COMMONWEALTH OF MASSACHUSETTS
Energy Facilities Siting Board

In the Matter of the Petition of Cambridge Electric Light Company for Approval to Construct One New, Underground 115 kV Transmission Line in the City of Cambridge, Massachusetts.	)	EFSB 00-3; D.T.E. 00-103

FINAL DECISION

Sheila R. McIntyre
Hearing Officer
September 25, 2001

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LIST OF ABBREVIATIONS

Abbreviation	Explanation
ANP Blackstone Decision	ANP Blackstone Energy Company, 8 DOMSB 1 (1999)
BECo	Boston Edison Company
CELCo	Cambridge Electric Light Company
City	City of Cambridge as intervener
Com/Electric	Commonwealth Electric Company
Company	Cambridge Electric Light Company
Company brief	Cambridge Electric Light Company's brief
CRA	Cambridge Redevelopment Authority
Department	Department of Telecommunications and Energy
EIR	Environmental Impact Report
EMF	Electric and magnetic fields
HPOF	High pressure oil filled
Kendall Station	Kendall Generating Station
kV	Kilovolt
MDC	Metropolitan District Commission
MDEP	Massachusetts Department of Environmental Protection
MEPA	Massachusetts Environmental Policy Act
mG	Milligauss
MHC	Massachusetts Historical Commission
Mirant	Southern Energy Kendall, LLC
MIT	Massachusetts Institute of Technology
MMWEC Decision	Massachusetts Municipal Wholesale Electric Company, EFSB 97-4 (2001)
MW	Megawatt
MWRA	Massachusetts Water Resources Authority
1995 NEPCo Decision	New England Power Company, 4 DOMSB 109, 167 (1995)

1997 BECo Decision	Boston Edison Company, 6 DOMSB 208 (1997)
NEPOOL	New England Power Pool
NFA	No Further Action
NRC	National Research Council
NRHP	National Register of Historic Places
OHM	Oil and hazardous material
Putnam Substation	Putnam Bulk Substation
RAO	Response Action Outcome
Restructuring Act	1997 Electric Utility Restructuring Act
ROW	Right-of-way
SE Kendall Decision	Southern Energy Kendall, LLC, 11 DOMSB 255 (2000)
Siting Board	Energy Facilities Siting Board
Turner Falls Decision	Turner Falls Limited Partnership, 18 DOMSC 141 (1988)

The Energy Facilities Siting Board hereby APPROVES the petition of Cambridge Electric Light Company to construct, maintain and operate one new 115 kilovolt underground transmission line in the City of Cambridge, Massachusetts using the Company's Primary Route.

I. INTRODUCTION

A. Summary of the Proposed Project and Facilities

Cambridge Electric Light Company ("CELCo" or "Company") is an electric operating subsidiary of NSTAR Electric and Gas Corporation (Company Brief at 1). CELCo has proposed to construct an approximately 2.6 mile, 115 kilovolt ("kV") underground transmission line between the Kendall Generating Station ("Kendall Station") and CELCo's Putnam Bulk Substation ("Putnam Substation") on Putnam Avenue in Cambridge (Exh. KSE-1, at 1-1). The proposed project is required to accommodate Mirant Corporation's repowering project at Kendall Station (id.).[1] The proposed transmission facilities will connect the repowered Kendall Station to the New England transmission grid via Putnam Substation (id.). The proposed transmission line will consist of 3 conductors placed in a concrete encased duct bank consisting of 9 ducts in a 3 x 3 design (id. at Figure 1.2.2). The duct bank will be buried under approximately 3 feet of cover (id. at 5-53).

CELCo's Primary Route for the transmission line exits Kendall Station, proceeds generally to the north to Athenaeum Street, then easterly to First Street, turning south on First Street, continuing across the Broad Canal to Memorial Drive, and then following Memorial Drive to Pleasant Street, where the facilities would extend over private property to reach the Putnam Substation (Company Brief at 1). CELCo identified an alternate route and a number of route variations that could be employed between Kendall Station and Putnam Substation (id.).

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[1] Mirant Corporation plans to upgrade generating equipment by adding 170 MW at the existing Kendall Station, located at 265 First Street, Cambridge, Massachusetts (Exh. KSE-1, at 1-1). This repowering project was approved by the Siting Board in EFSB 99-4, Southern Energy Kendall, LLC, 11 DOMSB 255 (2000) ("SE Kendall Decision").

B. Procedural History

On November 15, 2000, CELCo filed a petition with the Energy Facilities Siting Board ("Siting Board") seeking approval to construct a 2.6 mile, 115 kV underground electric transmission line between Kendall Station in Cambridge and CELCo's Putnam Substation in Cambridge. This petition was docketed as EFSB 00-3. In addition, CELCo filed two related petitions with the Department of Telecommunications and Energy ("Department"). The first petition, seeking a determination pursuant to G.L. c. 164, § 72 that the proposed facilities are necessary and will serve the public convenience and be consistent with the public interest, was docketed as D.T.E. 00-103. The second petition, seeking exemptions from the zoning by-laws of Cambridge for the proposed transmission line pursuant to G.L. c. 40A, § 3 ("Petition for Zoning Exemption"), was docketed as D.T.E. 00-104. On November 22, 2000, the Department petitions were referred to the Siting Board for consolidation and decision with EFSB 00-3. On January 17, 2001, the Siting Board conducted a public hearing on the consolidated petitions in Cambridge. In accordance with the direction of the Hearing Officer, CELCo provided notice of the public hearing and adjudication.

Timely petitions to intervene were submitted by: the City of Cambridge ("City"); Southern Energy Kendall, LLC ("Mirant");[2] the Cambridge Redevelopment Authority ("CRA"); and the Massachusetts Institute of Technology ("MIT"). In addition, Kendall Square, LLC petitioned to participate as an interested person.

The Hearing Officer allowed the petitions to intervene of the City, Mirant, CRA, and MIT. The Hearing Officer also allowed the petition of Kendall Square, LLC to participate as an interested person (Cambridge Electric Light Company, EFSB 00-3/D.T.E. 00-103, Hearing Officer Procedural Order, February 21, 2001).

The Siting Board conducted evidentiary hearings on May 31 and June 7, 2001. CELCo presented eight witnesses: Joseph W. Freeman, Program Director of Earth Tech, who testified regarding site selection and temporary and permanent environmental impacts; M. Robert Hebert, Senior Engineer at Power Engineers, Inc., who testified regarding site selection and project alternatives;

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[2] Mirant Kendall, LLC was formerly known as Southern Energy Kendall, LLC.

Calvin W. Layton, an arborist with Commonwealth Electric Company ("Com/Electric"), an affiliate of CELCo, who testified regarding temporary and permanent environmental impacts; William J. McMullan, Senior Electrical Engineer of Com/Electric, who testified regarding the need for the proposed facility, project alternatives, and the magnetic field impacts of the proposed facility; Peter A. Valberg, Ph.D., Principal and Senior Health Scientist at Gradient Corporation, who testified regarding magnetic fields associated with the proposed facility; Joseph L. Jerz, Manager of Energy Forecast Estimation and Research for NSTAR Electric & Gas Corporation, who testified regarding load forecasting; Lynda A. Lee, Lead Forecasting Analyst for NSTAR Electric & Gas Corporation, who testified regarding load forecasting; and Charles P. Salamone, Director of System Planning for NSTAR Electric & Gas Corporation, who testified regarding load forecasting.

The Hearing Officer entered 141 exhibits into the record, consisting primarily of CELCo's responses to information and record requests. On June 28, 2001, the Company, MIT and the City filed briefs. On July 10, 2001, the City filed a reply brief. On July 13, 2001, the Company filed a reply brief.

On July 20, 2001, the Company filed a motion to withdraw its petition for an exemption from the zoning by-laws of Cambridge (D.T.E. 00-104). On August 21, 2001, the motion to withdraw was allowed in accordance with 220 CMR 1.04(4).

C. Jurisdiction

The Company's petition is filed in accordance with G.L. c. 164, § 69H, which requires the Siting Board "to implement the energy policies . . . to provide a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost," and pursuant to G.L. c. 164, § 69J, which requires electric companies to obtain Siting Board approval for construction of proposed facilities at a proposed site before a construction permit may be issued by another state agency.

The Company's proposal to construct an approximately 2.6-mile, 115 kV electric transmission line falls squarely within the second definition of "facility" set forth in G.L. c. 164, § 69G. That section

states, in part, that a facility is:

> (2) any new electric transmission line having a design rating of sixty-nine kilovolts or more and which is one mile or more in length except reconductoring or rebuilding of existing transmission lines at the same voltage.

As discussed above, CELCo filed a petition with the Department requesting a determination of public convenience and necessity relative to the proposed underground transmission line.[3] Although the Department has initial jurisdiction over such petitions, G.L. c. 164, § 69H(2) provides that the Siting Board may accept such petitions for review and approval or rejection when they are referred to the Siting Board by the Chairman of the Department pursuant to G.L. c. 25, § 4. The Chairman referred D.T.E.00-103 to the Siting Board on November 22, 2000. The Siting Board hereby accepts D.T.E. 00-103 for review.

D. Scope of Review

In accordance with G.L. c. 164, § 69H, before approving an application to construct facilities, the Siting Board requires applicants to justify facility proposals in three phases. First, the Siting Board requires the applicant to show that additional energy resources are needed (see Section II.A, below). Next, the Siting Board requires the applicant to establish that its project is superior to alternative approaches in terms of cost, environmental impact, reliability, and ability to address the previously identified need (see Section II.B, below). Finally, the Siting Board requires the applicant to show that its site selection process has not overlooked or eliminated clearly superior sites, and that the proposed site for the facility is superior to a noticed alternate site in terms of cost, environmental impact, and reliability of supply (see Section III, below).[4] Additionally, in the case of an electric company which is

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[3] As discussed above, CELCo also filed a related Petition for Zoning Exemption with the Department; however, this petition has been withdrawn.

[4] When a transmission line proposal is submitted to the Siting Board, the petitioner is required to present: (1) its primary route; and (2) at least one alternate route. These routes are described as noticed alternatives because they are the only routes described in the notice of adjudication

(continued...)

required by G.L. c. 164, § 69I to file a long-range forecast with the Department, the applicant must show that the facility is consistent with the electric company's most recently approved long-range forecast. G.L. c. 164, § 69J. CELCo is an electric company required to make such a filing and to make such a showing.

II. ANALYSIS OF THE PROPOSED PROJECT

A. Need Analysis

1. Standard of Review

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

In Turner Falls Limited Partnership, 18 DOMSC 141, 154-155 (1988) ("Turner Falls Decision"), the Siting Board found that once the additional energy resources provided by a power plant were needed, the determination of need for an interconnecting transmission line followed directly. In ANP Blackstone Energy Company, 8 DOMSB 1 (1999) ("ANP Blackstone Decision"), the Siting Board determined that a proposed transmission line was needed because a proposed generating facility could not supply energy to the region in the absence of an adequate and reliable transmission interconnection. In each of these cases, a need determination was made based on the need for additional energy resources to be provided by a proposed generating facility. Consistent with the 1997 Electric Utility Restructuring Act, ("Restructuring Act"), the Siting Board no longer reviews the need for proposed generating facilities, relying on the market to determine need for such facilities. However,

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[4] (...continued)
published at the commencement of the Siting Board's review. In reaching a decision in such a facility case, the Siting Board can approve a petitioner's primary route, approve an alternate route, or reject all routes. The Siting Board, however, may not approve any route or portion of a route which was not included in the published notice of adjudication.

G.L. c. 164, § 69J¼ provides that, once approved by the Siting Board, "a generating facility shall be deemed to contribute to a necessary energy supply for the commonwealth with a minimum impact on the environment at the lowest possible cost."

2. Description of the Existing System

The Company stated that the CELCo service territory includes Cambridge and certain areas of Belmont, with over 46,000 customers and a predicted peak load of 348 MW for summer 2001(Exh. KSE-1, at 1-1). The Company stated that the CELCo system is made up of the 64 MW Kendall Station and the 13.5 MW Blackstone Street Station,[5] with an integrated network of 13.8 kV and 115 kV transmission lines that interconnect generation, substations, and BECo's surrounding 115 kV transmission system (id. at 2-2 to 2-7). Kendall Station currently is directly connected to the local 13.8 kV network; there are no 115 kV transmission facilities in Kendall Station (Tr. 2, at 152).[6] The Company explained that transmission lines within the CELCo service territory supply three 115 kV substations -- CELCo's Putnam Substation and BECo's Somerville and North Cambridge substations (Exh. KSE-1, at 2-5). In addition, two 13.8 kV substations, CELCo's Alewife and Prospect substations, are located within CELCo's system, and interconnecting 13.8 kV tie circuits extend between the Kendall, Putnam, and Prospect substations to ensure system reliability (id. at 2-5 to 2-7). The Company stated that BECo 115 kV lines 329-510 and 329-511 interconnect Everett Station #250 to Brighton Station #329; and BECo 115 kV lines 150 and 151 connect the North Cambridge

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5 The Company stated that 40% of CELCo's peak load has historically been supplied by generation within CELCo's service territory at Kendall and Blackstone Street Stations, and the remaining 60% of peak load is met by imports from the surrounding Boston Edison Company ("BECo") territory (Exh. KSE-1, at 2-2).

6 The Company stated that, as part of another project separate from the proposed transmission line, it is currently developing plans to upgrade the supply of power to its customers in the Kendall Square area near Kendall Station (Tr.1, at 59-60, 65-66). The Company indicated that one upgrade option would be the construction of a new 115 kV-13.8 kV distribution substation (id.; Exh. EFSB-1-16). The new substation would be required to accommodate future load growth in the Kendall Square area, and in Cambridge (id.; Tr. 2, at 176).

substation with the Putnam Substation (id.). In addition, BECo's 345 kV transmission lines 324 and 372 pass through the CELCo area but do not interconnect to the system (id. at 2-5 to 2-6).

3. Need for the Proposed Transmission Line

The need for the proposed transmission interconnection project is reviewed here in the context of the proposed Kendall Station repowering, which was approved by the Siting Board in the SE Kendall Decision. In that decision, the Siting Board approved, subject to conditions, the petition of Mirant to upgrade the generating facilities at its existing Kendall Square Station, increasing its generation capacity from approximately 64 MW to approximately 234 MW. In light of this approval and pursuant to G.L. c.164, § 69J¼, the Siting Board finds that the repowered Kendall Station would contribute to a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.

The Company stated that an electrical interconnection of some type is required in order to give the new generation facilities at Kendall Station access to the regional transmission system (Exh. KSE-1, at 2-2). The Company also asserted that under its Federal Energy Regulatory Commission-approved open access transmission tariff, owners of transmission facilities, such as CELCo, are required to provide independent power plant operators access to the regional transmission system (id.; Tr. 2, at 152).

The Siting Board has found that the repowered Kendall Station project would contribute to a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost. However, the record shows that some form of electrical interconnection is required to provide the regional transmission system with the additional energy provided by the repowered Kendall Station. Further, the record indicates that the Company is required under its federal open-access tariff to provide generators with access to the transmission system. Consequently, the Siting Board finds that there is a need for additional energy resources to interconnect the repowered Kendall Station facilities with the regional transmission system.

4. Consistency with Forecast

G.L. c. 164, § 69J requires that a facility proposed by an electric company required to file a long-range forecast pursuant to G.L. c. 164, § 69I be consistent with that company's most recently approved long-range forecast. CELCo is an electric company required to file a long-range forecast pursuant to G.L. c. 164, § 69I. Consequently, to satisfy the statutory requirement, the Siting Board reviews the consistency of the proposed transmission line with CELCo's forecast of system load.

CELCo argued that its petition for the proposed facilities is consistent with the most recent fully-litigated Department-approved forecast -- the 1991 long-term system forecast filed by CELCo ("1991 forecast") in D.P.U. 91-292 (1994) (Tr. 2, at 154).[7] The Company stated that it regularly develops forecasts for the CELCo service territory, including Cambridge and portions of Belmont (Tr. 2, at 160). The Company indicated that the 1991 Cambridge load growth forecast is consistent with the internal forecast currently used to allocate load within the CELCo system (Tr. 2, at 154).

The Company stated that it conducts facility planning by developing base and extreme projections of peak load growth for areas within its service territory (Exh. HO-RR-5; Tr. 2, at 159-162). The Company indicated that these projections include the highest recorded area base and peak load, anticipated large new load additions, and the expected base and peak load growth forecast (Exh. HO-RR-5). The Company stated that its forecast of customer load in a geographic area such as Cambridge is important in determining the timing and magnitude of enhancements to the transmission and distribution systems (Tr. 2, at 158-160). However, enhancements and upgrades might also be required for reasons other than load growth (id. at 170). The Company provided historical and forecast peak loads for the CELCo system for the years 1996 through 2006, based on the Company's

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[7] CELCo filed a subsequent forecast with the Department in 1995, D.P.U 95-95 (1996) which was accepted in a settlement by the Department. CELCo noted that, although the 1995 forecast updated components of the 1991 forecast and was methodologically consistent with the 1991 forecast, the 1995 settlement dealt primarily with the Company's demand-side management programs, and did not contain forecast information relevant to this proceeding (Exh. RR-HO-7; Tr. 2, at 154-157).

records and internal forecasts (Exh. RR-HO-5; Tr. 2, at 164).[8]

G.L. c. 164, § 69J requires that a facility proposed by an electric company required to file a long-range forecast pursuant to G.L. c. 164, § 69I be consistent with that company's most recently approved long-range forecast. In prior cases where the need for a facility has been premised on the electric company's need to serve load in a localized area, the Siting Board has found the facility to be consistent with a previously approved forecast either if the need for the facility was established in that forecast, or if the localized forecast upon which a showing of need was based was methodologically consistent with that forecast. New England Power Company, 7 DOMSB 339, at 357 (1998); Norwood Municipal Light Department, 5 DOMSB 109, at 127 (1997).

Another class of projects, not clearly anticipated by statute, are those projects designed to serve a specific customer or set of customers, rather than to serve load in a specific section of a company's service territory. While the need for such projects generally is unrelated to the issues typically addressed in a long-range forecast and supply plan, the choice of project approach may affect, either positively or negatively, a company's ability to reliably meet demand in its service territory.

The Siting Board acknowledges that electric companies have a specific obligation under federal rules to interconnect new generation in a timely fashion, even if the need for such an interconnection arises between forecast review cycles. Therefore, when considering a proposed facility designed to interconnect new generation, the Siting Board will consider the facility to be consistent with a long-range forecast if any issues related to the project's effect on the company's ability to serve load in its service territory are addressed using a forecast that is methodologically consistent with the most recently approved forecast.

Here, the various approaches to interconnecting the repowered Kendall Station must be evaluated in light of their effect on the Company's ability to reliably serve its Cambridge- and Boston-area customers (see Section II.B, below). The Company has demonstrated that its current internal

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[8] The Company indicated that summer peak loads for the CELCo service territory ranged from 273 MW to 305 MW between 1996 and 2000 (Exh. EFSB-RR-HO-5). The Company projected that peak load would range from 346 MW to 372 MW between 2001 and 2006, with annual growth rates ranging from -1.6% to 13.4% (id.).

forecasts of Cambridge and Boston-area load are methodologically consistent with its most recently approved long-range forecast. Accordingly, the Siting Board finds that the proposed facility is consistent with the Company's most recently approved long range forecast.

B. Comparison of the Proposed Project and Alternative Approaches

1. Standard of Review

G.L. c. 164, § 69H requires the Siting Board to evaluate proposed projects in terms of their consistency with providing a reliable energy supply to the Commonwealth with a minimum impact on the environment at the lowest possible cost. In addition, G.L. c. 164, § 69J requires a project proponent to present "alternatives to planned action" which may include: (a) other methods of generating, manufacturing, or storing electricity or natural gas; (b) other sources of electrical power or natural gas; and (c) no additional electric power or natural gas.[9]

In implementing its statutory mandate, the Siting Board requires a petitioner to show that, on balance, its proposed project is superior to alternate approaches in terms of cost, environmental impact, and ability to meet the identified need. 1997 BECo Decision, 6 DOMSB 208, at 252; 1997 ComElec Decision, 5 DOMSB 273, at 299; Boston Edison Company, 13 DOMSC 63, at 67-68, 73-74 (1985). In addition, the Siting Board requires a petitioner to consider reliability of supply as part of its showing that the proposed project is superior to alternative project approaches. 1997 BECo Decision, 6 DOMSB 208, at 253-257; 1997 ComElec Decision, 5 DOMSB 273, at 300; Massachusetts Electric Company, 18 DOMSC 383, at 404-405 (1989).

2. Identification of Project Approaches for Analysis

The Company considered four approaches for the interconnection of the repowered Kendall Station (Exh. KSE-1, at 3-1). These four approaches include connecting Kendall Station: (1) to

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9 G.L. c. 164, § 69J also requires a petitioner to provide a description of **?**other site locations." The Siting Board reviews the petitioner's Primary Route, as well as other possible routes, in Section III.B, below.

CELCo's 115 kV Putnam Station via a new 2.6 mile underground transmission line; (2) to BECo's 115 kV lines 329-510 and 329-511 via a new 2.0 mile underground transmission line; (3) to the existing supply bus at Kendall Station; and (4) to BECo's 345 kV line 324 via a new 1.2 mile underground loop (id. at 3-1 to 3-5, 3-13).[10]

a. The Proposed Project

The Company stated that the proposed project would connect the repowered Kendall Station to CELCo's 115 kV Putnam Substation via a new 2.6-mile underground transmission line (id. at 3-1). The Company stated that the proposed electrical interconnect facilities would consist of 115 kV solid dielectric insulated transmission cables within a concrete duct (id. at 1-3). The ductbank would be constructed in a trench beneath existing street corridors for the majority of the route (id.). The Company noted that Putnam Station has the necessary space and equipment to accommodate the installation of the new cable (id. at 3-3). The line would also connect to a circuit breaker within Kendall Station (id. at 1-3). The Company stated that the proposed project is technically feasible and would fully satisfy the identified need to provide a reliable interconnection to the regional transmission system while maintaining system reliability (id. at 3-7). The Company stated that the estimated cost of the proposed project is $9.88 million (id. at 3-13).

b. Alternate Approach 1

The Company stated that its first alternate approach would connect the repowered Kendall

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[10] The Company also considered a no-build alternative. The Company determined that this approach would prevent the repowered Kendall Station from being interconnected to the regional transmission grid, and did not further consider it (Exh. KSE-1, at 3-5).

General Laws c. 169, § 69J requires the Company to consider the alternative of "no additional electric power." However, the Siting Board has found that there is a need for additional energy resources to interconnect repowered Kendall Station (see Section II.A.3.c, above). The Siting Board notes that the no-build alternative would not meet the identified need, and therefore eliminates it from further consideration.

Station to BECo's 115 kV Lines 329-510 and 329-511, which pass through Station #402 in Somerville, via a new 2.0 mile underground transmission line ("Alternate Approach 1") (Exh. KSE-1, at 3-3, 3-13).

The Company stated that the temporary construction impacts of the proposed project and Alternate Approach 1 would be essentially comparable because the transmission lines associated with the two approaches would travel through similar areas (id. at 3-13). The Company noted that Alternate Approach 1 would require expanding Station #402 (id. at 3-4). The Company stated that this expansion would be very costly, and would require extensive construction time, would result in permanent visual impacts and possibly other environmental impacts at Station #402 (id. at 3-4, 3-13; Tr. 1, at 16). The Company also noted that much of the construction process would require the de-energizing of existing facilities and that replacement power would have to be supplied at premium costs to maintain continuity of service to customers (Exh. KSE-1, at 3-4). The Company estimated the cost of this approach at $21.02 million (id. at 3-13).

The Company stated that BECo's Lines 329-510 and 329-511 serve as primary export paths for delivery of power from Mystic Generating Station in Everett to Station #329 in Brighton, and are heavily loaded on a continuous basis (id. at 3-3). The Company indicated that, depending on the magnitude of those flows, it would not always be possible to fully dispatch Kendall Station and Mystic Station at the same time (id.). The Company concluded that despite its technical feasibility, the limitations and extra work and costs associated with Alternate Approach 1 make it less attractive than the proposed project (id. at 3-10).

c. Alternate Approach 2

The Company stated that it also considered the possibility of connecting the new Kendall generator directly to the existing distribution supply bus at Kendall Station ("Alternate Approach 2") (id. at 3-4). However, the Company stated that the 13.8 kV system is designed to distribute power to customer loads, not to export large power blocks to a transmission grid (Exh. EFSB-1-15). The Company stated that to effectively implement Alternate Approach 2, it would have to install 20 to 25

additional circuits, as well as added duct banks, manholes, circuit breakers and other substation equipment (id.). The Company added that the entire 13.8 kV system at Kendall Station would have to be replaced with equipment with unusually high capacity ratings (id.). The Company concluded that this approach was impractical, given that the generator output would overwhelm the capabilities of the existing 13.8 kV infrastructure, and did not give this option further consideration (Exh. KSE-1, at 3-4).

d. Alternate Approach 3

The Company stated that its third alternate approach would connect the Kendall generator to BECo's 345 kV line 324, a bulk load delivery cable serving downtown Boston, near its exit from the Charles River crossing in Cambridge ("Alternative Approach 3") (id. at 3-4). The Company stated that, to implement Alternate Approach 3, Line 324 would be cut into two sections at the interconnection point (id. at 3-5). One section would be spliced to a new high pressure oil-filled ("HPOF")[11] cable and associated piping that would be routed approximately 0.6 miles to Kendall Station, then routed back 0.6 miles and spliced to the other section of Line 324 (id.). The Company noted that this approach would require the construction of a new 345 kV substation transformer at Kendall Station to increase the generating facility output voltage to 345 kV (id.). The Company stated that the substation transformer would include three circuit breakers: one to connect to the 345 kV side of the generator step-up transformer, and two to protect each section of Line 324 (id.). Additional pumps and heat exchangers also would be required to accommodate the new line section (id.).

The Company stated that although Alternate Approach 3 is technically feasible, it was eliminated in initial evaluations due primarily to concerns that the project would degrade the reliability of Line 324, and also based on the higher costs associated with the use of 345 kV equipment and the HPOF cable (id. at 3-12). The Company stated that the additional cable lengths and splices and the introduction of a generator and its associated auxiliary equipment would increase the probability of

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[11] The Company stated that HPOF cable is needed for this approach, as opposed to the solid-dielectric cable to be used for the 115 kV approaches, in order to match and reliably connect to the existing HPOF cable (Exh. KSE-1, at 3-5).

failure on Line 324, thus adding risk to an essential transmission element supplying bulk power to downtown Boston (id.). The Company also stated that the planned output from Kendall Station is too low to justify connection to the 345 kV tier of the transmission network (id.).

e. Analysis

The Company has identified four approaches to meeting the identified need: the proposed project and three alternate project approaches. The record indicates that the proposed project involves a longer transmission line than any of the alternate approaches. However, the record shows that each of the three alternate approaches has disadvantages with respect to reliability. Moreover, when all new facilities required for the alternate approaches are considered, including substations and distribution lines, the infrastructure requirements of each of the approaches would be substantial.

The record indicates that the cost of Alternate Approach 1 would be more than double that of the proposed project. In addition, the inability of BECo Lines 329-510 and 329-511 to consistently dispatch Kendall Station and Mystic Station generation at the same time constitutes a significant system reliability disadvantage in comparison with the proposed project. Further, given the similarity of environmental impacts associated with the transmission lines for the two approaches, and the additional environmental disadvantages associated with expanding Station #402, Alternate Approach 1 is not likely to provide an overall advantage with respect to environmental impacts. Thus, the proposed project is clearly superior to Alternate Approach 1. The record indicates that Alternate Approach 2, which would use up to 25 new 13.8 kV distribution circuits to transfer power to the transmission grid, is infeasible. Given the extensive equipment upgrades that would be required at Kendall Station, and the numerous distribution lines that would be required, it is likely that Alternate Approach 2 would be significantly more costly than the proposed project. Further, the approach offers no significant environmental advantages over the proposed project. The Siting Board agrees with the Company's conclusion that Alternate Approach 2 does not warrant further evaluation.

Finally, the record indicates that although Alternate Approach 3 is technically feasible, it possesses significant system reliability disadvantages in comparison with the proposed project.

Specifically, Alternate Approach 3 would subject an essential transmission element supplying bulk power to downtown Boston to greater reliability risk, as a result of the added technical complexity and equipment exposure associated with segmenting, splicing and extending the existing 345 kV line in order to interconnect the repowered Kendall Station. Further, given the additions to existing infrastructure that this approach would require, it is likely that it would be considerably more costly than the proposed project, and would not offer any significant environmental advantages. The Siting Board agrees with the Company's conclusion that Alternate Approach 3 does not warrant further evaluation.

In light of the clear reliability concerns associated with Alternate Approaches 1, 2, and 3, and the lack of potential offsetting cost or environmental advantages, the Siting Board finds that the proposed project would be superior to Alternate Approaches 1, 2, and 3 with respect to providing a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.

III. ANALYSIS OF THE PRIMARY AND ALTERNATE ROUTES

The Siting Board has a statutory mandate to implement the policies of G.L. c. 164, §§ 69J-69Q to provide a necessary energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost. G.L. c. 164, §§ 69H and J. Further, G.L. c. 164, § 69J requires the Siting Board to review alternatives to planned projects, including "other site locations." In implementing this statutory mandate, the Siting Board requires a petitioner to demonstrate that it examined a reasonable range of practical siting alternatives, and that its proposed facilities are sited at locations that minimize costs and environmental impacts while ensuring supply reliability. Massachusetts Municipal Wholesale Electric Company, EFSB 97-4, at 89 (2000) ("MMWEC Decision"); ANP Blackstone Decision, 8 DOMSB 1, at 212-213; New England Power Company, 21 DOMSC 325, at 376 (1991).

A. Site Selection

1. Standard of Review

G.L. c. 164, § 69J provides that a petition to construct a proposed facility must include "a description of alternatives to [the applicant's] planned action" including "other site locations." In past reviews of alternate site locations identified by an applicant, the Siting Board has required the applicant to demonstrate that it examined a reasonable range of practical siting alternatives. MMWEC Decision, EFSB 97-4, at 92; ANP Blackstone Decision, 8 DOMSB 1, at 213; 1998 NEPCo Decision, 7 DOMSB 333, at 374. In order to determine whether an applicant has considered a reasonable range of practical alternatives, the Siting Board has required the applicant to meet a two-pronged test. First, the applicant must establish that it developed and applied a reasonable set of criteria for identifying and evaluating alternate sites in a manner which ensures that it has not overlooked or eliminated any sites which, on balance, are clearly superior to the proposed site. Second, the applicant must establish that it identified at least two noticed sites or routes with some measure of geographic diversity. MMWEC Decision, EFSB-97-4, at 92; ANP Blackstone Decision, 8 DOMSB 1, at 213; 1998 NEPCo Decision, 7 DOMSB 333, at 374.[12]

2. Site Selection Process

a. Description

The Company indicated that its site selection process included the following stages: development of threshold criteria; definition of a study area; identification of route options; development of screening criteria for route options; and ranking of route options based on the screening criteria in order to determine a primary and an alternate route (Exh. KSE-1, at 4-2 to 4-3).

The Company stated that it developed threshold criteria to narrow the routing options to those which would minimize environmental and community impacts and costs while maintaining system reliability (id. at 4-3). The Company indicated that the study area for its proposed project,

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[12] In this decision, the Siting Board has made minor modifications to the site selection standard of review as set forth in previous Siting Board decisions. These modifications reflect an effort to clarify application of the standard of review, and do not alter the standard of review substantively. In the future, the Siting Board intends to re-examine the substantive analysis required by the site selection standard of review.

approximately 8,000 feet long by 9,000 feet wide, was bounded by the Charles River to the east and south, Binney and Bristol Streets to the north, and the Broadway/Inman Street corridor through to Central Square to the west (id.). The Company stated that the study area allowed for a reasonable range of geographically and environmentally diverse alternatives within an urban environment (id.).

Additionally, the Company stated that, to the greatest extent possible, it attempted to follow existing utility or transportation rights-of-way ("ROWs"), and avoid railroads, residential areas, streets with a construction moratorium, major intersections, narrow streets, proximity to heat-generating underground facilities, excessive turns, and streets with on-going or planned activity that could conflict with the construction of the proposed project (id. at 4-4). The Company stated that it identified street segments which best met these threshold criteria through review of maps and drawings of existing utilities within the study area, on-site inspections, and meetings with Cambridge and Metropolitan District Commission ("MDC") officials (id. at 4-4 to 4-5). The Company stated that, as a result of this process, it eliminated several routes from consideration, including routes through Kendall Square and along sections of Massachusetts Avenue between Memorial Drive and Central Square (id.).

The Company stated that six distinct route alternatives were identified through the application of its threshold criteria (id.). These included a 2.6 mile route primarily using Memorial Drive ("Memorial Drive Route"), a 2.5 mile route primarily traveling along Sydney and Erie Streets ("Sydney/Erie Street Route"), a 2.3 mile route primarily using Albany Street ("Albany Street Route"), a 2.3 mile route primarily along Vassar Street ("Vassar Street Route"), a 2.4 mile route primarily along Prospect and Magazine Streets ("Prospect/Magazine Street Route"), and a 2.4 mile route primarily along Inman and Pleasant Streets ("Inman/Pleasant Street Route") (id. at 4-5, 4-12 to 4-16).

The Company stated that it compared the six route alternatives using eleven screening criteria, including cost, three technical criteria, and seven community and environmental criteria (id. at 4-17). The Company stated that the technical screening criteria were designed to assess the technical difficulty of constructing and maintaining the interconnection facilities (id.). The three technical categories were: the congestion of underground utilities along the routes, the difficulty of crossing the CSX Corporation railroad tracks, and the difficulty of roadway intersection crossings along each route (id. at 4-17 to 4-

19).

The Company stated that the community/environmental impact screening criteria were designed to assess the potential effects of construction and operation of the interconnection facilities on the human and natural environment (id. at 4-19). The seven community/ environmental criteria included construction impacts on residences, proximity of sensitive receptors, traffic impacts due to construction, presence of open space and parkland areas, presence of historical sites, presence of hazardous material, and community acceptance (id. at 4-19 to 4-23).

The Company indicated that, for each of the routes, it developed ratings and scores for each of the screening criteria (id. at 4-23). The Company explained that it rated each route as favorable, moderately effective, or unfavorable in meeting each criterion, and then assigned a score of 2 if the route was rated as favorable, a score of 1 if the route was rated as moderately effective, and a score of 0 if the route was rated as unfavorable (id. at 4-18 to 4-24).

The Company stated that to derive an overall suitability score, it assigned a weight to each criterion based on the project team's judgment of the relative importance of that criterion (id. at 4-24). Criteria that were considered very important were given a weight of 3, criteria that were considered of moderate importance were given a weight of 2, and criteria that were considered of minor importance were given a weight of 1 (id.).[13] The Company stated that the individual criterion score was then multiplied by the weight to derive the weighted score for each criterion for each route (id.). The Company stated that the weighted scores were then totaled for each route alternative (id.). Table 1 provides a comparison of the six route alternatives:

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[13] The Company's assignment of weights was distributed as follows: the weights for the seven environmental/community criteria totaled 13, the weights for the three technical criteria totaled 8, and the weight for the cost criterion was 3 (Exh. KSE-1, at 4-24).

TABLE 1: COMPARISON OF ROUTES

Route Name	Length (mi.)	Manholes required	Total Cost ($M)	Score (Weighted)
Memorial Drive	2.6	6	$12.2	41
Sidney/Erie Street	2.5	8	$12.7	33
Albany Street	2.3	8	$13.2	20
Vassar Street	2.3	7	$14.0	19
Inman/Pleasant Street	2.4	7	$13.0	16
Prospect/Magazine Street	2.4	7	$12.9	11

(id. at 4-5, 4-12 to 4-16, 4-25, 4-27).

The Company stated that the highest scoring route was the Memorial Drive Route, which outscored other routes in terms of technical criteria, community acceptance, and impact to residences, and also scored well with respect to environmental impacts (Exh. KSE-1, at 4-28). The second-ranked Sidney/Erie Street Route tied with the Memorial Drive Route on cost, and scored well on technical and community/environmental criteria; the Company noted that this route didn't score as well with respect to impacts on residences, community acceptance, and hazardous materials issues (id. at 4-27 to 4-28). The Company noted that the Vassar and Albany street routes were essentially tied for third, reflecting constraints and costs associated with underground utility congestion (id. at 4-28). Based on its analysis, the Company designated the Memorial Drive Route as its Primary Route and the Sidney/Erie Street Route as its Alternate Route (id. at 4-28).

b. Analysis

CELCo has developed a set of criteria for identifying and evaluating route options that addresses natural resource issues, land use issues, human environmental issues, cost and reliability -- types of criteria that the Siting Board has found to be appropriate for the siting of transmission lines and related facilities. See 1997 BECo Decision, 6 DOMSB 208, at 283; 1997 ComElec Decision, 5 DOMSB 273, at 330; New England Power Company, 4 DOMSB 109, at 167 (1995) ("1995 NEPCo Decision").

To identify route options for further evaluation, the Company first identified an area that would encompass all viable routing options given the limitations imposed by the location of Kendall and Putnam Stations. The Company used threshold criteria to identify six routes within this area. The Company then developed a list of eleven environmental/community, technical, and cost criteria which it used to evaluate these six routing alternatives.

For each of the identified alternatives, the Company weighted the importance of each criterion and multiplied the unweighted assigned scores for the eleven criteria by the weights to produce weighted scores. The Company used the weighted scores to balance the community/environmental impacts, technical issues and costs of the six routing alternatives. The Company's allocation of approximately half of overall weight to community/environmental criteria and half to technical and cost criteria was reasonable. The weighting of specific environmental factors appropriately reflected their relative significance; in particular, the desirability of siting transmission lines within existing utility and transportation corridors where possible was appropriately stressed, as was the need to route the proposed facilities to minimize disruptive construction in residential and commercial areas. Thus, the Company used a comprehensive, quantitative method to compare identified alternatives on the basis of technical feasibility, cost, and environmental and community impacts.

Accordingly, the Siting Board finds that the Company has developed and applied a reasonable set of criteria for identifying and evaluating alternate routes in a manner which ensures that it has not overlooked or eliminated any routes which are clearly superior to the proposed project.

3. Geographic Diversity

CELCo considered six geographically diverse transmission line routes to connect Kendall Station with the Putnam Substation. The six alternate routes overlap only in segments proximate to the beginning and terminating points of the proposed transmission line. Each route is clearly distinct, offering a unique set of environmental, reliability and cost constraints and advantages within the area designated by the Company as encompassing all viable siting options for its proposed transmission line. Consequently, the Siting Board finds that the Company has identified a range of practical transmission line routes with some measure of geographic diversity.

4. Conclusions on the Site Selection Process

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

B. Description of the Primary and Alternate Routes

1. Primary Route

The Company stated that the Primary Route exits Kendall Station onto Athenaeum Street and then continues east on Athenaeum Street until it reaches First Street, where it proceeds south down the west side of First Street across the Broad Canal (Exh. KSE-1, at 4-12). The Primary Route then proceeds along the ramps connecting Main Street and the Longfellow Bridge to westbound Memorial Drive. The Primary Route follows the northern edge of Memorial Drive under the sidewalk or under the parking lane (id.). At the intersection of Memorial Drive with Massachusetts Avenue, the Primary Route follows the northern edge of the ramps to Massachusetts Avenue, crosses Massachusetts Avenue, and then returns down the northern edge of the ramp to westbound Memorial Drive (id.). As

the route approaches the Reid overpass, it crosses under the railroad tracks on the Memorial Drive Bridge and follows the exit ramp to the Brookline Street Rotary (id.). The route then crosses the Brookline Street Rotary or the rotary infield before rejoining the ramp to westbound Memorial Drive (id.). The Primary Route then rejoins Memorial Drive and continues until it reaches Pleasant Street, where it turns to the north and proceeds up Pleasant Street (id.). The Primary Route then follows a Massachusetts Water Resources Authority ("MWRA") sewer line easement to the Putnam Substation (id.). The Company stated that the Primary Route is 2.6 miles long, and its use would require the installation of 6 manholes (id. at 4-5).

The Company identified a number of variations to the Primary Route. At the beginning of the route, instead of exiting Kendall Station onto Athenaeum, the route could travel east through the Kendall switchyard and then south in the First Street sidewalk until it crosses the Broad Canal (id.).

The Company also proposed a more lengthy route variation involving Ames Street. This variation is discussed in Section III.C.2.c, below.

Farther along the route, the route could cross the Brookline Street Rotary within the Reid overpass, rather than following the Rotary itself.

At the end of the route, instead of using the MWRA sewer easement, the Primary Route could either: (1) traverse privately owned land by obtaining an easement, or (2) proceed along Pleasant Street, to Putnam Avenue, turn west on Putnam Avenue, and then enter Putnam Substation by crossing a CELCo cable storage yard (id.).

2. Alternate Route

The Company indicated that the Alternate Route begins at the new switchyard at Kendall Station and proceeds north to the intersection with Athenaeum Street (Exh. KSE-1, at 1-12). The Alternate Route then turns left (west) and proceeds overland through easements across the Lyme Properties land, crosses Third Street, then crosses through property of Commonwealth Gas (id.). From the western edge of the Commonwealth Gas property, the Alternate Route proceeds south on Fifth Street to Potter Street, across the Department of Transportation parking lot, and along a

pedestrian walkway owned by the Cambridge Redevelopment Authority to Broadway (id.). The Alternate Route then turns northwest onto Broadway, crossing underneath the railroad tracks, and follows Broadway to its intersection with Portland Street. The Alternate Route turns south, following Portland Street to Main Street, and then proceeds west on Main Street for two blocks to the intersection with Osborn Street, where it turns one block south to State Street and proceeds west on State Street (id.).

The Alternate Route follows State Street to the west to an oblique crossing of Massachusetts Avenue to Sidney Street (id.). The route then follows Sidney Street to its intersection with Erie Street, then turns west onto Erie Street and proceeds to Magazine Street, where it jogs south to Fairmont Street and continues west to Pleasant Street (id.). The Alternate Route then follows Pleasant Street south to Putnam Avenue, where it turns onto Putnam Avenue and enters the Putnam Substation (id.). The Company stated that the Alternate Route is approximately 2.5 miles long, and would require the installation of at least 8 manholes (id. at 4-14).

The Company identified two variations to the Alternate Route. One identified variation, at the beginning of the Alternate Route begins at the intersection of Athenaeum Street and Second Street, and continues north onto Second Street to the intersection with Linsky Way (id.). This variation proceeds west on Linsky Way to Third Street, crosses onto Linsky Way and proceed to Fifth Street and rejoins the Alternate Route at the Commonwealth Gas property.

The other variation begins at the intersection of Portland and Washington Streets, just south of Broadway (id.). Instead of continuing south on Portland, the route would turn to the west onto Washington and proceed to State Street where it would turn west to rejoin the Alternate Route (id.).

C. Environmental Impacts, Cost and Reliability of the Proposed and Alternative Facilities

1. Standard of Review

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

impacts while ensuring a reliable energy supply. To determine whether such a showing is made, the Siting Board requires a petitioner to demonstrate that the proposed site for the facility is superior to the noticed alternatives on the basis of balancing cost, environmental impact, and reliability of supply. MMWEC Decision, EFSB 97-4, at 100 (2001); Berkshire Gas Decision, 9 DOMSB 1, at 40; Boston Edison Company, 6 DOMSB 208, at 287 (1997) ("1997 BECo Decision").

An assessment of all impacts of a proposed facility is necessary to determine whether an appropriate balance is achieved both among conflicting environmental concerns as well as among environmental impacts, cost, and reliability. A facility which achieves that appropriate balance thereby meets the Siting Board's statutory requirement to minimize environmental impacts at the lowest possible cost. MMWEC Decision, EFSB 97-4, at 101 (2001); Berkshire Gas Decision, 9 DOMSB 1, at 46; 1997 BECo Decision, 6 DOMSB 208, at 287.

The Siting Board recognizes that an evaluation of the environmental, cost and reliability trade-offs associated with a particular proposal must be clearly described and consistently applied from one case to the next. Therefore, in order to determine if a petitioner has achieved the proper balance among environmental impacts and between environmental impacts, cost and reliability, the Siting Board must first determine if the petitioner has provided sufficient information regarding environmental impacts and potential mitigation measures in order to make such a determination. The Siting Board then can determine whether environmental impacts would be minimized. Similarly, the Siting Board must find that the petitioner has provided sufficient cost information in order to determine if the appropriate balance among environmental impacts, cost, and reliability would be achieved. MMWEC Decision, EFSB 97-4, at 101 (2001); 1998 NEPCo Decision, 7 DOMSB 333, at 384 (1998); Commonwealth Electric Company, 5 DOMSB 273, at 337 (1997).

Accordingly, in the sections below, the Siting Board examines the environmental impacts and cost[14] of the proposed facilities along CELCo's primary and alternate routes to determine: (1) whether

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[14] The Siting Board notes that the Primary and Alternate Routes both run underground in urban streets for approximately 2.5 to 2.6 miles, and thus are almost identical with respect to reliability; therefore, there are no differential reliability issues to be balanced against

(continued...)

environmental impacts would be minimized; and (2) whether an appropriate balance would be achieved among conflicting environmental impacts as well as among environmental impacts, cost and reliability. In this examination, the Siting Board compares the primary and alternate routes to determine which is superior with respect to providing a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.

2. Analysis of the Proposed Facilities Along the Primary Route

a. Environmental Impacts

In this section, the Siting Board evaluates the environmental impacts of the proposed facilities along the Primary Route, the proposed mitigation for such impacts, and any options for additional mitigation. The Siting Board then determines whether the environmental impacts of the proposed facilities along the Primary Route would be minimized.

(i) Water Resources

CELCo stated that the primary water resources near the Primary Route are the Charles River and the Broad Canal (Exh. KSE-1, at 5-2). The Company asserted that water resource impacts associated with the proposed project would occur only in the vicinity of the Broad Canal, and that any such impacts would be temporary and insignificant (id.).

The Company stated that the Primary Route would enter a regulated Riverfront area[15] in the vicinity of the Board Canal, where the Route crosses the Canal Drawbridge from First Street to Memorial Drive (id.). The Company also noted that areas within 100 feet of the banks of the Broad

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[14] (...continued)
environmental and cost issues.

[15] The Company stated that Riverfront Areas are defined as the areas between a river's annual high-water line, and a parallel line generally located 200 feet away measured horizontally outward from the river (Exh. KSE-1, at 5-3). The Company noted that the regulated Riverfront Area in Cambridge is limited to 25 feet, due to existing development patterns and population density (id.).

Canal and Charles River are considered buffer zones under the Wetlands Protection Act, and stated that the Primary Route would enter the Broad Canal buffer zone at certain locations, and may enter the Charles River buffer zone, depending on the final placement of the transmission line (id.). The Company stated that no vegetated wetland resources were identified along the Primary Route (id.).

The Company stated that Chapter 91 Waterways Program approval would be required for the proposed project because the Primary Route would cross historically filled tidelands on the Kendall Station site and along Memorial Drive (id. at 5-4).[16] The Company stated that it was pursuing a strategy for compliance with Chapter 91 requirements, and that the proposed project would not adversely affect filled tidelands (id. at 5-5).

The record demonstrates that the Primary Route would enter a regulated Riverfront Area as it follows First Street over the Broad Canal drawbridge. The Primary Route also would enter wetland buffer zones along the Broad Canal and perhaps along the Charles River. In addition, the proposed project will be subject to further review under Chapter 91 because it crosses historically filled tidelands. Based on the limited encroachment into Riverfront and wetland buffer areas, and the developed nature of the Broad Canal and Memorial Drive, the Siting Board concludes that construction of the proposed facilities along the Primary Route would result in no permanent impacts, and only minimal temporary impacts, to water resources.

Accordingly, the Siting Board finds that the water resource impacts of the proposed facilities along the Primary Route would be minimized.

(ii) Land Resources

The Company indicated that the Primary Route passes through a densely developed urban area, traversing the MDC Charles River Basin Reservation as it passes along Memorial Drive (Exh. KSE-1, at 5-5 to 5-6). Other recreational resources within a short distance of the Primary Route

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16 The Company noted that the Massachusetts Department of Environmental Protection ("MDEP") has determined that the transmission line is a water-dependent use under Chapter 91 because it is an integral part of the Mirant Kendall Station project (Exh. KSE-1, at 5-4 to 5-5).

include MIT open space and neighborhood playgrounds, parks, and schoolyards (id. at 5-6). The Company stated that the proposed transmission line would be located underground within existing street or sidewalk ROWs, minimizing any impacts to recreational resources (id.). The Company testified that its contract specifications would require that any site traversed by the proposed project be returned to its original condition (Tr. 1, at 122).

The Company provided correspondence with the U.S. Fish and Wildlife Service and the Massachusetts Natural Heritage and Endangered Species Program indicating that there are no threatened or endangered species or associated habitat areas along the Primary Route (Exh. KSE-1, App. 3). The Company also stated that, because the proposed transmission line would be located underground in existing transportation corridors, the proposed project would have no impact on wildlife, with the possible exception of impacts related to construction noise (id. at 5-6).

The Company stated that there is one oil and hazardous material ("OHM") site located along the Primary Route at Kendall Station, where contamination from a former manufactured gas operation exists (id. at 5-7). In addition, the Company noted that several variations of the Primary Route also would cross the actual manufactured gas site on the neighboring Lyme Properties parcel; remediation would be required if the transmission line were installed on that OHM site (id.).

The Company stated that, if trees were lost during construction, it would replace the trees in kind or implement mitigation of a comparable cost (Exh. EFSB-1-20, Tr. 2, at 195). After the close of hearings, the Company submitted a tree-management report designed to assess the potential for impacts to trees along the Primary Route, and to recommend protection measures that would ensure safety and preserve the aesthetic character of Memorial Drive (Exh. CAM-1-37-S Att. at 4). The report inventoried 209 trees along the Primary Route, and rated the condition of each tree as good, fair, poor, or dead (id. at 16, 18). The report identified 64 trees, valued at a total of $92,964, that would be removed either because they pose hazards or because they are in general decline in areas with high construction impact (id. at 19, 20). Of these 64 trees, 5 were in good condition, 12 were in fair condition, 36 were in poor condition, and 11 were dead (id. at 24-28).

The report stated that protective measures would be required for all trees within 100 feet of any

construction activity (id. at 5). The report specified general tree protection measures to be undertaken by the general contractor, including fencing and watering, and specified that a certified arborist would perform or supervise other tree conservation measures, including heavy-duty fencing, mulching, trunk protection, root collar excavations, and vertical mulching (id. at 5 to 9). The report indicated that pruning of deadwood and tree removals would be accomplished as necessary to ensure safety under the supervision of a certified arborist (id. at 9). The report did not specifically address the replacement of trees removed or injured during construction.

The City, before the tree management report was released, requested that the Siting Board require the Company to consult with, and obtain approval from, the City in the development of its tree management plan, and to submit a tree management plan prior to construction (City Brief at 13, 18). In response, the Company noted that, although most of the Primary Route falls within the jurisdiction of the MDC, it had already agreed to submit its tree management plan to the Cambridge Historical Commission and the Cambridge Conservation Commission for review (Company Reply Brief at 7). The Company argued that a further requirement to consult with the City prior to construction would be unnecessary (id.).

The record indicates that the Primary Route would run through densely populated urban areas, and would pass through or near recreational resources and open space. However, because the proposed transmission line would be located underground in existing ROWs, there would be no permanent impact on the use of recreational areas and other open space. No known rare or endangered species or endangered species habitat would be adversely affected by the construction of the proposed project along the Primary Route. The Primary Route would cross one contaminated site, at Kendall Station.

The Company's tree consultant has recommended that 64 trees, or approximately 30% of the trees along the Primary Route, be cleared to allow for project construction. Eleven of these trees are dead, and the majority of the living trees are in poor condition; nonetheless, the Siting Board is concerned that the loss of 53 live trees would have a significant effect on the urban visual environment. The Company made a general commitment at the hearing to replace trees lost during construction in

kind, or to implement mitigation of a comparable cost; however, because the tree management report does not specifically address replacement plans, it is difficult to assess the expected visual impact of this level of tree removal. The Siting Board directs the Company, prior to commencing removal of trees in preparation for construction, to provide the Siting Board with an update on its tree management plan, developed in consultation with the Cambridge Historical Commission, the Cambridge Conservation Commission, the MDC and other relevant City agencies, that sets forth specific provisions for the restoration of trees removed in preparation for or as a result of construction. The update should address the timing and the likely extent of replacement plantings and indicate the division of responsibility for such plantings between the Company, the MDC, and Cambridge. Further, to minimize impacts upon trees and vegetation, CELCo shall develop, obtain approval from the MDC and the City of Cambridge, within their respective jurisdictions, and implement a tree management plan, including a plan to avoid or mitigate impacts upon trees and vegetation. The tree management plan shall be approved by, and the field work shall be directly supervised by, a certified arborist.

Accordingly, the Siting Board finds that, with the implementation of and compliance with the mitigation contained in the tree report and with the implementation of the above condition, the land resource impacts of the proposed facilities along the Primary Route would be minimized.

(iii) Land Use

The Company submitted a description of land uses along the Primary Route (Exh KSE-1, at 5-9 to 5-17). The Company indicated that the portion of the Primary Route running along Memorial Drive largely abuts open space and transportation uses, while other parts of the route traverse residential, business, office, institutional and recreational areas (id. at 5-8 to 5-10).

The Company also discussed the zoning of areas along the Primary Route, but noted that most of the Primary Route runs through state-owned property (Memorial Drive and the Charles River Reservation), and is therefore not subject to local zoning (id. at 5-8).[17] The Company also asserted

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[17] The Company stated that it initially would seek a grant of location from the MDC in order to (continued...)

that zoning approval is not required for underground transmission lines, as they do not meet the definition of a "structure" under the State Building Code (id.). However, the Company noted that it would be required to obtain approval from the Cambridge Department of Public Works for local street openings and from the Cambridge City Council for grants of location within city streets (id. at 5-8 to 5-9).

The Company stated that the proposed project requires no new above ground facilities or structures, and that, with the exception the tree removal discussed in Section III.C.2.a.(ii), above, there would be no alteration to above ground elements of the current visual environment (id. at 5-50). The Company stated that 73% of the 64 trees to be cleared currently are in poor condition or dead (Exh. CAM-1-37 Att.).

The Company noted that the segment of the Primary Route which runs along Memorial Drive passes through one historic district, the Charles River Basin National Register District, and abuts the MIT National Register District (Exh. KSE-1, at 5-17). The Company identified a number of listed historic properties along the Primary Route, including the Athenaeum Press Building on Athenaeum Street, MIT buildings at 30, 305, and 362 Memorial Drive, and the Shell gasoline station at 727 Memorial Drive (id.) Additionally, the Company stated that some of the trees along the route were considered to have historic value (Tr. 2, at 196 to 197). The Company indicated that it did not anticipate any adverse impacts to historic sites and stated that it would consult with the Cambridge Historical Commission and Massachusetts Historical Commission ("MHC") regarding appropriate procedures to prevent such impacts (Exh. KSE-1, at 5-18). The Company stated that the Primary Route does not pass through any Neighborhood Conservation District (id. at 5-17).

The Company stated that the proposed transmission line would not result in permanent noise impacts either along the Primary Route or at Putnam Substation (id. at 5-49). The Company indicated that installation of the proposed transmission line would result in normal construction noise, which

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[17] (...continued)
construct the proposed project, and later would seek an easement from the legislature (Tr. 1, at 21).

typically would be confined to the hours between 7:00 a.m. and 4:00 p.m., with night work occurring only when necessary to minimize traffic impacts along heavily traveled roadways and at congested intersections and rotaries (Tr.1, at 104, 107). The Company stated that it expects construction to proceed at a rate of approximately 150 feet every four days, thus limiting the duration of construction noise in any specific location (Exh. KSE-1, at 5-50). The Company stated that it planned to mitigate potential noise impacts by restricting construction activity to daylight hours when possible, complying with federal regulations that limit truck noise, using muffling devices and keeping construction equipment in good repair, and performing any night work in accordance with local requirements, including the Cambridge Noise Ordinance (id. at 5-50; Exh. CAM-1-8).

The City noted that conflicts may arise between the MDC's interest in minimizing traffic impacts on roads under its jurisdiction, and the City's interest in avoiding nighttime noise impacts on Cambridge residents (City Brief at 3). The City argued that a more detailed noise mitigation plan would be needed to resolve these issues, and requested that the Siting Board require the Company to develop, and obtain City and MDC approval for, a construction work plan that specifies daytime work hours, avoids night work to the extent possible, specifies noise mitigation measures for night work, and sets forth mitigation measures for noise and other construction impacts (id. at 5, 17). In response, the Company argued that construction details and noise mitigation should be developed in the context of the Company's Traffic Management Plan, which would be submitted to the City for approval (Company Reply Brief at 2).[18] The Company also noted that the Cambridge Pole and Conduit Commission may attach conditions to the street opening permit required for the proposed project (id.). The Company therefore argued that a separate noise mitigation approval process would be unnecessary and overly burdensome (id.).

The record demonstrates that the land use impacts of the proposed project would be limited primarily to temporary noise and visual impacts associated with construction activities. Construction noise impacts would be minimized by confining construction work to daytime hours to the maximum

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[18] The Company's Draft Traffic Management Plan is discussed in detail in Section III.C.2.a.(v), below.

extent possible, and by maintaining nighttime construction noise within the limits established by Cambridge noise ordinances. The City has requested that the Siting Board require the Company, as a condition of approval, to develop a formal noise mitigation plan and submit it to the City for approval. The Siting Board agrees that the Company's noise mitigation plan should be developed in further detail prior to construction. However, the Siting Board also agrees with the Company that noise mitigation would be best addressed in the context of the Company's Traffic Management Plan, which necessarily will address matters such as nighttime construction along the most congested portions of the Primary Route. As the Company cannot commence construction without a Traffic Management Plan that has been approved by both the City and the MDC (see Section III.C.2.a.(v), below), the Siting Board sees no need for a separate noise mitigation approval process.

The record demonstrates that the permanent visual impacts of the proposed project would be limited to the removal of a number of trees along the Primary Route. As discussed in Section III.C.2.a.(ii), above, the Company has developed a tree management plan to protect trees during construction, and has committed to replace trees lost during construction in kind, or to implement mitigation of a comparable cost. These steps should minimize visual impacts associated with tree clearing. The Company intends to consult with the Cambridge Historical Commission and the MHC to avoid permanent impacts to cultural and historic resources. Finally, the record indicates that the proposed project would have no permanent noise impacts.

Accordingly, the Siting Board finds that the land use impacts of the proposed facilities along the Primary Route would be minimized.

(iv) Electric and Magnetic Field Levels

In this section the Siting Board reviews the potential impacts of the proposed project with regard to Electric and Magnetic Fields ("EMF").[19]

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[19] The Company stated that, because the proposed transmission line would be constructed with concentric shielding that will be grounded, electric fields associated with the cable would be negligible and would not be detectable at ground level (Exh. KSE-1, at 5-51, 5-53).

(continued...)

(a) Description

In order to assess the effect of the proposed facilities on EMF along the Primary Route, the Company measured existing ambient magnetic field levels at various points along the route. The Company's measurements show that existing field levels along the Primary Route range from 5 milligaus ("mG") to 21 mG (Exh. KSE-1, at 5-51, App. D). The Company modeled the magnetic fields likely to be generated by the proposed transmission lines and determined that, during maximum generation export, magnetic fields would be 124 mG at one meter above the ground over the center of the cables (Exh. KSE-1, at 5-53). The corresponding magnetic field strength 25 feet from the center line above the cables would be 10 mG (id.).[20] The Company did not calculate field strength at the edge-of-ROW; however, it stated that maximum magnetic field levels would fall below 85 mG within 5 feet of the centerline and that the proposed project thus would meet the Siting Board's 85 mG guideline within an effective ROW only 10 feet in width (Exh. RR-HO-4).

The Company identified one sensitive receptor within 25 feet of the proposed transmission line along the Primary Route: the Morse School, an elementary school located along Memorial Drive between the Brookline Street Rotary and Magazine Street (Exh. EFSB-1-24). The Company stated that the proposed transmission line would come within 15 feet of the library and the school playground, and estimated that the maximum magnetic field levels associated with the proposed transmission line would be approximately 24 mG at this distance (Exh. EFSB-2-7). The Company also stated that a small number of residences associated with MIT abut the Primary Route along Memorial Drive (id.). The Company indicated that the closest of these residences would be approximately 38 feet from the

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19 (...continued)
Consequently, the Company performed no measurements or modeling of the electric fields which would be produced by the proposed transmission line (Exh. KSE-1, at 5-51).

20 The Company's modeling assumed that the proposed transmission line's three conductors would be installed in a delta-configuration in one corner of the ductbank, in a phase arrangement that would provide maximum magnetic field cancellation (Exh. RR-HO-4). The Company stated that if one of the conductors failed and could not be removed from its duct, the Company would install a new cable in a location that would maintain the delta-configuration and phase arrangement which maximizes magnetic field cancellation (Tr. 2, at 258 to 261).

centerline of the proposed transmission line, and estimated that the maximum magnetic field levels associated with the proposed transmission line would be approximately 5 mG at this distance (Exh. EFSB-2-7).

The Company described three techniques which could be used to reduce magnetic fields generated by the proposed transmission line: metal shielding, charged coils, and uncharged coils.[21] The Company stated that installation of metal shielding above and beside the ductbank would be the most cost-effective means of reducing magnetic fields; however, it noted that the metal shielding would reduce the ability of the transmission line to dissipate heat, thus reducing the capacity of the transmission line by 5% (Exh. RR-HO-4). The Company estimated that it would cost approximately $24,000 to install shielding sufficient to reduce maximum above-ground EMF levels from 124 mG to under 85 mG along 10 yards of transmission line (id.). The Company stated that use of a charged coil around the ductbank could theoretically mitigate maximum magnetic field impacts by a minimum of 40 mG at a cost of $32,000 over 10 yards, but noted that this technique is unproven and may not be as effective in the field as modeling would predict (id.). Finally, the Company stated that use of an uncharged metal coil surrounding the ductbank would cost approximately $21,000 over 10 yards, but added that this technique also has not been field-tested (id.).

(b) Current Research

The Company provided a summary of current research on the potential for adverse effects on human health resulting from magnetic fields. In particular, the Company provided a 1997 report by the National Research Council ("NRC"), which provides a comprehensive review of research up to that date on the biologic effects of exposure to power-frequency electric and magnetic fields, including cellular and molecular studies, studies on whole animals, and epidemiological studies (Exh. EFSB-2-9). The report concludes that the current body of evidence does not show that exposure to such fields

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[21] The Company also stated that steel plates installed between a transmission line and the surface, as is typical near bridge crossings, would reduce surface magnetic field levels, but did not estimate either the level of EMF reductions or the cost of this approach (Tr. 2, at 199).

presents a human health hazard (id. at 1). With respect to epidemiological studies, the report indicates that the aggregate evidence does not support an association between magnetic field exposure and adult cancer, pregnancy outcome, neurobehavioral disorders, and childhood cancers other than leukemia (id.).

The Company also provided the results of studies conducted since the 1997 NRC report. A 1999 World Health Organization review of EMF health effects found that "current evidence does not confirm the existence of any health consequences from exposure to low-level electromagnetic fields"(Exh. EFSB-2-9-S at 2). A 1999 study by the National Academy of Sciences and National Research Council of research projects conducted under its auspices concluded that the research does not support the contention that EMF exposures at normal residential or occupational doses produce important health effects, including cancer (id. at 3). Studies from the American Cancer Society (2000) and the British Columbia Ministry of Health (2000) also concluded that the evidence does not support a link between EMF and human health effects (id. at 4). A 1999 National Institute of Environmental Health Sciences study stated that, while some evidence links EMF exposure with an increased risk of leukemia, virtually all laboratory data from animals and humans, and mechanistic studies in cells, fail to support a causal relationship between EMF and health effects (id. at 3).

The Company's witness described several recent epidemiologic studies, none of which conclusively supported a link between EMF exposure at residential or occupation levels, and human health effects (id. at 5-6).[22] He also stated that a 2000 study by Albohm et al. in the British Journal of Cancer re-examined pooled data from nine studies of EMF and childhood leukemia and found a statistical increase in leukemia at levels greater than 4 mG (id. at 7). However, he testified that the study's authors acknowledged that this association could be the result of selection bias and a highest-

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[22] Day et al. (1999), found no link between EMF from electricity supply in the United Kingdom and increased risks of childhood leukemia, cancers of the nervous system, or any other childhood cancer; Sorahan et al. (1999), found no such link in a study of EMF exposures during pregnancy; Forssen et al. (2000), found no support for the hypothesis that residential or occupational EMF levels were linked to an increased risk of breast cancer in Sweden (Exh. EFSB-2-9-S at 5 to 6).

exposure category comprising under 1% of the subjects of the study, and noted that their conclusions were not borne out in animal laboratory studies (id. at 7-8).

Finally, the Company provided a summary of existing state and non-regulatory guidance regarding exposure to EMF (Exh. KSE-1, App. D at 5). The Company indicated that other states have adopted EMF guidelines which generally are based on levels in existing transmission corridors (id.). The Company stated that the International Radiation Protection Association recommends that occupational exposure be limited to magnetic fields below 5000 mG; that routine exposure for the general public be limited to 1000 mG; and that general public exposure to fields between 1000 and 10,000 mG be limited to a few hours per day (id. at 6). The Company also stated that the American Conference of Governmental Industrial Hygienists have established a Threshold Limit Value (a level to which nearly all workers may be exposed repeatedly without adverse health effects) of 10,000 mG (id. at 5 to 6). Finally, 1998 guidelines from the International Commission on Non-Ionizing Radiation Protection set allowable 60 Hz EMF exposure levels at 830 mG for the general public (Exh. EFSB-2-9, Supp.).

(c) Positions of the Parties

The City asserted that no evidence was presented specific to exposure to magnetic fields for extended periods for school children (City Brief at 7). The City proposed that the Siting Board require the Company to install shielding to reduce magnetic field levels at the Morse Elementary School library and playing fields to 10 mG or less, or to some higher level approved by the Cambridge Department of Public Health (City Brief at 17). The City argued that this condition would allay fears regarding the risk to school children from magnetic fields and mitigate any effects on the computers in the library (City Brief at 8).

In response to the City's proposal, the Company asserted that it presented evidence that magnetic fields from transmission lines have no proven effect on the health of the general public (Company Reply Brief at 3). The Company also argued that the worst-case field levels along the library wall closest to the transmission line would be no greater than 24 mG, comparable with magnetic

fields created by home appliances (40 to 80 mG at 1 foot) and computer video-display monitors (3 to 20 mG at 1 to 4 feet), and that field levels in the library would decline to 10 mG at a distance of 10 feet from the wall (Company Reply Brief, at 3 to 4, citing Exhs. KSE-1, Appendix D, at 3; CAM-1-50; EFSB-2-8; Tr 1, at 76-78). The Company also asserted that the anticipated magnetic field levels are unlikely to affect the school's computer monitors (Company Reply Brief, at 4 to 5, citing Exh. CAM-1-50).

(d) Analysis

In a previous review of proposed transmission line facilities, the Siting Board accepted edge-of-ROW levels of 85 mG for the magnetic field. Massachusetts Electric Company/New England Power Company, 13 DOMSC 119, at 228-242 (1985) ("1985 MECo/NEPCo Decision"). 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, 1997 ComElec Decision, 5 DOMSB 273, at 350; Norwood Decision, 5 DOMSB 109, at 145; MASSPOWER, Inc., 20 DOMSC 301, at 401-403 (1990). Here, assuming the maximum export of electricity from Kendall Station to the Putnam Substation, magnetic field levels would be 124 mG directly above the proposed transmission line. Because the proposed transmission line would lie almost entirely in city streets, there is no well-defined edge-of-ROW for the project; however, the record shows that the street and sidewalk areas provide an "effective ROW" of at least 10 feet in width. Outside this effective ROW, magnetic fields associated with the transmission line would drop below 85 mG. Thus, although the Company has not specifically designated a ROW for its proposed transmission line, the magnetic field levels associated with the proposed project appear to be consistent with levels approved in the 1985 MECo/NEPCo Decision.

More recently, the Siting Board has inquired into the current scientific literature regarding the possible impact of exposure to magnetic fields on human health. SE Kendall Decision, 11 DOMSB at 383-386; Nickel Hill Energy LLC, 11 DOMSB 83, at 233-235 (2000) ("Nickel Hill Decision"); Sithe Mystic Development LLC, 9 DOMSB 101, at 196-199 (1999) ("Sithe Mystic Decision"). 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. SE Kendall Decision, 11 DOMSB at 385-386; Nickel Hill Decision, 11 DOMSB at 235; Sithe Mystic Decision, 9 DOMSB at 198-199. The record in this proceeding is consistent with the record developed in previous proceedings, and leads to the same conclusion. Thus, the record in this case does not support a conclusion that the EMF levels anticipated as a result of the proposed project would pose a public health concern.

The City has argued that the Company should be required to limit magnetic field levels to 10 mG at the Morse Elementary School, both to protect school computer equipment and to allay public health concerns. 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 also 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 Decision, 9 DOMSB 225, at 333. Here, CELCo already has committed to use and maintain a delta configuration within the duct bank in order to minimize magnetic fields. Further mitigation measures may be technically feasible; however, the record suggests that both the cost and effectiveness of these measures are uncertain. Moreover, there is no record evidence that supports the need for a 10 mG limit (as opposed to some higher limit) on magnetic fields at the Morse Elementary School. The Siting Board therefore cannot find that the City's proposed condition would minimize the environmental impacts of the proposed transmission line, consistent with minimizing cost. Instead, consistent with our precedent requiring the cost-effective minimization of magnetic field levels, the Siting Board directs the Company to consult with officials of Cambridge and the Morse Elementary School about cost-effective measures to minimize student exposure to magnetic fields from the proposed transmission line and, if reasonably feasible, reduce EMF levels to the City's preferred 10 mG in the school library. While the Company focused on ways to incorporate shielding into its facility design, more cost-effective measures might include changes in the

alignment of the transmission line near the Morse Elementary School or the minor relocation of equipment or activities within the school. The Company should provide the Siting Board with a report on the consultation, and on any measures to be implemented, prior to commencement of construction. Should the Company be unable to achieve the City's preferred 10 mG level, the Company shall inform the Siting Board so that the Siting Board may decide whether to inquire further into this matter.

Accordingly, the Siting Board finds that, with the implementation of the above condition, the magnetic field impacts of the proposed facilities along the Primary Route would be minimized.

(v) Traffic

The Company stated that construction of the proposed transmission line would result in temporary traffic impacts along the streets making up the Primary Route and at 18 intersections (Exh. KSE-1, at 5-18 to 5-19). The Company indicated that, at any given time during the four-month construction period, roadway and sidewalk access would be limited in areas approximately 35 feet in length, and added that construction would progress approximately 150 feet every four days, per crew (id. at 5-8, 5-18).

The Company stated that it plans to install the proposed transmission line in the sidewalk on the north side of Memorial Drive; however, if this proves infeasible due to utility or other conditions, the transmission line would be installed in the curb lane of Memorial Drive westbound (id. at 5-19). The Company indicated that traffic issues would be most difficult along Memorial Drive between the Overpass and Pleasant Street, and near Vassar Street as traffic approaches the Reid Overpass (Tr. 1, at 98 to 99). The Company noted that, in these areas, it may be necessary to close two lanes, rather than just one lane, of Memorial Drive to accommodate the delivery of construction materials and equipment (id. at 94, 99,100). The Company stated that it did not anticipate impacts on school buses or public transportation except in places where the Primary Route would cross street intersections (Exh. CAM-1-18).

The Company proposed to mitigate construction traffic impacts by: coordinating with Cambridge and the MDC on the design of traffic management plans and on the timing of construction;

using industry-standard road signs and police details to control traffic; scheduling construction during off-peak traffic hours; identifying appropriate detour routes; accommodating loading zones and other business functions along the route; identifying replacement parking areas for parking areas displaced by construction; distributing advance public notice of construction; providing temporary markings, barriers, and other traffic control measures; and ensuring safe pedestrian flow (Exh. KSE-1, at 5-47). The Company provided a copy of its Draft Traffic Management Plan, which specifies in detail the location of lane and exit closings and relevant signage (Exh. EFSB-2-18). The Company stated that it would repave and restore roadways consistent with MDC and Cambridge policies (Exh. KSE-1, at 5-47).

The City noted that the final Traffic Management Plan will address a number of issues, including traffic management, parking, and repaving, that are subject to City approval, and that the Company has acknowledged that it will not receive MDC or City permits required for the project until both the MDC and the City are satisfied with the Traffic Management Plan (City Brief at 10-11). The City requested that the Siting Board require the Company to develop, obtain City and MDC approval for, and implement a traffic, parking and street restoration plan, and to submit the plan to the Siting Board (City Brief at 18).

The record demonstrates that construction of the proposed transmission line along the Primary Route has the potential to create temporary traffic impacts on Cambridge streets and along Memorial Drive, a major transportation artery. The impacts on Memorial Drive would be mitigated in part by scheduling construction outside the evening peak travel period, when traffic volumes in the lanes affected by construction would be highest. The Company has agreed to work with Cambridge and the MDC to identify specific measures to further mitigate traffic impacts, and has provided a Draft Traffic Management Plan for the proposed project. The Company has agreed to develop a final Traffic Management Plan and submit it to the MDC and to Cambridge for approval.

The Siting Board notes that some of the signage proposed in the Company's Draft Traffic Management Plan may not provide adequate direction for drivers who are unfamiliar with the Boston

area,[23] and encourages the Company to work with the MDC and Cambridge to improve the clarity and placement of signs, including, as necessary, flashing text signs and signs at the end of detours indicating the direction to important locations such as bridges, cities, or main streets. The Siting Board finds that, with the implementation of a traffic management plan that includes traffic and noise mitigation measures acceptable to the MDC and Cambridge, the traffic impacts of the proposed project along the Primary Route would minimized.

b. Cost

The Company estimated that the total cost for installation of the proposed transmission lines along the Primary Route would be $12,199,000, including $8,170,000 for the line cost, $1,392,000 for improvements to the station, $478,000 for overhead costs, $1,050,000 for engineering and construction management, and $1,109,000 for contingencies (Exh. KSE-1, at 4-25, Table 4.3-1).

c. Variations to the Primary Route

As part of the Primary Route, the Company described a route variation known at the Ames Street Variation which it proposed to use if it was unable to cross the Broad Street Canal. The Ames Street Variation would proceed north from the new switchyard at Kendall Station to the intersection of Second Street and Athenaeum Street (Exh. KSE-1, at 4-5). From this point it would proceed either across land owned by Lyme Properties, or along Second Street, Linsky Way, and Fifth Street, to property owned by Commonwealth Gas (id.). From the western edge of the Commonwealth Gas property, the Ames Street Variation would proceed along Fifth Street and Potter Street, across a Department of Transportation parking lot, and over a pedestrian walkway owned by the Cambridge Redevelopment Authority to Broadway (id. at 4-12). From Broadway, the Ames Street Variation would continue southwest onto Ames Street, crossing Main Street and following Ames Street to

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[23] For example, drivers entering the Brookline Rotary from Brookline Street are informed of a detour before they enter the rotary; however, once in the rotary, they are given no indication as to whether the detour continues around the rotary, up Memorial Drive eastbound, or over the Boston University Bridge (Exh. EFSB-2-18, Sheet 13).

Memorial Drive (id. at 4-13). The Ames Street Variation is approximately one mile in length and travels up to one third of a mile from the Primary Route (id., Figure 4.2 - 1).

The Company stated that further study of Ames Street would be required if it were to use the Ames Street Variation (Tr. 2 at 233). Specifically, the Company stated that it has not developed detailed alignment drawings for the Ames Street Variation, because it does not expect to use the Ames Street Variation (Tr. 2 at 219). The Company also stated that it took a more cursory look at the trees along the Ames Street Variation than along the Primary Route and that the Company would need to do a tree management survey if a route other than the Primary Route were used (Tr. 2, 212-213). The Company noted that its Traffic Management Plan did not focus on the Ames Street Variation, and stated that additional studies would be required if the Ames Street Variation were to be used (Tr. 2 at 216). The Company also noted that contamination within the street has been confirmed at the intersection of Ames and Amherst Street, along the Ames Street Variation (id. at 239-240, 244).

MIT stated that it strongly opposes the use of the Ames Street variation to the Primary Route, due to the effects of the increased magnetic fields on sensitive research equipment (Exh. MIT-1-1, MIT Brief). The Company expressed its commitment to ensure that there are no adverse effects on MIT research equipment if the Ames Street Variation is used (Tr. 2, at 221).

The record demonstrates that, prior to using the Ames Street Variation, the Company would need to further study tree management and traffic management issues and create a land/plan profile. Given the commitments made to MIT in this proceeding, the Company also would have to develop plans to address MIT's concerns regarding the effect of magnetic fields from the proposed transmission line on its research equipment. Such plans could have considerable cost implications. In the absence of this information, the Siting Board finds that the record is not sufficient to allow it to determine whether the environmental impacts of the proposed facilities along the Ames Street Variation to the Primary Route would be minimized, consistent with minimizing cost. Should CELCo determine that it needs to use the Ames Street Variation, it must notify the Siting Board so that the Siting Board may decide whether to further inquire into the matter.

The Company has identified four other variations to the Primary Route. As discussed in

Section III.B, above, these variations include: (1) traveling through the Kendall Station switchyard and south in the First Street sidewalk for a short distance at the beginning of the route; (2) crossing the Brookline Street Rotary within the Reid Overpass, rather than following the Rotary itself; and (3) traversing privately owned land or city streets and a CELCo cable storage yard rather than a sewer easement at the end of the route. Each of these variations is relatively short, and remains close to the Primary Route. The Reid Overpass variation, which is the longest of the variations, remains essentially on Memorial Drive. Two other variations bring the transmission line out of city streets or easements onto property owned by the Company or its affiliates. In light of the length and nature of these variations, as well as the similarity between these variations and the corresponding parts of the Primary Route, the Siting Board concludes that the overall environmental impact of the proposed transmission line along the Primary Route would not change significantly if these variations were used.

d. Conclusions

In Section III.C.2.a and b, above, the Siting Board reviewed the record evidence regarding the environmental impacts and cost of the proposed facilities along the Primary Route. The Siting Board finds that the Company has provided sufficient information regarding the environmental impacts and cost of the proposed facilities along the Primary Route for the Siting Board to determine whether environmental impacts would be minimized and whether an appropriate balance among the environmental impacts and between environmental impacts and cost would be achieved.

In Section III.C.2.a, above, the Siting Board reviewed the water resource, land resource, land use, EMF, and traffic impacts of the proposed facilities along the Primary Route. The Siting Board found that the water resource, land use, and traffic impacts of the proposed project would be minimized with the Company's proposed mitigation, and that the land resource and EMF impacts of the proposed project would be minimized with the implementation of conditions relating to tree management and to EMF levels near the Morse Elementary School. In Section III.C.2.c, above, the Siting Board found that the record is not sufficient to allow it to determine whether the environmental impacts of the proposed facilities along the Ames Street Variation to the Primary Route would be

minimized, consistent with minimizing cost; however, it also found that the overall environmental impact of the proposed transmission line along the Primary Route would not change significantly if the other variations to the Primary Route were used. Accordingly, 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 environmental impacts of the proposed facility along the Primary Route, including variations other than the Ames Street Variation, would be minimized. The Siting Board also finds that the proposed facilities along the Primary Route would achieve an appropriate balance among conflicting environmental concerns as well as between environmental impacts, reliability, and cost.

3. Analysis of the Proposed Facilities Along the Alternate Route

a. Environmental Impacts

In this section, the Siting Board evaluates the environmental impacts of the proposed facilities along the Alternate Route. First, as part of its evaluation, the Siting Board addresses whether the petitioner has provided sufficient information regarding the Alternate Route for the Siting Board to determine whether the environmental impacts of the proposed facilities would be minimized, and whether the proposed facilities would achieve the appropriate balance among environmental impacts and between cost and environmental impacts. If necessary for its review, the Siting Board separately addresses whether the environmental impacts of the proposed facilities along the Alternate Route would be minimized, with potential mitigation. Finally, in order to determine a best route, the Siting Board compares the environmental impacts of the Primary Route to the environmental impacts of the Alternate Route.

(i) Water Resources

The Company stated that the Alternate Route, like the Primary Route, crosses historically filled tidelands on the Kendall Station site (Exh. KSE-1, at 5-4). However, the Company stated that no jurisdictional wetland resources were identified along the Alternate Route, and that there would be

no project impacts to any protected areas – Bordering Land Subject to Flooding, 100-foot Buffer Zone or Riverfront Area -- associated with the Charles River or the Broad Canal (id. at 5-3).

The record shows that the Alternate Route avoids areas where construction could affect water resources, but that the route extends into filled tidelands subject to review under G.L. c. 91. In contrast, the Primary Route crosses the Broad Canal via a bridge and traverses the 100-foot buffer zone along the canal, as well as extending into filled tidelands. However, as discussed in Section III.C.2.a.ii, above, any water resources impacts of constructing the proposed facility along the Primary Route would be minimal and temporary, given the developed nature of the Broad Canal and Memorial Drive. Accordingly, the Siting Board finds that the Primary Route and the Alternate Route would be comparable with respect to water resources.

(ii) Land Resources

The Company stated that the Alternate Route does not directly abut any public open space or recreational area (Exh. KSE-1, at 5-6). The Company stated that, due to the urban nature of the area, no significant natural habitats for wildlife are present in the vicinity of the Alternate Route (id.). The Company also noted that, due to the nature of the proposed facilities, and the use of existing transportation corridors, no adverse impacts to wildlife are expected to result from the proposed project along either route, with the exception of temporary construction related noise disturbance (id. at 5-6). The Company stated that the U.S. Fish and Wildlife Service and the Massachusetts Natural Heritage and Endangered Species Program have confirmed that there are no threatened or endangered species or associated habitat along the Alternate Route (id.).

The Company stated that no alteration of trees is expected along the Alternate Route (id. at 5-50). The Company provide photographs indicating that some trees are present on many but not all segments of the Alternate Route, and that where present, trees often are at intermittent locations or along one side on affected roadways (id. at 5-37 to 5-43).

The Company stated that ten OHM release sites have been identified along the Alternate Route, and noted that nine of the identified sites have been issued a Response Action Outcome

("RAO"), have attained No Further Action ("NFA") status, are pending NFA status, or were preclassified (id. at 5-7). The Company noted that one of these ten OHM release sites is common to both the Primary and Alternate Routes (id.). The Company stated that the Alternate Route crosses the Lyme Properties parcel, which is the one OHM release site requiring remediation activities for the installation of the transmission line (id.).

The record indicates that the Primary Route includes segments along Memorial Drive that are proximate to numerous trees, and that the Company has developed a tree management plan that recommends removal of 64 trees, three-quarters of which currently are dead or in poor condition. Although not investigated to the same level of detail, the Alternate Route is proximate to fewer trees than the Primary Route, and its use likely would result in fewer, if any, alterations to trees. However, while use of the Primary Route is likely to lead to the removal of a significant number of trees, the record makes it clear that the anticipated removals involve trees that are predominantly in poor condition and that already require significant maintenance or replacement. Further, the Company is committed to restore features that are altered as a result of the project, and has been directed to provide more specific tree restoration plans.

Overall, the record indicates that the proposed project could be constructed along either the Primary or Alternate Route without affecting wildlife habitat, threatened or endangered species, or the public use of parkland or open space. Use of the Primary Route would affect more trees, but most of the affected trees are dead or in poor condition, and restoration would be provided. The Alternate Route passes more OHM release sites, and traverses a site requiring remediation near Kendall Station.

Consequently, the Siting Board finds that, on balance, the Primary Route and the Alternate Route would be comparable with respect to land resources.

(iii) Land Use

The Company indicated that the Alternate Route would pass through office, commercial, light industrial, and residential areas of Cambridge, traversing various zoning districts associated with such uses (Exh. KSE-1, at 5-11 to 5-13). The Company argued that the Alternate Route traverses

significantly more residential areas than the Primary Route, and therefore is the inferior route with respect to land use (Company Brief at 31, citing, Exh. KSE-1, at 5-9 to 5-17).[24]

The Company asserted that the proposed facilities would not be regulated under local zoning as they do not meet the definition of a "structure" under the State Building Code (Exh. KSE-1, at 5-8). However, the Company noted that it would be required to obtain approval from the Cambridge Department of Public Works for local street openings and from the Cambridge City Council for grants of location within city streets (id. at 5-8 to 5-9).

The Company stated that visual impacts of the proposed project along the Alternate Route would be limited to activity during the construction period, and that there would be no permanent alterations of trees or other above-ground elements of the visual environment (id. at 5-51). The Company stated that noise impacts also would be limited to construction noise associated with the installation of the duct bank and manholes for the transmission line (id. at 5-50). The Company stated that the expected rate of construction and the proposed provisions to limit construction noise would be the same for the Alternate Route as for the Primary Route (id.).

The Company stated that the Alternate Route does not pass through either Historic Districts or Neighborhood Conservation Districts, as designated by the Cambridge Historical Commission (id. at 5-18). The Company stated that the Alternate Route passes in the vicinity of ten locations listed on the National Register of Historic Places ("NRHP") (id.). The Company noted that the location of the proposed transmission facilities along the Alternate Route within the previously disturbed roadbed is expected to prevent any impacts to cultural or archaeological resources (id.).

The record indicates that the Alternate Route traverses more residential areas and would require construction in narrower streets than the Primary Route, increasing the importance of noise impacts along the Alternate Route. The Alternate Route also is located in the vicinity of a greater number of cultural and historic resources than the Primary Route.

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[24] The Company provided descriptions and photographs indicating that the Alternate Route extends predominantly along roadways with two travel lanes and varying amounts of space for parking and sidewalk, and further that such roadways are narrower than the Memorial Drive corridor along which most of the Primary Route extends (Exh. KSE-1, at 5-19 to 5-46).

Neither the Primary nor the Alternate Route has appreciable advantages or disadvantages with respect to zoning. Although use of the Primary Route would include a number of tree removals, representing alterations of the visual environment, the record indicates that in most cases the planned removals involve trees that currently are dead or in poor condition, and that the Company has committed to restore features that are altered as a result of the project. The Siting Board has directed the Company to provide the Siting Board with an update on its tree restoration plans (see Section III.C.3.a.ii, above).

The Siting Board finds that, on balance, the Primary Route would be preferable to the Alternate Route with respect to land use.

(iv) Electric and Magnetic Fields

In order to assess the effect of the proposed facilities on EMF along the Alternate Route, the Company measured existing EMF levels at various points along the Alternate Route (Exh. KSE-1, at 5-52).[25] The Company stated that existing magnetic field levels for the portion of the Alternate Route west of Portland Street were below 10 mG, with occasional spikes in the 10 and 20 mG range (id.). The Company stated that existing magnetic fields east of the Portland Street area were generally less than 5 mG (id.). The Company noted that the highest field measured in this study occurred on Windsor Street along a variation to the Alternate Route where a spike of 84 mG was measured on April 14, 2000 around 4:00 p.m. (id.).

The Company stated that there are no sensitive receptors along the Alternate Route (Exh. EFSB-1-25). However, the Company provided information indicating that the Alternate Route traverses several residential streets (Exh. KSE-1, at 5-11 to 5-13). The nearest residences to the proposed facilities along the Alternate Route would be houses on Fairmont and Erie Streets in Cambridge, which are narrow streets with small sidewalks (Exhs. EFSB-1-25; EFSB-2-7). The

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[25] The Company noted that, because the Alternate Route had changed over time, magnetic field measurements along segments of the Alternate Route were conducted at different times (Exh. KSE-1, at 5-52).

Company stated that the walls of residences along these streets would be approximately 13 feet from the cable centerline, resulting in magnetic field levels of approximately 30 mG at these residences (Exhs. EFSB-1-25; EFSB-2-7). The Company stated that because the proposed cable would be constructed with concentric shielding that would be electrically grounded, electric fields associated with the cable would be negligible (Exh. KSE-1, at 5-51).

The record shows that the design of the cable ductbank and its projected maximum load would be the same along either the Primary or Alternate Routes; consequently the EMF levels modeled directly above the centerline of the transmission line would be the same for either route. However, the record shows that the Alternate Route would pass within 13 feet of the nearest residences, while the closest residence on the Primary Route would be 38 feet away from the proposed transmission line, resulting in lower magnetic fields at the nearest residence. On the other hand, the Alternate Route does not pass near any sensitive receptors, while the Primary Route approaches the Morse School. Thus, each route has advantages and disadvantages. Further, as discussed in Section C.2.d, above, although the health effects of magnetic fields are still subject to considerable debate, the record in this case does not provide evidence of any health effect resulting from exposure to EMF. Accordingly, the Siting Board finds that, on balance, the Primary Route and the Alternate Route would be comparable with respect to EMF impacts.

(v) Traffic

The Company stated that traffic impacts associated with the proposed facilities along the Alternate Route would be temporary in nature, and would occur primarily during construction (Exh. KSE-1, at 5-18). The Company stated that, during construction, access to certain roadways and sidewalks would be limited (id.). The Company stated that installation of the proposed facilities along the Alternate Route generally would progress at approximately the same rate as it would along the Primary Route (id.). However, the Company noted that the Alternate Route could require use of more construction space and a longer construction time than the Primary Route for installation of the pipeline crossing underneath the railroad tracks (id.).

The Company stated that construction of the proposed facilities along the Alternate Route would require placing a utility easement along the following roadways: Fifth Street, Potter Street, Broadway, Portland Street, Main Street, Osborn Street, State Street, Sidney Street, Erie Street, Fairmont Street, Pleasant Street, and Putnam Avenue (id. at 5-35). The Company stated that between the Kendall Station site and Broadway, the Alternate Route largely travels on private property and existing easements, and therefore would not affect any significant intersections in this area (id.). The Company indicated that the rest of the Alternate Route travels primarily along one and two-lane city streets (id. at 5-36 to 5-46). The Company stated that the proposed facilities along the Alternate Route would require 8 manholes and would affect 24 intersections, compared to the 6 required manholes and 18 affected intersections for the Primary Route (id. at 4-13, 4-14, 5-19, 5-35).

The Company stated that it would employ mitigation measures to accommodate roadway traffic during construction, similar to those which would be used with the Primary Route (id. at 5-46 to 5-47).

The construction of the proposed facilities along either the Primary or Alternate Route would result in temporary impacts to traffic. Similar construction techniques and mitigation would be used for either route. The record shows that the Alternate Route traverses a larger number of intersections than the Primary Route and would require installation of more manholes. Moreover, although facility construction along the Primary Route would potentially affect Memorial Drive, a well traveled roadway, construction would not occur during the evening peak travel period when the travel lanes affected by construction would be subject to high traffic volume. Accordingly, the Siting Board finds that the Primary Route would be slightly preferable to the Alternate Route with respect to traffic.

b. Cost

The Company estimated the cost of the proposed facility along the Alternate Route to be $12,692,000, compared with an estimated cost of $12,199,000 along the Primary Route (Exh. KSE-1, at 5-53). The Company stated that the higher cost for the proposed transmission line along the Alternate Route reflects the increased chance of encountering congested utilities, the greater number of

intersections to be crossed, the greater number of manholes required, and the expected ease of installing the transmission line on the portion of the Primary Route along Memorial Drive (id. at 5-54).

Accordingly, the Siting Board finds that the Primary Route would be preferable to the Alternate Route with respect to cost.

c. Conclusions on Route Comparison

The record indicates that the Primary Route would be preferable to the Alternate Route with regard to land use, and traffic, while the Primary and Alternate Routes would be comparable with regard to water resources, land resources, and EMF. In addition, the Primary Route is preferable to the Alternate Route with respect to cost. Accordingly, the Siting Board finds that the proposed facilities along the Primary Route would be preferable to the proposed facilities along the Alternate Route with respect to providing a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.

IV. PUBLIC CONVENIENCE AND INTEREST

As noted in Section I.C, above, CELCo has filed with the Department a petition seeking a determination pursuant to G.L. c. 164, § 72 that the Company's proposed electric transmission line is necessary and will serve the public convenience and be consistent with the public interest. This petition was subsequently referred to the Siting Board and consolidated for review in this proceeding. Pursuant to G.L. c. 164, § 69H(2), the Siting Board applies the Department's standard of review for such petitions to the subject matter of the Company's petitions in a manner consistent with its findings in Sections II and III, above.

A. Standard of Review

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

> authority to construct and use . . . a line for the transmission of electricity for distribution in some definite area or for supplying electricity to itself or to another electric company or to a municipal lighting plant for distribution and sale . . . and shall represent that such line will or does serve the public convenience and is consistent with the public interest. . . . The [D]epartment, after notice and a public hearing in one or more of the towns affected, may determine that said line is necessary for the purpose alleged, and will serve the public convenience and is consistent with the public interest.[26]

The Department, in making a determination under G.L. c. 164, § 72, is to consider all aspects of the public interest (see Massachusetts Electric Company and New England Power Company, D.T.E. 99-70, at 2 (2000) ("MECo/NEPCo"); Boston Edison Company v. Town of Sudbury, 356 Mass. 406, 419 (1969) ("Boston Edison")). Section 72, for example, permits the Department to prescribe reasonable conditions for the protection of the public safety. Boston Edison, 356 Mass. 406, at 419-420. All factors affecting any phase of the public interest and public convenience must be weighed fairly by the Department in a determination under G.L. c. 164, § 72. Town of Sudbury v. Department of Public Utilities, 343 Mass. 428, 430 (1962).

In evaluating petitions filed under G.L. c. 164, § 72, the Department examines: (1) the need for, or public benefits of, the present or proposed use (See MECo/NEPCo, D.T.E. 99-70, at 6-7, 17-18 (2000); Massachusetts Electric Company, D.P.U. 93-29/30, at 10-14, 22-23 (1995) ("1995 MECo Decision"); New England Power Company, D.P.U. 92-278/279/280, at 19 (1994) ("1994 NEPCo Decision"); (2) the environmental impacts or any other impacts of the present or proposed use (see MECo/NEPCo, D.T.E. 99-70, at 20-22 (2000); NEPCo, D.P.U. 92-278/279/280, at 20-23; NEPCo, D.P.U. 92-270, at 17-20); and (3) the present or proposed use and any alternatives identified (See MECo/NEPCo, D.T.E. 99-70, at 18-20 (2000); NEPCo, D.P.U. 92-278/279/280, at 19; NEPCo, D.P.U. 92-270, at 17). The Department then balances the interests of the general public against the local interest and determines whether the line is necessary for the purpose alleged and will

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[26] Pursuant to the statute, the 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 facilities in reasonable detail. G.L. c. 164, § 72.

serve the public convenience and is consistent with the public interest.[27]

B. Analysis and Findings

As indicated in Section II.A.2, above, CELCo is an electric distribution company engaged in the distribution and sale of electricity and as such is an electric company defined by G.L. c. 164, § 1. Accordingly, CELCo is authorized to petition the Department for a determination under G.L. c. 164, § 72 that the proposed transmission line "is necessary for the purpose alleged, and will serve the public convenience, and is consistent with the public interest." As discussed in Section IV.A, above, in making a determination pursuant to G.L. c. 164, § 72, the Department first examines the need for or public benefits of the proposed use. The Department then examines the identified alternatives and the environmental and other impacts of the project. Finally, the Department balances the interests of the general public with any identified local interests. The Siting Board examines CELCo's petition consistent with these standards. In making its findings regarding the Company's petition pursuant to G.L. c. 164, § 72, the Siting Board relies on its analyses in Sections II and III, above.

As an initial matter, the Siting Board finds that the Company's petition, filed pursuant to G.L. c. 164, § 72, has complied with the requirements that it describe the proposed transmission line, provide a map or plan showing the general location of the transmission line, and estimate the cost of the transmission line in reasonable detail.

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[27] In addition, 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 C.M.R. § 11.01(3), these findings are necessary when an Environmental Impact Report ("EIR") is submitted by the company to the Secretary of Environmental Affairs, and should be based on such EIR. Where an EIR is not required, c. 30, § 61 findings are not necessary. 301 C.M.R. § 11.01(3). In the present case, the Secretary of Environmental Affairs issued his determination that no EIR was required for the proposed project (see Certificate of the Secretary of Environmental Affairs on the Environmental Notification Form, EOEA No. 12386, dated February 9, 2001), and, therefore, a finding is not necessary in this case under G.L. c. 30, § 61.

In Section II.A.3, above, the Siting Board found that the repowered Kendall station would contribute to a necessary supply of energy for the Commonwealth with a minimum impact on the environment at the lowest possible cost. Further, in Section II.A.3., above, the Siting Board found that there is a need for additional energy resources to interconnect the repowered Kendall Station facilities with the regional transmission system. Accordingly, we find a need for, and public benefits of, the construction and operation of the proposed transmission line.

In Section III.C.2, above, the Siting Board found that the water resource, land use, and traffic impacts of the proposed project would be minimized with the Company's proposed mitigation, and that the land resource and EMF impacts of the proposed project would be minimized with the implementation of conditions relating to tree management and to EMF levels near the Morse Elementary School. Accordingly, 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 Company has taken all reasonable measures to avoid, minimize or mitigate environmental impacts along the Primary Route and variations to the Primary Route with the exception of the Ames Street variation.

In Section II.B, above, the Siting Board reviewed the four approaches considered by the Company for the interconnection of the repowered Kendall Station. The Siting Board concluded that, in light of the clear reliability concerns associated with Alternate Approaches 1, 2, and 3, and the lack of potential offsetting cost or environmental advantages, the Siting Board finds that the proposed project would be superior to Alternate Approaches 1, 2, and 3 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 finds that the Company's decision to pursue the proposed project was reasonable.

The Siting Board has found, above, that there is both a need for, and public benefits of the construction and operation of the proposed transmission line. The Siting Board has also found that the Company's decision to pursue the proposed project, rather that one of the identified alternatives, was reasonable. The Siting Board further finds that, with the implementation of the proposed mitigation and conditions, and compliance with all applicable local, state and federal requirements, the Company has

taken all reasonable measures to avoid, minimize or mitigate environmental impacts along the Primary Route and variations to the Primary Route with the exception of the Ames Street Variation. Accordingly, the Siting Board finds that the public benefits of the project outweigh its impacts. Consequently, pursuant to G.L. c. 164, § 72, the Siting Board finds that, with the implementation of the mitigation measures proposed by the Company, and upon compliance with the conditions regarding the tree management plan and EMF, the proposed 115 kV electric transmission line is necessary for the purpose alleged, will serve the public convenience, and is consistent with the public interest.

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 addition, G.L. c. 164, § 69J requires that a facility proposed by an electric company required to file a long-range forecast pursuant to G.L. c. 164, § 69I be consistent with that company's most recently approved long range forecast

In Section II.A, above, the Siting Board found that there is a need for additional energy resources to interconnect the repowered Kendall Station facilities with the regional transmission system. Further in Section II.A, the Siting Board found that the proposed facility is consistent with the Company's most recently approved long range forecast.

In Section II.B, above, the Siting Board found that the proposed project would be superior to Alternate Approaches 1, 2, and 3 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 CELCo 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 2.6-mile route in light of related regulatory or other programs of the Commonwealth, including programs related to wetlands protection, and rare and endangered species. As evidenced by the above discussions and analyses, the proposed 2.6-mile transmission line along the Primary Route and variations to that route, with the exception of the Ames Street variation, 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 environmental impacts of the proposed facilities 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 between 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 Alternate 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 one 2.6 mile, 115-kilovolt underground electric transmission line in Cambridge, Massachusetts using the Company's Primary Route and variations to that route with the exception of the Ames Street variation, subject to the following conditions:

A. The Siting Board directs the Company, prior to commencing removal of trees in preparation for construction, to provide the Siting Board with an update on its tree

management plan, developed in consultation with the Cambridge Historical Commission, the Cambridge Conservation Commission, the MDC, and other relevant City agencies, that sets forth specific provisions for the restoration of trees removed in preparation for or as a result of construction. The update should address the timing and the likely extent of replacement plantings and indicate the division of responsibility for such plantings between the Company, the MDC, and Cambridge.

B. The Siting Board directs the Company to develop and obtain approval from the MDC and the City of Cambridge, within their respective jurisdictions, and implement a tree management plan, including a plan to avoid or mitigate impacts upon trees and vegetation. The tree management plan shall be approved by, and the field work shall be directly supervised by, a certified arborist.

C. The Siting Board directs the Company to consult with officials of Cambridge and the Morse Elementary School about cost-effective measures to minimize student exposure to magnetic fields from the proposed transmission line and, if reasonably feasible, reduce EMF levels to the City's preferred 10 mG in the school library. While the Company focused on ways to incorporate shielding into its facility design, more cost-effective measures might include changes in the alignment of the transmission line near the Morse Elementary School or the minor relocation of equipment or activities within the school. The Company should provide the Siting Board with a report on the consultation, and on any measures to be implemented, prior to commencement of construction. Should the Company be unable to adhere to the City's preferred 10 mG level, the Company shall inform the Siting Board so that the Siting Board may decide whether to inquire further into this matter.

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

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.

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Sheila Renner McIntyre
Hearing Officer

Dated this 25th day of September, 2001.

APPROVED by the Energy Facilities Siting Board at its meeting of September 24, 2001, by the members and designees present and voting: James Connelly (Chairman, DTE/EFSB); Deirdre K. Manning (Commissioner, DTE); W. Robert Keating (Commissioner, DTE); Matthew Morais (for David L. O'Connor, Commissioner, Division of Energy Resources); and Joseph Donovan (for Elizabeth Ames, Director of Economic Development).

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James Connelly, Chairman
Energy Facilities Siting Board

Dated this 24th day of September, 2001.

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).