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 and Operate a New 115-kV Electric Transmission Line Between the Bourne Switching Station and West Barnstable Substation	EFSB 19-06

PETITION OF NSTAR ELECTRIC COMPANY d/b/a EVERSOURCE ENERGY FOR APPROVAL OF A NEW 115-kV ELECTRIC TRANSMISSION LINE BETWEEN THE BOURNE SWITCHING STATION AND WEST BARNSTABLE SUBSTATION

I. INTRODUCTION

Now comes NSTAR Electric Company d/b/a Eversource Energy ("Eversource" or the "Company"), seeking approval from the Energy Facilities Siting Board (the "Siting Board") pursuant to G.L. c. 164, § 69J ("Section 69J") to construct and operate an approximately 12.5-mile, overhead 115-kilovolt ("kV") electric transmission line (the "New Line") along an existing Eversource right-of-way ("ROW") between Eversource's Bourne Switching Station and West Barnstable Substation. The New Line, together with the related station improvements, is referred to as the Mid Cape Reliability Project, or the "Project." The Project, as more fully described herein, is necessary to provide a reliable energy supply for the Commonwealth while minimizing cost and environmental impacts in accordance with Section 69J. In support thereof, the Company states as follows:

1. Eversource is a Massachusetts corporation and an "electric company" as defined by G.L. c. 164, § 69G and is subject to the provisions of G.L. c. 164, §§ 69H-69R.

2. Pursuant to G.L. c. 164, § 69J, an electric company seeking to construct a "facility" must first obtain approval from the Siting Board. Pursuant to G.L. c. 164, § 69G,

jurisdictional facilities are defined to include a "a new electric transmission line having a design rating of 115 kilovolts or more which is 10 miles or more in length on an existing transmission corridor" and any "ancillary structure which is an integral part of the operation of any transmission line which is a facility." The proposed New Line is approximately 12.5 miles in length in Eversource's existing right-of-way ("ROW") #342 and has a design rating of 115 kV.

II. PROJECT DESCRIPTION

3. The Project is one of approximately 25 individual transmission projects to emerge from an extended transmission study process conducted by ISO-NE and the Southeastern Massachusetts and Rhode Island ("SEMA-RI") Working Group (the "Working Group") to identify and address reliability needs of the regional transmission system that serves southeastern Massachusetts and Rhode Island. This study process ultimately resulted in the issuance of: (1) the SEMA-RI Area Transmission Needs Assessment, dated May 2016 ("Needs Assessment"), and (2) the SEMA-RI Transmission Solutions Study, dated February 2017 ("Solutions Study"), which documented the selection of a set of transmission projects to address the needs identified in the Needs Assessment. The Working Group identified six geographic need areas, which are referred to as Groups. The Needs Assessment identified several criteria violations in the Group 6 Cape Cod Subarea, which includes a southeastern portion of Plymouth County, Cape Cod and the islands of Martha's Vineyard and Nantucket. As described more fully in Section 2 of the Analysis and as documented in the Needs Assessment, certain existing transmission lines serving the Cape Cod Subarea would overload under various contingencies at existing peak load levels, which would lead to a voltage collapse and the consequent loss of service for approximately 200,000 customers in 22 towns on Cape Cod, Martha's Vineyard and Nantucket. The Solution Study identified the selection of a new, 115-kV transmission line

between Bourne Switching Station and West Barnstable Substation as the preferred solution to meet the needs identified in the Cape Cod Subarea.

4. Eversource updated the need analysis conducted by the Working Group to evaluate transmission needs in the Cape Cod Subarea using the 2019 Capacity, Energy, Loads and Transmission ("CELT") report, including the updated energy efficiency and solar photovoltaics ("PV") forecast, to confirm the need for the Project remains. As demonstrated in Section 2 of the Analysis, the potential for line overloads, low voltage and voltage collapse persists; thus, the need for the Project remains.

5. The Company proposes to construct, operate and maintain the New Line, which will be installed in the Towns of Bourne, Sandwich, and Barnstable.

6. To accommodate the New Line, the Company also proposes to undertake improvements at the West Barnstable Substation, including the addition of a new 115-kV switchyard bay (circuit breakers and bus work) on the west side of the existing substation. The western fence line of West Barnstable Substation will be expanded by approximately 65 feet to accommodate the new terminal. The expansion work will take place on some existing disturbed and graveled areas but will also include approximately 1.4 acres of tree removal where grading, modifications to an existing stormwater swale, reconfiguring an existing gravel access road and relocating the existing 25-kV distribution line poles will occur. There is sufficient space at Bourne Switching Station to terminate the New Line.

7. The Company also offers for the Siting Board's consideration a variation in the Project design intended to provide flexibility for the future expansion of the electric system on Cape Cod to accommodate the likely need to interconnect new renewable energy generation. This "Noticed Variation" is to build the Project's transmission structures to be capable of

operating at 345-kV should the need for operation at that voltage materialize in the future. To meet the current identified need for the Project and to minimize the potential siting, cost, community and environmental impacts of building an entirely distinct 345-kV line or rebuilding the proposed 115-kV line to 345-kV standards in the future, the Company is presenting the Noticed Variation to build the Project to 345-kV standards but to operate it at 115 kV. If the Noticed Variation is approved and the need for the New Line to be operated at 345 kV materializes in the future, the Company would return to the Siting Board for permission to operate the line at 345 kV at that time.

8. Simultaneously herewith, the Company is submitting: (a) a petition with the Department requesting approval of the New Line in accordance with G.L. c. 164, § 72 ("Section 72 Petition"); (b) a petition requesting individual and comprehensive exemptions from the Zoning Ordinance of the Town of Barnstable, pursuant to G.L. c. 40A, § 3 (the "Zoning Petition") to facilitate the work at West Barnstable Substation; and (c) motions filed with the Department of Public Utilities (the "Department") and the Siting Board requesting that the Department refer the Section 72 Petition and the Zoning Petition to the Siting Board and that the Siting Board consolidate each of the petitions for its review. See G.L. c. 25, § 4; G.L. c. 164 § 69H(2). The Company incorporates by reference the Section 72 Petition and the Zoning Petition together with all attachments into this Section 69J Petition. The Section 69J Petition and Attachment A appended thereto, a document entitled *Analysis to Support Petitions Before the Energy Facilities Siting Board – Mid Cape Reliability Project* (the "Analysis"), provide the factual basis for the Company's conclusion that the Project is necessary in order to maintain a reliable supply of electricity in the Commonwealth while balancing issues of cost and environmental impacts.

III. STANDARD OF REVIEW

9. In accordance with Section 69J, before approving a petition to construct a proposed energy facility, the Siting Board requires an applicant to justify its proposal in four phases. First, the Siting Board requires the applicant to show that additional energy resources are needed (see Analysis, Section 2). Second, the Siting Board requires the applicant to establish that, on balance, its 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 Analysis, Section 3). Third, the Siting Board requires the applicant to show that it has considered a reasonable range of practical facility siting alternatives and that the proposed site (or route) for the facility is superior to a noticed alternative site (or route) in terms of cost, environmental impact and reliability of supply (see Analysis, Sections 4 and 5). Finally, the applicant must show that its plans for construction of its new facilities are consistent with the current health, environmental protection and resource use and development policies as developed by the Commonwealth (see Analysis, Section 6). As demonstrated throughout the Analysis, the Project satisfies the Siting Board's standards and relevant precedent for jurisdictional facilities.

A. The Project is Needed.

10. Section 69J provides that the Siting Board should approve a petition to construct if it determines that the petition meets certain requirements, including that the plans for the construction of the applicant's facilities are consistent with the policies stated in G.L. c. 164, § 69H to provide a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost. In carrying out its statutory mandate with respect to proposals to construct energy facilities in the Commonwealth, the Siting Board evaluates whether there is a need for additional energy resources to meet: (1) reliability objectives;

(2) economic efficiency objectives; or (3) environmental objectives. NSTAR Electric Company d/b/a Eversource Energy, EFSB 16-02/D.P.U. 16-77, at 8-9 (2018) ("Eversource Needham"); NSTAR Electric Company d/b/a Eversource Energy and New England Power Company d/b/a National Grid, EFSB 15-04/D.P.U. 15-140/15-141, at 9-10 (2018) ("Eversource/NEP Woburn-Wakefield"); NSTAR Electric Company d/b/a Eversource Energy, EFSB 15-03/D.P.U. 15-64/15-65, at 6-7 (2017) ("Eversource Mystic-Woburn"). Accordingly, the need for a particular facility can be demonstrated by showing need on any (or all) of those three bases. ECC Remand, 1 DOMSB 213, at 411-12 & n.264 (1993); see, e.g., Eversource Needham at 8-9; Eversource Woburn-Wakefield at 9-10; Eversource Mystic-Woburn at 6-7.

11. To ensure reliability, each transmission and distribution company establishes planning criteria for construction, operation, and maintenance of its transmission and distribution system. Eversource Needham at 8; Eversource/NEP Woburn-Wakefield at 9; Eversource Mystic-Woburn at 6-7. Compliance with the applicable planning criteria demonstrates a "reliable" system. See, e.g., Eversource Needham at 8; Eversource Woburn-Wakefield at 9; Eversource Mystic-Woburn at 6-7.

12. To determine whether system improvements are needed, the Siting Board: (1) examines the reasonableness of the Company's system reliability planning criteria; (2) determines whether the Company uses reviewable and appropriate methods for assessing system reliability over time based on system modeling analyses or other valid reliability indicators; (3) determines whether the relevant transmission and distribution system meets these reliability criteria over time under normal conditions and under reasonable contingencies, given existing and projected loads; and (4) determines whether acceleration of conservation and load management programs, and pursuant to c. 249 of the Acts of 2004, the use of other alternatives

to the facility, including other methods of transmitting or storing energy, might eliminate or slow the need for such additional energy resources.[1] Eversource Needham at 9; Eversource/NEP Woburn-Wakefield at 9; Eversource Mystic-Woburn at 7.

13. When a petitioner's analysis of system reliability and facility requirements is driven, at least in part, by load projections, the Siting Board reviews the underlying load forecast. Eversource Needham at 9; Eversource/NEP Woburn-Wakefield at 9-10; Eversource Mystic-Woburn at 7. 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. G.L. c. 164, § 69J; Eversource Needham at 9; Eversource/NEP Woburn-Wakefield at 9-10; Eversource Mystic-Woburn at 7. To ensure that this standard has been met, the Siting Board requires that forecasts be reviewable, appropriate and reliable. Eversource Needham at 9; Eversource/NEP Woburn-Wakefield at 9-10; Eversource Mystic-Woburn at 7. 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; and a forecast is considered reliable if its data, assumptions and judgments provide a measure of confidence in what is most likely to occur. Eversource Needham at 9; Eversource/NEP Woburn-Wakefield at 10; Eversource Mystic-Woburn at 7.

14. As described more fully in Section 2 of the Analysis, the primary purpose of the Mid Cape Reliability Project is to address potential thermal overloads and low voltage conditions

[1] Pursuant to c. 249 of the Acts of 2004, applicants proposing a new transmission line are required to provide ". . . (3) a description of alternatives to the facility, such as other methods of transmitting or storing energy . . . or a reduction of requirements through load management . . .." In addition, applicants are required to demonstrate that "projections of the demand for electric power . . . include an adequate consideration of conservation and load management." G.L. c. 164, § 69J.

that could result in the loss of electric service to the entire Cape Cod area and the islands of Martha's Vineyard and Nantucket, totaling over 500 megawatts of load. Such an outage could affect over 200,000 customers in the Cape Cod area. The need is present at existing load levels and is therefore immediate.

B. The Company Considered Alternatives to the Project.

15. The Siting Board is required to evaluate proposed projects to ensure a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost. See G.L. c. 164, § 69H. In addition, Section 69J requires a proposed project proponent to present alternatives to the proposed facility, which may include: (a) other methods of transmitting or storing energy; (b) other sources of electrical power or natural gas; or (c) a reduction of requirements through load management. Eversource Needham at 13; Eversource/NEP Woburn-Wakefield at 18; Eversource Mystic-Woburn at 18.

16. In implementing its statutory mandate, the Siting Board requires a petitioner to show that, on balance, its proposed project is superior to alternative approaches in terms of reliability, cost, environmental impact, and ability to meet a previously identified need. Eversource Needham at 13-14; Eversource/NEP Woburn-Wakefield at 18; Eversource Mystic-Woburn at 18. 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. Eversource Needham at 14; Eversource/NEP Woburn-Wakefield at 18-19; Eversource Mystic-Woburn at 18.

17. The Company has comprehensively identified and analyzed various alternatives to address the identified needs for the Project. In order to determine the approach that best balances reliability, cost and environmental impact, and in accordance with Section 69J and

Siting Board precedent, the Company evaluated a series of project approach alternatives for their potential to address the needs identified in the Needs Assessment. Section 3 of the Analysis describes the detailed analyses undertaken by the Company to identify and evaluate alternative means to address the needs identified in Section 2, including: (1) a No-Build Alternative; (2) a transmission alternative involving the reconductoring, rebuilding and bifurcation of existing transmission lines, as well as associated terminal system upgrades;[2] and (3) non-transmission alternatives ("NTAs") such as energy efficiency, demand response programs and distributed generation.. The Company first rejected the No-Build Alternative after determining that the identified transmission system reliability need, which exists at current load levels would remain unaddressed and that the transmission system would not meet mandatory transmission reliability planning standards and criteria. Next, the Project was shown to be superior to the transmission alternative based on a balancing of cost, reliability and environmental impacts. Lastly, the Company concluded that no feasible or practical NTA to this Project can address the identified need. The Company's analysis showed that any hypothetical NTA that could be identified would be unprecedented in scope, many multiples higher in cost, difficult to implement, and less flexible and robust in operation than the Project.

18. Accordingly, a new 115-kV overhead transmission line between Bourne Switching Station and West Barnstable Substation was advanced to the transmission routing analysis presented in Section 4 of the Analysis.

C. The Company Properly Evaluated Alternative Routes.

19. The Siting Board has a statutory mandate to implement the policies of G.L. c.

[2] More specifically, the transmission alternative studied consists of the following components as more fully described in Section 3 of the Analysis: (1) reconductor and rebuild a 115-kV overhead transmission line from Bourne Switching Station to West Barnstable Substation (approximately 26.5 miles); (2) bifurcate a 115-kV transmission line from Bourne Switching Station to Barnstable Switching Station (approximately 16 miles); and (3) construct the associated terminal system upgrades.

164, §§ 69J-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, 69J. Further, Section 69J requires the Siting Board to review alternatives to planned projects, including "other site locations." In implementing this statutory mandate, the Siting Board requires a petitioner to demonstrate that it has considered a reasonable range of practical siting alternatives and that the proposed facilities are sited at locations that minimize costs and environmental impacts while ensuring supply reliability. Eversource Needham at 21; Eversource/NEP Woburn-Wakefield at 34; Eversource Mystic-Woburn at 26. To do so, an applicant must satisfy a two-pronged test: (1) the applicant must first 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; and (2) the applicant must establish that it identified at least two noticed sites or routes with some measure of geographic diversity. Eversource Needham at 21; Eversource Woburn-Wakefield at 34-35; Eversource Mystic-Woburn at 26.

20. The Company engaged in a comprehensive route selection process to determine the best routes that contribute to a reliable energy supply at the lowest possible cost and that result in the least environmental impact with respect to the construction and operation of the Project. The route selection process for the New Line, which resulted in the selection of a Preferred Route and a Noticed Alternative Route, is described in Section 4 of the Analysis.

D. Environmental Impacts, Cost and Reliability of the Project and the Noticed Alternative Route Have Been Appropriately Evaluated.

21. In implementing its statutory mandate to ensure a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost, the Siting Board requires a petitioner to show that its proposed facility is sited at a location that

minimizes costs and environmental impacts while ensuring a reliable energy supply. To determine whether such a showing is made, the Siting Board requires a petitioner to demonstrate that the proposed site for the facility is superior to the noticed alternative on the basis of balancing cost, environmental impact and reliability of supply. Eversource Needham at 32; Eversource/NEP Woburn-Wakefield at 72; Eversource Mystic-Woburn at 33.

22. An assessment of all impacts of a proposed facility is necessary to determine whether an appropriate balance is achieved both among conflicting environmental concerns as well as among environmental impacts, cost and reliability. A facility that achieves that appropriate balance meets the Siting Board's statutory requirement to minimize environmental impacts at the lowest possible cost. Eversource Needham at 32; Eversource/NEP Woburn-Wakefield at 72; Eversource Mystic-Woburn at 33.

23. In order to determine if a petitioner has achieved the proper balance among various environmental impacts and among environmental impacts, cost and reliability, the Siting Board determines if the petitioner has provided sufficient information regarding environmental impacts and potential mitigation measures to enable the Siting Board to make such a determination. The Siting Board then determines whether environmental impacts would be minimized. Similarly, the Siting Board must find that the petitioner has provided sufficient cost and reliability information in order to determine if the appropriate balance among environmental impacts, cost and reliability is achieved. Eversource Needham at 73-74; Eversource/NEP Woburn-Wakefield at 136; Eversource Mystic-Woburn at 72-73.

24. Accordingly, the Siting Board examines the environmental impacts, reliability and cost of the proposed facilities along the Preferred and Noticed Alternative Routes to determine: (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. In this examination, the Siting Board compares the preferred and alternative routes to determine which is superior with respect to providing a reliable energy supply for the Commonwealth with a minimum impact to the environment at the lowest possible cost. Eversource Needham at 73-74; Eversource/NEP Woburn-Wakefield at 136; Eversource Mystic-Woburn at 72-73.

25. The Company conducted a comprehensive analysis of the environmental impacts associated with the Project and will take steps to appropriately minimize and mitigate such impacts. The Company also analyzed the Noticed Variation, which would involve the design and construction of a 345-kV transmission line on the same ROW as the Project but operated at 115-kV, relative to the Project. The Company's analysis demonstrates that the Noticed Variation will cost more than the Project, but will have similar environmental impacts, while providing potential synergy for future interconnection of renewable generation. Overall, the Company's analysis demonstrates that the Project will achieve an appropriate balance among conflicting environmental concerns as well as among environmental impacts, reliability and cost. The Company's analysis also provides a sufficient basis for the Siting Board to approve the Noticed Variation. The cost, reliability and environmental impacts analyses are set forth in Section 5 of the Analysis.

E. The Project Meets the Siting Board's Consistency Standards in Accordance with Precedent.

26. Section 69J states, inter alia, that the Siting Board shall approve a petition to construct a facility if it determines that "plans for expansion and 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."

27. The Project is necessary to ensure the reliable supply of electricity to customers on Cape Cod and the islands of Martha's Vineyard and Nantucket. Section 6 of the Analysis demonstrates that the construction and operation of the Project is consistent with current health, environmental protection and resource use and development policies as adopted by the Commonwealth of Massachusetts.

WHEREFORE, Eversource respectfully requests that the Siting Board, pursuant to G.L. c. 164, § 69J, conduct a public hearing on this Petition (and on any matters referred to the Siting Board from the Department) and take such other action as may be necessary to: (i) grant the authority to construct the Project as more particularly described in the attached Analysis; (ii) find that such construction is required in order to provide a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost; and (iii) find that the construction of the Project is consistent with current health, environmental, and resource use and development policies as adopted by the Commonwealth of Massachusetts and the policies stated in G.L. c. 164, § 69H.

Respectfully Submitted,

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