The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC UTILITIES

D.P.U. 14-03 April 13, 2015

Petition of NSTAR Electric Company pursuant to G.L. c. 40A § 3 for Exemptions from the Zoning Bylaws of the Town of Mashpee

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TABLE OF CONTENTS

I. INTRODUCTION

A. Description of the Proposed Project

On January 16, 2014, NSTAR Electric Company ("NSTAR" or "Company") filed a Petition for individual and comprehensive zoning exemptions from the Town of Mashpee Zoning Bylaws ("Bylaws") pursuant to G.L. c. 40A, § 3. NSTAR seeks the exemptions in connection with its proposal to expand and upgrade the Company's existing Mashpee Substation No. 946 ("Mashpee Substation" or "Substation") located at 21 Orchard Road in Mashpee ("Project").

The Department granted a zoning exemption for the Mashpee Substation site in 1971. NSTAR constructed and began operating the Substation in 1972. As originally constructed, the Substation had one 20/26/33 megavolt-ampere ("MVA") transformer ("Original Transformer") and one 23 kilovolt ("kV") bus section serving two 23 kV distribution supply feeders (Exh. NSTAR-1, at 2). In 2013, the Company replaced the Original Transformer with a new 30/40/50 MVA transformer ("Existing Transformer") (id.).

The Company now proposes to expand the Substation site from approximately 30,000 square feet to approximately 68,000 square feet (Exh. NSTAR-1, at 27). The proposed equipment upgrades include:

- Installation of a second 30/40/50 MVA 115 kV to 23 kV transformer ("Proposed Transformer");
- Installation of a second 23 kV bus section for four 23 kV feeders, and a 4.8 megavolt-ampere reactive ("MVAR") switched capacitor bank;
- Replacement of the existing open 23 kV bus with enclosed, metal-clad switchgear;

- Addition of an auto-bus restoral ("ABR") scheme;
- Installation of a new control center;
- Relocation of one existing 23 kV distribution feeder, to connect to the new 23 kV bus section;
- Construction of a new 23 kV feeder underground to Orchard Road, to serve local load on Route 28; and
- Replacement of the existing 115 kV arrangement (one transformer tapped off of Line 136) with a 115 kV bus with two 115 kV circuit breakers, to sectionalize Line 136 between the Falmouth Tap and the West Barnstable Substation).[1]

(Exh. NSTAR-1, at 4-5; Company Brief at 2-3).

According to the Company, the Project is needed to maintain reliability and increase the capacity of the electric system serving the greater Mashpee and Barnstable area ("Project Area") (Exh. NSTAR-1, at 11). The estimated cost of the Project is $19 million (id. at 5). The Company estimated that Project construction would take approximately twelve months, with civil construction beginning in April 2015 and an anticipated in-service date of June 1, 2016 (Exh. DPU-G-2; Company Brief at 4).

B. Procedural History

NSTAR filed its Petition with the Department of Public Utilities ("Department") on January 16, 2014. On May 6, 2014, the Department conducted a site visit followed by a public hearing at Mashpee Town Hall. No intervention petitions were filed by the May 20, 2014 deadline. The Department issued written information requests to NSTAR on June 11,

[1] Also as part of the Project, NSTAR proposes to install foundations on the 115 kV side of the Substation to eventually support six circuit breakers in a future breaker-and-a-half scheme; the Project includes installation of only two of the circuit breakers (Exh. NSTAR-1, at 5).

2014; NSTAR completed its response to the information requests on July 29, 2014. The Department conducted evidentiary hearings on July 30 and 31, 2014, at which the Company presented five witnesses.

NSTAR submitted the prefiled direct testimony of John Zicko, P.E., acting director of substation and overhead transmission line engineering at NSTAR; Keith L. Jones, senior planning engineer at NSTAR; and Kevin McCune, licensing and permitting project manager at Northeast Utilities. At the evidentiary hearings, the Company also presented as witnesses Christopher Plecs, manager of sales and revenue forecasting at Northeast Utilities; and Robert Hellweg, of Epsilon Associates, Inc.

The Department issued record requests at the evidentiary hearing, and the Company completed the filing of its record request responses on September 18, 2014. On September 25, 2014, the Company filed its brief.

I. REQUEST FOR INDIVIDUAL ZONING EXEMPTIONS PURSUANT TO G.L. C. 40A, § 3

A. Standard of Review

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

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

Thus, a petitioner seeking exemption from a local zoning by-law under G.L. c. 40A, § 3, must meet three criteria. First, the petitioner must qualify as a public

service corporation. NSTAR Electric Company, D.P.U 13-177/13-178 at 5 (2015) ("NSTAR Seafood Way"); NSTAR Electric Company, D.P.U 13-64, at 4 (2014) (NSTAR Barnstable); Save the Bay, Inc. v. Department of Public Utilities, 366 Mass. 667 (1975) ("Save the Bay"). Second, the petitioner must demonstrate that its present or proposed use of the land or structure is reasonably necessary for the convenience or welfare of the public. NSTAR Seafood Way at 5; NSTAR Barnstable at 4; Tennessee Gas Pipeline Company, D.T.E. 01-57, at 3-4 (2002). Finally, the petitioner must establish that it requires exemption from the zoning ordinance or by-law. NSTAR Seafood Way at 5-6; NSTAR Barnstable at 4; Boston Gas Company, D.T.E. 00-24, at 3 (2001).

1. Public Service Corporation

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

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

NSTAR Seafood Way at 8; NSTAR Barnstable at 4-5; Save the Bay, 366 Mass. at 680. See also Berkshire Power Development, Inc., D.P.U. 96-104, at 26-36 (1997) ("Berkshire Power").

The Department interprets this list not as a test, but rather, as guidance to ensure that the intent of G.L. c. 40A, § 3, will be realized, i.e., that a present or proposed use of land or

structure that is determined by the Department to be "reasonably necessary for the convenience or welfare of the public" not be foreclosed due to local opposition. Berkshire Power at 30; Save the Bay, 366 Mass. at 685-686; Town of Truro v. Department of Public Utilities, 365 Mass. 407, at 410 (1974) ("Town of Truro"); NSTAR Seafood Way at 8. The Department has interpreted the "pertinent considerations" as a "flexible set of criteria which allow the Department to respond to changes in the environment in which the industries it regulates operate and still provide for the public welfare." Berkshire Power at 30; NSTAR Seafood Way at 8; see also Dispatch Communications of New England d/b/a Nextel Communications, Inc., D.P.U./D.T.E. 95-59B/95-80/95-112/96-113, at 6 (1998). The Department has determined that it is not necessary for a petitioner to demonstrate the existence of "an appropriate franchise" in order to establish PSC status. Berkshire Power at 31; NSTAR Seafood Way at 8; NSTAR Barnstable at 5.

2. Public Convenience and Welfare

In determining whether the present or proposed use is reasonably necessary for the public convenience or welfare, the Department must balance the interests of the general public against the local interest. Save the Bay, 366 Mass. at 680; Town of Truro, 365 Mass. at 410; NSTAR Seafood Way at 9. Specifically, the Department is empowered and required to undertake "a broad and balanced consideration of all aspects of the general public interest and welfare and not merely [make an] examination of the local and individual interests which might be affected." New York Central Railroad v. Department of Public Utilities, 347 Mass. 586, 592 (1964) ("New York Central Railroad"); NSTAR Seafood Way at 9. When reviewing a

petition for a zoning exemption under G.L. c. 40A, § 3, the Department is empowered and required to consider the public effects of the requested exemption in the state as a whole and upon the territory served by the applicant. Save the Bay, 366 Mass. at 685; New York Central Railroad, 347 Mass. at 592; NSTAR Seafood Way at 9.

With respect to the particular site chosen by a petitioner, G.L. c. 40A, § 3 does not require the petitioner to demonstrate that its primary site is the best possible alternative, nor does the statute require the Department to consider and reject every possible alternative site presented. Rather, the availability of alternative sites, the efforts necessary to secure them, and the relative advantages and disadvantages of those sites are matters of fact bearing solely upon the main issue of whether the primary site is reasonably necessary for the convenience or welfare of the public. Martarano v. Department of Public Utilities, 401 Mass. 257, 265 (1987); New York Central Railroad, 347 Mass. at 591; NSTAR Seafood Way at 9.

Therefore, when making a determination as to whether a petitioner's present or proposed use is reasonably necessary for the public convenience or welfare, the Department examines: (1) the present or proposed use and any alternatives or alternative sites identified; (2) the need for, or public benefits of, the present or proposed use; and (3) the environmental impacts or any other impacts of the present or proposed use. The Department then balances the interests of the general public against the local interest, and determines whether the present or proposed use of the land or structures is reasonably necessary for the convenience or welfare of the public. NSTAR Seafood Way at 9-10; NSTAR Barnstable at 6-7; Tennessee Gas Company, D.T.E. 98-33, at 4-5 (1998).

3. Exemptions Required

In determining whether exemption from a particular provision of a zoning by-law is "required" for purposes of G.L. c. 40A, § 3, the Department determines whether the exemption is necessary to allow construction or operation of the petitioner's Project. NSTAR Seafood Way at 10; NSTAR Barnstable at 7; Tennessee Gas Company, D.P.U. 92-261, at-20-21 (1993). It is a petitioner's burden to identify the individual zoning provisions applicable to the Project and then to establish on the record that exemption from each of those provisions is required:

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

New York Cellular Geographic Service Area, Inc., D.P.U. 94-44, at 18 (1995); NSTAR Seafood Way at 10; NSTAR Barnstable at 7.

B. Public Service Corporation Status

NSTAR is an electric company as defined by G.L. c. 164, § 1, and, as such, is a public service corporation. NSTAR Seafood Way at 10-11; NSTAR Barnstable at 7; NSTAR Electric Company, D.P.U. 07-60/07-61, at 2-6 (2008). Accordingly, the Department finds that NSTAR qualifies as a public service corporation for the purposes of G.L. c. 40A, § 3.

C. Public Convenience and Welfare

1. Need for or Public Benefit of Use

a. Capacity and Contingency Issues

NSTAR stated that, based on the planning standards set forth in the Company's Bulk Distribution Substation Assessment Procedure, SYS PLAN-010 ("SYS PLAN-010"), the existing transmission and distribution system serving the Project Area has multiple planning criteria violations, which have the potential to adversely affect system performance and reliability (Exh. NSTAR-1, at 12).

NSTAR stated that there are currently four potential N-1 contingency[2] events ("N-1 Contingencies") that would require extensive distribution switching following the contingency, and that one of the N-1 Contingencies would currently result in loss of customer load under summer peak load conditions (Exhs. NSTAR-1, at 13; DPU-N-1; DPU-N-2; DPU-N-8). Three of the N-1 Contingencies would directly cause the loss respectively of: (1) the Mashpee Substation; (2) the Oak Street Substation located in West Barnstable; (3) the Hatchville Substation located in Falmouth. The fourth N-1 Contingency is the loss of the 115 kV transmission Line 136 (Exhs. NSTAR-1, at 13-17; DPU-N-8).

[2] An N-1 contingency is a circumstance in which there is an unexpected fault or loss of a single electric element.

i. Contingency Outage of the Mashpee Substation

NSTAR stated that as a result of increasing summer peak demand, the Substation has recently exceeded, and is expected to continue to exceed its maximum load carrying capacity[3] during peak load periods (Exhs. NSTAR-1, at 13; DPU-N-7).[4] The Company contended that following the loss of the Existing Transformer, ten steps of cascading distribution switching would be required to restore customer load, which would take up to 40 minutes (Exhs. DPU-N-1; DPU-N-10).[5] NSTAR asserted that this amount of distribution switching, and the 40-minute timeframe necessary to complete the switching and to restore power to all customers, is excessive (Exhs. DPU-N-1; DPU-N-10).

NSTAR further stated that as system demand continues to increase on the Mashpee and neighboring substations, insufficient distribution switching capability will be available to restore all customers, depending on load levels at the time of the contingency (Exh. DPU-N-29). The Company forecasted that by summer 2016, 3.6 megawatts ("MW") of

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[3] The load carrying capacity of a substation is equal to its firm capacity (which for the Mashpee Substation is zero (Exh. DPU-N-7, at 2)) plus the available distribution transfer capacity to adjacent substations, limited by the short-term emergency rating of the transformer being relieved by the distribution transfer switching (id. at 1-2).

[4] NSTAR indicated that peak summer loads exceeded the Substation's load carrying capacity in 2010, 2011, and 2013 and it expects similar exceedances at summer peak loads in the future (Exhs. DPU-N-5; DPU-N-7).

[5] To restore the supply of electricity to customers served by the Substation following an outage, NSTAR switches these customers to distribution feeders from the Oak Street and Hatchville Substations (Exh. NSTAR-1, at 14). NSTAR explained that, to prevent equipment overloads at these neighboring substations, it needs to pre-relieve the Oak Street and Hatchville Substations by transferring distribution feeders to more remote substations (id.).

load would be at risk following the loss of the Mashpee Substation, increasing to 6.0 MW by summer 2017 (id.).

ii. Contingency Outage of the Oak Street Substation

NSTAR stated that following the loss of the Oak Street Substation, under peak demand conditions, eight distribution switching steps are required (Exh. DPU-N-1). The Company further noted that even with distribution switching, not all of the load at the Oak Street Substation can be restored (Exh. DPU-N-29). The Company forecasted that 4.0 MW of load would be at risk in 2014, increasing to 9.0 MW by 2017, and continuing to increase thereafter (Exhs. DPU-N-28; DPU-N-29).

iii. Contingency Outage of the Hatchville Substation

NSTAR stated that following the loss of the Hatchville Substation, under peak demand conditions, six distribution switching steps would be required (Exh. DPU-N-1). The Company predicted that, by 2016, growth in electricity demand in the Project Area would be enough that an outage would cause overloading on one of the distribution feeders serving the Hatchville Substation (Exh. NSTAR-1, at 16).

iv. Contingency Outage of Line 136

A contingency outage of Line 136 would cause three substation transformers (Mashpee, Hatchville, and one transformer at Falmouth), as well as reactive support in the area, to trip out of service (Exh. NSTAR-1, at 16-17). NSTAR stated that depending on the location of a fault on the line, at least one of the Mashpee, Hatchville, or Falmouth transformers would remain out of service (id. at 17). Distribution switching, consistent with the switching

requirements described above for the loss of the Mashpee or Hatchville Substations, would then follow (Exh. DPU-N-2).

v. NSTAR Recommended Solution

NSTAR's recommended solution to the extensive distribution switching and the load loss from the N-1 Contingencies is to install a second 30/40/50 MVA transformer, a 23 kV bus section, and ancillary upgrades at the Mashpee Substation. According to NSTAR, the Project would eliminate the need for relief switching at the Mashpee Substation following an N-1 contingency at the Substation (Exh. NSTAR-1, at 17). The Project would also reduce the need for relief switching following contingency outages at the Oak Street or Hatchville Substations, or the loss of the 115 kV transmission supply to the area (id. at 17-18; Tr. 2, at 214-215, 300). NSTAR asserted that the Project would also address all post-contingency thermal overloads associated with the N-1 Contingencies (Exh. NSTAR-1, at 17).

In addition, NSTAR stated that further reliability benefits would result from the sectionalization of the 115 kV transmission line serving the area, and the addition of an ABR scheme at the Substation (Exh. NSTAR-1, at 18). The installation of a 115 kV bus arrangement with two 115 kV circuit breakers at the Mashpee Substation would sectionalize Line 136 into two separate zones of protection; the first between Falmouth Tap, the Falmouth Substation, and the Mashpee Substation (to remain numbered as Line 136), and the second between the Mashpee Substation and the West Barnstable Substation (to be renumbered as Line 137) (id.). The Company stated that this upgrade would result in reliability benefits because a contingency outage of Line 137 would not result in the loss of load or customer

interruption at any of the substations in the area (id.). A contingency outage on Line 136 would result in the loss of customer load only at the Hatchville Substation; local capacity restraint reductions due to the Project would allow the neighboring substations to readily supply those customers via distribution switching (id.).

The installation of a second transformer at the Mashpee Substation would enable the installation of an ABR scheme that would automatically close the 23 kV bus-tie circuit breaker for the loss of either the Existing or Proposed Transformer, or the 115 kV supply line, preventing outages to customers supplied by the Mashpee Substation (Exh. NSTAR-1, at 18). NSTAR asserted that the Project therefore supports the Company's stated goal of restoring all customers' electric service automatically upon loss of supply to bulk distribution substation supply buses (id. at 18-19).

b. Remedial and Short-Term Measures Instituted

As part of NSTAR's mitigation plan to address capacity issues at the Substation, NSTAR replaced the Original 20/26/33 MVA Transformer with a higher rated 30/40/50 MVA unit (the Existing Transformer) in the spring of 2013 (Exh. NSTAR-1, at 2, 13). While this investment addressed thermal exceedances during N-0 conditions (that is, all facilities operating), the replacement did not resolve the reliability concerns associated with the N-1 Contingencies, as described above (id.).

c. Analysis and Findings

In 2013, the Company replaced the Original Transformer at the Substation, which partially resolved capacity issues in the Project Area. However, this replacement has not addressed all of the identified reliability needs in the Project Area, which fails to meet NSTAR's planning standards for reliable service.

The Company has shown that there is a need for enhancements to the transmission and distribution system serving the Project Area. Considering the demands on system operators, and the amount of time customers would be without power during contingencies, distribution switching of as many as ten steps is excessive. Beyond resolving the current load-at-risk at the Oak Street Substation, and the future load-at-risk at the Mashpee Substation, the Project would substantially reduce the requisite distribution switching following an N-1 contingency under existing peak load conditions.

Based on the Company's demonstration of: (1) post-contingency capacity constraints at the Mashpee Substation and neighboring substations; (2) an existing and increasing risk of post-contingency load shedding; and (3) the need for an excessive level of post-contingency distribution switching, the Department finds that there is a need for the Project, and that by meeting this need, the construction and operation of the Project would result in public benefits.

2. Alternatives Explored

In assessing alternative solutions to meet the identified need, NSTAR explored energy efficiency ("EE") and demand response ("DR") programs, distributed generation ("DG"), a battery storage system, and an alternative substation solution.[6]

a. Non-Transmission Alternatives

NSTAR considered the potential for EE or DR programs to address the identified need, but stated that the Project Area does not have the type of large commercial and industrial customers that could potentially yield load reductions from EE or DR sufficient to meet the area's reliability need (Exh. NSTAR-1, at 20).

NSTAR noted that the Cape Light Compact ("CLC") administers EE programs in the Project Area, as well as elsewhere on Cape Cod, and that the Company's demand reduction forecast due to EE is based on these programs (Exh. NSTAR-1, at 20). Using CLC's projections through 2022 of Cape Cod peak demand reductions due to EE programs, the Company estimated that peak demand reductions for the Mashpee Substation would be 1.4 MW in 2013, 1.8 MW in 2014, and 2.5 MW in 2015 (id. at 21; Exh. DPU-N-5(1)). NSTAR indicated that no practical way exists to achieve a sufficient level of incremental EE to eliminate the load-at-risk for the N-1 Contingencies (Exh. NSTAR-1, at 20-21; Tr. 2, at 262-263). The Company also noted that it does not provide guidance to CLC concerning

[6] NSTAR also explored a no-build approach; however, this approach did not address the reliability need of the Project Area (Exh. NSTAR-1, at 19-20).

specific locations where EE efforts could potentially avoid transmission and distribution projects (Tr. 2, at 219).

With respect to DR resources, NSTAR stated that by 2016 approximately 3.6 MW (or 10.3 percent of the Mashpee Substation peak load) would be required at the Mashpee Substation, and 8.2 MW (or 17.7 percent of the Oak Street Substation peak load) would be required at the Oak Street Substation to meet the need for the Project (Exh. DPU-N-28). These requirements would increase over time with area peak load growth, which the Company forecasted as approximately 0.9 percent annually between 2014 and 2024, after taking into account the impact of predicted EE reductions (id.; Exh. DPU-N-5(1)). The Company indicated that the Substation's location on Cape Cod offers less potential for DR than other areas in Massachusetts with more industrial and large commercial load (Exh. NSTAR-1, at 22).[7] NSTAR contends that DR, either alone or in conjunction with EE resources, would be insufficient to meet the area's reliability need (id.).

NSTAR listed four reasons that DG would be inadequate to meet the identified need. First, the Company noted that photovoltaic ("PV") and wind energy facilities, the most prevalent DG resources on the NSTAR system, are intermittent and non-dispatchable, and thus an unreliable means of serving load at a specific time (summer peak load periods, for example) (Exh. NSTAR-1, at 23). Second, the output of PV resources drops when Cape Cod loads are typically highest – in the evening between 6:00 p.m. and 8:00 p.m. (id.). Third, the Company

[7] NSTAR explained that it does not operate any DR programs in any of its service territories (Tr. 2, at 251-252). The Company noted that DR resources are managed by ISO-NE and the individual operators of the DR programs (id.).

stated that many DG resources would trip off-line in response to the instantaneous loss of power expected from the N-1 Contingencies (id.).[8] Finally, there are potential problems associated with switching DG resources between distribution feeders in response to a contingency (id. at 23-24).[9] Thus NSTAR concluded that DG resources cannot be relied upon to defer or avoid the need for the Project (id. at 24).

As an alternative to PV and wind energy DG facilities, NSTAR also considered the installation of a battery storage system. The Company explained that the installation of a 12 MVA, 72-megawatt-hour, battery storage system would defer the need for the Project by approximately five years, resolving some, but not all, of the N-1 Contingencies (Exh. DPU-N-29). NSTAR estimated the cost of the battery storage system as between $48 million and $168 million, and indicated that the system would generally have a maximum life expectancy of 20 years (id.). Based on this information, NSTAR concluded that the battery storage alternative would be more costly and less reliable than the Project (id.).

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[8] NSTAR noted that this disconnection response is required by the generally accepted DG connection standards set forth in the Institute of Electrical and Electronics Engineers ("IEEE") Standard 1547-2003 (Exh. NSTAR-1, at 23).

[9] The incorporation of DG resources onto the distribution system requires some engineering assessment of the circuit and substation capability. In the event of a contingency where load can be switched to another distribution feeder, NSTAR would have concerns about whether the DG resources can be safely operated under the temporary connection arrangement (Exh. NSTAR-1, at 24). NSTAR's SYS PLAN-011 planning standard does not permit DG resource to operate in cases where restorative distribution switching would result in the DG resources being connected to a distribution feeder that is not their normal source of supply (id. at 23-24).

b. Alternative Substation

As an alternative to improvements to the Mashpee Substation, the Company explored construction of a new single-transformer 115/23 kV bulk supply substation on undeveloped NSTAR property on Cammett Road in Barnstable ("Cammett Road Alternative") (Exh. NSTAR-1, at 24-26).[10] The Company's evaluation of the Cammett Road Alternative included a comparison of reliability, cost, environmental impacts, and permitting requirements (id.).

NSTAR stated that the Cammett Road Alternative would meet the identified need by reducing the amount of customer load served by the existing Mashpee and Oak Street Substations (Exh. NSTAR-1, at 24). The Company asserted that the new substation would resolve all identified N-1 capacity constraints, but would provide a less electrically robust solution than the Project, as the Cammett Road Alternative would not include an ABR system (id. at 24-25). NSTAR estimated the cost of the Cammett Road Alternative as $21.4 million, approximately ten percent higher than the estimated cost of the proposed Project (id. at 24).[11]

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[10] NSTAR also considered other substation alternatives, including upgrading or double-ending other stations in the area, but determined that these modifications would not address the reliability need of the area (Exh. NSTAR-1, at 26).

[11] The Company stated that regardless of the alternative selected, work at Mashpee Substation would be required to address aging substation equipment, namely the 115 kV circuit switcher, the 23 kV open bus, oil-filled circuit breakers and control and protection equipment (Exh. NSTAR-1, at 24-25). The cost estimates for both the Project and the Cammett Road Alternative include $2.4 million for this work (Exhs. NSTAR-1, at 24-25; DPU-A-2).

With regard to environmental impacts, NSTAR stated that the Cammett Road Alternative would require the clearing of currently undeveloped forested land, and would have greater operational, visual, and environmental impacts than expanding the Mashpee Substation, despite requiring slightly less environmental permitting (Exhs. NSTAR-1, at 25; DPU-A-5). Table 1 below provides a summary of the Company's description of the environmental impacts of the Project and the Cammett Road Alternative.

Table 1. Summary of the Environmental Impacts of the Project & Alternative Substation as Identified by NSTAR

Type of Impact	Proposed Project	Cammett Road Alternative
Land Use	Expansion of existing substation at site; land use consistent with current use.	No existing switching station or substation at this site; currently undeveloped forested land.
Wetland Resource Areas	No impact.	No impact.
Wellhead Protection & Water Supply Resource Areas	Project not within a MassDEP Water Supply Protection Area or Interim Wellhead Protection Area ("IWPA").	Portions of site within MassDEP Zone II Water Supply Protection Area but not an IWPA.
Groundwater	Within Town of Mashpee Groundwater Protection District.	Portions of site within Barnstable Groundwater Protection District.
Visual	Would require expansion of an existing substation. Visual impacts would be minimized by maintaining a buffer of mature trees around the substation.	Increased visual impact of a new substation on an undeveloped, forested site.
Noise	Greatest noise impacts would occur during construction at a site already in public utility use, and would be temporary in nature. Additional noise impacts would result from the installation of a second transformer on the site.	Greatest noise impacts would occur during construction at a new site for public utility use, and would be temporary in nature. Additional noise impacts would result from the installation of a transformer where there is none today.
Traffic	Not located on, and does not cross over, a public roadway.	Not located on, and does not cross over, a public roadway.
Areas of Critical Environmental Concern	Not Applicable.	Not Applicable.
Historic Resources	Not Applicable.	Not Applicable.
Flood Zone	Not Applicable.	Not Applicable.
Protected Species and Habitat	Site is within a Priority Habitat and Estimated Habitat for the eastern box turtle. NSTAR has received a "No Take" determination from the MA Natural Heritage and Endangered Species Program for an initial Project design. An updated assessment is required for the current Project plan.	Not Applicable.

Sources: Exhs. NSTAR-1, exh. 11; DPU-A-5; RR-DPU-3(1).

c. Analysis and Findings

The record demonstrates that, currently, EE and DR do not offer an adequate alternative to the Project. The Company's summer peak load forecast for the Project Area shows continued growth in electricity demand, even after taking into account EE goals that have been set by the CLC. The Department accepts the Company's position that it is not practical to achieve sufficient incremental EE and/or DR within the Project Area, especially in light of the near-term nature of the area's reliability need.[12] However, the Department notes that if the planning horizon were longer, it is possible that a project of this type could either be deferred or found to be unnecessary as a result of EE and DR implementation. Therefore, NSTAR is strongly encouraged, in the future, to discuss with the CLC the potential for targeted and/or incremental EE, well in advance of determining that a transmission or distribution project is needed in the Company's Cape Cod service territory. The Department expects NSTAR to provide evidence of long-range EE planning efforts in all future zoning exemption and Section 72 applications filed with the Department. The Department also

[12] NSTAR asserted that 134 MW of load would be at risk for the most critical contingency identified, and implied that demand in the Project Area would need to be reduced by this amount in order to address the area's reliability need (Exh. NSTAR-1, at 20). However, NSTAR's assessment of other project alternatives suggests that incremental EE and/or DR resources on the order of 12 MW, with subsequent increases to match load growth over time, would be sufficient to meet the identified need.

continues to expect that NSTAR will strongly encourage its customers, both existing and new, to take full advantage of EE programs.[13]

The record also shows that DG and battery storage would not provide NSTAR with reliable and/or cost effective load relief in the Project Area at this time. The effectiveness of distributed PV and wind facilities to address the identified need is limited by the intermittent and non-dispatchable nature of these resources, as well as by the non-coincident relationship between system peak loads and the production profiles of PV systems. Finally, the record shows that the development of a battery storage system would be a less robust and significantly more costly solution than the proposed Project. The Department directs NSTAR to continue to explore ways that non-transmission alternatives (individually or in combination) could avoid or delay the need for new transmission infrastructure in a cost-effective manner.

With respect to the alternative substation, the Cammett Road Alternative would require developing a currently forested parcel of land, while construction of the Project would occur on an existing substation site. Construction of the Cammett Road Alternative would have greater land use impacts and visual impacts than the Project.[14] The Project and the Cammett

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[13] See Investigation by the Department of Public Utilities on its own Motion into Modernization of the Electric Grid, D.P.U. 12-76-C (2014) and Investigation by the Department of Public Utilities upon its own Motion into Time Varying Rates, D.P.U. 14-04 (2014).

[14] As described further in Section II.C.3, below, the location of the proposed Project has been mapped as Priority Habitat for the eastern box turtle. NSTAR received a "No Take" determination based on earlier designs of the Project, but requires an updated assessment for the current Project plan (Exhs. NSTAR-1, at 32-33; DPU-A-5). The Cammett Road site does not contain any Priority Habitat (Exh. DPU-A-5).

Road Alternative would have similar noise impacts resulting from construction activities and the operation of a new transformer. In the Department's view, the environmental impacts of the Cammett Road Alternative would exceed the environmental impacts of the Project; would provide a less electrically robust solution to the area's reliability need; and would likely be more costly than the Project.

Accordingly, the Department finds that the Company's decision to pursue the Project rather than the alternatives is reasonable.

3. Impacts of the Proposed Use

a. Land Use Impacts

The Project would increase the fenced area at the existing Mashpee Substation from 30,000 square feet to approximately 68,000 square feet (Exh. NSTAR-1, at 27). The expansion would occur to the south and east of the existing Substation fenceline (id. at 30).

The Mashpee Substation is surrounded by a dense pitch pine and mixed oak forest to the west, north, and east (Exhs. DPU-LU-1(1); DPU-LU-5). The southern fence of the Substation faces a right-of-way ("ROW") containing two existing 115 kV aboveground transmission lines and two 23 kV aboveground distribution lines (Exhs. NSTAR-1, at 30; NSTAR-1, exh. 13, at 11; DPU-G-18).[15] The ROW is vegetated with low shrubs, young oak trees, ferns, and mixed grasses (Exh. DPU-LU-5). The ROW is maintained under NSTAR's Vegetation Management Plan ("VMP") based on an Integrated Vegetation Management

[15] The Project would consist of the construction of a new underground distribution line and the relocation of the two existing distribution lines to underground ducts.

("IVM") Plan of mechanical cutting and selective herbicide application (id.).[16] While the Company would not apply herbicides during construction, growth of vegetation at the Substation would be prevented with bare-ground herbicide application after construction is complete (id.; Exh. DPU-LU-6). The Company stated that it would use only herbicides approved by DAR for use in Sensitive Areas (Exh. DPU-LU-6).

Currently, the main access to the Substation is at the southeast corner (Exh. NSTAR-KM-3). The Company stated that it needs to move the main access gate to the northeast corner of the Substation as part of the Project (Exh. DPU-LU-12). The Town of Mashpee ("Town") requested that the Company keep the existing southeastern road entrance from Orchard Road (id.). Therefore, the Company proposes to construct a gravel access road that begins at the southeastern road entrance and then travels along the eastern side of the site to the northeastern gate (id.). See Figure 1, below. Construction of the access road requires no on-site tree removal, however, it requires approximately 26,380 square feet of tree removal outside the expanded eastern Substation fence line (Exhs. NSTAR-1, at 30; DPU-LU-10; DPU-LU-12; Tr. 1 at 151-152).

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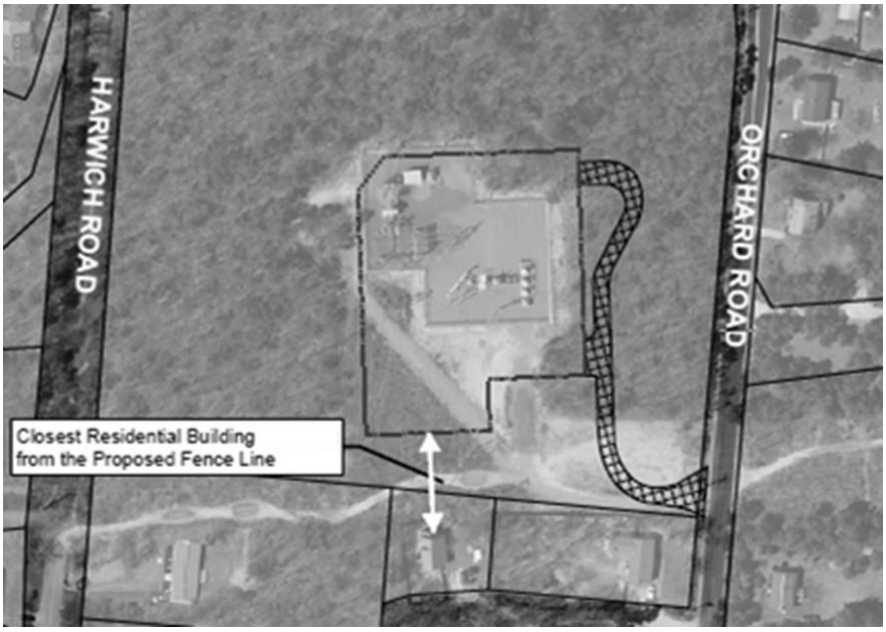
[16] NSTAR has a current VMP and Yearly Operation Plan ("YOP") approved by the Massachusetts Department of Agricultural Resources ("DAR") under DAR's ROW regulations, 333 CMR 11.00 (Exh. DPU-LU-6). The intent of these regulations and plans is to prevent contamination of water resources and wetlands during vegetation maintenance activities.

Figure 1: Substation Expansion Area and Access Road



The Company would use mechanical equipment to remove trees (Exh. DPU-LU-13). To the extent that minor grading is needed inside the Substation fence and for construction of the access road, the Company would use small bulldozers or similar equipment (Exh. DPU-LU-4). Town officials expressed concerns regarding silt tracking and road breakdown on Orchard Road from vehicles entering and exiting the Substation (Exh. DPU-LU-12). The Company agreed to a paved apron and the use of crushed stone to minimize transport of dust and silt (Exhs. DPU-G-5, DPU-LU-12).

The nearest residence to the Substation is located 118 feet from the proposed Project fence line (RR-DPU-9). Approximately seven additional homes lie within 300 feet of the proposed fence line to the south and east (id.).

The Project site is not located within an Area of Critical Environmental Concern ("ACEC") and the Company stated the site does not contain any documented cultural or historical resources (Exh. NSTAR-1, at 32). The Company indicated it would prepare a Project Notification Form for submittal to the Massachusetts Historical Commission ("MHC"), which is required for projects requiring action from the Commonwealth, and it would provide MHC's findings when available (Exh. DPU-LU-9).

The Project would be within a Natural Heritage and Endangered Species Program ("NHESP")-mapped Priority Habitat for the eastern box turtle (Exh. DPU-LU-11). The Company prepared a Massachusetts Endangered Species Act ("MESA") Project Review Checklist and received a determination of "No Take" on January 10, 2013 (Exh. NSTAR-1, at 32). The Company continued consultations with the Mashpee Board of Selectmen concerning the access road and made alterations after it received the determination (id. at 33; Exhs. DPU-LU-10; Tr. 1 at 130). The Company stated that it would file a revised NHESP checklist, and that MESA has indicated the "No Take" determination would remain unchanged (Exh. DPU-A-5).

b. Noise Impacts

The new transformer would be a reduced-sound unit, including sound absorbing walls and low-speed fans (Exh. NSTAR-1, at 31). Like the Existing Transformer, the Proposed Transformer would have eight fans to cool the transformers during high heat or anticipated high load level events (Tr. 1, at 11). At various times, the number of fans operating could be none, four, eight, twelve, or sixteen; the Company stated that it is not possible to know with

certainty how often, and how many fans would be operating over the course of a year (id. at 34-35).

The Company measured ambient sound levels at six locations and modeled noise levels at nine receptor locations[17] to estimate the A-weighted decibel ("dBA") noise impacts of the new equipment, as well as to evaluate creation of pure tones as defined by the Massachusetts Department of Environmental Protection ("MassDEP") (Exh. NSTAR-1, exh. 12, at 1; RR-DPU-3).[18] See Figure 2, below. The Company measured ambient sound levels under three conditions: (1) with the Original Transformer operating; (2) with the Existing Transformer operating; and (3) with no transformer operating (Exh. NSTAR-1, exh. 12, at 1).

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[17] NSTAR originally conducted measurements and modeled noise at four property line receptors. During the course of the proceeding, the Company conducted measurements and modeled at two additional property line locations near residences, and modeled for three residences further from the property lines (RR-DPU-3(1) at 30). Receptors 1R, 2R, 3R, 4R, 5 and 6 are residential receptors, and receptors 1, 2, 3, and 4 are property line receptors.

[18] MassDEP defines a pure tone condition where any one octave band sound pressure level exceeds the two adjacent frequency bands by three dBA or more.

Figure 2: Sound Level Measurement and Modeling Locations

The results of the noise modeling based on nighttime ambient measurements with no transformer operating, as provided in Table 2 below, show: (1) an increase of between two to six dBA with all fans off and between six to twelve dBA with all fans on, at the nearest

residential properties; and (2) an increase of two to eight dBA with all fans off and between six to 13 dBA with all fans on, at the property lines (RR-DPU-3(1), Tables 10, 13, and 16; RR-DPU-8).

Table 2. Predicted Noise Levels – Nighttime with Proposed Transformer and Existing Transformer Operating, with all Fans either OFF or ON

Location	Ambient[1] (dBA)	Project and Ambient Fans OFF	Increase[2] (dBA)	Project and Ambient Fans ON	Increase[2] (dBA)
1	27	34	7	40	13
1R	27	34	6	40	12
2	29	32	2	35	6
3	26	33	8	36	11
3R	26	30	5	33	7
4	27	31	4	36	9
4R	27	29	2	33	6
5	27	31	5	37	10
6	28	32	4	39	10

Notes: (1) The ambient measurement used in this Table is the no transformer operating condition
(2) Due to rounding associated with dBA measurements, increases may not sum across columns
Sources: RR-DPU-3(1), Tables 10, 13, and 16; RR-DPU-8.

With regard to pure tones, the modeling for nighttime shows: (1) a pure tone condition in the 125 Hz octave band with fans either off or on at Locations 1 and 1R; and (2) a pure tone condition in the 500 Hz octave band at Locations 1, 1R, and 5 with fans on (RR-DPU-3, Tables 6, 7, and 8). Based on the Company's modeling, a potential pure tone condition at various receptors would exist because sound in the 125 Hz and/or 500 Hz octave band exceeds sound in the adjacent octave bands by more than the MassDEP three-decibel pure tone criterion (id., Tables 7 and 8).

The Company analyzed sound levels with no mitigation, and with two forms of mitigation: (1) a single 20-foot high sound wall located 15 feet south of the transformers ("single-wall barrier"); and (2) a 20-foot high double-U shaped sound wall structure forming barriers to the south, east and west of the both transformers ("three-sided barrier") (RR-DPU-3(1) at 10, 11; RR-DPU-8). Table 3 below shows the noise implications of these noise mitigation alternatives.

Table 3. Noise Mitigation Alternatives

Location	Location Type	Ambient (dBA)	Modeled mitigation	Total Sound (Fans off/on)	Noise Increase (Fans off/on)
1	Property line	27	None	34 / 40	7 / 13
			Single-wall barrier	28 / 29	1 / 2
			Three-sided barrier	28 / 29	0 / 2
1R	Residential	27	None	34 / 40	6 / 12
			Single-wall barrier	28 / 29	1 / 2
			Three-sided barrier	28 / 29	0 / 2
2	Property line	29	None	32 / 35	2 / 6
			Single-wall barrier	32 / 36	3 / 6
			Three-sided barrier	30 / 30	0 / 1
3	Within parcel	26	None	33 / 36	8 / 11
			Single-wall barrier	33 / 37	8 / 11
			Three-sided barrier	33 / 37	8 / 11
3R	Residential	26	None	30 / 33	5 / 7
			Single-wall barrier	30 / 33	5 / 7
			Three-sided barrier	30 / 33	5 / 7
4	Property line	27	None	31 / 36	4 / 9
			Single-wall barrier	31 / 36	4 / 9
			Three-sided barrier	27 / 28	1 / 2
4R	Residential	27	None	29 / 33	2 / 6
			Single-wall barrier	30 / 34	3 / 7
			Three-sided barrier	27 / 28	0 / 1
5	Residential	27	None	31 / 37	5 / 10
			Single-wall barrier	27 / 28	0 / 2
			Three-sided barrier	27 / 28	0 / 1
6	Residential	28	None	32 / 39	4 / 10
			Single-wall barrier	29 / 30	1 / 2
			Three-sided barrier	29 / 30	0 / 2

The single-wall barrier would be approximately 20 feet beyond the edge of each transformer, and would require approximately a ten-foot expansion of the fence line to the west (RR-DPU-3(1), at 10; RR-DPU-6(1); RR-DPU-6(2)). The three-sided barrier would be open to the north, with sound walls located 15 feet from the transformers on the outer eastern, western, and southern edges (RR-DPU-3(1) at 11).

The single-wall barrier is estimated to cost $250,000 and the three-sided barrier is estimated to cost $375,000 (RR-DPU-8). Throughout the proceeding, the Company asserted that its preference is to conduct post-construction noise monitoring before committing to mitigation (Exh. DPU-NO-8; RR-DPU-3, at 12; Tr. 1, at 22). However, the Company now proposes to install the single-wall barrier, with the intention of complying with the MassDEP noise policy for both A-weighted and pure tones based on pre-construction modeling (Company Brief at 41). The Company asserts that there is no reason to pursue the installation of a three-sided barrier (id. at 40).

With the use of the single-wall barrier, the increase at all residences is less than seven dBA with the fans on and five dBA with the fans off; the highest increase is at the location north of the transformers (RR-DPU-3, at 10; RR-DPU-8). Compared to the single-wall barrier, the three-sided barrier reduces incremental noise levels (with fans on, at nighttime ambient conditions) by an additional five to six dBA to the east and west, respectively, and one dBA to the south (RR-DPU-3, at 11; RR-DPU-8). However, the use of three-sided barrier does not provide further mitigation at the residential location to the north, nor at the north property line (id.).

With regard to pure tones, the Company stated that with the use of the single-wall sound barrier, all pure tone conditions would be eliminated with fans both on and off, with the exception of a marginal 250 Hz pure tone exceedance by 0.2 dB at location 3R (RR-DPU-7; RR-DPU-3 at 11). The Company asserted that the installation of a three-sided sound barrier would not improve the pure tone condition over the single-wall sound barrier (RR-DPU-7).

The Company stated that it anticipates construction would occur Monday through Saturday, from 7:00 a.m. to 6:00 p.m., or later when daylight permits extended work hours (Exh. NSTAR-1, at 27). With regard to construction outside these work hours, the Company noted that the only activities planned would be filling and vacuum processing of the transformers and outage work on the existing transmission system (id.; Exh. DPU-NO-3).[19] The Company indicated that, where appropriate, it would use smaller equipment, foundation designs that minimize digging, and off-site preassembly of Project components to minimize construction noise (Exh. NSTAR-1, at 27).

c. Visual Impacts

The existing Substation contains the Existing Transformer and related substation equipment, and is adjacent to a ROW with transmission and distribution lines (Exh. NSTAR-1, at 4, 27). The height of the equipment to be added by the Project includes 60-foot static masts and 40-foot line terminal supports (id. at 30, 40). The Company stated that the height of these

[19] Oil filing and vacuum processing of the transformers must be conducted continuously, and can require from 15 to 72 hours or more, depending on the ambient temperature and the moisture content of the oil (Exh. DPU-NO-3).

new structures is consistent with the height of the existing equipment (id. at 30). Thus, the Company stated the visual impacts of the Substation would be essentially unchanged (id.).

As discussed above, tree clearing would be required along the eastern edge of the Substation to construct the access road (Exh. NSTAR-1, at 30). The tree clearing would result in a decrease in the width of the wooded visual buffer along Orchard Road from approximately 180 feet to 100 feet (id.; Exh. DPU-V-1).

The Company would provide visual landscaping along the southern fence line of the expanded Substation, to improve screening for abutters to the south (Exh. NSTAR-KM-3; Tr. 1, at 148, 155, 170). However, because of tree clearing associated with the new access road, the Company acknowledged that the Substation would be more visible to the southeast than it is currently (Tr. 1, at 169). The Company indicated that it would provide plantings for approximately 20 to 30 feet along the western fence line to mitigate views from the southwest (id. at 155). NSTAR stated that the landscaping plan complies with the NSTAR VMP and was developed in consultation with the Mashpee Board of Selectmen (Exh. DPU-V-4).

As discussed above, the Company provided information about two types of sound barriers that could be used to mitigate ambient noise impacts and pure tones of the Project: a single-wall barrier and a three-sided barrier (Exh. DPU-NO-8; RR-DPU-3(1), at 10-11). The Company provided visual representations of both types of sound barriers and stated that each would block the line-of-sight to the transformers for the residential receptors to the south, and that the distance of the receptors from the transformers would make either sound wall barely visible (RR-DPU-3(1), at 10; RR-DPU-6(3), (4), (5)).

d. Wetlands and Water Resources

NSTAR stated that the Substation property contains one small, isolated wetland measuring approximately 15 feet by 30 feet that was likely created by standing water in tire tracks on the dirt driveway (Exh. NSTAR-1, at 28). This wetland is not jurisdictional under the Massachusetts Wetland Protection Act, but is regulated under the Town of Mashpee Wetland Bylaws (id.). The Company indicated that before altering the wetland, it would submit to the Mashpee Conservation Commission a Request for a Determination of Applicability ("RDA") and then, if necessary, a Notice of Intent ("NOI") (id.; Tr. 1, at 133).

NSTAR stated that there are no certified or potential vernal pools within 750 feet of the Project, or any rivers and streams within 200 feet of the Project (Exh. NSTAR-1, at 28). The Project would not be located within a MassDEP Zone II Wellhead Protection Area or Interim Wellhead Protection Area (Exh. NSTAR-1, at 28). The Project would be located in a Mashpee Groundwater Protection District (id. at 28, 37) (see Sections II.C.2.g and II.D.2).

e. Traffic

NSTAR stated that neither a traffic management plan nor new traffic control measures would be needed, since the Project would not be located on or cross over public roadways (Exhs. NSTAR-1, at 31; DPU-T-1). NSTAR indicated that road closures may be needed for large equipment deliveries, which would generally occur in the morning and would be intermittent in nature (Exhs. DPU-T-1; DPU-T-2; DPU-T-3; Tr. 1, at 133-134).

At least 30 days prior to the commencement of Project construction, the Company would provide abutters and Town officials a general overview of, and timeline for, equipment

deliveries or other activities with the potential for traffic impacts (Exh. DPU-G-4). For any planned construction outside of normal construction hours, NSTAR would notify Town officials and abutters five days in advance (id.). The Company would schedule road closures to minimize impacts to school bus routes along Orchard Road (Exhs. DPU-T-1; DPU-T-3; Tr. 1, at 133-134).

The Project would require multiple independent crews, ranging from two to twelve crew members each, with crews working simultaneously within the Substation (Exhs. DPU-G-11; DPU-T-3). The parking for crew members and storage and delivery of materials is expected to be accommodated on-site, with additional equipment storage space available at NSTAR's Yarmouth Service Center on Willow Street (Exhs. DPU-G-11; DPU-G-13; DPU-T-1). The Company stated that once the Project is complete, there will be no permanent traffic impacts (Exh. NSTAR-1, at 32).

f. Air Impacts

NSTAR reported on its use of sulfur hexafluoride ("SF_6"), a gas identified as a non-toxic but highly potent greenhouse gas ("GHG") (Exh. DPU-AIR-1).[20, 21] The new

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[20] SF_6 is a GHG that is 23,900 times more potent than CO_2. One pound of SF_6 has the same global warming impact as eleven tons of CO_2. See the Massachusetts Clean Energy and Climate Plan for 2020, at 77.

[21] The Massachusetts Clean Energy and Climate Plan, issued by the Secretary of Energy and Environmental Affairs on December 29, 2010, adopts a 2020 statewide GHG emissions limit 25 percent below 1990 emissions levels and sets forth an integrated portfolio of policies to reach the Commonwealth's clean energy and climate goals. Reduction of an amount of SF_6 equivalent to a reduction of 0.2 million metric tons of CO_2 is one of the policies set forth in the Plan. See G.L. c. 21N.

equipment at the Mashpee Substation would include a circuit switcher that would contain approximately six pounds of SF_6 gas and two 115 kV circuit breakers that would contain 64 pounds of SF_6 gas each. NSTAR currently uses SF_6 at the Substation for one circuit switcher that contains approximately six pounds of SF_6 and one 115 kV breaker with 64 pounds of SF_6 (id.).

NSTAR reports that filling new equipment with SF_6 takes place at installation; that no SF_6 would be stored on site once the Project is complete; and that the equipment would not be opened unless maintenance was necessary, during which a gas cart would be used to capture SF_6 (Exh. DPU-AIR-1). NSTAR employees who handle or supervise handling of SF_6 receive training from the equipment manufacturer (id.). A specialty gas vendor recovers and reclaims SF_6 gas at equipment retirement (id.).

Vehicle idling would be limited in accordance with the Massachusetts anti-idling law, and with NSTAR's company-wide idling reduction policy (Exh. DPU-G-14). The Company would minimize fugitive dust impacts by covering stockpiled soil with anchored plastic sheeting, spraying exposed soils with water, and minimizing vegetation removal (Exh. DPU-LU-14).

g. Hazardous Materials

The Project would be located in a Mashpee Groundwater Protection District (Exh. NSTAR-1, at 28). The Mashpee Zoning Bylaws prohibit the storage of petroleum products and liquid hazardous materials in a Groundwater Protection District (id.). The Company stated that Mineral Oil Dielectric Fluid ("MODF"), classified as an oil and

hazardous material subject to the Massachusetts Contingency Plan, would be used in the new transformer, and is currently used in the Existing Transformer as an insulating and heat transfer medium (id. at 29, 38).[22] NSTAR stated that each transformer would contain approximately 10,000 gallons of MODF and, in the event of a release; any MODF would be captured within a secondary containment structure under each transformer (id. at 29).[23] Each containment system would be located under the transformer and consist of a concrete moat filled with imbiber beads that expand when in contact with the MODF (Tr. 1, at 162). The capacity of the containment system would be ten percent greater than the largest single MODF-containing compartment of the transformer (id. at 162; Tr. 2, at 273). Any MODF not captured in the containment system would adhere to soil particles and organic matter (Exh. NSTAR-1, at 29). NSTAR stated that spill response procedures would include cleaning and disposing of any impacted soils (id.).

h. Magnetic Fields

The Company provided an assessment, prepared by its contractor, of the potential magnetic field impacts of the Project (Exh. NSTAR-1, exh. 13). The Company calculated pre-

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[22] The Company does not consider the use of MODF in the transformers as the "storage" of MODF as the term is used in hazardous materials regulation. However, the Company acknowledges that others may interpret the term "storage" more broadly. See Section II.D.2, Table 5, below.

[23] There is not currently a containment system under the Existing Transformer at the Substation (Tr. 1, at 162). As part of this Project, the Company will install two separate containment systems, one under the Existing Transformer, and one under the Proposed Transformer (id.).

Project magnetic field levels at the measured 2013 peak day system load level and post-Project magnetic field levels at the forecasted 2015 peak day system load level (id.).

Table 4: Modeled Magnetic Fields One Meter Above Grade for the Existing and Proposed Configurations of Power Lines

Model Location	Maximum Magnetic Field in milligauss ("mG")	
	Pre-Project	Post-Project
ROW Northern Edge at Substation boundary	1.8	1.3
ROW Northern Edge at Harwich Road	1.8	1.3
ROW Northern Edge at Orchard Road	1.1	1.1
ROW Southern Edge (South of property boundary)	12.0	14.1
Within ROW	46.4	34.9

Source: Exh. NSTAR-1, exh. 13.

The modeled post-Project magnetic field levels are less than pre-Project levels at four of the modeled locations (Exh. NSTAR-1, exh. 13). The Company attributed the increase on the southern edge of the ROW to an increase in load on an above-ground distribution line (id.).

i. Analysis and Findings

The land use impacts of the Project would be similar to the existing impacts at the Substation. The nearest residence is approximately 120 feet from the substation expansion, with approximately seven residences between 120 to 300 feet away. Project construction would occur entirely within existing NSTAR property. Some grading and leveling may be required for the Project site, and 26,380 square feet of tree clearing would be required for the access road construction. The Project is not in an ACEC and there are no documented cultural or historical resources in the Project area.

NSTAR has not received a final determination from NHESP following the changes to the access road design. The determination, when available, is required to support NSTAR's assertion that the Project would not adversely affect rare and endangered species. The Department therefore directs the Company to provide the Department with a copy of NHESP's determination on the Project's impacts on protected species, when issued.

The Company modeled daytime and nighttime operational noise impacts of the Existing and New Transformers with up to eight fans operating to cool each transformer. Noise modeling for low-noise transformers, as proposed by the Company, without additional mitigation in the form of sound barriers, showed that the greatest potential sound level (at full load, with all fans operating) would exceed the quietest nighttime ambient sound level at the closest residences to the south by ten to 13 dBA. This level would exceed the ten dBA increase defined in MassDEP's noise policy, and is also greater than the noise increases previously accepted in Department and Siting Board cases. Additionally, as modeled, the transformers appear to create a pure tone as defined by MassDEP at three locations.

The Company's modeling indicates that either a single-wall or a three-sided noise barrier on the south side of the transformers would eliminate the pure tone conditions and would reduce noise level increase attributable to the Substation from the ten to 13 dBA predicted (with no mitigation) to an increase of only one to two dBA. At the residential locations to the east and the west of the site, the three-sided barrier provides as much as a six dBA decrease compared to the single-wall. However, the same sound walls south of the transformers do not reduce transformer noise north of the Substation. The location of the

modeled eleven dBA increase (in excess of the ten dBA MassDEP noise policy) is north of the Substation, but within the Company's property; a conservative estimate of the noise increases at the homes north of the Substation is seven dBA.

The single-wall sound barrier and the three-sided barrier differ with respect to mitigation of sound to the east and west of the Substation. At modeled receptor locations to the east and west, the single-wall barrier would limit the estimated noise increases to six dBA or less. However, the three-sided barrier would reduce these noise impacts to one dBA. The three-sided barrier, as proposed, is not as long as the single-wall and would not require the fenced area to be enlarged by approximately ten feet in this location. Although more effective at mitigating noise, the three-sided barrier would cost $125,000 more than the single-wall.

At the end of the proceeding, the Company proposed to build the single-wall barrier. While both the single-wall and the three-sided barrier address pure tone conditions, as well decreasing noise levels to the south to the same extent, the three-sided barrier reduces incremental noise impacts east and west of the Substation from six dBA to one dBA. The Department finds this degree of reduction in noise significant and warrants the additional expenditure. Therefore, the Department directs the Company to install a 20-feet high three-sided sound barrier, to the south, east and west of the two transformers – the Proposed Transformer and the Existing Transformer.

The Company would mitigate construction noise impacts by using smaller equipment, minimizing digging, and maximizing use of pre-assembled components. Given the residents abutting the site, performing construction primarily during business hours, five days a week

would minimize construction noise impacts. Therefore, to help mitigate noise impacts from construction, the Department directs the Company to work Monday through Friday from 7:00 a.m. to 5:00 p.m., with the exception of construction activities that require continuous construction or otherwise require work outside normal construction hours. Should the Company need to extend work beyond the construction hours or days noted above, the Company is directed to seek written permission from the relevant Town authority prior to the commencement of such work. If the Company and Town officials are not able to agree on whether such extended construction hours should occur, the Company may request prior authorization from the Department.

With respect to visual impacts, the Company stated that the Project would be consistent with the existing visual landscape of the Substation. The Company has consulted with abutters and the Mashpee Board of Selectmen to develop a landscaping plan to minimize the visual impacts of the Substation expansion. However, due to tree clearing associated with the construction of the new access road and driveway, expanded views of the Substation from the southeast would occur. Therefore, the Department directs the Company to update the landscaping plan to include increased landscaping in the vicinity of the access road entrance from Orchard Road, to diminish the views from homes southeast of the Project site. If the Company finds that adequate visual mitigation is not possible in this vicinity due to restrictions

found in the NSTAR VMP associated with the ROW, the Department directs the Company to work with the affected abutters to the southeast of the Project to provide off-site mitigation.[24]

The Project would not be located near any MassDEP Wellhead Protection Areas. There are no jurisdictional wetland resources under the Massachusetts Wetland Protection Act in the Project Area. The Company will work with the Mashpee Conservation Commission in regards to a small isolated wetland in the Substation driveway.

The Project would be located in a Mashpee Groundwater Protection District. The Company is seeking an exemption from the Mashpee Zoning Bylaw regarding the Groundwater Protection District (see Section II.D.2). The Company would install a containment system under the Proposed and Existing transformers, to contain any release of MODF that might occur.

With respect to traffic impacts, Project construction may trigger intermittent road blockages or closures for large equipment deliveries. All Project work would occur within the Substation expansion area and ROW, which is large enough for equipment storage and crew parking. NSTAR would notify abutters 30 days prior to the start of construction with a general construction schedule, and provide notifications of anticipated traffic disruptions or work schedule adjustments. Given that there will be construction-related road closures and equipment deliveries, and to ensure that information about construction and operation of the Project is disseminated more widely within the community, the Department directs the

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[24] Impacted abutters include the residents of homes directly off of Orchard Road, identified as homes E and F in the Company's response to Record Request DPU-9.

Company, in consultation with the Town, to develop a community outreach plan for Project construction. The outreach plan should, at a minimum, lay out procedures for providing prior notification to affected residents of: (1) the scheduled start, duration, and hours of construction; (2) any construction that must take place outside the hours or days indicated above; (3) any operation the Company intends to conduct that could result in unexpected community impacts due to unusual circumstances; and (4) complaint and response procedures including contact information.

In terms of mitigation of construction air impacts, consistent with recent Department and Siting Board requirements the Department directs the Company to ensure: (1) that all diesel-powered non-road construction equipment with engine horsepower ratings of 50 and above to be used for 30 or more days over the course of the Project construction will have USEPA-verified or equivalent emission control devices installed; and (2) that all vehicle idling will be limited, generally to five minutes, in accordance with the Massachusetts anti-idling law and regulations. See NSTAR Seafood Way at 22; NSTAR Barnstable at 22; NSTAR Electric Company, EFSB 10-2/D.P.U. 10-131/132, at 78 (2012). Additionally, new equipment at the Substation requiring SF_6 would include one circuit switcher that would contain approximately six pounds of SF_6 and two 115 kV circuit breakers that would contain 64 pounds of SF_6 each. The Department directs NSTAR to inform the Department if it adds additional SF_6 to any equipment at the Substation or replaces any equipment at the Substation due to SF_6 loss within five years of the completion and initial operation of the Project, after which time the Company will consult with the Department to determine whether the

Department will require continuing reporting, as deemed appropriate.

The maximum magnetic field value along the ROW edge would increase from twelve to 14.1 mG on the southern edge. At other locations modeled, magnetic field values decreased along the ROW edges. Post-Project magnetic fields would be minimized by the relocation of overhead lines to underground lines.

The Department concludes that the impacts of the Project will be minimized, with the Project's compliance with: (1) all applicable federal, state, and local laws and regulations; (2) the avoidance, minimization and mitigation measures that NSTAR has stated it will implement during Project construction; and (3) the Department's conditions as discussed above and set forth below.

D. Conclusion on Public Convenience and Public Interest

Based on the foregoing analysis of: (1) the need for or public benefit of the proposed use; (2) alternatives explored; and (3) impacts of the proposed use, the Department finds that that the Project is necessary for the purpose alleged, that the benefits of the Project to the general public exceed the local impacts, and that the Project will serve the public convenience and is consistent with the public interest.

E. Exemptions Required

1. Introduction

NSTAR is seeking exemption from eleven individual provisions of the Town's Bylaws. NSTAR seeks to be exempted from two provisions that would require a use variance for the Project, on the ground that the Bylaws do not provide for use variances. NSTAR seeks

exemption from the need to obtain five additional variances, including three dimensional variances, on the grounds that the legal standard for obtaining a variance is difficult to meet and that, even if obtained, a variance would be appealable and therefore a potential source of Project delay, burden and undue expense. The Company seeks exemption from four provisions of the Bylaws that would require either a special permit or site plan approval for the Project, on the grounds that such approvals are discretionary in nature, may include burdensome conditions and, even if obtained, would be appealable and therefore a potential source of Project delay, burden, and undue expense (Exh. NSTAR-1, at 36-44; Company Brief at 45-55).

2. Individual Exemptions

a. Company's Position

In addition to the general reasons cited above, Table 5 below presents: (1) each of the specific provisions of the Bylaws from which the Company seeks exemption; (2) the relief available from the Town through the local zoning process; and (3) the Company's argument as to why it cannot comply with the identified zoning provision or why the available zoning relief is inadequate.

Table 5. Company Position: Requested Exemptions From Mashpee Zoning Bylaws

Section of Zoning Bylaws	Available Relief	Why Exemption is Required: Company's Position
Storage of Liquid Petroleum or Liquid Hazardous Materials in a Groundwater Protection District Section 174-81 (A) and (B)	Use Prohibition; No Available Relief	The storage of liquid petroleum or liquid hazardous materials is prohibited in a Groundwater Protection District. The new transformer on the site will use MODF, which is petroleum-based fluid. The Company believes that it will not be "storing" MODF on-site, but others may interpret this provision differently. If the Company is deemed to be storing MODF, a use variance would be required, but the Zoning Bylaws do not authorize use variances.
Soil Removal in a Groundwater Protection District Section 174-81(O)	Use Prohibition; No Available Relief	Project construction will require soil removal for the transformer foundation and the new steel line angle structures. Soil removal in a Groundwater Protection District is prohibited within four feet of the historical high groundwater table. The line angle structures will require soil removal within four feet of groundwater. The Company thus would require a use variance, but the Zoning Bylaws do not authorize use variances.
Structure Height Section 174-24 (G)	Variance	The Substation is located in the Otis Air National Guard Base Accident Prevention Zone, in which structures may not exceed 35 feet in height. The Substation's terminal supports will be approximately 40 feet high, and the shielding masts will be 60 feet high. The Company would require a height variance. Variances are a disfavored form of relief and, even if granted, are susceptible to appeal. Appeals may result in adverse outcomes, delay, burden and undue expense.
Building Height Section 174-31	Variance	The Substation is located in an R-3 zoning district. The maximum building height in an R-3 District is 35 feet. The Substation's terminal supports will be approximately 40 feet high, the shielding masts will be 60 feet high, and it is possible that the Building Inspector will apply the building height restriction to these structures. If this provision is deemed to apply to the Project, the Company will require a height variance. Variances are a disfavored form of relief and, even if granted, are susceptible to appeal. Appeals may result in adverse outcomes, delay, burden and undue expense.

Section of Zoning Bylaws	Available Relief	Why Exemption is Required: Company's Position
Side-Yard Setback Section 174-31	Variance	The minimum building setback to side lot lines is 15 feet. The new transmission line angle structures will be located within this side-yard setback. The Company will require a dimensional variance. Variances are a disfavored form of relief and, even if granted, are susceptible to appeal. Appeals may result in adverse outcomes, delay, burden and undue expense.
Storm Water Management Section 174-27.2	Variance	New non-residential developments requiring a special permit must have a system of storm water management and precipitation recharge. The Company does not intend to install such a system, because it is not necessary or practical. The Company will require a variance. Variances are a disfavored form of relief and, even if granted, are susceptible to appeal. Appeals may result in adverse outcomes, delay, burden and undue expense.
Off-Street Parking Article VIII	Variance	New or enlarged structures require compliance with off-street parking requirements. Parking at the Substation is rare because it generally is unmanned, and the Project will not generate the need for additional parking. A variance from the off-street parking requirements would be appropriate, but variances are a disfavored form of relief and, even if granted, are susceptible to appeal. Appeals may result in adverse outcomes, delay, burden and undue expense.
Pesticide Use in Groundwater Protection Districts Section 174-82 (A) (2)	Special Permit	The Company will use herbicides to prevent vegetative interference with Substation operation. Pesticide use in a Groundwater Protection District is allowed by special permit if certain criteria are met. The criteria for granting a special permit are subjective, thus creating uncertainty with respect to obtaining the permit. The local permitting process, including potential appeals, may result in adverse outcomes, delay, burden and undue expense.
Use Regulations Section 174-25 (6)	Special Permit	The Substation is located in a Residence 3 (R-3) District, in which public utilities are allowed by special permit if certain criteria are met. The criteria for granting a special permit are subjective, thus creating uncertainty with respect to obtaining the permit. The local permitting process, including potential appeals, may result in adverse outcomes, delay, burden and undue expense.

Section of Zoning Bylaws	Available Relief	Why Exemption is Required: Company's Position
Public Utility Use in Groundwater Protection District Article XIII	Special Permit	The Substation is located in a Groundwater Protection District, and public utility uses in a Groundwater Protection District require a special permit. The criteria for granting a special permit are subjective, thus creating uncertainty with respect to obtaining the permit. The local permitting process, including potential appeals, may result in adverse outcomes, delay, burden and undue expense.
Site Plan Review Section 174-24 (C)	Site Plan Review	Site plan review is required for all projects that require a special permit. The Company must have the discretion to design the Project and site layout in a manner consistent with established industry standards. Site Plan review is discretionary and, could result in burdensome or restrictive conditions.

Sources: Exh. NSTAR-1, at 36-44; Company Brief at 43-55.

b. Analysis and Findings

i. Variances

The record shows that the Project would require two use variances: (1) a variance from the requirements of Section 174-81 (A) and (B) (prohibiting the storage of liquid petroleum or liquid hazardous materials in a groundwater protection district) and (2) a variance from the requirements of Section 174-81 (O) (prohibiting soil removal within four feet of groundwater in a groundwater protection district). The Bylaws do not authorize the issuance of use variances; thus no zoning relief would be available to the Company with respect to these two provisions of the Bylaws. See G.L. c. 40A, § 10. Accordingly, we find that exemption from Section 174-81 (A) and (B) and Section 174-81 (O) is required within the meaning of G.L. c. 40A, § 3 and exemption from both provisions is granted.

With respect to variances other than use variances, the Department concurs with the Company that the criteria for obtaining a variance are difficult to meet. See G.L. c. 40A,

§ 10. Additionally, we note that variances are appealable. Thus, requiring the Company to obtain variances could, at a minimum, result in significant Project delay. Accordingly, we find that exemptions from the identified provisions of the Bylaws that would require the Company to obtain a variance to construct and operate the Project are required within the meaning of G.L. c. 40A, § 3. Specifically, exemption is granted from the following provisions: Section 174-24 (G) (structure height); Section 174-31 (building height); Section 174-31 (side-yard setback); Section 174-27.2 (storm water management); and Article VIII (off-street parking).

With respect to Section 74-24 (G) (35-foot height restriction in Otis Air National Guard Accident Prevention District), the Company stated that it will confer with the Federal Aviation Administration and the Massachusetts Aeronautical Commission regarding allowable structure heights at the Substation (Exh. DPU-Z-4; Tr. 2, at 276-279). The Department thus grants an exemption from Section 174-24 (G) of the Bylaws, subject to the condition that the Company confer with all relevant air safety authorities and conform to any height restrictions, or other requirements, imposed by those authorities.

ii. Special Permits and Site Plan Review

Section 174-24 (C) of the Bylaws sets forth the criteria for obtaining a special permit. The criteria pertain primarily to the nature and magnitude of the environmental, public health, and public safety impacts that would result from construction and operation of a proposed use. See Section 174-24 (C) (2). We concur with the Company that the special permit criteria are to some extent subjective in nature, and that this introduces some uncertainty into the

permitting process. Additionally, we note that special permits are appealable. Thus, requiring the Company to obtain special permits could result in significant Project delay. Finally, we note that the Project will actually meet many of the applicable special permit criteria (Exh. DPU-Z-1). Accordingly, we find that exemptions from the special permit requirements in Section 174-82 (A)(2) (special permit required for herbicide use in a groundwater protection district); Section 174-25 (6) (special permit required for public utility use in an R-3 district) and Article XIII (special permit required for public utility use in a groundwater protection district) are required within the meaning of G.L. c. 40A, § 3. With respect to Section 174-82 (2), the exemption is granted subject to the conditions that the herbicides used by the Company are approved by the Massachusetts DAR for use in Sensitive Areas, at a minimum. To avoid the potential for burdensome conditions or significant delay, we find that exemption from Section 174-24 (C) (site plan review) also is required.

3. Consultation with Municipality

a. Introduction

NSTAR stated that, between July 2011, and October 2013, it met with Town officials on numerous occasions to discuss both the Project and the Company's proposal to seek zoning relief from the Department rather than from the Town, as described below (Exh. NSTAR-1, at 6-7).

On July 29, 2011, NSTAR representatives met with the Mashpee Town Manager and Acting Building Inspector, who encouraged the Company to participate in the Town's design review process (Exh. NSTAR-1, at 6). On February 7, 2012, NSTAR presented the Project to

the Town's Design Review Committee, followed by a site visit at which Town officials raised questions regarding Project visibility (id.). On June 4, 2013, NSTAR again presented the Project to the Town's Design Review Committee. NSTAR stated that, as a result of comments made at this meeting, the Company developed artist renderings that addressed visual screening, and provided the Mashpee Fire Department with a Material Safety Data Sheet ("MSDS") for the transformer insulating fluid (id.). NSTAR also agreed to pave an apron at the entrance to the Substation site (id.). On July 15, 2013, NSTAR met for a third time with the Design Review Committee at which it discussed potential Project impacts and mitigation (id. at 6-7).

On September 23, 2013, NSTAR appeared at a public hearing before the Mashpee Board of Selectmen (Exh. NSTAR-1, at 7). NSTAR stated that the Board of Selectmen approved the Company's request to seek zoning relief from the Department, conditioned upon NSTAR presenting the Project to the Mashpee Zoning Board of Appeals ("ZBA"). On October 9, 2013, NSTAR presented the Project to the ZBA (id.). The ZBA voted to support the Company's request to seek zoning relief from the Department and, on October 15, 2013, the Board of Selectmen provided NSTAR a letter of support (id.; Exh. NSTAR-1, Att. 6). NSTAR stated that, during planning and construction of the Project, the Company would continue to work with the Town, including the Building Inspector, to address any zoning, permitting, or construction issues that might arise (Exh. NSTAR-1, at 7).

b. Analysis and Findings

The Department continues to favor the resolution of local issues on a local level whenever possible to reduce concern regarding any intrusion on home rule. NSTAR Seafood

Way at 36; NSTAR Barnstable at 33; Russell Biomass LLC/Western Massachusetts Electric Company, EFSB 07-4/D.P.U. 07-35/07-36, at 60-65 (2009) ("Russell Biomass"). The Department believes that the most effective approach for doing so is for applicants to consult with local officials regarding their projects before seeking zoning exemptions pursuant to G.L. c. 40A, § 3 or Section 6 of Chapter 665 of the Acts of 1956. NSTAR Seafood Way at 36; NSTAR Barnstable at 33-34; New England Power Company d/b/a National Grid, D.P.U. 12-02, at 36 (2012) ("National Grid Westborough").

The record shows that NSTAR consulted with Town officials on multiple occasions regarding the proposed Project, and did so well before the Company filed its zoning exemption petition with the Department. The Town's Board of Selectmen, its ZBA, and its Design Review Committee each were given opportunities review the Project, and NSTAR modified the Project to incorporate changes requested by them. The Board of Selectmen and the ZBA affirmatively indicated their support for the Project and for the Company's proposal to seek zoning relief from the Department rather than from the Town. We find that the Company made a good faith effort to consult with municipal authorities, and that the Company's communications have been consistent with the spirit and intent of Russell Biomass.

4. Conclusion on Request for Individual Zoning Exemptions

As described above, the Department finds that: (1) NSTAR is a public service corporation; (2) the proposed use is reasonably necessary for the public convenience or welfare; and (3) the specifically identified zoning exemptions are required for purposes of G.L. c. 40A, § 3. Additionally, we find that the Company engaged in good faith consultation

with the Town. Accordingly, we grant the Company's request for the individual zoning exemptions listed above in Table 5, subject to any conditions set forth in this Order.

II. REQUEST FOR A COMPREHENSIVE EXEMPTION

A. Standard of Review

The Department considers requests for comprehensive zoning exemptions on a case-by-case basis. NSTAR Seafood Way at 37-38; NSTAR Barnstable at 34-35; NSTAR Electric Company, D.P.U. 07-60/07-61, at 50-51 (2008) ("NSTAR Carver"), citing Princeton Municipal Light Department, D.T.E./D.P.U. 06-11, at 37 (2007). The Department will not consider the number of exemptions required as a sole basis for granting a comprehensive exemption. Rather, the Department will consider a request for comprehensive zoning relief only when issuance of a comprehensive exemption would avoid substantial public harm. NSTAR Seafood Way at 37-38; NSTAR Barnstable at 35; NSTAR Carver at 51-52.

B. Company's Position

In addition to the individual exemptions discussed above, NSTAR also has requested a comprehensive exemption from the Bylaws (Exh. NSTAR-1, at 44-48; Company Brief at 55-58). The Company asserts that the Project requires a comprehensive exemption to avoid substantial public harm, and thus satisfies the Department's standard for the granting of comprehensive exemptions (Exh. NSTAR-1, at 44, 46).

The Company asserts that the reliability need for the Project is "immediate" and "widespread" (Exh. NSTAR-1, at 46). The Company states that load growth on Cape Cod has been increasing at such a rate that the Existing Transformer at the Mashpee Substation has

reached its maximum load carrying capacity (id. at 13). The Company states that, both currently and in the near future, four reasonably foreseeable N-1 contingencies would force the Existing Transformer, and other components of the existing system, to operate in excess of their maximum design rating under peak load conditions (id. at 46; Company Brief at 57). The Company states that this overloading would require extensive distribution switching and would result in substantial loss of load (Exh. NSTAR-1, at 13). The Company indicates that the Project is needed to ensure reliable electric service to 44,000 customers served by NSTAR's transmission system on Cape Cod (id. at 46-47).

The Company further contends that a comprehensive exemption would prevent potential delays in Project construction if: (1) a zoning provision originally deemed inapplicable is later determined to be applicable; or (2) prior to construction, a new zoning provision were to be adopted that was potentially applicable to the Project (Company Brief at 56-57).

C. Analysis and Findings

The grant of a comprehensive exemption is based on the specifics of each case. Compared to the grant of individual zoning exemptions, which is tailored to meet the construction requirements of a particular project, the grant of a comprehensive exemption serves to nullify a municipality's zoning code in its entirety with respect to the project under review. Thus, compared to the grant of individual zoning exemptions, a comprehensive zoning exemption constitutes a broader incursion upon municipal home rule authority. In the absence of a showing that substantial public harm may be avoided by granting a comprehensive exemption, the granting of such extraordinary relief is not justified. NSTAR Electric

Company, D.P.U. 13-126/127, at 37-39 (2014) ("NSTAR Electric Avenue"); NSTAR Barnstable at 34-36; National Grid Westborough at 34-37; NSTAR Electric Company, D.P.U. 11-80, at 42-44 (2012) ("NSTAR Plympton").

Department and Siting Board cases in which comprehensive exemptions have been granted typically have involved reliability-based projects that were found to be so time sensitive that delay could result in substantial public harm. NSTAR Electric Avenue at 39; NSTAR Barnstable at 34-36; New England Power Company d/b/a National Grid, EFSB 09-1/D.P.U. 09-131/09-132 (2011); Western Massachusetts Electric Company, EFSB 08-2/D.P.U. 08-105/08-106 (2010).

As discussed in Section II.C., above, the record in this case shows that NSTAR's proposed Project is needed to address both current and future capacity and reliability needs in the Project Area. The Department finds that completion of the Project is sufficiently time-sensitive that delay in placing the Project into service may result in substantial public harm. Additionally, the Town of Mashpee supports the Department's grant of a comprehensive exemption for the Project. Therefore, the Department grants NSTAR's request for a comprehensive zoning exemption.

III. SECTION 61 FINDINGS

The Massachusetts Environmental Policy Act ("MEPA") provides that "[a]ny determination made by an agency of the commonwealth shall include a finding describing the environmental impact, if any, of the project and a finding that all feasible measures have been taken to avoid or minimize said impact" ("Section 61 findings"). G.L. c. 30, § 61. Pursuant

to 301 C.M.R. § 11.01(3), Section 61 findings are necessary when an Environmental Impact Report ("EIR") is submitted to the Secretary of Energy and Environmental Affairs, and should be based on such EIR. Where an EIR is not required, Section 61 findings are not necessary. 301 C.M.R. § 11.01(3). In an affidavit dated January 16, 2014, counsel for NSTAR stated that the Project would not exceed any of the applicable MEPA review thresholds and, accordingly, that the Project does not require a MEPA filing (Exh. NSTAR-DR-1). Accordingly, Section 61 findings are not necessary in this case.[25]

IV. ORDER

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

ORDERED: That the petition of NSTAR seeking the specific exemptions set forth in Table 5, from the operation of the Town of Mashpee Zoning Bylaw pursuant to G.L. c. 40A, § 3 is granted; and it is

FURTHER ORDERED: That the petition of NSTAR seeking a comprehensive exemption from the operation of the Town of Mashpee Zoning Bylaw is granted; and it is

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[25] The Department notes the requirements set forth in G.L. c. 30A, § 61, effective November 5, 2008, regarding findings related to climate change impacts. Since Section 61 findings are not required in this case, the Project is not subject to the Greenhouse Gas Emissions Policy and Protocol. The Department nonetheless notes that this Project would have minimal greenhouse gas emissions, as it consists of modifications to an existing Substation. As such, the Project would have minimal direct emissions from a stationary source under normal operations and would have minimal indirect emissions from transportation sources limited to construction, occasional repair, or maintenance activities. The Department addresses Project SF_6 in Section II.C.3.f, above.

FURTHER ORDERED: That NSTAR submit to the Department as a compliance filing the final NHESP determination regarding the potential for Project impacts on rare and endangered species, once the NHESP determination is issued; and it is

FURTHER ORDERED: That NSTAR install a 20-feet high three-sided sound wall, to the south, east and west of the two transformers: the Proposed Transformer and the Existing Transformer; and it is

FURTHER ORDERED: That NSTAR limit Project construction to Monday through Friday from 7:00 a.m. to 5:00 p.m., with the exception of activities that require continuous construction. Should the Company need to extend construction work beyond these hours or days, the Company is directed to seek written permission from the relevant Town authority prior to the commencement of such work and to provide the Department with a copy of such permission. If the Company and Town officials are not able to agree on whether such extended construction hours should occur, the Company may request prior authorization from the Department; and it is

FURTHER ORDERED: That NSTAR update the Substation landscaping plan to include increased landscaping in the vicinity of the access road entrance from Orchard Road, to help screen the views from homes southeast of the Project site. If the Company finds that adequate visual mitigation is not possible in this vicinity due to restrictions found in the NSTAR VMP associated with the ROW, the Department directs the Company to work with the affected abutters to the southeast of the Project to provide off-site mitigation; and it is

FURTHER ORDERED: That NSTAR, in consultation with the Town, develop a community outreach plan for Project construction and operation. The outreach plan should, at a minimum, lay out procedures for providing prior notification to affected residents of: (a) the scheduled start, duration, and hours of construction; (b) any construction that must take place outside the hours or days indicated below; (c) any operation the Company intends to conduct that could result in unexpected community impacts due to unusual circumstances; and (d) complaint and response procedures including contact information; and it is

FURTHER ORDERED: That NSTAR ensure: (1) that all diesel-powered non-road construction equipment with engine horsepower ratings of 50 and above to be used for 30 or more days over the course of the Project construction will have USEPA-verified or equivalent emission control devices installed; and (2) that all vehicle idling be limited, generally to five minutes, in accordance with the Massachusetts anti-idling law and regulations; and it is

FURTHER ORDERED: That NSTAR inform the Department if it adds additional SF_6 to any equipment at the Substation or replaces any equipment at the Substation due to SF_6 loss within five years of the completion and initial operation of the Project, after which time the Company will consult with the Department to determine whether the Department will require continuing reporting, as deemed appropriate; and it is

FURTHER ORDERED: That NSTAR confer with all relevant air safety authorities and conform to any height restrictions or other requirements imposed by those authorities regarding the Project; and it is

FURTHER ORDERED: That NSTAR use herbicides approved by the Massachusetts Department of Agricultural Resources for use in Sensitive Areas, at a minimum; and it is

FURTHER ORDERED: That NSTAR and its contractors and subcontractors comply with all applicable federal, state and local laws, regulations and ordinances for which the Company has not received an exemption, including those pertaining to noise, emissions, herbicides, and hazardous materials; and it is

FURTHER ORDERED: That NSTAR obtain all other governmental approvals necessary for the Project; and it is

FURTHER ORDERED: That NSTAR and its successors in interest notify the Department of any significant changes in the planned timing, design, or environmental impacts of the Project so that the Department may decide whether to inquire further into a particular issue; and it is

FURTHER ORDERED: That because the issues addressed in this Order relative to this Project are subject to change over time, construction of the Project commence within three years of the date of this Order; and it is

FURTHER ORDERED: That within 90 days of Project completion, NSTAR submit a report to the Department documenting compliance with all conditions contained in this Order, noting any outstanding conditions yet to be satisfied and the expected date and status of such resolution; and it is

FURTHER ORDERED: That the Secretary of the Department transmit a certified copy of this Order to the Town of Mashpee, and that NSTAR serve a copy of this Order on the

Mashpee Board of Selectmen, the Mashpee Planning Board and the Mashpee Zoning Board of Appeals within five business days of its issuance and certify to the Secretary of the Department within ten business days of its issuance that such service has been accomplished.

By Order of the Department:

_____/s/_____
Angela M. O'Connor, Chairman

_____/s/_____
Jolette A. Westbrook, Commissioner

_____/s/_____
Robert Hayden, Commissioner

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