

heat exchanger, which was assumed to have maximum noise levels that would occur in the daytime under contingency conditions. Given that the estimates of project noise to the west reflect a level of equipment operation expected during the day, the Company's analysis likely overstates maximum nighttime noise to the west. Second, the Company has maintained that there is no space available to the west of the facility to install a sound wall on NSTAR property.

Therefore, in order to minimize noise impacts at the Hyde Park Substation consistent with minimizing visual impacts, the Siting Board directs NSTAR to consult with the City of Boston and neighboring residents on its noise mitigation plan for the Hyde Park Substation and options to further reduce nighttime L_{90} increases from the project at residences east of the site, across Hyde Park Avenue. As part of this consultation, NSTAR shall develop a refined noise mitigation option based on the sound wall approach described in the record that would reduce nighttime L_{90} increases at residences east of the site to no greater than 3 dBA, while also minimizing the sound wall's visual impacts and providing the greatest possible implementation of the Company's proposed landscaping plan. In addition, NSTAR shall develop one or more additional noise mitigation options that entail less visual impact or interference with landscaping, and shall provide information on the level of noise mitigation that could be achieved under these options. NSTAR shall consult with appropriate City of Boston officials and neighboring residents as to the relative desirability of the Company's proposed noise plan (which does not incorporate a sound wall) and the options for additional noise mitigation, and shall develop and implement a final noise mitigation plan based on these consultations. NSTAR shall report to the Siting Board on these consultations and on the opinions of the City of Boston and neighboring residents on its final noise mitigation plan for the Hyde Park Substation. The Siting Board finds that, with implementation of the above condition, the noise impacts of the Hyde Park Substation would be minimized.

The noise increase at residential receptors in the vicinity of the Baker Street and K Street Substations, are zero and two respectively, which are below perceptibility. Overall, the Siting Board finds that with the implementation of the above condition, the permanent noise impacts of the proposed transmission project along the primary route would be minimized.

In comparing noise impacts along the primary, alternative, and hybrid routes, the Siting

Board notes that the noise impacts of the Hyde Park, K Street and Baker Street Substations would be the same for all routes. Thus, differences in noise impacts are limited to the differential impacts of the new switching station at the Route 138 site and at the SRA site. The record indicates that noise increases at the Route 138 site have been reduced to only 3 dBA at the closest residence to the switching station. The record also indicates that property line noise impacts are likely to be higher at the SRA site than the Route 138 site, due to the smaller size of the SRA site. However, it is likely that use of the SRA site would not result in increases over existing ambient noise levels at any residential locations, due to the distance from the site to the nearest residential areas. The record shows that commercial uses, including retail stores, are located adjacent to the SRA site; however, while the proximity of such uses and the small size of that site provide limited buffer, noise impacts would be limited to daytime and early evening periods when ambient noise levels are higher than the nighttime ambient conditions which underlie the noise analysis at the Route 138 site. Thus, on balance, the SRA site provides no significant advantage or disadvantage for minimizing noise impact relative to the Route 138 site.

Accordingly, the Siting Board finds that the primary route, the alternative route and the hybrid route would be comparable with respect to permanent noise impacts.

c. Visual

In this section, the Siting Board considers the visual impacts of the proposed transmission project. Because the transmission lines would be located underground along both the primary and alternative routes, except at bridge crossings, this analysis focuses primarily on the visual impacts at switching stations and substations associated with the project.

i. Primary Route

(a) Transmission Lines

NSTAR noted that the proposed transmission lines would be located underground along almost their entire route, and asserted that there would be no permanent visual impacts associated with the underground transmission lines (Exhs. EFSB-G-1, at 5-31; BECO-1, at 5-24, 5-25). At bridge crossings, the transmission lines would be installed in pipe chases beneath the deck of the

bridge, or in a sidewalk; the Company noted that these pipes would be visible at the Southeast Expressway (Exh. EFSB-G-1, at 5-31).

(b) Route 138 Switching Station

The Company stated that the Route 138 switching station would include six new monopole transition poles, ranging from approximately 60 feet to 125 feet high, to be located in an existing transmission ROW, and two incoming line bridges, 60 feet high, and shielding masts at approximately 100 feet to 120 feet high (Exhs. BECO-1, at 1-13; EFSB-G-1, at 2-17; ST-57;. RR-EFSB- 58). NSTAR stated that the switching station also would include four voltage compensators, each comprised of a main tank approximately 22 feet high, and entrance bushings to which the 345 kV line would be connected at a maximum of 30 feet above ground (*id.*). NSTAR indicated that approximately two-thirds of the 345 kV bus work would be approximately 22 feet high, and that the remainder would be approximately 38 feet high (*id.*). The Company stated that it would use a rigid bus design, with 22-foot high supports, rather than the 40-foot high A-frame supports initially proposed (Exh. RR-EFSB-28(S)).

The new switching station would be built on a site currently occupied by a working sand and gravel operation, a mulching operation, and a retail nursery supply operation (Exh. BECO-1, at 5-18; Tr. 5, at 722). A Town of Stoughton sewage pump station is located at the northeast portion of the site at York Street (Exh. BECO-1, at 5-18). NSTAR noted that the site presently has 345 kV lattice-structure towers that are approximately 130 feet high located in the ROW (Exh. EFSB-L-3). The Company stated that residences at the end of Charles Avenue, located along the southern border of the site in close proximity to the ROW, have clear views of the existing transmission towers and ROW, and that residences along Ewing Drive, located along the southeastern border of the site, have views of the existing transmission towers, the ROW, and stockpiles of sand and gravel along the southeastern border of the site (Exh. EFSB-G-1, at 5-32, 5-39).

The Company stated that the switching station equipment would be located on approximately four acres of the 14-acre parcel, toward the intersection of Route 138 and York Road, and well below the grade of these roads (Exhs. BECO-1, at 1-12; RR-EFSB-60, Fig. 1;

RR-EFSB-51).⁷⁴ The Company noted that a small area of vegetation located east of the pump station between the northern fence line and the northern property border would be removed during construction (Exh. EFSB-L-25). However, the Company stated that existing mature vegetation on the north and east would not be cleared (Exhs. EFSB-G-1, at 2-19; EFSB-L-2).

Pursuant to the Host Community Agreement, NSTAR has agreed to take reasonable steps to ensure that, to the extent feasible, abutters and passersby to the site would not have an unobstructed view of the switchyard facilities, except for the take-off towers and structures and the lightning masts (*id.*). The Host Community Agreement specified that A-frame structures originally proposed adjacent to the voltage compensators would be eliminated in favor of a rigid-bus design, and that the Company would construct a berm parallel to Route 138 and place vegetation on top of the berm to provide a buffer to the line of site from Route 138 (*id.*). NSTAR agreed to solicit input from the Town regarding the layout and type of vegetative screening to be used on site for screening purposes, but that the Company retains sole discretion as to landscaping design and materials (*id.*).

During the proceeding, NSTAR provided additional information regarding its plans for visual mitigation at the Route 138 site. Along Route 138 and a northwest portion of York Street, the Company proposed planting a mix of 71 evergreen trees 8 to 12 feet tall, 48 smaller white pines 4 to 5 feet tall, 15 understory trees, and 6 canopy trees (Exhs. RR-EFSB-51; RR-EFSB-49; EFSB-L-5). These trees would be planted atop a 10- to 12-foot natural earth berm to be constructed roughly parallel to Route 138 and running a short distance along York Street, for a total of approximately 1,500 feet (Exh. RR-EFSB-28(S); Tr. 14, at 1905). NSTAR stated that it would loam and seed approximately 2.2 acres of the substation site between Route 138/York Street and the switching station fence line (Exh. RR-EFSB-51).

⁷⁴ The Company explained that the elevation of the switching station yard would range from approximately 214 feet on the north side near York Street, to 218 feet on the southerly portion (Exhs. EFSB-G-1, at 5-31; RR-EFSB-51; RR-EFSB-60). According to the Company, the switching station yard therefore would be considerable lower than the western frontage of the site, which ranges from approximately 232 feet at the York Street/Route 138 intersection to 240 feet at the southwest corner along Route 138 (Exh. RR-EFSB-60). The yard would be lower than the existing grade of 248 feet to the south of the switching station (Exhs. ST-57a; RR-EFSB-60).

The Company stated that it is considering additional on-site landscaping, off-site landscaping or a combination of the two to buffer views from the residential areas along Charles Street and Ewing Street to the south of the switching station (Exh. EFSB-L-27). The Company suggested that 60 evergreen trees, 75 small evergreen trees, and 100 shrubs, planted primarily to the southeast of the proposed facility on currently disturbed land, could screen views from residences along Charles Street, Ewing Street, and York Street (Exh. RR-EFSB-51). The Company has also suggested that a 10- to 12-foot berm, similar to that proposed for the western portion of the site, could be installed on the southeastern portion of the site to improve the screening effect of the plantings in that location (*id.*; Exh. RR-EFSB-49; Tr. 14, at 1907). The Company stated that such a berm could screen views from Ewing Street, but that the existing transmission ROW would preclude the installation of a berm that would help screen views from the residences along Charles Street (Exh. EFSB-RR-49).

The Company estimated that the on-site landscaping costs for the landscaping as discussed above, excluding the berm, would be approximately: (1) \$165,000 for the Route 138/York Street area, which includes trees, bark mulch, and loaming and seeding; (2) \$100,000 for the York Street/Charles Avenue/Ewing Street area for trees and bark mulch; and (3) \$110,000 for the loam and seeding of approximately 4 acres of open areas to the east and southeast (Exh. RR-EFSB-51).⁷⁵ In addition to the costs provided, NSTAR estimated that the added cost to provide additional taller deciduous plantings of 15 to 20 feet high, would be approximately \$2,000 to \$3,000 per tree, and that the added cost for comparable evergreen trees would be \$4,000 to \$6,000 (Exh. RR-EFSB-49; Tr. 14, at 1913-1914).

NSTAR identified the two homes at the end of Charles Street, and possibly three homes on Ewing Street, that could benefit from off-site landscaping (Tr. 13, at 1714; Tr. 14 at 1917). Given the difference in elevation between the facility yard and the areas south of the facility, the Company indicated that relatively low screening plantings or fencing placed close to the two homes at the end of Charles should effectively screen views of the switching station equipment,

⁷⁵ For the Route 138/York Street area, the trees and bark mulch costs are between \$75,000 to \$80,000 and the loam and seed cost for 2.2 acres is between \$80,000 to \$85,000 (Exh. RR-EFSB-51).

with the exception of the upper portion of the bridge structure and the shielding masts (Exh. RR-EFSB-60). The Company stated that placing evergreens along the rear yards of two or three residences along Ewing Street could reduce or eliminate sightlines to the proposed switching station from those residences (Exh. RR-EFSB-51). NSTAR noted that it has retained a landscape architect to work with affected landowners on the selection of appropriate plantings (Exhs. EFSB-L-26; EFSB-L-27; Tr. 13, at 1714).

Overall, the Company concluded that its proposed mitigation, including landscaping, berming, and structural changes, would shield views of the switching station from Route 138, York Street, and Charles Street (Exh. RR-EFSB-28(S); Company Brief at 136).

During the proceeding, the Town of Stoughton and NSTAR considered the use of gas-insulated switchgear (“GIS”) as an option for visual mitigation for the proposed switching station. The Company noted that GIS equipment relies on sulfur hexafluoride (“SF₆”) gas as an insulating medium, rather than air, allowing a smaller equipment footprint (Exh. EFSB-ST-2). NSTAR estimated that, for an incremental cost of \$4.8 million, it could install a hybrid GIS system⁷⁶ at the Route 138 site, which would reduce the overall switchyard footprint of approximately 3.8 acres, by up to one-third (Exhs. RR-EFSB-28(S); RR-EFSB-26; Tr. 14, at 1871). NSTAR indicated that a full GIS switchyard could be installed at an incremental cost of \$8.24 million; the Company did not estimate the footprint reduction that would result from using a full GIS system, but asserted that the footprint would not be significantly smaller than that of the hybrid GIS switchyard (*id.*; Tr. 14, at 1896, 1897). NSTAR stated that the use of GIS would not reduce the height of the take-off structures (the most visible component of the substation), or the size or height of the voltage compensators (*id.*).

The Town of Stoughton’s witness provided a sketch of the Route 138 site using a hybrid GIS arrangement which shows the switching equipment occupying approximately 1.24 acres, or less than one third of the area required for the open-air switchyard (Exh. RR-EFSB-58a). However, this layout used a six-breaker configuration, rather than the eight-breaker configuration

⁷⁶ In a hybrid GIS system, the gas insulated switching equipment would be connected to the four voltage compensators using air-insulated equipment, while in a full GIS system, all connections would be made using gas-insulated equipment (Tr. 14, at 1890).

proposed by NSTAR (id.; Exh. RR-EFSB-59).

NSTAR stated that it would provide the switching station with high-pressure sodium lighting; however, standard operation would require no lighting (Exhs. EFSB-G-1, at 2-17). The lighting would generally be used only during emergency conditions, or for maintenance activities that can only be completed in the evening (id.).

ii. Alternative and Hybrid Routes

(a) Transmission Lines

The Company stated that the proposed transmission lines would be located underground from the SRA Switching Station to the terminus at the K Street and Hyde Park Substations (Exh. BECO-1 at 5-25). The Company asserted that there would be no permanent visual impacts associated with the underground transmission lines (id.). NSTAR asserted that the visual impacts of alternative and primary routes are comparable (id.).

(b) SRA Switching Station

As part of the transmission project along the alternative route, NSTAR would construct a new switching station at the SRA site. The switching station equipment would be the same as that installed at the primary site (Exh. BECO-1, at 1-12-1-14). The SRA site is a former landfill site traversed by existing 345 kV transmission facilities, including 130-foot high lattice towers; it has no existing vegetative screening (Exhs. EFSB-L-2; EFSB-L-3). The Company stated that the SRA site is located in a retail/commercial/warehousing area; the nearest residence is 1,700 feet away, and there currently are no sensitive receptors in the vicinity of the site (Exhs. BECO-1, at 5-24; EFSB-NO-6; EFSB-L-5). However, the Company noted that the large number of customers who frequent commercial businesses in the area would have unobstructed views of the proposed switching station facilities (Tr. 5, at 616 -618).

The Company did not propose visual mitigation for the SRA site, stating that the design of the substation and the size of the site leave limited available space to provide screening (Exhs. EFSB-L-5; EFSB-RR-51; Tr. 8, at 1219-1221). However, the Company stated that it would be possible to install limited landscaping, consisting of shrubs and/or compact evergreen trees,

along the western and northern perimeter of the site, as well as loam and seed along the entire perimeter (Exh. RR-EFSB-51). The Company estimated that the cost of this landscaping would be between \$50,000 to \$75,000 (id.).

Overall, NSTAR asserted that the visual impacts of a new switching station at the SRA site would be more significant than those of a new switching station at the Route 138 site, citing the unobstructed views of the SRA site from commercial businesses in the area, and the visual mitigation planned for the Route 138 site (Tr. 5, at 616 -618; Company Brief at 136).

iii. Substations

(a) Hyde Park Substation

The Hyde Park Substation is bounded on the north by the MWRA pump station facility, to the east by Hyde Park Avenue and residences across the street, to the south by the NSTAR Service Center and four triple decker residences, and to the west by MBTA tracks (Exhs. EFSB-G-1, at 4-56; EFSB-L-14). The Company stated that the site is surrounded by a chain link fence with some low shrubbery located along Hyde Park Avenue inside of the fence (Exhs. EFSB-L-5; EFSB-L-6). NSTAR stated that beyond the railroad tracks, a band of vegetation varying in width from approximately 30 feet to 150 feet extends from opposite the pumping station to opposite the Service Center (Tr. 8, at 1200). The Company noted that at present, the four residences immediately to the south of the substation have views of the NSTAR Service Center parking area and the existing substation facilities, somewhat mitigated by the fencing (Exh. EFSB-G-1, at 5-43).

As part of the transmission project, NSTAR intends to install new equipment at the Hyde Park Substation, including an autotransformer 35 feet high, GIS equipment between 12 and 32 feet high, a 10- to 12-foot high control house, and a 10-foot high heat exchanger (Exh. EFSB-L-31). The substation will be provided with high-pressure sodium lighting; however, the lighting generally would be used only during emergency conditions, or for maintenance activities that can only be completed in the evening (Exh. EFSB-G-1, at 5-40).

The Company stated that it is proposing to provide new 8-foot high chain-link black vinyl fencing with brick columns along Hyde Park Avenue to screen views of the expanded substation

from Hyde Park Avenue (Exh. EFSB-L-6). The same fencing, without brick columns, would be placed along the southern border of the site (Tr. 8, at 1200). The Company indicated that it also proposes to plant 5- to 6-foot arborvitae, or similar evergreen shrubbery, along Hyde Park Avenue, and along approximately 80 feet of the southern boundary of the site and approximately 100 feet of the northern boundary (Exhs. EFSB-L-5; EFSB-L-6; EFSB-RR-31(a)). NSTAR explained that the vegetative screening proposed along the southern boundary is intended to extend from Hyde Park Avenue to the back edge of the nearest residence to the south (Exhs. EFSB-L-6(a); EFSB-RR-30). The Company has indicated that plantings along the southern boundary could be extended another 15 to 20 feet to provide screening to the rear porches and backyards of the triple deckers (Tr. 8, at 1184). NSTAR noted that discussions with the City of Boston regarding the Hyde Park Substation have focused on the appearance of the substation, as well as operational issues (Tr. 13, at 1815).

The Company asserted that, due to the bank of the MBTA tracks and the vegetation along the western side of the MBTA tracks, the residences to the west would have very limited views of the new equipment (Exhs. EFSB-G-1, at 5-40; RR-EFSB-31).

(b) K Street Substation

NSTAR stated that the proposed expansion of the present K Street Substation would occur on a vacant portion of the developed 14-acre site (Exh. EFSB-L-3). NSTAR asserted that the new substation equipment would be generally consistent with the existing substation facilities (*id.*). The proposed expansion, to be situated to the north of the existing distribution-level facilities, would be set back approximately 400 feet from East First Street on the western portion of the site and approximately 800 feet north of East First Street on the eastern portion of the site (Exh. EFSB-G-1, at Fig. 4.8-6). The Company stated that no trees would be cleared at the K Street Substation site (Exh. EFSB-L-2).

NSTAR stated that a site-wide landscaping plan is currently in place at the existing K Street Substation site (Exh. EFSB-L-6). The Company explained that the views toward the facilities have been improved with the addition of evergreen and deciduous trees and shrubs along East First Street (*id.*). In addition, there will be landscaping along the new sections of the

Harborwalk⁷⁷ located on the north and west sides of the site (id.).

The new sections of the switch and transformer yards will have metal halide yard lighting; however, the lighting would generally be used only during emergency conditions, or for maintenance activities that can only be completed in the evening (Exh. EFSB-G-1, at 5-43).

(c) Baker Street Substation

NSTAR stated that it intends to install a new heat exchanger at the Baker Street Substation, which would be 10 feet high, would occupy an area 50 feet long by 10 feet wide, and would be set back approximately 125 feet from the street (Exh. EFSB-L-3; Tr. 8 at 1212). The Company noted that while the site presently has both above ground and underground transmission facilities, the new equipment would be confined to the heat exchanger and underground transmission facilities (Exh. EFSB-L-3). NSTAR noted that along the edge of Baker Street, at the fence that separates the property from the street, a 150 to 200 foot long row of deciduous trees exists (Tr. 8, at 1212). The Company stated that no trees would be cleared at the Baker Street Substation site (Exh. EFSB-L-2).

The Company stated that the heat exchanger would be installed approximately 17 feet below the grade of Baker Street, and asserted that views of the heat exchanger generally would be shielded by the slopes from the road to the site (Exh. EFSB-G-1, at 4-56; Tr. 8, at 1212; Tr. 13, at 1804). NSTAR also noted that the heat exchanger would be located as far as possible from the residential area to the north of the site (Tr. 13, at 1806). The Company indicated that it does not expect to landscape the site due to the lack of visual impacts associated with the heat exchanger (Exh. EFSB-L-6; Tr. 13, at 1802-1803).

⁷⁷ NSTAR stated that consistent with Coastal Zone Management Policies, to provide community access to the waterfront where none currently exists, it is licensing and constructing a Harborwalk (Exh. EFSB-G-1, at 5-46, 7-9). The Company indicated that the Harborwalk will be constructed in two phases (id.). The first phase is an 850-foot long segment that runs along the extension of the Reserved Channel on the west of the site, and the second phase is a 175-foot long segment will run along the Reserved Channel on the north of the site (Exh. EFSB-G-1, at 5-46). The Harborwalk project was scheduled to begin in the summer of 2004 and be completed in the fall of 2004; however, the Company indicated that the project may be behind schedule (Exh. EFSB-L-7; Tr. 8, at 1212).

The Company stated that the Baker Street Substation is located in the West Roxbury Community Commercial district and that the zoning bylaws for this district require the front yard of industrial buildings to include an adequate landscape buffer (Exh. BECO-3, at 25 ;Tr. 13, at 1803). The Company acknowledged that the existing substation landscaping may not conform to current bylaws, and stated that it would be willing to provide additional screening for the substation if requested to do so by the City of Boston (Tr. 13, at 1802, 1804, 1807).

iv. Analysis

The record demonstrates that the proposed transmission lines would be installed almost entirely underground along either the primary or the alternative route, and that views of the transmission lines at bridge crossings would be insignificant. Consequently, the permanent visual impacts of the proposed project are confined to those resulting from the construction or expansion of the switching station and substations.

The Route 138 Switching Station would include a number of taller elements similar in scale to existing support structures for the transmission lines that traverse the site – six new transition monopoles, two bridge structures, and shielding masts. These taller elements, all proposed to reach heights of 60 feet or more, would be generally visible from the surrounding area. The remaining substation facilities would consist of buswork and other equipment, most of which would be 22 feet in height or lower; however, one-third of the buswork is proposed to be 38 feet high.

The Company proposes to provide landscaping and other mitigation to screen all but the taller elements of the proposed facility from surrounding areas. NSTAR has proposed a berm with predominantly evergreen trees that would provide a 20-foot high screen of the substation facilities, both to the west along the Route 138 frontage and on the northwest portion of the site toward York Street near Route 138. Although there is existing deciduous vegetation to the northeast toward residences further east along York Street, NSTAR also has included supplemental plantings in its landscape plans to screen the facility from those residences. The record shows that residential areas to the south, at the end of Charles Street, and to the southwest along a portion of Ewing Street, also would have views of the substation, absent any mitigation.

Due to the higher elevation of the Charles Street and Ewing Street areas, and the presence of the intervening transmission ROW, the ability to provide effective on-site screening is limited, and the Company expects to consider use of mitigation in both on-site and off-site areas. Consistent with provisions of the Host Community Agreement, NSTAR will consult with Stoughton regarding all its landscaping plans, including the on-site plans provided in the record and plans being developed to screen areas south of the site. However, the Company has not provided the Siting board with specific landscaping plans.

In order to minimize visual impacts at the Route 138 site, the Siting Board directs NSTAR to develop and implement detailed landscape plans to screen the proposed switching station from residential and roadway locations on all sides, and to consult with the Town of Stoughton regarding the plans. To screen locations to the south and southeast, NSTAR shall consider, in consultation with affected landowners and the Town of Stoughton, use of plantings or other mitigation in off-site as well as on-site areas. NSTAR shall, if agreeable to the affected landowners or appropriate Town officials, include as part of its landscape plans plantings or other mitigation in off-site residential or roadway locations. To ensure a mix of plantings that provides some immediate screening in all directions, NSTAR shall offer the Town and affected landowners larger plantings in lieu of several smaller plantings at selected locations within the areas of vegetative screening planned in different directions from the site. NSTAR shall provide a copy of its final landscape plans to the Siting Board for its information.

NSTAR intends to install a new transformer, heat exchanger, and GIS equipment at its existing Hyde Park Substation. To screen views of the equipment from residences across Hyde Park Avenue and from passersby, NSTAR proposes to install new 8-foot high decorative brick pillar fencing and a border of 5- to 6-foot tall arborvitae, or similar evergreen shrubbery along Hyde Park Avenue. The landscaping will continue around to the north and south of the substation, using the same type of vegetative border, but without the decorative brick pillars. As discussed above, there is a row of triple-decker residences directly to the south of the existing substation, abutting the NSTAR Service Center. The rear property lines of these residences appear to be approximately 100 to 125 feet from Hyde Park Avenue. The nearest of these residences is located less than 50 feet from the proposed fencing and landscaping, and would

benefit from the same decorative fencing proposed for Hyde Park Avenue. Therefore, the Siting Board directs NSTAR to provide a border of 5- to 6-foot arborvitae and decorative brick pillar fencing for a total distance of approximately 100 to 125 feet along the southern border of the Hyde Park Substation site, extending from Hyde Park Avenue to a point flush with the rear property line of the closest residence to the south of the site.

NSTAR also intends to install new equipment at its K Street Substation, which is densely developed with substation and transmission facilities and is located in an industrial area, surrounded on three sides by industrial uses. The K Street Substation already is the subject of a comprehensive landscaping plan that calls for the placement of significant landscaping along East First Street and K Street and the construction of a new Harborwalk. The Siting Board concludes that the visual impacts of the expansion of the K Street Substation will be mitigated to the extent possible by the existing landscaping plan.

NSTAR also intends to install a new heat exchanger at its existing Baker Street Substation. The Company argues that the installation of the heat exchanger would have no visual impacts, because it would be placed behind existing equipment and well below the grade of Baker Street. The Siting Board agrees that installation of the heat exchanger is unlikely to alter views from nearby residences or the neighboring park and playing fields. However, the Siting Board notes that the existing substation landscaping along Baker Street is minimal, and that, under the applicable zoning regulations, the Company likely would be required to upgrade landscaping at the substation as a condition for new construction on the site. In Section IV, below, the Siting Board grants NSTAR an exemption from the City of Boston Zoning Code applicable to this site in order to facilitate the construction of the transmission project; however, it is not our intent to undercut the substance of the bylaws as they relate to landscaping. Therefore, the Siting Board directs NSTAR to provide plantings similar to those proposed for the Hyde Park Substation along those portions of the Baker Street fence line where there is no existing landscaping, and to supplement areas where there are existing deciduous trees with plantings and/or landscaping similar to those proposed for the Hyde Park Substation.

The Siting Board finds that with the implementation of the above conditions, the visual impacts of the proposed transmission project along the primary route would be minimized.

In comparing the primary, alternative and hybrid routes, the Siting Board notes that the underground transmission lines would have no permanent visual impacts, and that visual impacts at the Hyde Park, K Street, and Baker Street Substations would be the same regardless of the route chosen. Thus, differences in visual impacts are limited to the differential impacts of the southern switching station at the Route 138 and SRA sites.

The Company has argued that the visual impacts of the switching station would be greater at the SRA site than at the Route 138 site, because it would be unable to provide anything more than minimal screening at the SRA site, while the larger Route 138 site provides both a natural buffer and room for more significant screening. Both sites are industrially zoned, and in each case the change in view would be from one type of industrial activity to a different type. The record demonstrates that, if the switching station were built on the SRA site, the upper portions of the taller substation elements, and, in early years, the upper portion of the substation buswork, would be visible to passersby. In contrast, views of the switching station at the Route 138 site likely would be limited to the upper portions of taller substation elements from the beginning of project operation; at the same time, some of these views would be from residential areas. In the Siting Board's judgement, the impacts on these residences outweigh the starker views that would be seen by individuals using the businesses near the SRA site. Thus, on balance, the Siting Board finds that the alternative and hybrid routes would be preferable to the primary route with respect to visual impacts.

d. Electric and Magnetic Fields

In this section, the Siting Board reviews the potential impacts of electric and magnetic fields ("EMF") associated with the proposed transmission line, the existing 345 kV transmission line that would be tapped, and the Hyde Park and K Street Substations.

i. Primary Route

NSTAR asserted that EMF impacts associated with the project would be minimized (Company Brief at 177). The Company asserted that the underground 345 kV lines would have no electric field impacts, and that the magnetic field impacts of the project would be well within

the Siting Board's guideline of 85 milligauss ("mG") (id. at 178-179, 181-183). In support, the Company provided estimates of EMF levels: (1) from the proposed transmission lines operated at full capacity, (2) at property boundaries and off-site areas surrounding the proposed switching station and existing substation sites, with and without the project, and (3) at the edges of the Walpole-to-Holbrook ROW occupied by the 345 kV line that the proposed facilities would tap, with and without the project (Exhs. BECO-1, at C-1; EFSB-EM-1; EFSB-EM-4).

With respect to the proposed transmission lines, NSTAR predicted that the peak magnetic field for the underground circuits when carrying a total of 1,500 MW would be 1.1 mG (Exh. BECO-1, at C-1). The Company stated that at distances greater than about 15 feet from the centerline of the transmission line, the magnetic field would be undetectable (id.). NSTAR stated that because the circuits would be installed underground, no above-ground electric fields would be produced (id.).

With respect to the proposed switching station and substation expansions, the Company stated that, in general, the highest EMF levels at affected sites are produced by the power lines entering and leaving each facility (Exh. BECO-1, at C-7). To estimate maximum public off-site EMF, NSTAR explained that it first conducted a walking survey at the accessible portions of the fence or property lines of the properties, taking EMF measurements at regular intervals (Exh. EFSB-EM-1(S) at 1; Tr. 12, at 1586). The Company stated that it then extrapolated the results from power flow (current) conditions on the day of measurement to power flow conditions that represent 2008 peak normal loads, without the proposed project in place (Exh. EFSB-EM-1(S) at 1). The Company then modeled EMF levels under 2008 peak normal load with the proposed project in place (id.). The Company characterized these modeled levels as conservative, in that they are maximum rather than typical levels (id. at 1-2).

At the property line of the Route 138 site, the Company projected the maximum magnetic field to be 24 mG in 2008 under peak normal load conditions, without the proposed project in place (Exh. EFSB-EM-1(S) at 5).⁷⁸ With the project in place, NSTAR modeled the maximum

⁷⁸ The Company stated that the maximum magnetic field at the property line that it measured on June 10, 2004 was 16 mG, but this figure was not scaled to reflect peak
(continued...)

magnetic field at the property line to be 42 mg (id.). The Company stated that the location of this maximum level would be at the intersection of the property line with the overhead transmission line ROW, at Route 138, where it is dominated by the influence of the transmission line (Exh. RR-EFSB-47; Tr. 12, at 1594-1595). The Company noted that at the northern border of the site property (at a point along York Street), the maximum magnetic field under 2008 peak normal load, with the switching station, would be approximately 10 to 12 mG (Exh. EFSB-EM-1, at 2; Tr. 12, at 1596-1597). The Company explained that at this point along the property line, the influence of the overhead ROW is the least (Tr. 12, at 1618). The Company also noted that magnetic fields drop off sharply as the distance from the source increases (Exh. EFSB-EM-1(S) at 2). For example, the Company stated that a magnetic field level of 54 mG at the switching station's northern fence-line (i.e., close to the equipment and not at the property line) decreases to 11 mG at a distance of 50 feet from the fence line, and to 1 mG at a distance of 200 feet from the fence line (Exh. EFSB-EM-1(S) at 3).

At the K Street Substation, NSTAR calculated the maximum magnetic field at the property line, under 2008 peak normal load, without the proposed project, to be 55 mG (Exh. EFSB-EM-1, at 5).⁷⁹ The Company predicted the maximum property-line level associated with the new equipment required for the project to be 30 mG (id.). The Company explained that this location is different from the location of the peak level associated with the existing equipment, and that the two values are not additive (id.).

Similarly, at the Hyde Park Substation, the Company projected that the maximum magnetic field level at the property line would be 96 mG under 2008 peak normal load without the project, whereas the maximum magnetic field level due to the equipment associated with the project would be 5.2 mG, but at a different point along the property line (Exh. EFSB-EM-1, at 5; Tr. 12, at 1598). The Company explained that the locations of the highest peak magnetic fields

⁷⁸ (...continued)
normal load for 2004 (Exh. EFSB-EM-1(S) at 1, 5).

⁷⁹ The Company stated, that, currently, the maximum magnetic field measured, 33 mG, occurs at the midpoint of the access road to 530 East First Street (Clean Harbors) (Exh. RR-EFSB-47).

(i.e., 96 mG) would be at the fence line along Hyde Park Avenue at the points where low-voltage underground distribution lines exit the substation (Exh. RR-EFSB-47; Tr. 12, at 1603, 1635).⁸⁰

The Company stated that the proposed project would not affect these peak levels, which are driven by customer load on the distribution lines (Tr. 12, at 1602-1603).

With regard to electric field levels, NSTAR stated that the maximum electric field at the property line of the proposed Route 138 switching station site would be 2.5 kV/m in 2008 under peak normal loads, with or without the proposed project, although the average level⁸¹ would increase from 0.08 kV/m to 0.3 kV/m (Exh. EFSB-EM-1(S) at 5). For the K Street Substation, the Company projected maximum electric field levels no higher than 1.9 kV/m, and average levels no higher than 0.7 kV/m, with or without the proposed project (id.). The Company stated that at the Hyde Park Substation, the new equipment would not produce any external electric field (id.).

The Company stated that it does not propose any changes in the electrical circuitry or electrical structures at the Baker Street Substation (Exh. EFSB-EMF-1 (S)).

With regard to projected changes in magnetic fields associated with the existing overhead 345 kV transmission line between the West Walpole and Holbrook Substations that would be tapped by the proposed facilities, the Company provided the following estimates for 2008 magnetic field levels, with and without the proposed project:

⁸⁰ The Company stated that magnetic fields are attenuated when pipe-type cables are used, but the distribution lines here are not pipe-type cables (Tr. 12, at 1604). The Company also stated that the closest residences to the substation's fence line on Hyde Park Avenue are across the avenue, and that present-day magnetic field readings were on the order of 12 mG on that side of the street (id. at 1635).

⁸¹ The Company explained that its "average" figures represented both spatial and temporal averaging (Tr. 12, at 1585-1586).

Table 4: Projected Magnetic Fields (mG) Along Walpole-Holbrook ROW, 2008

<u>Peak</u>		<u>Off-Peak</u>		<u>Peak</u>	<u>Off-Peak</u>	
<i>Without Project</i>	9.9	13.8		9.9	13.8	<i>Without Project</i>
<i>With Project</i>	43.0	6.3		16.6	22.7	<i>With Project</i>
<-----northern edge of ROW----->						
W. Walpole Subst. -----ROW to West----- Switching Station -----ROW to East-----Holbrook Subst.						
<-----southern edge of ROW----->						
<i>Without Project</i>	76.2	33.7		76.2	33.7	<i>Without Project</i>
<i>With Project</i>	54.0	32.4		40.5	23.5	<i>With Project</i>
Peak		Off-Peak		Peak	Off-Peak	

Source: Exh. EFSB-EM-4.

These projections indicate that operation of the proposed project would cause magnetic field strength to decrease along the southern edge of the ROW, during both peak and off-peak load conditions, both east and west of the switching station site (Exh. EFSB-EM-4). The Company's figures also indicate that magnetic field strength would decrease along the northern edge of the ROW west of the switching station during off-peak loadings, but would increase along the northern edge east of the switching station under off-peak conditions, and would increase both east and west of the switching station under peak load conditions (*id.*).⁸² The Company's data show that the largest increase in magnetic fields, from 9.9 mG to 43 mG, would occur west of the switching station site, on the north side of the ROW under peak normal loading, while the largest decrease would be from 76.2 mG to 40.5 mG to the east of the site, on the south side of the ROW under peak normal loading (*id.*; Tr.12, at 1612).

The Company provided a summary of recent developments in EMF epidemiological research by Gradient Corporation which asserts that, although some studies have reported associations between EMF and adverse health effects, the body of available epidemiological evidence regarding environmental levels of power-line EMF remains inconsistent and

⁸² Use of "switching station site" in this context is generic, and could refer to either the Route 138 or SRA site.

inconclusive with respect to establishing power-line EMF as a human health hazard (Exh. EFSB-EM-3, Att. at 2).

ii. Alternative Route

NSTAR did not provide measurements of present-day EMF at the SRA site. However, the Company asserted that because the SRA site is smaller and the switching station circuitry more complex, future magnetic field levels at the site's property lines would be somewhat greater than at the Route 138 site (Exh. ST-31). The Company projected that, at the point along the future fence line where magnetic fields would be least influenced by the overhead ROW lines, the maximum magnetic field level associated with the new facilities would be 31 mG (id.; Tr. 12, at 1618). The Company stated that the appropriate Route 138 figure to which this should be compared is 12 mG, the maximum level along the northern border of the Route 138 site (furthest from the influence of the overhead ROW lines at that site) (Tr. 12, at 1618).

With respect to magnetic field impacts along the 14.5-mile Walpole-to-Holbrook ROW, the Company stated that siting the switching station as far west as possible (i.e., at the Route 138 site) would minimize the length of ROW subject to magnetic field increases on the northern side of the ROW, while maximizing the length of ROW subject to magnetic field reductions on the southern side (Exh. RR-EFSB-48; Tr. 12, at 1629). The Company explained that magnetic field strength would increase relative to projected levels without the project under some conditions, and would decrease under others, depending upon whether the point of measurement is east or west of the new switching station, whether it is on the north or south side of the ROW, and whether loading on the 345 kV line is at peak or off-peak levels (see Table 4) (Exh. EFSB-EM-4, at 2). Due to these differences, the choice of switching station site could have a differential effect on magnetic fields along the ROW between the two candidate sites (Exh. EFSB-EM-4; Tr. 12, at 1612-1613, 1629).

The Company observed that the largest increase in magnetic field level would occur to the west of the switching station (on the north side of the ROW, during peak conditions) and that the largest decrease would occur to the east of the switching station (on the south side of the ROW, during peak loads) (Tr. 12, at 1611, 1629). From this information, the Company

concluded that siting the switching station as far west as possible would provide the most favorable outcome with respect to EMF by limiting the length of line over which the increase occurs and extending the length of line over which the decreases occur (id. at 1629).

The Company characterized the land uses between the West Walpole and Holbrook Substations as a mixture of undeveloped land, residential, and commercial/industrial (Exh. RR-EFSB-48). Between the Route 138 and SRA sites in particular, NSTAR characterized the land uses as a mix of residential and open space (id.). The Company estimated that there are currently six to eight houses within 200 feet of the south side of the ROW between the Route 138 and SRA sites, and somewhat fewer on the north side (id. at Fig. 3; Tr. 12, at 1629-1630).

iii. Analysis

In a previous review of proposed transmission line facilities, the Siting Board accepted edge-of-ROW levels of 85 mG for magnetic fields. 1985 MECo/NEPCo Decision, 13 DOMSC 119, at 228-242. The Siting Board has used this edge-of-ROW level in subsequent facility reviews to determine whether anticipated magnetic field levels are unusually high. See CELCo Decision, 12 DOMSB 305, at 348, 349; Norwood Municipal Light Department, 5 DOMSB 109, at 145 (1997); MASSPOWER, Inc., 20 DOMSC 301, at 401-403 (1990).⁸³ Here, the maximum magnetic field levels associated with the proposed transmission project would be 1.1 mG directly above the proposed underground transmission lines, 12 mG at the switching station northern property line (where it is least influenced by the overhead ROW), 30 mG at the K Street Substation property line, and 5 mG at the Hyde Park Substation property line.

In addition, the maximum magnetic field level along the edge of the existing Walpole-Holbrook ROW would be 54 mG with the project, which represents a decrease from the

⁸³ More recently, the Siting Board has inquired into the current scientific literature regarding the possible impact of exposure to magnetic fields on human health. The Siting Board has consistently found that, although some epidemiological studies suggest a correlation between exposure to magnetic fields and childhood leukemia, there is no evidence of a cause-and-effect association between magnetic field exposure and human health. Southern Energy Kendall, LLC, 11 DOMSB 255, at 385-386 (2000); Nickel Hill Energy, LLC, 11 DOMSB 83, at 134 (2000) ("Nickel Hill Decision").

maximum level without the project, along the corresponding side and length of the ROW under peak load conditions. Along other portions of the ROW under certain conditions, the maximum magnetic field level would be higher with the project than without it, but in no such cases would it be higher than 43 mG. In addition, all in-street, property-line, and edge-of-ROW levels would remain well below levels found acceptable in the 1985 MECo/NEPCo Decision.

The Siting Board notes that, in the past, electric companies have recognized that some members of the public are concerned about magnetic fields and therefore have incorporated design features into proposed transmission lines that would reduce magnetic fields at little or no additional cost. See, e.g., New England Power Company, 4 DOMSB 109, at 148 (1995). The Siting Board has encouraged the use of practical and cost-effective designs to minimize magnetic fields along transmission ROWs. See, e.g., Nickel Hill Decision, 11 DOMSB at 211; Sithe Edgar Development LLC, 10 DOMSB 1, at 117 (2000); IDC Bellingham LLC, 9 DOMSB 225, at 333. Here, the magnetic fields associated with the proposed pipe-type cables would be low due to the pipes themselves. With regard to the overhead ROW from Walpole to Holbrook, the proposed project would result in lower peak magnetic fields than those which would occur in the absence of the project. Accordingly, the Siting Board finds that the EMF impacts of the proposed transmission project along the primary route would be minimized.

In comparing the primary route to the alternative and hybrid routes, the Siting Board notes that magnetic fields above the proposed transmission line would be the same minimal level along any of the routes. Impacts at K Street and Hyde Park also would be the same, regardless of route selected. While magnetic field levels at the property lines of the SRA switching station site would be somewhat higher than at the Route 138 site, no residential properties are located within 1700 feet of the SRA site.

The principal difference between the two routes is the differential impact along the 14.5-mile section of the Walpole-to-Holbrook ROW between the possible switching station sites. The Company's modeling indicated that, under peak and off-peak loads, the project would result in a decrease in magnetic field levels along the entire southern edge of the ROW regardless of site choice, although they would decrease to a lower level to the east of the switching station. Therefore, this lower magnetic field level would extend over a greater portion of the ROW if the

Route 138 site were selected. Along the northern edge of the ROW, the changes in magnetic field levels would differ for peak and off-peak load, with mixed results both with respect to the direction of change with the project and with respect to whether the resultant magnetic field would be lower east of the switching station site. For the northern edge of the ROW, the model's results do not clearly suggest that either switching station location is preferable to the other.

Accordingly, the Siting Board finds that the primary route would be slightly preferable to the alternative or hybrid routes with respect to EMF impacts.

e. Hazardous Materials

i. Description

NSTAR indicated that the proposed project would require the long-term use of two substances with potential environmental impacts if leaked or spilled: (1) sulfur hexafluoride gas ("SF₆"), an insulator in the switchgear to be installed at Hyde Park; and (2) alkyl benzene, a dielectric fluid used for electrical insulation in the pipe-type cable ("PTC") (Exh. BECO-1, at 1-15, B-2 to B-3; Tr. 7, at 1038; Tr. 8, at 1116; Tr. 9, at 1293). The use of these materials would not be route-dependent.

The Company stated that it uses SF₆ to insulate existing switchgear at the Hyde Park Substation (Tr. 9, at 1293). According to the Material Safety Data Sheet for SF₆, the gas can pose some short-term health risks if inhaled; however, the Company indicated that it was highly unlikely that a leak from the outdoor switchgear would expose a passerby to the gas in a concentration sufficient to induce such effects (Exh. RR-EFSB-36(a); Tr. 14, at 1972). The Company indicated that the environmental concerns with releases of the gas are of greater concern than the direct human health effects (Tr. 14, at 1974-1975). According to the U.S. Environmental Protection Agency ("EPA"), SF₆ is a greenhouse gas that is 22,200 times more potent per pound than carbon dioxide (Exh. RR-EFSB-36, Att. B). To address releases of SF₆ from the electric power sector, EPA administers a program called the SF₆ Emission Reduction Partnership for Electric Power Systems (id.). According to EPA, program partners establish what their baseline SF₆ emissions are, develop management strategies, set an SF₆ emission reduction goal, and report on their annual SF₆ usage (id.). The Company indicated that it monitors its SF₆-

insulated systems and follows specific protocols to recover the gas when performing maintenance work on these systems (Tr. 9, at 1294), but did not indicate that it participates in the EPA program.

With respect to the dielectric fluid, NSTAR stated that alkyl benzene meets the definition of “oil” under the Massachusetts Contingency Plan, and is thus regulated only if it is released to the environment (Exh. RR-EFSB-35). The Company indicated that alkyl benzene floats on the surface of water, leaving a sheen (Exh. EFSB-CT-12). The Company stated that the PTCs would contain 410,000 gallons of alkyl benzene, with an additional 10,000 gallons to be stored in a 25,000-gallon capacity tank at the pump plant at the Stoughton switching station (Exhs. EFSB-G-1-S Bulk Att., App. G at 13-14; EFSB-CT-16). NSTAR explained that the extra volume in the tank would allow for thermal expansion of the fluid, and that the tank’s concrete foundation would provide containment for 110% of the tank’s volume (Exh. EFSB-CT-16). The Company also indicated that it would use a leak detection system at the new pump plant that would be capable of detecting leaks as slow as one gallon per hour (Exh. BECO-1, at B-7). The Company stated that each of the autotransformers and voltage compensators would have a fluid containment system lined with impermeable fabric and equipped with a special drain that blocks the dielectric fluid (id. at 14).

The Company stated that it employs emergency contractors to remediate leaks or spills of dielectric fluid (Exh. BECO-1, at B-7). According to the Company’s Oil Spill Contingency Plan, NSTAR has contracted with two oil spill response companies that have committed to providing cleanup resources within two hours of notification (Exh. RR-EFSB-34, Att. at 4). Depending on the type of impact, the Company explained that remediation may involve the removal of affected soil, the use of absorbent booms or pads, or the pumping of groundwater (Exhs. BECO-1, at B-7; EFSB-CT-12). The Company stated that it has also used bioremediation agents to treat affected soil (Exh. BECO-1, at B-7).

ii. Analysis

The record shows that NSTAR has prior experience with both SF₆ and alkyl benzene. With respect to alkyl benzene, the record shows that the Company would employ appropriate

leak containment and leak detection measures. The record also shows that the Company has established protocols for addressing leaks when they occur. With respect to SF₆, a potent greenhouse gas, the record shows that the Company monitors its SF₆-insulated systems and implements gas-recovery measures when working on this equipment, but does not participate in EPA's SF₆ emissions reduction program. Participation in the EPA program, including developing management strategies and monitoring and reporting emissions, could enhance NSTAR's efforts to control SF₆ emissions from this and other GIS equipment it operates. The Siting Board also notes that such participation would be consistent with the Commonwealth of Massachusetts' Climate Protection Plan. Accordingly, to help ensure that the environmental impacts of facility expansion at the Hyde Park Substation related to SF₆ emissions are minimized, the Siting Board directs NSTAR to study participating in EPA's SF₆ Emission Reduction Partnership and, within six months of the date of the Final Decision in this matter, inform the Siting Board of the Company's decision to join the program or of its reasons for not doing so. The Siting Board finds that with the implementation of this condition, the permanent hazardous materials impact of the proposed transmission project along the primary route would be minimized.

Given that the long-term impacts from alkyl benzene and SF₆ are not route-dependent, the Siting Board finds that the primary, alternative and hybrid routes would be comparable with respect to permanent hazardous materials impacts.

f. Conclusions on Permanent Impacts

The Siting Board has found that, with the implementation of certain conditions and mitigation, the permanent land use, water resource, noise, visual, hazardous material, and EMF impacts of the proposed transmission project would be minimized. In comparing permanent impacts along the three routes, the Siting Board has found that the primary route would be slightly preferable to the alternative and hybrid routes with respect to EMF impacts; that the alternative and hybrid routes would be slightly preferable to the primary route with respect to land use and water resource impacts and preferable with respect to visual impacts; and that the three routes would be comparable with respect to noise impacts and impacts associated with

hazardous materials. On balance, the Siting Board finds that the alternative and hybrid routes would be slightly preferable to the primary route with respect to permanent environmental impacts.

4. Cost

a. Cost Comparison

i. Description

The Company provided several estimates of the cost of the proposed project, representing different assumptions and levels of refinement as project design and permitting advanced (Exhs. BECO-1, at 5-53; EFSB-G-11; COB-F-1; RR-EFSB-16; RR-EFSB-21). For the latest stage at which a fair comparison of the primary, noticed alternative and hybrid routes could be made, NSTAR provided the following cost estimates (with associated circuit lengths for each route):

Table 5: Route Cost Comparison

	Primary Route		Noticed Alternative		Hybrid Route	
	\$ million	length (ft.)	\$ million	length (ft.)	\$ million	length (ft.)
3-Circuit Segments	83.5	55,812	65.9	45,968	89.5	59,384
2-Circuit Segments	37.5	35,306	43.8	39,156	37.5	35,306
1-Circuit Segments	2.7	3,832	12.4	16,952	2.7	3,832
<i>Circuit Subtotal</i>	123.7	94,950	122.1	102,076	129.7	98,522
Stoughton	23.4		19.8		19.8	
Hyde Park	12.7		12.7		12.7	
K Street	22.4		22.4		22.4	
Heat Exchangers	2.3		2.3		2.3	
<i>Station Subtotal</i>	60.8		57.2		57.2	
Project Total	\$184.5		\$179.3		\$186.9	

Source: Exh. RR-EFSB-16.

The Company presented its estimates for the transmission line components broken down by segments corresponding to the number of cables (one, two, or three) in the trench (Exh. RR-EFSB-16). In addition to segment length and number of cables, the Company noted several other factors that affect construction costs along various portion of a route, such as subsurface congestion in urban areas, the need to restrict work hours, the presence of substantial rock, and bridge crossings (Exhs. BECO-1, at 5-51; RR-EFSB-16; Tr. 12, at 1636-1637, 1642). The Company provided detailed information about its assumptions regarding cost adders for these factors (id.).

NSTAR stated that the principal reason that the Route 138 switching station site (primary route) is more expensive than the SRA site (alternative or hybrid route) is that the former contains an active business (Tr. 13, at 1734). However, the Company indicated that its estimate for the cost of Route 138 switching station site was based on a signed agreement, whereas it had not obtained a signed agreement for a permanent easement on the SRA site (Tr. 7, at 1009; Tr. 13, at 1733, 1734). In addition, the Company stated that it assumed for cost estimation that the SRA site would be delivered in a ready-to-build condition, with all landfill waste removed, graded flat, and permitting complete (Exhs. ST-13; RR-EFSB-52 Att. at 3; Tr. 7, at 1002; Tr. 13, at 1745); as discussed in Section III.C.2.d, the Company indicated that these assumptions were somewhat uncertain, and noted that ultimate costs could be different, depending on the outcome of negotiations for the site (Tr. 13, at 1012, 1733).

The Company indicated that the cost of easements was not included in the above estimates, and that two easements would be required along the primary or hybrid routes, only one of which would be required along the alternative route (Tr. 1, at 1670). According to the Company's estimates, the easements would increase costs for the primary or hybrid route by \$250,000, but would increase the cost of the alternative route by only \$200,000 (id.). Some cost differentials also would be associated with proposed or required mitigation not included in the Company's cost estimates. Specifically, on-site landscaping at the Route 138 site could cost approximately \$375,000, whereas landscaping at the SRA site is estimated to total approximately \$50,000 to \$75,000 (Exh. RR-EFSB-51). The Company estimated that a three-sided sound-attenuation wall at the Route 138 site would cost approximately \$110,000 (Tr. 14, at 1902,

1983). On the other hand, the Company calculated that the visual- and noise-attenuation berm at the Route 138 site would represent a savings of approximately \$100,000 in avoided soil disposal costs (*id.* at 1983). The net effect of these elements would be to increase the cost of the primary route by approximately \$635,000, the cost of the alternative route by approximately \$125,000 and the cost of the hybrid route by approximately \$325,000.

ii. Analysis

The Company's estimate of the cost of the project along the primary route (\$184.5 million) is \$5.2 million higher than its estimate for the noticed alternative route (\$179.3 million) but \$2.4 million lower than its estimate of the hybrid route (\$186.9 million). After factoring in the costs of easements and mitigation, these cost differentials change only slightly: the primary route cost becomes \$5.5 million more than that of the noticed alternative and \$2.1 million less than that of the hybrid route. The difference between the primary route and the hybrid route cost estimates is about one percent of the project total, which, in light of some of the cost uncertainties highlighted by the Company, is likely to be within the margin of error of these estimates. The difference between the primary route and the alternative route is higher, at approximately three percent of total route cost. Accordingly, the Siting Board finds that the alternative route is slightly preferable to the primary and hybrid routes with respect to cost, and that the primary route and the hybrid route are comparable with respect to cost.

b. Total Costs and Financial Impact

As noted above, the Company provided multiple estimates of the cost of the proposed project. As part of NSTAR's "12.C Application,"⁸⁴ the Company submitted to NEPOOL and ISO-NE a substantially higher estimate for the primary route than it presented to the Siting Board – \$217 million vs. \$177.6 million for the original primary route without the American Legion

⁸⁴ A "12.C Application" is a request to ISO-NE that the costs of the transmission project be shared regionally, rather than be borne by the applicant's customers alone. Typically, projects that benefit the regional grid, such as 345 kV transmission lines, are granted such treatment (*see*: Tr. 15, at 2062-2065).

Highway modification (Exhs. COB-F-1, at 1-9, Fig. 1-3, 3-19; RR-EFSB-21).⁸⁵ The 12.C Application did not contain estimates for the noticed alternative or hybrid routes, and thus could not be used for route-comparison purposes.

The Company explained some of the differences between the cost estimate in the 12.C Application and that provided to the Siting Board for the primary route. For example, the 12.C costs included \$5.2 million for potential circuit breaker replacements at other substations (with associated engineering field supervision and relay modifications) that might be required as a result of the proposed project; \$4.1 million for consultant fees for regulatory and environmental issues, legal expenses, project management costs, and community relations costs; approximately \$3 million as an “Allowance for Funds Used During Construction;” and an approximately \$3 million increase for soil disposal (Exh. RR-EFSB-21; Tr. 5, at 665; Tr. 12, at 1649). The Company also mentioned increased costs of \$6 per foot for pipe and \$4 per foot for cable (Tr. 12, at 1647, 1649), but did not calculate project-wide totals for these items. Based on the circuit lengths for the original primary route along Blue Hill Avenue contained in Exh. RR-EFSB-16, the Siting Board calculated that these two items would total approximately \$2.0 million for that route. The Company also discussed, but did not quantify, additional road restoration activities (Exh. RR-EFSB-21). With respect to substation costs, the Company stated that differences between the 12.C Application estimates and those submitted to the Siting Board, amounting to \$5.5 million in total, were due to updated figures from supplier bids (*id.*). The Siting Board notes that these items total approximately \$17 million, leaving unexplained a \$22.4 million discrepancy between the 12.C costs and those presented to the Siting Board.

NSTAR stated that the project has been approved by NEPOOL’s Reliability Committee

⁸⁵ The Company asserted that the 12.C Application’s estimate reflected, among other factors, the additional costs associated with using American Legion Highway (Exh. RR-EFSB-21; Tr. 5, at 672-673). However, all descriptions of the route in the 12.C Application correspond to the Company’s originally noticed primary route, not the version using the American Legion Highway variation (*see* Exh. COB-F-1, at 1-2, 1-9, Fig. 1-3). Thus, it appears that the 12.C estimate is for the original primary route. If so, the differential between the 12.C costs and the costs presented to the Siting Board for the same route is \$39.4 million, not the \$32.5 million that the Company stated in RR-EFSB-21.

as meeting all the criteria of a Regional Benefit Upgrade, as defined in the NEPOOL Transmission Tariff (Exh. COB-F-3; Tr. 12, at 1676). According to the Company, subject to similar approval by ISO-NE, all of the project's costs would be included in the regional transmission rate, and Boston Edison's customers would pay only that portion of the costs that represent BECo's share of the regional load, or approximately 13 % (Exh. COB-F-3).

While the Company has defined the need for the proposed project in terms of reliability, it also discussed some of the project's economic benefits. The Company stated that the proposed project would increase the overall import capability of the transmission system supplying the Greater Boston Area by approximately 800 MW with the addition of the first two circuits, and by 1,000 MW at project completion (Exh. BECO-1, at 2-31). The Company stated that the improved import capability would provide access to new, high-efficiency combined-cycle generating facilities located in southeastern Massachusetts (*id.*). NSTAR also asserted that the increased import capability would reduce congestion costs in the Greater Boston Area—that is, the increase in electricity costs that results from the need to run generating units out of merit due to transmission constraints (*id.*). The Company further asserted that the project would reduce or eliminate reliance on “reliability must-run” (“RMR”) generators, which are units that would be shut down were they not required to run to maintain area system reliability (Exh. EFSB—17). NSTAR noted that customers in the northeast Massachusetts (“NEMA”) zone currently pay fixed costs in excess of \$30 million per year to keep the New Boston generator in South Boston, which operates under an RMR contract, in operation (Exhs. EFSB—17; RR-ISO-NE-1). Based on these and other considerations, the Company stated that a conservative estimate of congestion-related savings that would accrue from the proposed project would be in the tens of millions of dollars per year (Exhs. BECO-1, at 2-31; EFSB—17).

5. Reliability

NSTAR asserted that construction of the proposed project along the preferred and alternative routes would provide similar levels of reliability (Exh. BECO-1, at 5-54). The Company noted that the routes are nearly the same length and require approximately the same number of bridge and rail crossings (*id.*). With respect to the switching station facilities, the

Company stated reliability is affected only by differences in the layout of tap lines required at the preferred and alternative switching station sites (id.). The Company stated that work at the Hyde Park and K Street Substations would be the same for either alternative (id.).

a. Switching Station Sites

NSTAR identified differences in the layout of the preferred and alternative switching station sites that could affect transmission system reliability (Exh. BECO-1, at 5-54). The Company stated that at the Route 138 site, no existing lines or structures intervene between the 345 kV circuit to be tapped and the proposed switching station, allowing new overhead lines to drop freely to a bridge structure and into the switchyard (id.). The Company contrasted this layout with the SRA site, where existing 115 kV lines and support structures are located between the 345 kV circuit to be tapped and the switching station, requiring the new taps to pass underneath the 115 kV lines (id.). According to NSTAR, the configuration at the SRA site would pose some risk that one of the existing overhead 115 kV conductors or static (shielding) wires could break or separate from its connectors and fall onto the new 345 kV bus, thereby de-energizing the switching station (id.; Exh. EFSB-R-4; Tr. 9, at 1303-1304). Noting that static wire breakage accounts for the majority of such failures, the Company stated that it could use a stronger, more corrosion-resistant type of static wire in the vicinity of the switching station to reduce somewhat the risk of breakage (Tr. 9, at 1304-1305). The Company further stated that the risk could be minimized by annual corrective maintenance inspections, including aerial inspection and ground patrols to identify and repair weakened connectors (Exh. EFSB-R-4).

b. Operational Reliability of Proposed PTC Design

NSTAR stated that it has extensive experience in the installation and operation of pipe-type cable ("PTC") systems at the 115 kV and 345 kV voltage levels, including 30 years of experience with 345 kV PTC systems (Exh. BECO-1, at B-1). The Company stated that it has encountered very few operating problems with PTCs, but reported several incidents over the last 50 years in which it experienced electrical faults or leaks of dielectric fluid (id. at B-1, B-4 to B-6). According to the Company's accounts, some of the electrical faults led to leaks of dielectric

fluid; other leaks of dielectric fluid were caused by other means, such as corrosion or damage by third parties (id. at B-4 to B-6; Exhs. EFSB-CT-9; EFSB-CT-10). NSTAR stated that outages of the cables are considered in the Company's contingency analyses (Tr. 9, at 1251, 1276-1277).

The Company stated that neither the North American Electric Reliability Council nor NEPOOL have any standards for testing, inspecting or maintaining PTCs (Exh. EFSB-CT-6). However, the Company stated that it would inspect the condition of the pipes via the manholes annually (Exh. EFSB-CT-5). In addition, the Company stated that it would survey the cathodic protection system annually (id.).⁸⁶

i. Electrical Faults

NSTAR reported that its PTCs have experienced eight electrical malfunctions over the last 50 years (Exh. BECO-1, at B-4). Of these, three occurred shortly after installation and were quickly repaired with no further problems (id.). Of the remaining five, the Company stated that three incidents resulted from third-party encroachments, and only two incidents resulted from equipment problems during operation (id.).

The Company stated that it uses redundant monitoring systems to detect faults on all its PTCs and that two independent high-speed relay protection systems de-energize and isolate a line within a tenth of a second of detecting a fault (Exh. EFSB-CT-8; Tr. 9, at 1251).⁸⁷ NSTAR explained that it identifies the location of a fault using a technique known as time-domain reflectometry ("TDR"), which involves sending a pulsed signal into the conductor, and then

⁸⁶ NSTAR explained that this is accomplished by using test leads that extend up from the pipe to hand holes in the sidewalk, which can be monitored for low voltages to detect degradation in the pipe's coating (Exh. EFSB-CT-5). The Company stated that the hand holes can also be used to monitor the operating temperature of the PTCs (id.).

⁸⁷ The Company explained that its system sends an alarm to NSTAR's Supervisory Control and Data Acquisition ("SCADA") system within a few seconds of fault detection (Exh. EFSB-CT-8). The Company noted that although the alarm informs the SCADA system which circuit breakers opened to isolate the line, it does not tell operators precisely where the fault occurred (Exhs. EFSB-CT-8; EFSB-CT-22).

examining the reflection of the pulse (Exh. ST-26; Tr. 9, at 1252). According to the Company, NSTAR owns some of the specialized equipment needed to perform TDR on lower-voltage cable, but sometimes must bring in outside experts to assist it (Tr. 9, at 1254). For each of two faults it had on 345 kV cables, NSTAR reported that it took approximately one month to pinpoint the locations of the faults (id. at 1254-1255). The Company stated that after locating the fault, repairs can take approximately one additional month (id. at 1255).⁸⁸

ii. Fluid Leaks

NSTAR reported that in 50 years of operating experience with PTC, the Company has experienced 28 instances of leakage of dielectric fluid, of which 22 were due to corrosion (Exh. BECO-1, at B-4). However, the Company noted, due to improvements in the pipes' cathodic protection system, monitoring, and other measures, none of the PTCs installed in the past 25 years have experienced corrosion-related leaks (id. at B-5). NSTAR stated that PTCs that have leaked since 1998 were older structures located on bridges that had been exposed to road salt and stormwater runoff (id.). The Company cited electrical faults, mechanical fretting (rubbing), and third-party encroachment as other causes of fluid leaks (id. at B-5 to B-6; EFSB-CT-10; Tr. 9, at 1245).

The Company stated that, unless they are associated with electrical faults, fluid leaks do not automatically take a cable out of service (Tr. 9, at 1273, 1275). NSTAR explained that pump operations and related parameters are monitored continuously and that abnormal conditions trigger an alarm at NSTAR's System Control Center (id.). The Company stated that it will employ a leak detection system at the new pump plant that will be capable of detecting leaks as slow as one gallon per hour (Exh. BECO-1, at B-7).

NSTAR explained that it uses two different methods to identify the precise location of a leak (Exh. BECO-1, at B-7; ST-59). The "traditional" method starts with inspections of

⁸⁸ The record includes contradictory information on this point: the Company also discussed two cables that were returned to service in 1 to 3 weeks, but another that was out of service for at least 19 months (October, 2002 through at least May, 2004) (Exh. EFSB-CT-9).

manholes and catchbasins along the route for evidence of the fluid (Exhs. BECO-1, at B-7; ST-59). If nothing is found, the Company can take the line out of service, hydraulically sectionalize it, then measure changes in hydraulic pressure to home in on the location of the leak (Exh. ST-59; Tr. 9, at 1265-1266). The Company characterized this method as slow and inefficient for finding a small leak, but better for a large-volume leak (Tr. 9, at 1267).

The second leak identification method involves the use of tracer gas in the dielectric fluid (Exhs. BECO-1, at B-7; ST-59). The Company explained that by conducting air sampling at the surface and then through small holes drilled into the pavement above the cable, this method can ultimately locate the leak to within 5 feet of its source (Exhs. EFSB-CT-21; ST-59). NSTAR stated that, while tracer gas sampling can locate a leak as quickly as in a few days, the contractors who perform the work are not always immediately available (Tr. 9, at 1269-1270).

iii. Bridge Crossings

The Company asserted that the bridge crossings associated with the proposed project will be less subject to corrosion than the bridge crossings that have experienced corrosion-related leaks in the past (Tr. 9, at 1241-1243). First, the Company noted that the coating on the PTCs used in this project would be of the newer, more corrosion-resistant and longer-lifespan variety (Exh. BECO-1, at B-6; Tr. 9, at 1249-1250). The Company explained that to cross the Neponset River along the primary or hybrid routes, the PTC would be buried in sand under the sidewalk of the Neponset River Bridge, exposed to neither the atmosphere nor road salt, and that it would be covered by a one-inch thick steel plate to protect it from damage (Exh. EFSB-G-1, App. G at 16; Tr. 9, at 1242-1245).⁸⁹ Along the alternative route, the Company anticipated that crossing the Neponset River would involve hanging the pipe from the Central Avenue Bridge and around its concrete abutments (Exh. EFSB-L-18). The Company stated it would install the pipe in an area where the bridge's drainage system would not discharge onto it, and would conduct annual

⁸⁹ In the Company's opinion, the greater risk to the PTC across the Neponset River Bridge is mechanical damage due to excavations through the sidewalk (Tr. 9, at 1241-1242). The Company stated it will protect the pipe with a one-inch steel plate in this area (id.). The Company noted that none of its PTCs have ever been damaged by third-party encroachment in places where they were protected by such plates (Exh. EFSB-CT-14).

inspections to make sure that neither the drainage system nor other atmospheric factors were causing corrosion of the pipe (Tr. 9, at 1249, 1251). The Company stated that thermal isolation is needed to avoid conflicting movements between the bridge and the pipe, and that electrical isolation from a bridge is necessary for the cathodic protection system to work properly (*id.* at 1248). The Company noted points along both the primary and alternative routes where it would need to take precautions with regard to stray current associated with rail or subway lines, which can interfere with cathodic protection of the cable (*id.* at 1246). NSTAR stated it would add reverse-current switches to address these situations, if necessary (*id.* at 1247).

c. Analysis

The record shows that electrical faults or leaks of the dielectric fluid may cause PTCs to be taken out of service for a period of time. Due to the significant length of time it may take to find and repair faults or leaks, preventing such episodes is critical to the overall reliability of the system. The Company has detailed improvements in the technology that have been made over the past 50 years, and measures it would take to protect the pipes from corrosion or other physical damage. Both the primary and alternative routes use the same technology and would therefore face similar risks due to these factors, although the different bridge crossings would require different measures to prevent damage or corrosion.

The record shows a slight difference in risk associated with the choice of switching station site. Specifically, the location of the existing 345 kV and 115 kV lines in relation to the SRA site would put certain switchyard structures at risk of being downed by overhead lines, should those lines break or become disconnected. This risk appears to be low, but no similar risk exists at the Route 138 site. Thus, the Siting Board finds that the primary route is slightly preferable to the alternative and hybrid routes with respect to reliability.

6. Conclusions on Route Comparison

The Siting Board has found, above, that the primary route is preferable to the alternative and hybrid routes with respect to construction impacts, while the alternative and hybrid routes are slightly preferable to the primary route with respect to permanent environmental impacts. The

Siting Board also has found that the primary and hybrid routes are comparable with respect to cost, while the alternative route is slightly preferable to the other two routes with respect to cost. Finally, the Siting Board has found that the primary route is slightly preferable to the alternative and hybrid routes with respect to reliability. Based on its review of the record, the Siting Board finds that NSTAR has provided sufficient information regarding cost, reliability, and environmental impacts to allow the Siting Board to determine whether it has achieved a proper balance among cost, reliability, and environmental impacts.

Based on the information presented in Sections III.C.2 and III.C.3, above, the Siting Board finds that, with the implementation of the proposed mitigation and conditions, and compliance with all applicable local, state and federal requirements, the temporary and permanent environmental impacts of the proposed transmission project along the primary route would be minimized. The Siting Board also finds that the proposed project along the primary route would achieve an appropriate balance among conflicting environmental concerns as well as between environmental impacts, reliability, and cost.

The record demonstrates the NSTAR has presented the Siting Board with two diverse routes with significant strengths, and that elements of these two routes can be combined to create a third route, also with significant strengths. The record suggests that a case could be made for approving any of the three routes analyzed in this section. In this instance, NSTAR has chosen to present for the Siting Board's approval the primary route, which is preferred by the MHD and affected municipalities along the route including the City of Boston, and the Towns of Milton and Canton. The primary route also appears to have fewer permitting complexities than either the hybrid or the alternative route, as it does not require re-permitting by MDEP to place a switching station in a former landfill, or permits from the Army Corps of Engineers to accomplish a crossing of the Neponset River. On balance, use of the primary route provides the greatest assurance that the proposed transmission project can be put in place in a timely, environmentally sensitive manner. Accordingly, the Siting Board finds that the primary route is preferable to the alternative and hybrid routes with respect to providing a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.

IV. ZONING EXEMPTION AND SECTION 72

NSTAR is seeking, pursuant to G.L. c. 40A, § 3, certain zoning exemptions from the Zoning By-laws of the Town of Stoughton regarding the Route 138 switching station site.⁹⁰ NSTAR also is seeking pursuant to Section 6 of Chapter 665 of the Acts of 1956, certain zoning exemptions from the City of Boston Zoning Code regarding modifications to the Baker Street, Hyde Park and K Street Substations. In addition, NSTAR is seeking, in accordance with G.L. c. 164, § 72, a determination that the proposed transmission lines in the City of Boston and the Towns of Canton, Milton, and Stoughton are necessary and will serve the public convenience and be consistent with the public interest.

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.

Similarly, Section 6 of Chapter 665 of the Acts of 1956 provides:

A building, structure, or land used or to be used by a public service corporation may be exempted from the operation of a zoning regulation or amendment if, upon petition of the corporation, the state [Department] shall, after public notice and hearing, decide that the present or proposed situation of the building, structure, or land in question is reasonably necessary for the convenience or welfare of the public.

Thus, a petitioner seeking exemption from a local zoning bylaw under G.L. c. 40A, § 3 must

⁹⁰ In light of the Siting Board's finding in Section III.C, above, that siting of the proposed 345 kV transmission project along the primary route is superior to the alternative or hybrid routes with respect to providing a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost, we will not address the Company's request for an exemption from the Stoughton Zoning By-laws for the SRA site.

meet three criteria. First, the petitioner must qualify as a public service corporation. Save the Bay, Inc. v. Department of Public Utilities, 366 Mass. 667 (1975) (“Save the Bay”). Second, the petitioner must establish that it requires a zoning exemption(s). Boston Gas Company, D.T.E. 00-24, at 3 (2001) (“Boston Gas”). Finally, the petitioner must demonstrate that its present or proposed use of the land or structure is reasonably necessary for the public convenience or welfare. Massachusetts Electric Company, D.T.E. 01-77, at 4 (2002) (“MECo (2002)”); Tennessee Gas Pipeline Company, D.T.E. 01-57, at 3-4 (2002) (“Tennessee Gas (2002)”).⁹¹

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 (“SJC”) stated:

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

Save the Bay, 366 Mass. at 680. See also, Boston Gas at 3-4; 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. See Berkshire Power at 30; Save the Bay at 685-686. 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; see

⁹¹ In evaluating the Company’s petition for zoning relief pursuant to Section 6 of Chapter 665 of the Acts of 1956, the Siting Board relies on the standard of review established for G.L. c. 40A, § 3 petitions.

also Dispatch Communications of New England d/b/a Nextel Communications, Inc., D.P.U./D.T.E. 95-59-B/95-80/95-112/96-113, at 6 (1998) (“Nextel”). 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. See Berkshire Power at 31.

2. Exemption Required

In determining whether exemption from a particular provision of a zoning bylaw is “required” for purposes of G.L. c. 40A, § 3, the Department looks to whether the exemption is necessary to allow construction or operation of the petitioner’s project as proposed. See MECo (2002) at 4-5; Tennessee Gas (2002) at 5; Western Massachusetts Electric Company, D.P.U./D.T.E. 99-35, at 4, 6-8 (1999); Tennessee Gas Company, D.P.U. 92-261, at 20-21 (1993). It is the 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).

3. Public Convenience or 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. See Save the Bay at 680; Town of Truro v. Department of Public Utilities, 365 Mass. 407, at 411 (1974). 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”). When reviewing a petition for a zoning exemption under

G.L. c. 40A, § 3, the Department is empowered and required to consider the public effects of the requested exemption in the State as a whole and upon the territory served by the applicant.

Save the Bay at 685; New York Central Railroad at 592.

4. G.L. c. 164, Section 72

With respect to a petition filed pursuant to G. L. c. 164, § 72, the statute requires, in relevant part, that an electric company seeking approval to construct a transmission line must file with the Department a petition for:

authority to construct and use... a line for the transmission of electricity for distribution in some definite area or for supplying electricity to itself or to another electric company or to a municipal lighting plant for distribution and sale ... and shall represent that such line will or does serve the public convenience and is consistent with the public interest ... The [Department], after notice and a public hearing in one or more of the towns affected, may determine that said line is necessary for the purpose alleged and will serve the public convenience and is consistent with the public interest.⁹²

The Department, in making a determination under G. L. c. 164, § 72, is to consider all aspects of the public interest. Boston Edison Company v. Town of Sudbury 356 Mass. 406, 419 (1969). Section 72, for example, permits the Department to prescribe reasonable conditions for the protection of the public safety. Id. at 419-420. All factors affecting any phase of the public interest and public convenience must be weighed fairly by the Department in making a determination under G.L. c. 164, § 72. Town of Sudbury v. Department of Public Utilities, 343 Mass. 428, 430 (1962).

As the Department has noted in previous cases, the public interest analysis required by G.L. c. 164, § 72 is analogous to the Department's analysis for the "reasonably necessary for the convenience or welfare of the public" standard under G.L. c. 40A, § 3. See New England Power Company, D.P.U. 89-163, at 6 (1993); New England Power Company, D.P.U. 91/117/118, at 4

⁹²

Pursuant to the statute, an electric company must file with its petition a general description of the transmission line, provide a map or plan showing its general location, and estimate the cost of the line in reasonable detail. G.L. c. 164, § 72.

(1991); Massachusetts Electric Company, D.P.U. 89-136/136/137, at 8 (1990). Accordingly, in evaluating petitions filed under G.L. c. 164, § 72, the Department relies on the standard of review for determining whether the proposed project is reasonably necessary for the convenience or welfare of the public under G.L. c. 40A, § 3, as set forth above.

B. Analysis and Findings

1. Public Service Corporation Status

NSTAR is an “electric company” as defined by G.L. c. 164, § 1. Commonwealth Electric Company d/b/a NSTAR, D.T.E. 03-7, at 5 (2003). Accordingly, the Siting Board finds that NSTAR qualifies as a public service corporation for the purposes of G.L. c. 40A, § 3 and for the purposes of Section 6 of Chapter 665 of the Acts of 1956.

2. Need for the Requested Exemptions

a. Town of Stoughton-Route 138 Switching Station

NSTAR’s preferred site for a new 345 kV switching station is at the intersection of Route 138 and York Street in Stoughton (see Section III.B, above). The proposed switching station site is located in an industrial district (“ID”) which permits public utility uses (Exh. BECO-3, at 9; and App. A, at Section V.D “Table of Use Regulations”). The Company identified eight sections of the Stoughton Zoning By-laws from which it is seeking an exemption in order to construct and operate the proposed switching station (*id.* at 8- 3). NSTAR stated that the process of obtaining zoning relief locally could delay the Company’s proposed in-service date of 2006 (*id.* at 31).⁹³ The sections for which the Company is seeking zoning relief are described below.

i. Height Requirements

NSTAR is seeking exemption from Section VI of the Stoughton Zoning By-laws, which

⁹³ The Company indicated that pursuant to the Host Community Agreement it has reached with Stoughton, the Town of Stoughton has agreed to relinquish all rights to appeal, challenge, or collaterally attack the Siting Board’s final decision in this matter (Exh. EFSB-62, at 5).

prohibits the construction or alteration of a building or structure that exceeds the height specified for the district in which it is located (Exh. BECO-3, App. A at Section II). Section VI, Table II places a 40 foot height limit on structures in an industrial district (id. at App. A at Section VI). According to the Company, the proposed facility would include six new monopole transition poles, ranging in height from approximately 60 to 125 feet, and two line bridges, each 60 feet high (Exh. RR-EFSB-58).

The Company maintained Section II of the Stoughton Zoning By-laws defines “height” in relation to a roof, and that none of the structures in question has a roof as a design element (Exh. BECO-3, at 9-10). Therefore, it is the Company’s position that the structures identified would not exceed the height restriction. NSTAR stated, however, that the building inspector may have a different interpretation of “height” as defined in the Stoughton Zoning By-laws (id.). The Company stated that if the building inspector determined that the project fails to comply with the height restriction, the Company would need to appeal the decision to the Stoughton Board of Appeals, or petition directly to the Stoughton Board of Appeals for zoning relief (id. at 10).

The record shows that certain project structures may exceed the height requirements in Section VI, Table II of the Stoughton Zoning By-laws. The Siting Board concludes that since the applicability of the Section VI, Table II to the proposed structures is subject to interpretation, it may be necessary for the Company to petition the Stoughton Board of Appeals for relief in order to construct the proposed project. While the proposed project could be built following a petition to the Board of Appeals, the outcome of any Board of Appeals process is uncertain and could delay construction. Accordingly, the Siting Board finds that exemption of the proposed transmission project from Section VI of the Stoughton Zoning By-laws is required within the meaning of G.L. c. 40A, § 3, since the proposed project is time sensitive.

ii. Off-street Parking

NSTAR seeks an exemption from Section VIII of the Stoughton Zoning By-laws, which requires one off-street parking space for each 800 square feet of gross floor area for uses other than office use (Exh. BECO-3, at 10, App. A at Section VIII). NSTAR stated that the 2100 square feet of gross floor area of the proposed new buildings at the Route 138 site would require

three parking spaces under a strict interpretation of the Stoughton Zoning By-laws (Exh. BECO-3, at 10). The Company stated that there will be no full-time employees at the site and that there already are 15 available parking spaces associated with the ongoing business at the site (id.). The Company could apply for a variance pursuant to Section X-K of the Stoughton Zoning By-laws for relief from Section VIII.

While the proposed project could be completed following an application for a variance from Section VIII, the outcome of the variance process is uncertain and could delay construction. Accordingly, the Siting Board finds that exemption from Section VIII of the Stoughton Zoning By-laws is required within the meaning of G.L. c. 40A, § 3, Since the proposed transmission project is time sensitive.

iii. Landscaping

The Company seeks exemption from the Section XII of the Stoughton Zoning By-laws, which provides that the Stoughton building inspector must review site landscaping plans for all uses within an industrial district (Exh. BECO-3, at 11; App. A at Section XII). NSTAR stated that the uncertainty related to the building inspector's review of the Company's landscaping plan could jeopardize the Company's in-service date of 2006 (Tr. 13, at 1753).

The record shows that the Stoughton Zoning By-laws require landscaping review for the proposed project. While the proposed project likely could be built without relief from Section XII, the outcome of the landscaping review process is uncertain and could delay construction. Accordingly, the Siting Board finds that exemption from Section XII of the Stoughton Zoning By-laws is required within the meaning of G.L. c. 40A, § 3 to the extent that the proposed transmission project is time sensitive.⁹⁴

⁹⁴

The Siting Board notes that NSTAR and Stoughton have entered into a Host Community Agreement which addresses landscaping issues, and that the Siting Board has addressed landscaping issues in Section III.C, above.

iv. Removal of Earth

NSTAR indicated that Section V of the Stoughton Zoning By-laws requires a special permit in all districts for any removal of earth associated with building construction on a lot (Exh. BECO-3, at 17-18, App. A at Section V).⁹⁵ The Company has not determined whether it will remove earth from the site or use the excavated material for regrading (Tr. 13, at 1791-93). However, NSTAR is seeking an exemption from the special permit requirement of Section V in the event that the Company removes earth from the proposed switching station site (Exh. BECO-3, at 11).

The record demonstrates that the Company would be required to obtain a special permit from Stoughton if there were earth removal from the Route 138 site. While the proposed project likely could be built without relief from Section V of the Stoughton Zoning By-laws, the outcome of the special permit process is uncertain and could delay construction. Accordingly, the Siting Board finds that exemption from Section V of the Stoughton Zoning By-laws is required within the meaning of G.L. c. 40A, § 3, since the proposed transmission project is time sensitive.

v. Environmental Performance Standards

NSTAR stated that Section XI-I of the Stoughton Zoning By-laws sets forth a list of ten environmental performance standards related to emissions, sound levels, vibrations, discharges, storage of hazardous materials and lighting with which the Company must comply (Exh. BECO-3, at 12). According to the Company, it intends to comply with the standards set forth in Section XI-I, but cannot provide “absolute assurances” that construction-stage dust, noise and vibration, as well as operating-stage noise, glare and electrical disturbances would satisfy a literal interpretation of Section XI-I (Exh. EFSB RR-53, at 1-2). The Company explained that, during certain atmospheric, emergency or maintenance conditions when it will require night lighting, it would not be able to comply with the prohibition on “direct or sky reflected glare” (Exh. RR-EFSB-53; Tr. 13, at 1766-67).

The record is not clear as to whether the Environmental Performance Standards apply to

⁹⁵ Section XI.B.5 of the Stoughton Zoning By-laws contains exceptions to this requirement; however, NSTAR stated that it meets none of the exceptions (Exh. BECO-3, at 11).

the construction phase of the proposed project. If the Environmental Performance Standards do apply during construction, the record shows that the Company would not be able to construct the proposed switching station without relief from Section XI-I. The record also shows that the Company would not be able to operate the proposed switching station without relief from Section XI-I (10), which prohibits “direct or sky reflected glare.” However, the record demonstrates that the Company could operate the switching station in accordance with the remaining provisions of Section XI-I. Accordingly, the Siting Board finds that exemption from Section XI-I of the Stoughton Zoning By-laws may be required during construction of the proposed facility, and thus is within the meaning of G.L. c. 40A, § 3. The Siting Board further finds that, during operation of the proposed facility, exemption from only Section XI-I (10) would be required within the meaning of G.L. c. 40A, § 3.

vi. Flood Hazards, Wetlands and Watershed Districts

The Company stated that portions of the Route 138 switching station site are within both wetlands and watershed districts that are governed by Section III-E of the Stoughton Zoning By-laws, which prohibits construction in such districts (“Flood Hazard/Wetland/Watershed Maps of the Town of Stoughton”) (Exh. BECO-3, at 12). The Company explained that the Stoughton Zoning By-laws provide an exception allowing for construction, installation and maintenance of public-utility facilities, including, without limitation, electric transmission lines in wetlands districts (*id.* at 12 and App. A at Section III.-E.4(a)(xi)). The Company asserted that the proposed switching station falls within this exemption; however, the Company stated that the building inspector may have a different interpretation (*id.* at 12).

The Company also stated that no new construction is allowed in watershed districts except as allowed in wetlands districts (Exh. BECO-3, at 13 and App. A at Section III-E. (4) (b)). Therefore, the Company explained that an exemption from Section III-E. 4(b) of the Stoughton Zoning By-laws may be required in the event of a determination that the proposed project does not fall within the public utility facilities exception for wetlands districts (*id.* at 13). The Company further stated that because the Stoughton Zoning Board of Appeals is not authorized to issue use variances, there is no local zoning relief available with respect to Sections III-E.4(a)(xi) and III-E.

4(b)(id. at 12).

The record demonstrates that the Company may not be able to construct the proposed switching station absent relief from Section III-E. 4(a)(xi) and III-E.4(b) of the Stoughton Zoning By-laws. Accordingly, the Siting Board finds that exemption from Sections III-E. 4(a)(xi) and III-E.4(b) of the Stoughton Zoning By-laws may be required within the meaning of G.L. c. 40A, § 3.

vii. Filling of Water, Wet Area, or Depression

NSTAR stated that, pursuant to Section XI-C. of the Stoughton Zoning By-laws, Stoughton regulates the filling of any water, wet area or depression where 500 cubic yards or more of filling is required or where an area to be filled exceeds 10,000 square feet (Exh. BECO-3, at 13, App. A at Section XI.C.). The Company explained that it would be able to comply with many of the requirements of Section XI-C. However, due to the topography of the site, the Company is uncertain that it could comply with certain aspects of this section (e.g., XI-C(6), requiring replacement of at least six inches of topsoil and seeding of all filled areas) without jeopardizing the project schedule (Tr. 13, at 1776-77). The Company indicated that whether or not a zoning exemption is granted, the Company would be required to make a filing with the Conservation Commission regarding the alteration and preservation of wetlands on the site (id. at 1772).

The record demonstrates that the Company may not be able to build the proposed project in a timely fashion absent relief from Section XI-C of the Stoughton Zoning By-laws. Accordingly, the Siting Board finds that exemption from Section XI-C of the Stoughton Zoning By-laws may be required within the meaning of G.L. c. 40A, § 3, since the proposed transmission project is time sensitive.

b. Zoning Relief Requested in the City of Boston

NSTAR stated that certain provisions of the Boston Zoning Code, if applied to the proposed transmission project, would preclude construction by the Company's in service date of 2006 (Exh. BECO-3, at 31-32). The Company identified eight specific exemptions of the Boston Zoning Code that may be needed to permit construction and operation at the existing Baker Street,

Hyde Park, and K Street Substations.⁹⁶

i. Baker Street Substation

NSTAR plans to install a heat exchanger at the Company's existing Baker Street Substation in order to increase the electrical capacity of the existing cables operating between the Baker Street Substation and the Hyde Park Substation (see Section III. C., above)

The Company stated that the substation is in a Community Commercial subdistrict ("CC subdistrict") of the West Roxbury Neighborhood District, governed by Section 56 of the Boston Zoning Code (Exh. BECO-3, at 25). The Company identified two sections of the Boston Zoning Code from which it is seeking an exemption.

(a) Conditional Use Permit

The Company stated that Section 56-45 of the Boston Zoning Code requires NSTAR to obtain a conditional use permit from the Boston Zoning Board in order to install the heat exchanger (Exh. BECO-3, at 25 and App. C at Section 56-45, Table B). NSTAR stated that the overall permitting process, especially in the event of any appeal of the decision, would jeopardize the Company's ability to meet its 2006 in-service date for the project (id.).

The record demonstrates that the Company is required to obtain a conditional use permit for the new equipment at the Baker Street Substation. While this equipment likely could be built without relief from Section 56-45 of the Boston Zoning Code, the outcome of the conditional use permit process is uncertain and could delay construction. Accordingly, the Siting Board finds that exemption of the proposed project from Section 56-45 of the Boston Zoning Code is required within the meaning of Section 6 of Chapter 665 of the Acts of 1956, since the proposed transmission project is time sensitive.

(b) Screening and Buffering

NSTAR also seeks an exemption from Section 56-37 of the Boston Zoning Code which

⁹⁶ The City of Boston did not address on brief the Company's request for an exemption from the Boston Zoning Code (see City of Boston Brief).

requires screening and buffering of certain parcels in the district (Exh. BECO-3, at 25-26 and App. C at Section 56-37). The Company indicated that, because the Baker Street Substation is located across the street from a public park and is in proximity to residences, this section of the Boston Zoning Code applies to the proposed substation expansion (id. at 26). The Company maintains that there is sufficient screening and buffering at the site, and is seeking an exemption from this provision of the Boston Zoning Code (id.; Tr. 17, at 1801-06).

_____The record demonstrates that Section 56-37 of the Boston Zoning Code requires the Company to provide screening and buffering along property lines abutting public parks and proximate to residences. While the proposed transmission project likely could be built without relief from Section 56-37, the outcome of the landscaping review process is uncertain and could delay construction. Moreover, as set forth in Section III. C, above, the Siting Board has directed the Company to provide plantings along those portions of the Baker Street fence line where there is no existing landscaping, and to supplement areas where there are existing deciduous trees. Accordingly, the Siting Board finds that exemption of the proposed project from Section 56-37 of the Boston Zoning Code is required within the meaning of Section 6 of Chapter 665 of the Acts of 1956, since the proposed transmission project is time sensitive.

ii. Hyde Park Substation

NSTAR proposed to expand its existing Hyde Park Substation to accommodate a new 345 kV transformer, control center building and heat exchanger (see Section III. C.) The existing substation is located in an M-1 district that is zoned for industrial use, including public utilities. (Exh. BECO-3, at 26). The Company identified two sections of the Boston Zoning Code from which it is seeking an exemption (id.).

(a) Height and Dimensional Requirements

NSTAR seeks an exemption from Section 13-1, “Table B: Dimensional Requirements” (Exh. BECO-3, at 27). Section 13-1 provides a 20 foot rear yard setback requirement in an M-1 district (id. at 27 and App. C. at Section 13-1). The Company indicated that the proposed heat exchangers and the control building would be placed approximately 1 to 2 feet from the rear lot

line in order to facilitate operation and maintenance activities and to meet necessary access requirements (id. at 27; Tr. 13, at 1809-10). NSTAR stated that it would be required to seek a dimensional variance in order to construct the control building and the heat exchangers (Exh. BECO-3, at 27).

The Company also stated that, depending upon the building inspector's definition of "height", the 2.5-story or 35-foot building height restriction for an M-1 district may apply to the proposed structures at the substation (Exh. BECO-3, at 26 and App. C, Section 13-1). According to the Company, the proposed new 345 kV transformer would be 38 feet high, and the Company might need to seek a variance from this provision (id. at 26).

While the proposed modifications to the existing Hyde Park Substation could be completed following an application for a variance from Section 13-1 of the Boston Zoning Code, the outcome of the variance process is uncertain and could delay construction. Accordingly, the Siting Board finds that exemption from Section 13-1 of the Boston Zoning Code for the aforementioned dimensional requirements of the Boston Zoning Code is required within the meaning of Section 6 of Chapter 665 of the Acts of 1956, since the proposed transmission project is time sensitive.

(b) Off-Street Parking

The Company seeks an exemption from Section 23-5 of the Boston Zoning Code, which requires one parking space for every 1200 square feet of gross floor area (Exh. BECO-3, at 27). NSTAR stated that the spacing requirements of the substation equipment and the layout of the existing facilities preclude the Company from creating any additional parking spaces and that the substation is and will remain an unmanned facility after construction and operation of the proposed transmission project (id.).

_____The record demonstrates that the Company could not expand the Hyde Park Substation without relief from Section 23-5 of the Boston Zoning Code. Accordingly, the Siting Board finds that exemption from the off-street parking requirements of the Boston Zoning Code is required within the meaning of Section 6 of Chapter 665 of the Acts of 1956.

iii. K Street Substation

NSTAR proposes to expand the existing substation to include the following facilities: two 345 kV-to-115 kV transformers, shunt reactors, circuit breakers, switching equipment, an emissions monitoring station, disconnection switches, bus work and support structures (Exh. BECO-3, at 28). The site is located in a Waterfront Industrial Zoning District (“W-2 District”), and is within the South Boston Waterfront Interim Planning Overlay District (“IPOD”). In addition, portions of the K Street Substation are on tidelands and governed by G.L. c. 91. The Company identified five sections of the Boston Zoning Code related the K Street Substation expansion for which it is seeking an exemption (id. at 29).

(a) Use Regulations

The Company stated that because the proposed project is located in a W-2 District in South Boston it would be subject to Section 8-7, “ Table A- Use Regulations” of the Boston Zoning Code (Exh. BECO-3, at 29). The Company seeks a comprehensive exemption from this portion of the Zoning Code, or, at a minimum, those provisions imposing dimensional requirements, off-street parking requirements, standards for construction in filled tidelands, development review and design guideline requirements and flood plain restrictions.

NSTAR explained that Section 27P of the Boston Zoning Code governs construction within IPOD districts (Exh. BECO-3, at 29). The Company stated that the proposed expansion of the K Street Substation would comply with all of the Article 27P dimensional requirements except for the waterfront area requirement (id. at 29). Article 27P-11 prohibits buildings or structures in a waterfront yard area, which is defined as 50 feet, measured perpendicularly from either the high tide line or the ends of and sides of piers (Exh. BECO-3, at 29 and App. C at Article 27P-11). According to the Company, several of its proposed structures must be located in the waterfront area, and NSTAR, therefore, is seeking an exemption from Article 27P-11 of the Boston Zoning Code.

Pursuant to G.L.c. 91, § 18, when a project is proposed in tideland areas, a developer must obtain a written recommendation from a local planning board to file with MDEP addressing whether the proposed project: (1) serves a public purpose; and (2) would not be detrimental to the

public's rights to the tidelands (Exh. BECO-3, at 30 and App. C at Section 27P-15). The IPOD provisions set forth the standards for the Boston Redevelopment Authority ("BRA") to use in making its recommendation to MDEP (id.). NSTAR explained that exemption from this requirement would not obviate the need for the Company to file with MDEP pursuant G.L. c. 91 and to include an order of conditions from the Boston Conservation Commission (Tr. 13, at 1817).

Pursuant to Section 27P-14 of the Boston Zoning Code, all proposed projects in the South Boston IPOD area must be subject to development review by the BRA and must follow applicable design guidelines (Exh. BECO-3, at 30).

The record demonstrates that the Company could not expand the K Street Substation without relief from Table 8-7 of the Boston Zoning Code. Accordingly, the Siting Board finds that exemption from Table 8-7 of the Boston Zoning Code is required within the meaning of Section 6 of Chapter 665 of the Acts of 1956. The record also demonstrates that the Company could not expand the K Street Substation without relief from Section 27P-11 of the Boston Zoning Code. Accordingly, the Siting Board finds that exemption from Section 27P-11 of the Boston Zoning Code is required within the meaning of Section 6 of Chapter 665 of the Acts of 1956. The record also demonstrates that the Company could not expand the K Street Substation absent relief from Sections 27P-14 and 27P-15 of the Boston Zoning Code. Accordingly, the Siting Board finds that exemption from Sections 27P-14 and 27P-15 of the Boston Zoning Code is required within the meaning of Section 6 of Chapter 665 of the Acts of 1956 to the extent that the proposed transmission project is time sensitive.⁹⁷

(b) Flood Hazard District

The Company stated that the K Street Substation is located within a Flood Hazard District that is subject to Section 25 of the Boston Zoning Code which governs, inter alia, new construction of nonresidential structures in Flood Hazard Districts (Exh. BECO-3, at 30-31).

⁹⁷ While the Siting Board finds that relief from the Boston Zoning Code is required, this does not preclude MDEP from exercising its authority pursuant to G.L. c. 91 as it relates to the K Street Substation expansion.

According to the Company, it would not be able to comply with the Section 25 requirement to have the lowest floor of a non-residential structure elevated to the level of base flood elevation (id. at 31).

The record demonstrates that the Company could not expand the K Street Substation without relief from Section 25 of the Boston Zoning Code. Accordingly, the Siting Board finds that an exemption from Section 25 of the Boston Zoning Code is required within the meaning of Section 6 of Chapter 665 of the Acts of 1956.

3. Public Convenience and Welfare

a. Need or Public Benefit of Use

In Section II.A, above, the Siting Board evaluated the need for the proposed project. Based on this analysis, the Siting Board found that additional energy resources are needed for reliability in the Greater Boston Area under certain contingencies. The finding was based on the Company's load flow analyses showing thermal overloads in the Downtown Boston Area as early as 2006.

b. Alternatives Explored

In Section II.B, above, the Siting Board analyzed potential alternatives to the proposed transmission line and a number of routing alternatives. Based on this analysis, the Siting Board found that the proposed 345 kV underground transmission project is preferable to both the lower voltage alternative and the bundled improvements alternative with respect to providing a reliable energy supply for the Commonwealth, with a minimum impact on the environment at the lowest possible cost.

c. Impacts of the Proposed Use

In Section III, above, the Siting Board analyzed the environmental impacts, including traffic, noise, land use, water resources, visual, hazardous materials, and EMF impacts, of the proposed transmission project. The Siting Board found that, with the conditions set forth in Section III, above, the Company has minimized the environmental impacts associated with the

proposed transmission project.

C. Scope of Exemption

The Siting Board found that NSTAR requires an exemption from the following sections of the Stoughton Zoning By-laws for the Route 138 switching station: III-E.4(a)(xi); II-E.4(b); V; VI; VIII; XI-C; XI-I during construction only; XI-I (10) during operation, and XII. The Siting Board also found that NSTAR requires an exemption from the following sections of the Boston Zoning Code for: (1) the Baker Street Substation: 56-45 and 56-37; (2) the Hyde Park Substation: 23-5 and 13-1; and (3) the K Street Substation: 8-7, 25, 27P-11, 27P-14, and 27P-15. NSTAR also has requested a comprehensive exemption from the operation of the Stoughton Zoning By-laws and the Boston Zoning Code. As the Department has noted, petitions for comprehensive zoning relief are infrequently granted but may be appropriate in certain circumstances. For example, the Department will consider the issuance of comprehensive relief where numerous individual exemptions are required or where the issuance of a comprehensive exemption could avoid substantial public harm by serving to prevent delay in the construction and operation of the proposed use. USGen New England, D.T.E. 03-83, at 34 (2004); Tennessee Gas Pipeline Company, D.T.E. 01-57, at 11 (2002).

The Siting Board has found a need for the proposed transmission project, based on its analysis that additional energy resources are required as early as 2006 to ensure reliability in the Greater Boston Area. It is therefore essential to the public interest that construction of the proposed project be completed by 2006.

The Siting Board finds that the advantage to the public in the construction of the proposed transmission project outweighs any benefit that could be obtained from further local review, with the exception set forth below. Accordingly, in light of the substantial advantage in constructing and operating the proposed transmission project to address the need to ensure transmission system reliability in the Greater Boston area, the Siting Board finds that exemption from Sections III-E.4(a)(xi), III-E.4(b) V, VI, VIII, XI-C, XI-I.(1 through 10) during construction, XI-I(10) during operation, and XII of the Stoughton Zoning By-laws is required within the meaning of G.L. c. 40A, § 3. The Siting Board denies the request of the Company for exemption from Section XI-I

(1 through 9) of the Stoughton Zoning By-laws during operation.

The Siting Board further finds that exemption from Sections 8-7, 13-1, 23-5, 25, 56-37, 56-45, 27P-11, 27P-14, and 27P-15 of the Boston Zoning Code is required within the meaning of Section 6 of Chapter 665 of the Acts of 1956. In addition, the Siting Board finds that, with the exception related to enforcement of Section XI-I (1 through 9) of the Stoughton Zoning By-laws during operation of the switching station, it is appropriate in this case to grant NSTAR's request for a comprehensive exemption from the operation of the Stoughton Zoning By-laws and the Boston Zoning Code generally in connection with the Company's use of the sites and the construction, operation and maintenance of the proposed transmission project.

1. G.L. c. 164, § 72

As stated above, in evaluating petitions filed pursuant to G.L. c. 164, § 72, the Department relies on the standard of review established for G.L. c. 40A, § 3 for determining whether the proposed project is reasonably necessary for the convenience or welfare of the public. Based on the record in this proceeding and the above analysis, and with the implementation of mitigation measures proposed by the Company and directed by the Siting Board, the Siting Board finds pursuant to G.L. c. 164, § 72, that the proposed transmission line and ancillary equipment are necessary for the purpose alleged, will serve the public convenience, and are consistent with the public interest.

The Siting Board directs NSTAR to serve a copy of this decision on the Town of Stoughton Board of Selectmen, the Town of Stoughton Planning Board, the Town of Stoughton Zoning Board of Appeals, the City of Boston City Council, the City of Boston Planning Board, and the City of Boston Zoning Board of Appeals within five business days of its issuance. The Siting Board further directs NSTAR to certify to the Secretary of the Department within ten business days of its issuance that such service has been made.

D. 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.” G.L. c. 30, § 61. Pursuant to 301 CMR § 11.01 (3), these findings are necessary when an Environmental Impact Report (“EIR”) is submitted by a petitioner to the Secretary of Environmental Affairs, and should be based on such EIR.

Where an EIR is not required, G.L. c. 30, § 61 findings are not necessary. 301 CMR § 11.01 (3). The record indicates that a single EIR was required for NSTAR’s proposed transmission project and ancillary facilities. Therefore, a finding under G.L. c. 30, § 61 is necessary for the Company’s Zoning Exemption Petition and its Section 72 Petition.

In Section III, above, the Siting Board conducted a comprehensive analysis of the environmental impacts of the proposed transmission project and found that the temporary and permanent impacts of the proposed transmission project along the primary route would be minimized and that the proposed project along the primary route would achieve an appropriate balance among conflicting environmental concerns as well as among environmental impacts, reliability, and cost. Accordingly, the Siting Board finds that all feasible measures have been taken to avoid or minimize the environmental impacts of the proposed facility.

V. DECISION

The Siting Board’s enabling statute directs the Siting Board to implement the energy policies contained in G.L. c. 164, §§ 69H to 69Q, to provide a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost. G. L. c. 164, § 69H. In addition, the statute requires that the Siting Board determine whether plans for the construction of energy facilities are consistent with current health, environmental protection, and resource use and development policies as adopted by the Commonwealth. G. L. c. 164, § 69J.

In Section II.A, above, the Siting Board found that the existing electric transmission system is inadequate to reliably serve projected loads in the Greater Boston Area under certain contingencies, and thus that additional energy resources are needed for reliability in the Greater Boston Area.

In Section II.B, above, the Siting Board found that the proposed transmission project is preferable to both the 115 kV alternative and the bundled improvements alternative with respect to providing a reliable energy supply for the Commonwealth, with a minimum impact on the environment at the lowest possible cost.

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

In Section III.C, above, the Siting Board reviewed environmental impacts of the proposed transmission project in light of related regulatory or other programs of the Commonwealth, including programs related to wetlands, tidelands and waterways, coastal zone management, rare and endangered species, historic resources, climate protection, and the handling of hazardous materials. As evidenced by the above discussions and analyses, the proposed transmission line along the primary route would be generally consistent with the identified requirements of all such programs.

In Section III.C, the Siting Board found that, with the implementation of the proposed mitigation and conditions, and compliance with all applicable local, state and federal requirements, the temporary and permanent environmental impacts of the proposed transmission project along the primary route would be minimized. The Siting Board also found that the proposed project along the primary route would achieve an appropriate balance among conflicting environmental concerns as well as among environmental impacts, reliability, and cost.

In Section III.C, above, the Siting Board found that the proposed facilities along the primary route would be preferable to the proposed facilities along the alternative route and the hybrid route with respect to providing a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.

Accordingly, the Siting Board APPROVES the Company's petition to construct a three-circuit 17.5 mile, 345-kilovolt underground electric transmission line in Stoughton, Canton, Milton and Boston, Massachusetts, using the Company's primary route with the use of American Legion Highway and Day Boulevard routing, and, if necessary, using the Glenway Street/Old Road variation and the variation crossing the shopping center parcel near the intersection of

Cummins Highway and American Legion Highway, subject to the following conditions:

- (A) To ensure that the traffic impacts of the proposed transmission project are minimized, the Siting Board directs NSTAR to submit the draft TMP to appropriate officials in the City of Boston, and the Towns of Stoughton, Canton, and Milton, to school administrators in each of these communities, and to the MHD and the MBTA, at least two months prior to the commencement of construction affecting these entities.
- (B) To ensure that the traffic impacts of the proposed transmission project are minimized, the Siting Board directs NSTAR, in consultation with the City of Boston and the Towns of Stoughton, Canton, and Milton, to develop a comprehensive outreach plan for the proposed project. The outreach plan should lay out the procedures to be used to notify the public about: the scheduled start, duration, and hours of construction in particular areas; the methods of construction that will be used in particular areas (including any use of nighttime construction); and anticipated street closures and detours. The outreach plan also should include information on complaint and response procedures, contact information, the availability of web-based project information, and protocols for notifying the MBTA and schools of upcoming construction.
- (C) To ensure that the noise impacts of the proposed transmission project are minimized, the Siting Board directs NSTAR to use portable noise barriers in nighttime periods to mitigate the noise impact of cable splicing wherever cable splicing operations are staged within 50 feet of a residential structure.
- (D) To ensure that the noise impacts of the proposed transmission project are minimized, the Siting Board directs NSTAR to develop a noise mitigation plan covering each residential area where nighttime construction would take place. In

developing the plans, NSTAR should work with appropriate officials to develop an initial noise mitigation plan, conduct public outreach in that area, and then, based on public input, develop a final noise mitigation plan in consultation with appropriate officials. The plans also should include a description of the Company's outreach plan. NSTAR shall provide copies of the final noise mitigation plans to the Siting Board for its information.

- (E) To ensure that the noise impacts of the proposed transmission project are minimized, the Siting Board directs NSTAR to develop construction outreach plans tailored to the neighborhoods surrounding the Hyde Park, Baker Street and K Street Substations, and the Route 138 switching station site, that provide the neighborhoods with regular updates on the timing and progress of work at these locations, provide advance notice when noisier activities are to be undertaken, and provide the neighborhoods with an opportunity to request changes in the scheduling of evening work activities if certain activities prove unduly burdensome.
- (F) To ensure that the noise impacts at the Hyde Park Substation of the proposed transmission project are minimized consistent with minimizing visual impacts, the Siting Board directs NSTAR to consult with the City of Boston and neighboring residents on its noise mitigation plan for the Hyde Park Substation and options to further reduce nighttime L_{90} increases from the project at residences east of the site, across Hyde Park Avenue. As part of this consultation, NSTAR shall develop a refined noise mitigation option based on the sound wall approach described in the record that would reduce nighttime L_{90} increases at residences east of the site to no greater than 3 dBA, while also minimizing the sound wall's visual impacts and providing the greatest possible implementation of the Company's proposed landscaping plan. In addition, NSTAR shall develop one or more additional noise mitigation options that entail less visual impact or interference with landscaping,

and shall provide information on the level of noise mitigation that could be achieved under these options. NSTAR shall consult with appropriate City of Boston officials and neighboring residents as to the relative desirability of the Company's proposed noise plan (which does not incorporate a sound wall) and the options for additional noise mitigation, and shall develop and implement a final noise mitigation plan based on these consultations. NSTAR shall report to the Siting Board on these consultations and on the opinions of the City of Boston and neighboring residents on its final noise mitigation plan for the Hyde Park Substation.

- (G) To ensure that the visual impacts of the proposed transmission project are minimized, the Siting Board directs NSTAR to develop and implement detailed landscape plans to screen the proposed switching station from residential and roadway locations on all sides, and to consult with the Town of Stoughton regarding the plans. To screen locations to the south and southeast, NSTAR shall consider, in consultation with affected landowners and the Town of Stoughton, use of plantings or other mitigation in off-site as well as on-site areas. NSTAR shall, if agreeable to the affected landowners or appropriate Town officials, include as part of its landscape plans plantings or other mitigation in off-site residential or roadway locations. To ensure a mix of plantings that provides some immediate screening in all directions, NSTAR shall offer the Town and affected landowners larger plantings in lieu of several smaller plantings at selected locations within the areas of vegetative screening planned in different directions from the site. NSTAR shall provide a copy of its final landscape plans to the Siting Board for its information.
- (H) To ensure that the visual impacts of the proposed transmission project are minimized, the Siting Board directs NSTAR to provide a border of 5- to 6-foot arborvitae and decorative brick pillar fencing for a total distance of approximately 100 to 125 feet along the southern border of the Hyde Park Substation site,

extending from Hyde Park Avenue to a point flush with the rear property line of the closest residence to the south of the site.

- (I) To ensure that the visual impacts of the proposed transmission project are minimized, the Siting Board directs NSTAR to provide plantings similar to those proposed for the Hyde Park Substation along those portions of the Baker Street fence line where there is no existing landscaping, and to supplement areas where there are existing deciduous trees with plantings and/or landscaping similar to those proposed for the Hyde Park Substation
- (J) To ensure that the hazardous waste impacts of the proposed transmission project are minimized, the Siting Board directs NSTAR to study participating in EPA's SF₆ Emission Reduction Partnership and, within six months of the date of the Final Decision in this matter, inform the Siting Board of the Company's decision to join the program or of its reasons for not doing so.

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

In addition, the Siting Board has found pursuant to G.L. c. 164, § 72 that NSTAR's proposed transmission line is necessary for the purpose alleged, and will serve the public convenience and is consistent with the public interest.

In addition, the Siting Board has found pursuant to G.L. c. 40A, § 3 and Section 6 of Chapter 665 of the Acts of 1956 that construction and operation of the Company's proposed facility is reasonably necessary for the public convenience or welfare. Accordingly, the Siting Board GRANTS the Company's petition for an exemption from certain provisions of the Town of Stoughton Zoning By-laws. Specifically, the Company shall be exempt from those sections of the Town of Stoughton Zoning By-laws enumerated in Section IV, above, with the exception of Section XI-I(1-9) during operation of the proposed facility. The Siting Board further GRANTS,

with the exception of Section XI-I (1-9) during operation of the proposed facility, the Company's petition for a comprehensive exemption from the operation of the Town of Stoughton Zoning By-laws.

The Siting Board also GRANTS the Company's petition pursuant to Section 6 of Chapter 665 of the Acts of 1956 for an exemption from certain provisions of the City of Boston Zoning Code. Specifically, the Company shall be exempt from those sections of the City of Boston Zoning Code enumerated in Section IV, above. The Siting Board further grants the Company's petition for a comprehensive exemption from the operation of the Boston Zoning Code.

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

Selma Urman
Presiding Officer

Dated this 14th day of January, 2005.

APPROVED by the Energy Facilities Siting Board at its meeting of January 13, 2005, by the members and designees present and voting: Paul G. Afonso (Chairman, DTE/EFSB), W. Robert Keating (Commissioner, DTE); Robert Sydney (for David L. O'Connor, Commissioner, Division of Energy Resources); Stephen R. Pritchard (for Ellen Roy Herzfelder, Secretary of Environmental Affairs); Judith F. Judson (Commissioner, DTE) and Deborah Shufrin (for Ranch Kimball, Secretary of Economic Development).

Paul G. Afonso, Chairman
Energy Facilities Siting Board

Dated this 13th day of January, 2005.

Appeal as to matters of law from any final decision, order or ruling of the Siting Board may be taken to the Supreme Judicial Court by an aggrieved party in interest by the filing of a written petition praying that the order of the Siting Board be modified or set aside in whole or in part.

Such petition for appeal shall be filed with the Siting Board within twenty days after the date of service of the decision, order or ruling of the Siting Board, or within such further time as the Siting Board may allow upon request filed prior to the expiration of the twenty days after the date of service of said decision, order or ruling. Within ten days after such petition has been filed, the appealing party shall enter the appeal in the Supreme Judicial Court sitting in Suffolk County by filing a copy thereof with the clerk of said court. (Massachusetts General Laws, Chapter 25, Sec. 5; Chapter 164, Sec. 69P).