCo, local officials, and abutting properties about construction progress. Finally, the Board has directed the Company to submit TMPs and TTCPs to address traffic mitigation. See Section VI.E.4.e above.

e. Visual Impacts

The Company proposes to construct the transmission lines underground regardless of route selected. The record shows that the Company will restore disturbed roadways and off-road surfaces to their preexisting conditions or better, which would avoid any permanent visual impacts along routes. The record also shows that the Company will also minimize temporary visual impacts by limiting the duration of construction and timing the construction in a manner that is least impactful to the landowner and users of the properties. Therefore, there will be no visual impacts from the transmission lines after construction.

However, unlike roadway surfaces that could be restored after the construction, the Board notes that the removal and replanting of public shade trees would have a longer-term visual impact until the replanted trees have time to grow back. The Board views this as the differentiating factor between route options for each Project Area and uses this information to make comparative findings on routes. However, the Siting Board recognizes the tentative nature of the Company's tree removal plan. Consequently, the Siting Board directs the Company to provide its finalized tree removal plan when available. With the implementation of mitigation measures, the Siting Board finds that the visual impacts of the transmission lines would be minimized.

i. Somerville Routes

Route S1A would have the least potential impact on public shade trees during construction. Therefore, the Siting Board finds that Route S1A is superior to Routes S15 and S11C for visual impacts.

ii. Kendall Routes

The record shows that both Routes K5A and K11 would encounter and potentially impact a significant number of public shade trees. Both routes would also likely involve tree removals by the Company and other parties on the Volpe Center site. The Siting Board finds that Routes K5A and K11 are comparable for visual impacts.

iii. Putnam Routes

Route P11 would encounter and potentially impact more public shade trees than Route P13. As a result, Route P11 could also have a greater visual impact than Route P13. Therefore, the Siting Board finds that Route P13 is superior to Route P11 for visual impacts.

iv. Brighton East Routes

The Board finds that Route B31 East would encounter and potentially impact more public shade trees, as well as likely requiring the removal of two or three public shade trees. On the other hand, Route B2A East's HDD work on Magazine Beach would create temporary visual impacts on an existing park, only during the off-season winter months when there would be few visitors. The visual impacts for both routes would be temporary. Whereas Route B31 East's removed and replanted public shade trees would take longer to restore, Route B2A East's visual impacts would be more substantial in scope but briefer in duration. Overall, the Siting Board finds that Route B2A East and Route B31 East are comparable for visual impacts.

v. Brighton West Routes

The Board notes that Route B29F West would likely require the removal of two or three public shade trees, whereas Route B30 West would pass by 130 more public shade trees. Overall, the Siting Board finds that the two routes are comparable for potential impacts to public shade trees and, thus, visual impacts.

f. Air Impacts

Because the exact quantities of air emissions for the transmission line construction are difficult to quantify, the Board considers two factors in its analysis: (1) the total length of the routes, which will roughly correspond to total construction duration and thus the total air emissions from construction vehicles and disturbed soils (longer routes would involve more transmission line laying and construction of additional manholes/splice vaults), and (2) proximity to land uses, sensitive receptors, and other facilities sensitive to air emissions.

Regarding mitigation, the Company will comply with industry best practices and established emission standards and regulations, such as the state vehicle idling law. With the implementation of mitigation measures, the Siting Board finds that the air impacts of construction of the transmission lines would be minimized.

i. Somerville Routes

Route S15 and Route S11C have fewer abutting residential land uses than Route S1A. Route S15 is shorter than Route S11C. The Siting Board finds that Route S15 is superior among the three routes considered for construction-related air impacts.

ii. Kendall Routes

Considering the proximity of the two route alignments, the Siting Board finds that Routes K11 and K5A are comparable for construction-related air impacts.

iii. Putnam Routes

The record shows that the longer distance of Route P11 (0.87 miles versus Route P13's 0.49 miles), would result more emissions during construction, especially in the vicinity of sensitive receptors. Therefore, the Siting Board finds Route P13 is superior to Route P11 for construction-related air impacts.

iv. Brighton East Routes

While Route B31 East is longer (3.26 miles versus Route B2A East's 2.91 miles), which could result in more dust and emissions during construction, Route B2A East involves HDD construction. On balance, the two routes are comparable for air impacts to the sensitive adjacent land uses. Accordingly, the Siting Board finds Routes B2A East and B31 East are comparable for construction-related air impacts.

v. Brighton West Routes

The longer Route B30 West (3.4 miles versus Route B29F West's 3.0 miles) could result in more dust and emissions during construction, especially in the vicinity of additional sensitive receptors along Route B30 West. Therefore, the Siting Board finds that Route B29F West is superior to Route B30 West on construction-related air impacts.

g. Hazardous Waste and Safety

The Company considered the number of MassDEP-listed sites to identify subsurface contamination. In order to make a more complete evaluation of the routes, Siting Board staff also took into account site remediation status to determine the risk of encountering subsurface contamination. With the implementation of mitigation measures, the Siting Board finds that the hazardous waste impacts of the Project would be minimized. The Board directs the Company to adhere to all applicable federal, state, and local regulations, and industry standards and guidelines established for the protection of the public.

i. Somerville Routes

Based on number of listed sites, Route S15 would have the greatest potential risk of encountering subsurface contaminations, followed by Route S1A, and then Route S11C. Accordingly, the Siting Board finds that Route S11C is superior to the other two routes for hazardous waste impacts.

ii. Kendall Routes

Although comparable in the total number of listed sites along each route, construction along the Route K5A would encounter more sites where no permanent solution has been implemented. Therefore, the Siting Board finds that Route K11 is superior to Route K5A for hazardous waste impacts.

iii. Putnam Routes

Based on number of listed sites, Route P11 would have greater potential impacts on encountering subsurface contaminations. Accordingly, the Siting Board finds that Route P13 is superior to Route P11 for hazardous waste impacts.

iv. Brighton East Routes

Based on number of listed sites, Route B31 East would have greater potential impacts on encountering subsurface contaminations. Accordingly, the Siting Board finds that Route B2A East is superior to Route B31 East for hazardous waste impacts.

v. Brighton West Routes

Based on number of listed sites, Route B29F West would have greater potential impacts on encountering subsurface contaminations. Accordingly, the Siting Board finds that Route B30 West is superior to Route B29F West for hazardous waste impacts.

h. Magnetic Fields

Magnetic fields are present whenever current flows in a conductor; they are not dependent on the voltage of the conductor. 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. Magnetic fields from transmission lines generally decrease with distance from the conductors. See Mid Cape Reliability Project, EFSB 19-06/D.P.U. 19-142/19-143, at 82 (2022).

The record shows that magnetic field levels associated with the Project, as modeled by the Company, would be (1) essentially equivalent between or among each set of alternative route alignments; and (2) mostly similar among the five Project Routes/duct bank segments, except at bridge crossings, where the transmission lines would be buried at shallower depths, and for the Kendall Routes, which is forecasted to have a higher transmission line loading due to power flow from and to Vicinity Energy. However, at average loading and a 25-foot distance from the duct bank centerline, the calculated magnetic field level for the Kendall Routes drops to approximately

8.4 mG, which is comparable to the calculated magnetic field levels directly above the duct bank in other routes. All of the modelled magnetic field values are comparable to those seen and approved previously by the Siting Board for transmission lines.

In addition, Table 22 in Section VI.E.1.c.i shows that each of the Company's preferred routes have either the fewest or comparable number of residential units within 50 feet of the route and directly abutting sensitive receptors. As these numbers demonstrate that the Company's preferred routes would expose noise impacts to the fewest sensitive abutters, the numbers also demonstrate the same in regard to magnetic fields generated by the new transmission lines.

Accordingly, the Siting Board finds that the magnetic field impacts are comparable between the Preferred and Noticed Alternative Routes for each of the five Project Routes, and that they are also minimized. Nevertheless, in locations where the transmission line alignment runs closely next to occupied buildings, such as in the Kendall Square area, the Siting Board advises the Company to locate the transmission lines as far away from the buildings as possible to further minimize magnetic impacts to building occupants.

i. MIT's Request for a MOU with the Company and Condition in MIT's Proposed Mitigation Measures

MIT requests that the Board require the Company to sign an MOU that incorporates conditions proposed by MIT on brief (MIT Brief at 3; see MIT Brief Attachment A). MIT argues such MOU is necessary to ensure the mitigation of potential adverse impacts on Ames Street that MIT finds to be the most troublesome (MIT Brief at 3). The Company objects to MIT's MOU request, noting that the Company and MIT had already discussed many topics that form the basis of MIT's request, and agrees to continue working with MIT (Company Reply Brief at 23 n. 25).[106]

Since MIT requested the proposed mitigation measures on brief, the Board did not have the opportunity to develop an evidentiary record to fully understand and evaluate MIT's proposed

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106 The Company also argues that there is no precedent for the Siting Board to require such an agreement, citing the Appeals Court decision in Town of Hopkinton v. Department of Public Utilities, 97 Mass. App. Ct. 1102, at 3 (2020) (Company Brief at 23).

measures. The Siting Board notes that it has made findings that impacts associated with each route have been minimized.

Given that one of the transmission routes runs through the MIT campus, the Board notes that there may be additional mitigation measures on which the parties may agree. The Siting Board recognizes that the Company and MIT are in discussions on mitigation of construction impacts near MIT's campus and encourages such discussion, in consultation with the City of Cambridge. Consequently, the Board directs Eversource to evaluate the specific mitigation measures proposed by MIT, and for the Company, MIT, and Cambridge to report back to the Siting Board within 60 days after the final decision on the status of negotiations on construction mitigation near the MIT campus. Such report may be filed jointly by the Company, MIT, and Cambridge, if mutually agreeable, or separately, if the Company, MIT or Cambridge prefer. If MIT, Eversource, or Cambridge do not agree on one or more of MIT's proposed mitigation measures in such pre-construction report, the Siting Board will provide each party an opportunity to present its position on the disputed issue(s), and the Siting Board or Director may make a final determination on whether the mitigation issue(s) in dispute in such pre-construction report should be implemented by Eversource.[107]

j. Cost

As noted in Section VI.E.2.a above, the Company estimated the cost of each Route. Based on these planning grade estimates, the Board finds the following for relative costs for the routes:

- Kendall Routes: Route K5A at $48.6 million, is $23.5 million less expensive than Route K11. Therefore, the Siting Board finds that Route K5A is preferable to Route K11 with respect to cost.

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[107] Depending on the nature and extent of any such dispute, this final determination may be made by the Siting Director. 980 CMR 2.05(2) ("the Board, the Chairman or the Chairman of the Department of Public Utilities may delegate to the Director Board-specific responsibilities other than the responsibility for the final decision in any matter").

- Putnam Routes: Route P13 at $37.6 million, is $19.1 million less expensive than Route P11. Therefore, the Siting Board finds that Route P13 is preferable to Route P11 with respect to cost.

- Brighton East Routes: Route B2A East at $194.0 million, is $5.6 million less expensive than Route B31. Therefore, the Siting Board finds that Route B2A East is preferable to Route B31 with respect to cost.

- Brighton West Routes: Route B29F West at $194.0 million, is $21.4 million less expensive than Route B30 West. Therefore, the Siting Board finds that Route B29F West is preferable to Route B30 West with respect to cost.

- Somerville Routes: Route S1A at $98.6 million, is $26.7 million less expensive than Route S15 and $31.4 million less expensive than Route S11C. Therefore, the Siting Board finds that Route S1A is preferable to Routes S15 and S11C with respect to cost, while Route S15 is preferable to Route S11C with respect to cost.

k. Reliability

Given that all the routes are underground and have relatively small differences in design, the Siting Board finds all routes to be comparable for reliability.

F. Substations Upgrades

The Company identified a variety of modifications to its existing Project Area substations, including modification to protection and control equipment within the substations; reconfiguring lines supplying the substations; duct bank reconfigurations, cable pulling/termination work (Exh. EV-2, at 5-50 to 5-53).[108] The Company provided a total planning grade cost estimate (i.e., -25%/+25%) of $37.6 million for all substation upgrade work (Exh. EV-2, at 1-8). The substations upgrades are an essential and inseparable part of the Project, contributing to the Project's ability to address reliability needs discussed earlier in Section III (see Exh. EV-2, at 1-1 to 1-2, 2-1).

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[108] See Exh. EV-2, at 4-51 to 4-53, for the discussion of the transmission line/duct bank reconfiguration associated with the Putnam Routes.

The record shows that a significant portion of the substation upgrades will occur within existing substations, and any work occurring outside the substations will have similar environmental impacts to transmission line construction. Given the similarities between substations upgrades and transmission line construction, any associated environmental impacts will be temporary, construction-related, and minimized. The Siting Board directs the Company to minimize environmental impacts from the substation upgrades via mitigation measures similar to those the Company will implement for the transmission line construction.

G. Conclusion on Analysis of Project Elements

The Siting Board is charged with ensuring that 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, 487 Mass at 747-748.

1. New Substation

The Company has provided the Board with information on environmental impacts and proposed mitigation measures, costs, and reliability of the New Substation. 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 New Substation would be minimized.

2. Underground Transmission Lines

i. Somerville Routes

Among the routes presented, the Board found that Route S15, including the Route S15 Variation, is superior to Routes S11C and S1A with regard to its impact for land use, noise, traffic and air. The impacts of Routes S15, S11C and S1A are comparable for soil contamination, magnetic fields, and water and wetlands. Route S15 is more expensive than Route S1A but less expensive than Route S11C.

However, given the reduced disruption to abutting residents and the continuous engagement with the MBTA, City of Somerville, and City of Cambridge to develop Route S15, the Siting Board finds that on balance Route S15 is superior.[109] 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 along Route S15, and the Route S15 Variation, would be minimized.

ii. Kendall Routes

The Board found that Routes K5A and K11 are comparable for a majority of environmental impacts. However, Route K5A is significantly less expensive than Route K11. Therefore, the Siting Board finds that Route K5A is the superior route, and with the implementation of the specified conditions and mitigation presented above, and compliance with all applicable local, state, and federal requirements, the environmental impacts along Route K5A would be minimized.

iii. Putnam Routes

The Siting Board found Route P13 to be superior for land use, noise, traffic, visual, air impacts and cost, and comparable with Route P11 on other categories of environmental impacts and reliability. The Siting Board concludes that Route P13 is the superior route for the proposed transmission line between the New Substation and Putnam Substation. 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 along Route P13 would be minimized.

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[109] Somerville has also requested that as part of the Project, the Company move existing overhead utility lines in the Boynton Yards area to underground conduits. Eversource and Somerville are in discussions on this request in connection with the ongoing HCA negotiations. The Siting Board sees value in consideration of mutual benefits from utility projects and other public improvements. However, the Siting Board is mindful of costs associated with such requests and possible ratepayer impacts. While Eversource and Somerville are free to discuss mutual benefits in Boynton Yards, Somerville's request is outside the scope of the Project and the Siting Board therefore declines to include it here.

iv. Brighton East Routes

The Siting Board found Route B2A East to be superior for land use, noise, traffic, safety and hazardous waste impacts, and cost, while inferior for impacts on waterbodies and wetlands, but comparable to Route B31 East on other categories of environmental impacts and in reliability. The Siting Board concludes that Route B2A East is the superior eastern route for the proposed transmission line between the New Substation and Brighton Substation. 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 along Route B2A East would be minimized.

v. Brighton West Routes

The Siting Board found Route B29F West to be superior for land use, noise, traffic, air, and cost, while inferior for safety and hazardous waste impacts, but comparable to Route B30 West on other categories of environmental impacts and in reliability. The Siting Board concludes that Route B29F West is the superior western route for the proposed transmission line between the New Substation and Brighton Substation. 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 along Route B29F West would be minimized.

3. Substations Upgrades

Upgrades at the five connecting substations (East Cambridge, Putnam, Somerville, Brighton, and North Cambridge) involves limited environmental impacts and the upgrades are necessary to guarantee the overall reliability of the Project The Siting Board finds that with the implementation of the general conditions and mitigation presented above for the Project, and compliance with all applicable local, state, and federal requirements, the environmental impacts for the substations upgrades would be minimized.

4. Conclusion

The Siting Board finds that the Project 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. Park City Wind at 158; Mid-Cape Reliability at 88; Beverly-Salem at 109.

B. Positions of the Parties

Eversource asserts that the Project is fully consistent with important state energy policies as articulated in the Electric Utility Restructuring Act of 1997 (the "Restructuring Act"), the Green Communities Act (c. 169 of the Acts of 2008), the Global Warming Solutions Act (c. 298 of the Acts of 2008), the Energy Diversity Act (c. 188 of the Acts of 2016), the Clean Energy Act (c. 227 of the Acts of 2018), and An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy (c. 8 of the Acts of 2021) (Exh. EV-2, at 6-1 to 6-7; Company Brief at 274).

No other party commented on this issue in briefs.

1. Health Policies

Eversource contends that the Project will be consistent with applicable health policies of the Commonwealth (Company Brief at 274-275). The Company noted that the Restructuring Act states that reliable electric service is of "utmost importance to the safety, health and welfare of the Commonwealth's citizens and economy…". (Company Brief at 274, citing Restructuring Act § 1(h)). Eversource asserts that the legislature has expressly determined that an adequate and reliable supply of energy is critical to the state's citizens and economy (id.). The Company argues that the Project as designed will enhance and ensure the reliability of the interconnected electric

transmission and distribution system in the Greater Cambridge area (Exh. EV-2, at 6-1; Company Brief at 275). The Company commits that Eversource will design, build, and maintain the facilities for the Project so that the health and safety of the public are protected (Exh. EV-2, at 6-1; Company Brief at 275). The Company concludes that by its compliance with, and promotion of the Commonwealth's energy policies as outlined in the Restructuring Act, it will also be consistent with its health policies (Company Brief at 274-275).

2. Environmental Protection Policies

Eversource asserts that the Project is consistent with the environmental protection policies as set forth in Chapter 164 of the General Laws and in other state and local environmental policies (Exh. EV-2, at 6-2; Company Brief at 275).

a. Energy and Climate Legislation

Eversource argues that the Project is consistent with the Green Communities Act (as amended and supplemented by St. 2012, c. 209, An Act Relative to Competitively Priced Electricity) (Company Brief at 277-278). The Company asserts that the Project's more robust system of new transmission lines and the New Substation will enable integration of additional clean energy generated by renewable energy and, expansion of electrification projects in the Greater Cambridge area, as well as support increased usage of electric vehicles and the associated installation of electric charging stations, consistent with the Green Communities Act and Cambridge and Somerville goals to achieve a clean, fossil-free energy supply for its residents (Exh. EV-2, at 5-61, 6-3; Tr. 3, at 447; Tr. 8, at 1175; Company Brief at 278). Eversource also contends that as part of the Company's evaluation of project alternatives, Eversource included the potential use of carbon free sources to meet the identified need in a reliable, cost-effective, and environmentally benign manner (Exh. EV-2, at 6-3). Eversource concludes that, in light of these factors, the Project is consistent with the Green Communities Act (Company Brief at 279).

Eversource asserts that the Project's design is also consistent with the goals of the Global Warming Solutions Act ("GWSA") (Company Brief at 278-280). The Company characterizes the GWSA's greenhouse gas ("GHG") emissions reduction targets of 25 percent from 1990 levels by

2020 and 80 percent from 1990 levels by 2050 as aggressive (Exh. EV-2, at 6-3). Eversource also notes that the GWSA obligates administrative agencies such as the Siting Board, in considering and issuing permits, to consider reasonably foreseeable climate change impacts (e.g., additional GHG emissions) and related effects (e.g., sea level rise) (id.). Pursuant to the GWSA, the Secretary issued the Clean Energy and Climate Plan ("CECP") for 2020 in December 2010 (Exh. EV-2, at 6-3). The Secretary also issued the CECP for 2025 and 2030 in 2022.

Eversource contends that the proposed improvements to the transmission system in the Project Area are consistent with the goals underlying the 2050 statewide emissions limit of net zero GHG emissions and the Massachusetts 2050 Decarbonization Roadmap (Company Brief at 278-279). Noting that the Commonwealth's goals for increased electrification (e.g., EV, new heat pump technologies), new local renewable resources (e.g., wind, solar and BESS), and the delivery of power from remote clean energy resources, such as offshore wind will require increased transmission capacity, Eversource argues that the proposed transmission improvements provided in the Project Area further these policies (Exhs. EV-2, at 6-3; EFSB-CPC--1).

The Company also addresses the Project's potential impacts on climate change and effects on sea levels (Exh. EV-2, at 6-3; Company Brief at 278-279). Eversource asserts that the Project's more robust system of additional transmission lines and the New Substation will enable integration of additional clean energy generated by renewables suppliers and, expansion of electrification initiatives in Cambridge and Somerville, and will support increased usage of EV and the transition of heating sources away from fossil fuels (Exh. EFSB-CPC-1; Company Brief at 279-281). In addition, Eversource states that the Project will facilitate the transmission of future renewable energy at large scale into Greater Cambridge that will be necessary to achieve the GWSA's ambitious 2050 GHG reductions (80 percent from 1990 levels) (Exh. EFSB-CPC-1).

Eversource describes the Energy Diversity Act as a multifaceted energy statute bill that facilitates the procurement and integration of renewable energy generation resources, including new offshore wind energy generation, firm service hydroelectric generation and new Class I Renewable Portfolio Standard ("RPS") eligible resources (St. 2016, c. 188, § 12; Company Brief at 281). Eversource argues that the Project will improve the reliability of the regional transmission system and better accommodate the addition of renewable and other clean energy resources in the

Greater Cambridge area (Exh. EV-2, at 6-4, 6-5; Company Brief at 281). Eversource therefore concludes that the Project is consistent with the Energy Diversity Act (Company Brief at 281).

Eversource also asserts that the Project design is consistent with the provisions of the Clean Energy Act, a statute that amended the Energy Diversity Act (St. 2018, c. 227; Company Brief at 281). The Company identifies a key goal of the Clean Energy Act as encouraging the further development of key energy resources such as energy storage including through more clean energy solicitations for resources such as solar, on-shore wind and off-shore wind (St. 2018, c. 227, § 20, 21; Company Brief at 282). Eversource concludes that given the proposed Project's improvements to the transmission grid, the proposed Project is consistent with the Clean Energy Act (Company Brief at 281).

b. Roadmap Act

Eversource cites the provisions of Chapter 8 of the Acts of 2021, "An Act Creating a Next Generation Roadmap for Massachusetts Climate Policy" (the "Roadmap Act") and certain provisions which established new interim goals for emissions reductions and authorizing a voluntary energy efficient building code for municipalities (Company Brief at 282). The Company notes the Roadmap Act requires that emissions must be 50 percent lower than 1990 emission levels and 75 percent lower by 2040 (Company Brief at 282).

Eversource also states that the Company has complied with the Roadmap Act's provisions relating to environmental justice principles in assessing the impact of the Project on environmental justice populations located in the vicinity of the Project and actions to provide information and project designs (Exh. EV-2, at 6-5). The Roadmap Act also expanded and built upon the Environmental Justice Policy of the EEA ("EJ Policy"), which was revised on June 24, 2021 (Exh. EV-2, at 5-57).[110] The Roadmap Act defines environmental justice principles as: (1) the meaningful involvement of all people with respect to the development, implementation and

[110] The Siting Board issued its EJ Strategy in February 2024 as required by the EEA EJ Policy. https://www.mass.gov/doc/february-2024-environmental-justice-strategy-english/download#page=133.

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.

The Company notes that the Project is located near neighborhoods within the radius of the New Substation and transmission lines, including in portions of Cambridge, Somerville, and Boston which qualify as environmental justice neighborhoods under the definitions provided in the Roadmap Act (Exh. EV-2, at 6-6, 5-56 to 5-63). Eversource asserts that the Company took several steps to facilitate meaningful and equitable participation by the residents of environmental justice populations (Exh. EFSB-CPC-5). From the outset, Eversource recognized that most of the Project would potentially impact environmental justice neighborhoods with sizable Spanish, Portuguese, Mandarin, and Haitian Creole speaking populations (id.).

The Company states that Eversource took several early steps to seek community involvement, consistent with the Commonwealth and Siting Board public participation requirements and recommendations (Company Brief at 284). Prior to the filing of its petitions in this proceeding, the Company held a series of virtual and in-person open house events to share information concerning the Project (Exh. EV-2, at 6-6; RR-EFSB-26; RR-EFSB-26(2)). The open house presentations were offered in English, Haitian Creole, Mandarin, Portuguese, and Spanish, respectively (Exhs. EV-2, at 6-6; RR-EFSB-26; RR-EFSB-26(3); RR-EFSB-26(4); RR-EFSB-26(5); RR-EFSB-26(6)).

Eversource states that the Company engaged these communities in many different forums, many different times of day, and in many different languages to ensure the communities had meaningful opportunities to participate and have a voice in the Project (Tr. 3, at 385). Since the filing of its petitions in this proceeding, the Company has complied with all notice, publication and translation requirements issued by the Siting Board in connection with the public comment hearings on June 28, 2022 and November 10, 2022 (Exh. EFSB-CPC-5). Eversource also stated its commitment to engaging environmental justice neighborhoods through proactive and sustained outreach throughout the siting, permitting, and construction process (id.; Exhs. EV-2, at 6-6; EFSB-CPC-4).

Eversource asserts that the Company's environmental analysis of the Project is designed to minimize the Project's impacts on all populations, including environmental justice populations (Exh. EV-2, at 6-6). Eversource asserts that the energy and environmental benefits of the Project greatly outweigh the "minimal" impacts of the Project, even considering existing environmental burdens in the community (Exh. EFSB-CPC-5). Eversource also states that the Project is critically needed to serve the electricity requirements of residents and businesses in the Project Area, which is experiencing rapid economic development and sustained load growth (Company Brief at 276-278, 285).

According to the Company, the Project will not only ensure continued reliability of electric service in the Project Area, it will allow the residents of Cambridge and Somerville to fully participate in the electrification goals and the related objectives of reducing emissions to offset the adverse effects of climate change, as set forth in the Commonwealth's 2050 Decarbonization objectives (Exh. EFSB-CPC-5). Eversource notes that the transmission and infrastructure improvements will contribute to advancing climate change and emission reduction initiatives and provide resulting benefits to the community and its residential and commercial inhabitants (Company Brief at 276-281). Eversource identified specific environmental benefits to neighboring environmental justice populations including the Company's restoration efforts at Magazine Beach and the facilitation of multi-use pathways, including along the Grand Junction Railroad corridor for Route S15 (Exh. EFSB-CPC-5; Tr. 3, at 415-19; Company Brief at 286).

Eversource concludes that the environmental burdens are limited and mitigated to the extent practicable and outweighed by the significant energy and environmental benefits of the Project, with particular emphasis on electric service reliability and the contribution of the Project to advancing climate change and emission reduction initiatives (Company Brief at 286). The Company concludes that the proposed Project has been designed and otherwise implemented consistent with the provisions of the Roadmap Act, and related policies (Company Brief at 286).

3. Resource Use and Development Policies

Eversource asserts that the Project will be constructed and operated in compliance with Massachusetts' policies regarding resource use and development (Exh. EV-2, at 6-6). The

Company points to the Commonwealth's Sustainable Development Principles, including: (1) supporting the revitalization of city centers and neighborhoods by promoting development that is compact, conserves land, protects historic resources and integrates uses; (2) encouraging remediation and reuse of existing sites, structures and infrastructure rather than new construction in undeveloped areas; and (3) protecting environmentally sensitive lands, natural resources, critical habitats, wetlands and water resources, and cultural and historic landscapes (id.). Eversource states that elements of the Project satisfy these principles as both the New Substation and the transmission lines will be predominantly located underground and within previously disturbed parcels of land and public ways (Exh. EV-2, at 6-6 to 6-7). The Company also notes the New Substation incorporates an innovative underground design that is integrated within a new residential and commercial development that will include open space in a growing area of Cambridge (id.). Eversource notes that the New Substation would be part of a larger open space program, the BXP MXD Plan, which will consist of hardscape, landscape, and public amenities such as benches and light recreation (Exh. EFSB-LU-1).

Eversource argues that the Company's proposed use of Article 97 lands on MassDCR's Magazine Beach property in Cambridge and portions of the Charles River Reservation on the west side of the Charles River in Boston (e.g., Dr. Paul Dudley White Bike Path) is consistent with the Commonwealth's policies as the Project would not destroy or threaten these "unique or significant resources" (e.g., significant habitat, rare or unusual terrain, or area of significant public recreation) (Exh. EV-2, at 6-6, 6-7). Noting the existence of numerous utilities located beneath Magazine Beach and the Dr. Paul Dudley White Bike Path, Eversource argues that the addition of a new underground transmission line in these locations will improve the current recreation areas with planned restoration of these resources after the completion of construction (Company Brief at 287-288). The Company notes its proposed mitigation package for these resources includes a transfer of Company land which would accommodate future public uses by DCR (Company Brief at 288.). Eversource concludes that the Project complies with, and furthers, the Commonwealth's policies regarding resource use and development and does not result in a net loss of Article 97 lands (Company Brief at 287).

C. Analysis and Findings of Consistency with Commonwealth Policies

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. Accordingly, projects that increase reliability in electric service to the community also can play a role to contribute to the health of the Commonwealth's citizens. See, e.g., Park City Wind at 161-163, Mid Cape Reliability at 89-90; Beverly-Salem at 109-110; Andrew-Dewar at 99; Sudbury-Hudson at 188. In Section III, above, the Siting Board found that the Project would improve the reliability of electric service in Massachusetts and improve the opportunities to contribute to electrification of end-uses and the decarbonization goals of the Commonwealth. 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 are consistent with current health policies of the Commonwealth.

2. Environmental Laws, Regulations, and Policies

Eversource has asserted that the construction of the Project will advance the Commonwealth's environmental protection and energy policies by facilitating the construction of transmission facilities to increase the reliability of the transmission and distribution system providing electricity to residents in Cambridge, Somerville, and Greater Boston; by providing additional capacity to serve anticipated increases in electric demands in the Project Area associated with the electrification of heating, electric vehicles and new distribution-side energy resources; and by accommodating the increased development in the Project Area. The new infrastructure will help to support the increased use of EVs and the associated installation of electric charging stations, consistent with the Green Communities Act. We also note that the Project has addressed climate resiliency concerns in its design of the Project infrastructure and incorporated information

related to projected flooding related to sea-level rise and extreme storms from materials available from local, state and federal sources. See Sections VI.G.1.c and VI.G.2.b.

The Siting Board agrees with the Company that the improvements in the Greater Cambridge area will strengthen and improve the reliability of the transmission system. While the primary Project purpose is to meet the identified need, the more robust system of additional transmission lines and the New Substation will enable integration of additional clean energy generated by renewables suppliers, expansion of electrification initiatives in Cambridge and Somerville, and will support increased usage of electric vehicles and the transformation of heating sources away from fossil fuels. In addition, the Project will facilitate the transmission of future renewable energy into the Greater Cambridge area that will be critical to achieve the GWSA's 2050 GHG reductions as well as the carbon reduction policies of Cambridge, Somerville, and Boston.

3. Compliance with the Roadmap Act

The Roadmap Act established new criteria to ensure that environmental justice populations are better informed of and have opportunities for meaningful participation in decision-making regarding proposed developments in their neighborhoods. See NSTAR Electric Company d/b/a Eversource Energy, EFSB 22-01, at 140-143 (2022) ("East Eagle Certificate)" at Section III.F.2, regarding Roadmap Act provisions. To meet that goal, the Roadmap Act included several provisions that address environmental justice. See Roadmap Act, Sections 56-60. The Roadmap Act contains statutory definitions of environmental justice populations, environmental benefits, and environmental burdens (including those from climate change). See Roadmap Act, Section 56, amending G.L. c. 30, § 62. The record shows that areas surrounding the Project, including the proposed New Substation and the proposed transmission routes, encompass environmental justice populations in neighborhoods in Cambridge, Somerville and Boston.

In determining the extent to which the Company has met its obligations to environmental justice populations, the Siting Board assesses: (1) the outreach efforts conducted by Eversource to inform residents of the Project and participate in the conversations shaping the proposed Project as

presented in this proceeding; and (2) the energy and environmental benefits and environmental burdens associated with the proposed Project.

a. Outreach Efforts Related to Project

In our review of the Company's outreach efforts, we have reviewed the extent to which Eversource engaged with stakeholder groups within the area of the proposed Project beginning in January 2019 (see Tr. 3, at 384). Eversource held more than 100 meetings with local groups prior to filing its application to the Siting Board (Tr. 3, at 384-385). The Company invited a wide number of individuals including representatives of community-based organizations including local, state and federally recognized tribes, municipal decision-makers, local residents, local businesses, local educational institutions, and stakeholders identified by others in meetings with Eversource (Exh. EFSB-CPC-5). In identifying potential stakeholders, the Company consulted with the MEPA Office and with community outreach agencies with Cambridge, Somerville, and Boston. (Tr. 3, at 386-389).

Information about and at these meetings was provided in English, Spanish and Portuguese to help residents who may have limited English proficiency to become aware of the meetings and information regarding the proposed Project (Tr. 3, at 384-385). Eversource also had in-person interpreters available at MEPA-related meetings[111] to provide interpretation in Russian, Haitian Creole, Spanish, and Brazilian Portuguese (Tr. 3, at 389). At evidentiary hearings, the Company's outreach director testified that Eversource sought to engage with different members of the community and communicate information in the language in which those members felt most comfortable (Tr. 3, at 385).

Eversource provided information to the community in a broad array of different forums, ranging from door-to-door contacts, community events, civic association meetings, open public

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[111] The proposed Project was the subject of review by MEPA in two separate review processes, the New Substation as part of the MEPA review of the larger BXP project and the proposed Project including both the New Substation and transmission routes in the Company's Environmental Notification Form ("ENF") filing for the Project (Tr. 3, at 390-397).

houses, public hearings held by municipal entities, traditional newspaper advertising in English, Spanish, and Portuguese publications, and at local gatherings (Tr. 3, at 385). The Company also noted that the forums including the public open houses took place at different times of day in an effort to provide opportunities for all members of the community to attend so that they could have a chance to attend, express their opinions and have a say in how the proposed Project was shaped (Tr. 3, at 385, 430-432).

It is notable that for the proposed New Substation site, the Company's involvement with Cambridge through the CRA and other community organizations began with discussions originally related to another Company-owned site on Fulkerson Street in Cambridge and evolved into the potential for collocation of the New Substation at the BXP location (Tr. 3, at 395-400, 404-405). This demonstrates that the Company responded to stakeholder input in a way that aimed to address stakeholder concerns. In addition, the Company received input related to the transmission line routes options from Cambridge, Somerville and Boston and other state agencies related to expected development and previous construction activities in the areas of the potential routes (Tr. 3, at 405-411)[112].

Eversource provided copies of a Project-specific outreach plan which addressed the strategies and guidelines for outreach related to the proposed Project through the permitting process (Exh. EFSB-CPC-4, Att. 1; Tr. 3, at 423-424). The Company also provided a Project-specific outreach plan for the planned construction phase for continued community outreach related to Eversource activities (Exh. EFSB-CPC-4, Att. 2). The outreach plans address areas such as identifying language needs, setting contacts for community stakeholders, reviewing options for multiple community venues and tracking commitments made by the Company to community members through the outreach process (Exh. EFSB-CPC-4(1); Tr. 3, at 441-442). By creating a plan that establishes a systematic approach to elements of the outreach process, the goals of different elements of the process and tracking the progress of specific outreach events, we find that

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[112] SCAH and the individual intervenors also participated in discussions related to potential additional route options, including routes in Somerville (Exh. EFSB-G-3).

the Company created a system which monitors each step of the outreach plan and potential lessons for continued outreach activities (Tr. 3, at 441).

The Company's outreach plan for construction incorporates additional elements that track critical items such as contractor training, notifications and timing related to construction activities, coordination related to traffic plans, and guidelines to address construction noise and property access which address the impacts that may be raised by residents throughout the construction process. These items will be updated on the Company's project website or through project updates to an email list (Exh. EFSB-CPC-4(2)). The Company's Project Service toll-free number 1-833-836-0302 and email address projectinfoma@eversource.com will allow caller and emailers to leave messages, ask questions or file complaints (RR-EFSB-20). Eversource committed to acknowledging all inquiries and complaints within 48 business hours, and working with individuals to find a solution (RR-EFSB-20). The Siting Board finds that the construction outreach plan provides an opportunity to systematically address resident concerns through the construction process and facilitate the safety and satisfaction of those residents in resolving potential construction issues.

Eversource also discussed the creation of a position to address equity and environmental justice concerns at the Company and training programs for employees in equity principles (RR-EFSB-11). Based on the record, the Siting Board finds that these efforts, in conjunction with the systematic and comprehensive approach to outreach as memorialized in the outreach plans, presented for the proposed Project, should facilitate the type of open communication with residents through the inception of a proposed project design to the completion of an approved Project that the Siting Board seeks to encourage. In future filings, we direct the Company and other applicants to continue to present a discussion of all efforts to provide better information to residents consistent with the Board's goals of promoting improved communication related to Project actions with potential impacts during construction.

The Siting Board finds the Company's outreach efforts to be reasonable in providing multiple opportunities for the members of neighboring environmental justice populations, including those with limited English proficiency, to gain information and provide comment

regarding the proposed Project. These outreach efforts were offered at a variety of times and forums to accommodate scheduling constraints potentially faced by residents.

b. Assessment of the Energy and Environmental Benefits and Environmental Burdens

The Roadmap Act includes in the definition of environmental justice principles, the equitable distribution of energy and environmental benefits and environmental burdens. G.L. c. 30, § 62; Roadmap Act, Section 56. The Roadmap Act amended Section 62 of Chapter 30 to define environmental benefits as "the access to clean natural resources, including air, water resources, open space, constructed playgrounds and other outdoor recreational facilities and venues, clean renewable energy sources, environmental enforcement, training and funding disbursed or administered by the executive office of energy and environmental affairs."

In this record, the Company identified certain Project attributes which constitute environmental benefits to various communities. These include the proposed routing along the Grand Junction Railroad in conjunction with municipal plans for a multi-use pathway rather than the original proposal along city streets in Cambridge. This routing change addressed concerns of local residents regarding construction impacts in a neighborhood that has already been exposed to substantial construction activity (Exh. EFSB-G-3; Tr. 3, at 412-417). Eversource stated that multi-use pathways offer benefits to environmental justice populations by providing safe recreation spaces for the community to travel without the need for public transportation or cars and providing the opportunity for small businesses to better connect to the community (Tr. 3, at 417). Multi-use pathways are consistent with the Roadmap Act's definition of environmental benefits as "the access to open space, constructed playgrounds and other outdoor recreational facilities and venues." Eversource also points to its proposed mitigation efforts related to Magazine Beach in collaboration with DCR, which will restore and improve existing soccer field conditions and allow better routing for an existing bike path now located along Memorial Drive (Tr. 3, at 417-420). The Siting Board agrees that these recreational improvements would constitute environmental benefits.

In addition, Eversource will improve the reliability of the existing transmission and distribution infrastructure in the proposed Project Area. The Siting Board agrees that the reliability improvements provide energy benefits to the residents of the area but also will provide

environmental benefits to area residents by providing capacity for serving the increasing electric demands associated with electrification and related decarbonization goals of the Commonwealth as well as Cambridge, Somerville, and Boston. By enhancing the ability of the interconnection of new clean renewable energy sources, we find that the proposed Project will provide significant environmental benefits. We also note that the Secretary's certificate approving Eversource's ENF also stated that Project would not have a disproportionate impact on environmental justice populations based on the environmental analysis provided in support of the ENF (see Exh. EV-4 at 11; Tr. 3, at 458-460). The Siting Board finds that the record in this proceeding supports that conclusion. In addition, the Board has extensively analyzed possible environmental burdens of the Project and has found that they will be minimized. In view of the above, the Siting Board finds that considerations of the equitable distribution of energy and environmental benefits and environmental burdens strongly favor the Project and are consistent with the environmental justice principles articulated in the Roadmap Act.

D. Conclusion

Based on the foregoing, the Company has satisfied the requirements in G.L. c. 164, §§ 69H, 69J that the proposed Project is "consistent with current health, environmental protection, and resource use and development policies as adopted by the [C]ommonwealth." See G.L. c. 164, §§ 69H, 69J. Subject to the specified mitigation and conditions set forth in this Decision and based on our findings relative to the health, energy and environmental policies of the Commonwealth, the Siting Board finds that the Company's plans for construction of the Project are consistent with the policies of the Commonwealth.

VIII. ANALYSIS UNDER G.L. C. 164, § 72

A. Standard of Review

General Laws, c. 164, § 72 requires, in relevant part, that an electric company seeking approval to construct a transmission line must file with the Department a petition for: "authority to construct and use […] a line for the transmission of electricity for distribution in some definite area or for supplying electricity to itself or to another electric Company or to a municipal lighting plant

for distribution and sale […] and shall represent that such line will or does serve the public convenience and is consistent with the public interest. The [D]epartment, after notice and a public hearing in one or more of the towns affected, may determine that said line is necessary for the purpose alleged, and will serve the public convenience and is consistent with the public interest."

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. Park City Wind at 211; Mid Cape Reliability at 112; 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).

B. Positions of the Parties

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 G.L. c. 164, § 69J would also support Project approval pursuant to Section 72 (Company Brief at 288-289). The Company maintains that the Project would contribute to a necessary supply of energy for the Commonwealth; would do so with a minimum impact on the environment and at the lowest possible cost; and that 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.

IX. SECTION 61 FINDINGS

MEPA provides that "[a]ny determination made by an agency of the Commonwealth shall include a finding describing the environmental impact, if any, of the Project and a finding that all feasible measures have been taken to avoid or minimize said impact" and shall consider reasonably foreseeable climate change impacts, including additional GHG emissions, and effects, such as predicted sea level rise ("Section 61 Findings"). G.L. c. 30, § 61.[113] Pursuant to 301 CMR 11.01(3), Section 61 Findings are necessary when an Environmental Impact Report ("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-3; EFSB-G-4). On November 8, 2021, the Secretary issued a MEPA Certificate stating that the Project does not require an EIR and that the Project's environmental impacts will be

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[113] Pursuant to G.L. c. 164, § 69I, the Board is not required to make Section 61 Findings in taking any action pursuant to G.L. c. 164, § 69J. However, because this proceeding also includes a determination pursuant to G.L. c. 164, § 72, the Board's exemption from Section 61 Findings does not apply.

avoided, minimized, or mitigated to the extent practicable (Exhs. EV-3; EFSB-G-4(1)). The Secretary stated that measures to avoid, minimize and mitigate environmental impacts include construction of the New Substation in an underground vault; use of HDD to avoid direct impacts to the Charles River; provision of compensatory land of equal value to the easement in Magazine Beach; implementation of TMPs during construction; use of sedimentation and erosion controls around work areas; and implementation of measures to minimize noise and dust during construction (Exh. EV-3, at 5). Consequently, Section 61 Findings are not necessary in this proceeding.

X. DECISION

The Siting Board's enabling statute directs the Siting Board to implement the energy policies contained in G.L. c. 164, §§ 69H to 69Q, to provide a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost. G.L. c. 164, § 69H. Thus, an applicant must obtain Siting Board approval under G.L. c. 164, § 69J, prior to construction of a proposed energy facility.

In Section III, above, the Siting Board finds that additional energy resources are needed in the Project Area to maintain a reliable supply of electricity. In Section IV, above, the Siting Board finds that the Project is superior to the other identified alternatives 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 it has 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, and therefore 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 Section VI, above, the Siting Board finds that the Project 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 proposed Routes would be minimized. The Siting Board finds that the Project along the proposed Routes 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, 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. 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, as described herein, subject to Conditions A through Q:

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, 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.

C. 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.

D. Given the possible risk of water infiltration of the vault due to the high groundwater table, the Board directs the Company to develop a maintenance protocol to: (1) assess performance of the sealant joints on a periodic basis; (2) identify remediation measures if required; and (3) report incidents and any remediation measures as soon as flaws are identified to authorities having jurisdiction, including the Board. The Board also directs the Company to provide a summary of the requirements with which BXP must abide for its drainage system design. The Company shall submit this information to the Siting Board within 90 days before Project operation.

E. Given the high groundwater levels at the location of the New Substation, as well as the first-of-its-kind underground location of the New Substation, the Siting Board directs the Company every five years following commissioning of the Project to review Cambridge and the state's projections of sea level rise and submit a report to the Siting Board analyzing the necessity, appropriateness, and cost of implementing additional flood mitigation measures at the New Substation to protect the New Substation from risks due to flooding. In preparing each report the Company shall consult with agencies including, but not limited to, the City of Cambridge, Office of Coastal Zone Management, Massachusetts Emergency Management Agency, and the Department of Environmental Protection. The report shall also include a discussion of any environmental impacts related to the proposed mitigation measures.

F. The Board directs the Company to submit the TMPs and TTCPs 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.

G. The Siting Board directs the Company to develop the outreach plan for the Project in consultation with the cities of Boston, Cambridge, and Somerville, 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, as necessary.

H. The CRA and the Cambridge Planning Board are responsible for approving the final public park design details and surface treatments as part of BXP's local permit application process. The Board directs the Company to submit a copy of the approved design when available.

I. The Siting Board directs the Company to seek approval from the Cambridge Fire Department and other relevant jurisdictional authorities on all aspects of substation fire safety design including: (1) fire protection considerations on the site including emergency access; (2) fire protection for substation building; (3) fire protection for substation including construction material, water supply, emergency access/exit corridors and fire extinguisher requirements; (4) fire protection for substation equipment; and (5) life safety. In addition, the Board directs the Company to develop an emergency response plan ("ERP") that is specific to the New Substation in coordination with the Cambridge Fire Department. The Company shall file the New Substation ERP 30 days prior to operation of the New Substation.

J. The Siting Board directs the Company to submit to the Siting Board the approvals from all relevant jurisdictional authorities regarding its Fire Protection Plan along with its Fire Hazard Analysis when they are available. The Board directs the Company to submit its most recent ERP before beginning construction work for the New Substation.

K. Given that the Company may make minor adjustments to the route alignment as the Project progresses, and the sensitivity of the Magazine Beach property and the Allston Multimodal Project, the Siting Board directs the Company to submit as a compliance filing (1) a statement and map depicting the final alignment of Route B2A East, and (2) a statement from MassDCR and MassDOT acknowledging such final alignment.

L. The Siting Board directs the Company to continue to work closely with MassDOT on coordinating construction and to inform the Siting Board of any significant changes to route alignments from its discussions.

M. The Siting Board directs the Company to address MIT's concerns by employing multiple crews, where practicable, subject to any required approval from the City of Cambridge. The Board also expects the Company to coordinate and communicate closely with MIT, MITIMCo, local officials, and abutting properties about construction progress.

N. The Board directs the Company's to adhere to all applicable federal, state, and local regulations, and industry standards and guidelines established for the protection of the public.

O. The Siting Board recognizes that the Company and MIT are in discussions on mitigation of construction impacts near MIT's campus and encourages such discussion, in consultation with the City of Cambridge. Consequently, the Board directs Eversource to evaluate the specific mitigation measures proposed by MIT, and for the

Company, MIT, and Cambridge to report back to the Siting Board within 60 days after the final decision on the status of negotiations on construction mitigation near the MIT campus. Such report may be filed jointly by the Company, MIT and Cambridge, if mutually agreeable, or separately, if the Company, MIT, or Cambridge prefer. If MIT, Eversource, or Cambridge do not agree on one or more of MIT's proposed mitigation measures in such pre-construction report, the Siting Board will provide each party an opportunity to present its position on the disputed issue(s), and the Siting Board or Director may make a final determination on whether the mitigation issue(s) in dispute in such pre-construction report should be implemented by Eversource.

P. The Siting Board directs the Company to minimize environmental impacts from the substation upgrades via mitigation measures similar to those the Company will implement for the transmission line construction.

Q. Eversource's typical construction work hours would be from 7:00 a.m. to 7:00 p.m. Monday through Friday and from 9:00 a.m. to 6:00 p.m. on Saturdays. The Siting Board directs the Company to limit construction to the above schedule. Work requiring longer continuous duration than allowed by normal construction hours allow, such as cable splicing, is exempted from this condition. The Siting Board also directs the Company to coordinate with the cities of Boston, Cambridge, and Somerville, and MassDOT or other jurisdictional agencies, to determine facilities and areas, such as schools and school grounds, where additional construction hour limitations that are narrower than weekdays 7:00 a.m. to 7:00 p.m. and Saturdays from 9:00 a.m. to 6:00 p.m. may be appropriate to mitigate noise or other concerns. The Company shall also communicate at least 48 hours in advance with the cities of Boston, Cambridge, Somerville, and MassDOT when it plans to employ longer continuous duration activities.

Should the Company need to extend construction work beyond the above-noted hours and days, except for emergency circumstances on a given day necessitating extended hours, Eversource shall obtain written permission from the relevant municipal authority before the commencement of such work and provide the Siting Board with a copy of such permission. If Eversource and city 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.

Because issues addressed in this Decision relative to the Project 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 Project 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 and 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 Mayors, City Councilors, and Planning Boards of the City of Cambridge, the City of Somerville, and the City of Boston. The Company shall also send the Decision to the following municipal entities in the Cities of Cambridge, Somerville and Boston: City Clerks, City Managers, Zoning Boards of Appeals, Departments of Public Works, and Conservation Commissions.

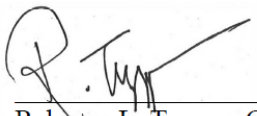
The Company shall certify to the Secretary of the Department within ten business days of issuance that such service has been made.

S/ Donna C. Sharkey

Donna C. Sharkey, Esq.
Presiding Officer

Dated this 28th day of June 2024

Approved by a vote of the Energy Facilities Siting Board at its meeting on June 27, 2024, by the members present and voting. Voting for the Tentative Decision as amended: Rebecca L. Tepper, Secretary of the Executive Office of Energy and Environmental Affairs and Chair, EFSB; James M. Van Nostrand, Chair, Department of Public Utilities; Staci Rubin, Commissioner of the Department of Public Utilities; Elizabeth Mahony, Commissioner of the Department of Energy Resources; Bonnie Heiple, Commissioner, Department of Environmental Protection; Jonathan Cosco, General Counsel and designee for the Yvonne Hao, Secretary of the Executive Office of Economic Development; Joseph C. Bonfiglio, Public Member; and Greg Watson, Public Member.



Rebecca L. Tepper, Chair
Energy Facilities Siting Board

Dated this 28th day of June, 2024

Appeal as to matters of law from any final decision, order or ruling of the Siting Board may be taken to the Supreme Judicial Court by an aggrieved party in interest by the filing of a written petition praying that the order of the Siting Board be modified or set aside in whole or in part. Such petition for appeal shall be filed with the Siting Board within twenty days after the date of service of the decision, order or ruling of the Siting Board, or within such further time as the Siting Board may allow upon request filed prior to the expiration of the twenty days after the date of service of said decision, order or ruling. Within ten days after such petition has been filed, the appealing party shall enter the appeal in the Supreme Judicial Court sitting in Suffolk County by filing a copy thereof with the clerk of said court. Massachusetts General Laws, Chapter 25, Sec. 5; Chapter 164, Sec. 69P.