COMMONWEALTH OF MASSACHUSETTS

Energy Facilities Siting Board

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In the Matter of the Petition of)

Sithe Mystic Development LLC for Approval)

to Construct a Bulk Generating Facility in) EFSB 98-8

in the City of Everett, Massachusetts)

_____)

FINAL DECISION

Selma Urman

Hearing Officer

September 30, 1999

On the Decision:

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LIST OF ABBREVIATIONS

Abbreviation	Explanation
AALs	Allowable Ambient Limits
Algonquin	Algonquin Gas Transmission Company
ANP	American National Power, Inc.
ANP Blackstone Decision	ANP Blackstone Energy Company, EFSB 97-2/98-2 (1999)

AQIP Sithe Mystic's Air Quality Improvement Plan

Berkshire Power Decision Berkshire Power Development, Inc., 4 DOMSB 221 (1996)

BACT Best available control technology

BECo Boston Edison Company

Brownfields Act c. 206 of Acts of 1998

Cabot Cabot Power Corporation

Cabot Power Decision Cabot Power Corporation, EFSB 91-101A (1998)

Campaign Campaign to Clean Up Polluting Power Plants

Cancer Incidence Report 1997 Massachusetts Department of Health Report

on cancer incidence in 351 cities and towns

cfs Cubic feet per second

Citizen Groups Massachusetts Public Interest Research Group, Clean Water Action, and Campaign to Clean up Polluting Power Plants

CO Carbon monoxide

CO_2 Carbon dioxide

Company Sithe Mystic Development LLC

Company Brief Sithe Mystic Development's brief

CSOs Combined Sewer Flows

CTGs Combustion Turbine Generators

CWA Clean Water Action

dBA Decibel

DEIR Draft Environmental Impact Report

Dighton Power Decision Dighton Power Associates, EFSB 96-3 (1997)

DOMAC Distrigas of Massachusetts

DPA Designated Port Area

Earth Tech Earth Tech, Inc.

EMF Electric and magnetic fields

EPC Engineering, procurement, and construction

ERC Emission reduction credits

EUA Eastern Utilities Associates

Everett City of Everett

FEIR Final Environmental Impact Report

FEMA Federal Emergency Management Agency

GEP Good Engineering Practice

gpd Gallons per day

gpy Gallons per year

HAPs Hazardous Air Pollutants

HAPs Study "Study of Hazardous Air Pollutant Emissions from Electric

Utility Steam Generating Units- Final Report to Congress"

(1998)

HRSGs Heat recovery steam generators

kV Kilovolt

L_{90} The level of noise that is exceeded 90 percent of the time

LAER Lowest Achievable Emission Rate

L_{dn} EPA's recommendation of a maximum day-night noise level of 55 dBA in residential areas

LOS Levels of service -- a measure of the efficiency of traffic operations at a given location

LNG Liquified natural gas

LSP Licensed site professional

MAAQS Massachusetts ambient air quality standards

MassGIS Massachusetts Geographic Information Systems

MBTA Massachusetts Bay Transportation Authority

McDonald's McDonald's Restaurant

MCZM Massachusetts Coastal Zone Management

MCP Massachusetts Contingency Plan

MDEP Massachusetts Department of Environmental Protection

Millennium Power Decision U.S. Generating Company, EFSB 96-4 (1997)

mG Milligauss

mgd Million gallons per day

MHI Mitsubishi Heavy Industries

MVA Megavolt-ampers

MW Megawatt

MWRA Massachusetts Water Resources Authority

NAAQS National ambient air quality standards

NCI National Cancer Institute

NEPCo New England Power Company

NEPOOL New England Power Pool

NHESP Natural Heritage and Endangered Species Program

1985 MECo/NEPCo Decision Massachusetts Electric Company et al., 13 DOMSC 119 (1985)

NOx Nitrogen oxides

NPDES National Pollution Discharge Elimination System

NRC National Research Council

NSPS New source performance standards

NSR New source review

NTEL Non-threshold Effects Exposure Limit

O_3 Ground-level ozone

Open Space Plan City of Everett's Open Space and Recreation Plan

Pb Lead

PM Particulates

PM-10 Fine particulates

ppm Parts per million

Prolerized Prolerized of New England

PSD Prevention of significant deterioration

RAO Response action outcome

REC Recognized environmental condition

Request for Comments Requests for Comments issued by Energy Facilities Siting Board on March 14, 1999 on proposed standards of review

Restructuring Act c. 164 of the Acts of 1997

RFP Request for Proposals

ROW Right-of-way

SCR Selective Catalytic Reduction

SILs Significant Impact Levels

Sithe Energies Sithe Energies, Inc.

Sithe Mystic Sithe Mystic Development LLC

Siting Board Energy Facilities Siting Board

Siting Council Energy Facilities Siting Council

SMD Sithe Mystic Development LLC

SO_2 Sulfur dioxide

SOx Sulfur oxides

SPCC Mystic Station Spill Prevention Control and Countermeasure

STGs Steam Turbine Generators

SWPPP Stormwater Pollution Prevention Program

TEL Threshold effects exposure limit

Tennessee Tennessee Gas Pipeline Company

TPS Technology Performance Standards

tpy Tons per year

USEPA The United States Environmental Protection Agency

USGen U.S. Generating Company

USGS United States Geological Survey

VOCs Volatile organic compounds

The Energy Facilities Siting Board ("Siting Board") hereby APPROVES subject to conditions the petition of Sithe Mystic Development LLC for approval to construct a net nominal 1550-megawatt bulk generating facility at the proposed site in Everett, Massachusetts.

I. INTRODUCTION

1. Description of Proposed Project, Site, and Interconnections

Sithe Mystic Development LLC ("Sithe Mystic" or "Company") has proposed to construct a natural gas-fired, combined-cycle, electric generating facility with a net nominal electrical output of 1550 megawatts ("MW") in the City of Everett, Massachusetts ("generating facility" or "proposed project ") (Exh. SMD-1, at 1-1).[(1)] The proposed generating facility would be located on approximately 17 acres of vacant land within the 58-acre parcel of land that is the existing site of Mystic Station (id. at 1-1). There are four active generating units, Units 4-7, which currently generate approximately 1000 MW of electricity on the 58-acre site. In May, 1998, Sithe Energies, Inc. ("Sithe Energies") purchased the Mystic Station site from Boston Edison Company ("BECo") following BECo's issuance of a Request for Proposals to divest its fossil-fueled generation facilities in accordance with the Massachusetts Electric Restructuring Act of 1997 (id. at 1-1; G.L. c. 164, §1A).

The Company has proposed to deliver natural gas to the generating facility via a new 20-inch diameter pipeline (Exh. SMD-1, at 1-2, 1-21). The pipeline would extend for approximately 3000 feet from the privately-owned property of the Distrigas of Massachusetts ("DOMAC") liquefied natural gas ("LNG") terminal to Mystic Station (id.). Based on the location of the proposed facility, the Company also could obtain natural gas supplies from the existing interstate pipeline companies, Algonquin Gas Transmission Company ("Algonquin") and Tennessee Gas Pipeline Company ("Tennessee") (id. at 1-4). Electric power generated by the proposed project would be delivered via two interconnections through a switchyard within the Company's property (Exh. EFSB-RR-17). One line from one 775 MW power block would run to the existing BECo 345 kilovolt ("kV") substation at Mystic Station; the other line would run from the second 775 MW power block to the existing BECo 115 kV substation at Mystic Station (id.). The power would be distributed to substations in Woburn, Chelsea, and West Everett via three 115 kV lines (Exh. EFSB-RR-45).

The generating facility would include the following major components and structures: four Mitsubishi Heavy Industries ("MHI") 501G combustion turbine generators ("CTGs"); four heat recovery steam generators ("HRSGs"); two steam turbine generators ("STGs"); two air-cooled condensers; and two 305-foot dual-flue concrete stacks (Exh. EFSB-A-7-S (att.) at 2-1). Additional project components include six transformers, an electrical switchyard, a gas metering and conditioning station, two 350,000 gallon raw water storage tanks, a demineralized water storage tank and two 100,000 gallon aqueous ammonia storage tanks (Exh. EFSB-A-1-S (att.) at 3-9 to 3-16). The proposed site for the generating facility is located within an industrialized area of Everett (Exh. SMD-1, at 1-4). The site is bordered to the east by Prolerlized of New England ("Prolerized"), a scrap metal recovery facility; to the north by Rover and Dexter Streets; to the south by the Mystic River; and to the west by Route 99 (Alford Street) (Exh. SMD-1, at 1-4).

Sithe Mystic is an affiliate of Sithe New England, Inc., a wholly-owned subsidiary of Sithe Energies (id. at 1-3). Sithe Energies owns and operates electric generation and cogeneration facilities world-wide, and is the third largest independent electric power generating company in the United States (id.).

B. Procedural History

On November 16, 1998, Sithe Mystic filed with the Siting Board[(2)] a petition to construct and operate a net nominal 1550 MW natural gas-fired, combined-cycle power generating facility in the City of Everett, Massachusetts. The Siting Board docketed the petition as EFSB 98-8.

On December 16, 1998, the Siting Board conducted a public hearing in Everett. In accordance with the direction of the Hearing Officer, the Company provided notice of the public hearing and adjudication.

Timely petitions to intervene were filed by the City of Everett ("Everett"); BECo; and the Sor Family. A timely joint petition to intervene was filed by Massachusetts Public Interest Research Group ("MASSPirg), Clean Water Action ("CWA"); and the Campaign to Clean Up Polluting Power Plants ("Campaign") (collectively, the "Citizen Groups"). Timely petitions to participate as interested persons were filed by Grace Pizzuro; Roger Mann, Jr.; James and Kathleen Godding; U.S. Gen New England, Inc. ("USGen"); American National Power, Inc. ("ANP"); and Cabot Power Corporation ("Cabot"). Sithe Mystic filed opposition to the petitions of BECo and the Citizen Groups.

The Hearing Officer granted the petitions to intervene filed by Everett, BECo and the Sor Family. Sithe Mystic Development LLC, EFSB 98-8, Hearing Officer Procedural Ruling, February 5, 1999, at 9. With respect to the Citizen Groups, the Hearing Officer granted the petitions of MASSPirg and CWA, and denied the petition of the Campaign. Sithe Mystic Development LLC, EFSB 98-8, Hearing Officer Procedural Ruling, February 23, 1999, at 4-5. The Hearing Officer granted the petitions to participate as interested persons of Roger Mann, Jr.; James and Kathleen Godding; USGen; ANP; and Cabot, and denied the petition to participate as an interested person of Grace Pizzuro. Sithe Mystic Development LLC, EFSB 98-8, Hearing Officer Procedural Ruling, February 5, 1999, at 9.

The Siting Board conducted seven days of evidentiary hearings, commencing on May 17, 1999 and ending on June 14, 1999. The Company presented the testimony of the following witnesses: James P. McGowan, Vice President of Development for Sithe New England, who testified as to the Company's site selection process and general project matters; Frederick M. Sellers, Vice President of Environmental Sciences and Planning of Earth Tech, Inc. ("Earth Tech"), who testified as to site selection and air impacts; George S. Lipka, Senior Project Manager for Earth Tech, who testified as to air impacts; David Keast, an independent acoustical engineer, who testified as to noise impact and noise mitigation issues; Donald R. Neal, Senior Program Manager at Earth Tech, who testified as to water, traffic, safety, solid waste, land use and visual impacts; Susan F. Tierney, a partner at The Economic Resource Group, Inc., who testified as to the Company's site selection process and air impacts; Peter A. Valberg, Ph.D., Senior Scientist at Cambridge Environmental, Inc., who testified as to electrical and magnetic fields ("EMF") and health impacts; James J. Youmans, Project Manager with Stone & Webster Engineering Corp., who testified as to project design and engineering; and Gregg McBride, Principal at GZA GeoEnvironmental, Inc., who testified as to hazardous waste impacts.

On July 2, 1999, Sithe Mystic submitted its brief. The record includes 235 exhibits, consisting primarily of information request responses and record request responses.

C. Scope of Review

1. Background

On November 25, 1997, the Governor signed into law Chapter 164 of the Acts of 1997, entitled "An Act Relative to Restructuring the Electric Utility Industry in the

Commonwealth, Regulating the Provision of Electricity and Other Services, and Promoting Enhanced Consumer Protection Therein" ("Restructuring Act"). Sections 204 and 210 of the Restructuring Act altered the scope of the Siting Board's review of generating facility proposals by amending G.L. c. 164, § 69H and by adding a new section, G.L. c. 164, § 69J ¼, which sets forth new criteria for the review of generating facility cases.

On March 19, 1999, the Siting Board issued a request for comments on Siting Board staff's four draft standards of review for generating facility cases ("Request for Comments"). The draft standards of review addressed the four major elements of the generating facility review set forth in G.L. c. 164 §§ 69 H and 69J: the site selection process, the environmental impacts of the proposed facility, consistency with the policies of the Commonwealth, and the generating technology comparison (required only in cases where the expected emissions from a proposed generating facility exceed the levels specified in 980 CMR 12.03).

In its Request for Comments, the Siting Board stated that parties in pending generating facility cases would have an opportunity to brief the standards of review to be applied in their specific case (Request for Comments at 2). On June 14, 1999, staff issued revised standards of review. On June 15, 1999, parties and interested persons in EFSB 98-8 were invited to submit comments on both versions of the standards of review. Sithe Mystic Development LLC, EFSB 98-8, Hearing Officer Memorandum, June 15, 1999.

2. Position of the Company

Sithe Mystic supports the Siting Board staff's revised proposed standards of review for the site selection process, environmental impacts, and consistency with the policies of the Commonwealth (Company Brief at 10, 22 to 23, 85). Sithe Mystic, however, suggests a further revision of the June 14, 1999 standard of review for site selection (id. at 10). Specifically, the Company advocates the addition of the words "relative to other sites considered" at the end of the second paragraph which states in pertinent part as follows:

The Siting Board therefore will review the applicant's site selection process in order to determine whether that process contributes to the minimization of environmental impacts of the proposed project and the costs of mitigating, controlling, and reducing such impacts. In making this determination, the Siting Board also will consider, consistent with its broad mandate under G.L. c. 164, § 69H, the reliability, regulatory, and other non-environmental advantages and disadvantages of the proposed site.

(id.).

According to the Company, without the additional language, the standard as drafted may be interpreted as allowing the Siting Board to consider all aspects, not just the environmental aspects, of a proposed site, in contravention of the Restructuring Act (id.).

3. Analysis

G.L. c. 164, § 69H clearly states that the Siting Board's review of generating facilities is limited to environmental issues, and that issues of reliability and cost are to be left to the marketplace. The Siting Board understands Sithe's concern that the Siting Board not appear to overstep its mandate in setting forth its standard of review for site selection. However, the Siting Board concludes that the change suggested by Sithe is unnecessary and could be counterproductive. As Sithe itself noted in its original response to the Request for Comments, our standard of review must recognize that "a developer's site selection must address [a] wider spectrum of criteria" than that encompassed by an environmental review. The Siting Board notes that some of these criteria - proximity to the regional transmission system, for example - may be so fundamental to a particular project that the developer would not consider any site that lacked them. Alternatively, a site might be chosen, despite some environmental disadvantages, because of an outstanding non-environmental advantage relative to most other sites in the Commonwealth, not just to "other sites considered". It is important that the Siting Board be able to weigh such considerations when determining whether an applicant's process contributes to the minimization of environmental impacts of the proposed project and the costs of mitigating, controlling, and reducing such impacts.

The Siting Board, therefore, finds that the revised standards of review with respect to the site selection process, environmental impacts, and consistency with the policies of the Commonwealth issued on June 14, 1999, comply with the requirements of G.L. c. 164, §§69H and J¼ and will govern the scope of review in this proceeding.[(3), (4)]

In Section II, below, the Siting Board considers the Company's site selection process; in Section III, below, the Siting Board considers the environmental impacts of the proposed facility; and in Section IV, below, the Siting Board addresses whether the plans for construction of the proposed facility are consistent with current health and environmental protection policies of the Commonwealth, and with such energy policies as are adopted by the Commonwealth for the specific purpose of guiding the decisions of the Siting Board.[(5)]

II. SITE SELECTION

1. Standard of Review

G.L. c. 164, § 69J¼ requires the Siting Board to determine whether an applicant's description of the site selection process used is accurate. An accurate description of a

petitioner's site selection process shall include a complete description of the environmental, reliability, regulatory, and other considerations that led to the applicant's decision to pursue the project as proposed at the proposed site, as well as a description of other siting and design options that were considered as part of the site selection process.

The Siting Board also is required to determine whether a proposed facility provides a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost. G.L. c. 164, § 69H. To accomplish this, G.L. c. 164, § 69 J¼ requires the Siting Board to determine whether "plans for the construction of a proposed facility minimize the environmental impacts consistent with the minimization of costs associated with the mitigation, control, and reduction of the environmental impacts of the proposed generating facility". Site selection, together with project design and mitigation, is an integral part of the process of minimizing the environmental impacts of an energy facility. The Siting Board therefore will review the applicant's site selection process in order to determine whether that process contributes to the minimization of environmental impacts of the proposed project and the costs of mitigating, controlling, and reducing such impacts. In making this determination, the Siting Board also will consider, consistent with its broad mandate under G.L. c. 164, § 69H, the reliability, regulatory, and other non-environmental advantages of the proposed site.

1. Description

Sithe Mystic is an affiliate of Sithe New England, Inc., a wholly-owned subsidiary of Sithe Energies (Exh. SMD-1, at 1-3). Sithe Energies is involved in the development, financing, construction, operation and ownership of generating facilities worldwide (id. at 1-2). Decisions regarding the development of the entire portfolio of the BECo properties, including the Mystic Station site, were made by Sithe Energies (id. at 3-3).

The Company indicated that Sithe Energies initially narrowed the area of Company investment to New England and then to Massachusetts in order to meet its development objectives (Exh. SMD-1, at 3-6). Specifically, Sithe Energies listed the following positive development considerations associated with Massachusetts: (1) the negotiated restructuring settlements executed by various Massachusetts electric companies, legislative proposals and associated incentives which were more attractive than those in other New England states; (2) the announced plans and subsequent solicitation of three utilities to sell their generating assets; (3) a streamlined permitting process; and (4) favorable environmental policies pertaining to brownfield development and gas-fired projects (id. at 3-6 to 3-7).

The Company stated that between July, 1997 and December, 1997, Sithe Energies submitted bids to purchase the existing generating assets of three companies, New England Power Company ("NEPCo"), BECo, and Eastern Utilities Associates ("EUA")

(id.). The BECo assets for which Sithe Energies bid included five sites: (1) Mystic Station in Everett; (2) New Boston Station in South Boston; (3) Edgar Station in Weymouth; (4) Framingham Station in Framingham; and (5) West Medway Station in Medway (id. at 3-8).[6], [7] The Company indicated that the BECo assets had characteristics that were compatible with Sithe Energies' development objectives, including available land for development, proximity to load centers, proximity to fuel supply, available transmission structure, ability to share infrastructure and operations personnel with existing units, and consistency with the Commonwealth's policy of encouraging brownfields development (id. at 3-7).

The Company explained that prior to submitting its bid, Sithe Energies conducted a half-day visit to each site, evaluated the properties based on environmental impacts as well as economics, and prepared summaries describing the strengths and weaknesses of each property (Exh. EFSB-SS-7). Based on the listed strengths[8] and weaknesses, Sithe Energies identified base and alternative development configurations and potential development risks for each site (id.). Sithe Energies noted that the potential development risks for Mystic Station were (1) permitting once-through cooling, and (2) renegotiating property taxes (id.).[9]

Sithe Energies indicated that it based its bid on a target development figure of 2,800 MW (Exhs. SMD-1, at 3-8; EFSB-SS-5). Sithe Energies indicated that this figure represented the

development potential for all the sites, and that Sithe Energies' internal economic and reliability analyses indicated that the New England market would benefit from at least an additional 2,800 MW of efficient generating capacity (Exh. EFSB-SS-5).[10] The Company stated that the figure reflected a dynamic analysis of how much capacity could be added to the sites, and what revenues could be expected under a range of scenarios (Tr. 5, at 454).

On December 10, 1997, BECo announced that it had selected Sithe Energies to purchase its generating assets (Exhs. SMD-1, at 3-7; EFSB-SS-3). Sithe Energies stated that it then conducted the second phase of its site review, which built upon the initial pre-bid analyses (Exh. SMD-1, at 3-8). The second phase included the evaluation of each site based on three categories of criteria: (1) consistency with Sithe Energies' development objectives; (2) environmental impacts; and (3) community issues (id. at 3-9). Consistency with development objectives encompassed the following sub-criteria: (1) availability of land; (2) proximity to electric load; (3) availability of natural gas; (4) electric transmission;[11] (5) availability of water for cooling purposes; and (6) compatibility with planned and existing uses (id. at 3-9 to 3-10). Environmental impacts encompassed the following sub-criteria: (1) air quality impacts; (2) water consumption;[12] (3) wastewater impacts; (4) wetlands; (5) noise;[13] (6) land use; (7) historical and cultural resources; (8) visual impacts; (9) traffic impacts; (10) solid and hazardous waste; (11) safety; and (12)

EMF effects (id. at 3-10; Exh. EFSB-SS-15). Community issues criteria encompassed the following sub-criteria: (1) compatibility with surrounding land uses;

(2) zoning; (3) local support or opposition; (4) valuation of surrounding property; (5) taxation; and (6) the impact of ancillary facilities on property owners (Exhs. SMD-1, at 3-11; EFSB-SS-16).

The Company explained that it did not use a formal weighted scoring system to rank the five sites based on these identified criteria; rather, it analyzed how important each criterion was on a case-by-case basis (Tr. 5, at 479-480). Sithe Energies indicated that it relied heavily on judgment in reviewing the criteria, and that all of the criteria were important (id. at 476, 480). Sithe Energies provided information which tracked the general application of its environmental and community issues criteria (Exhs. EFSB-RR-29 (att.); EFSB-RR-30).

Sithe Energies explained that in addition to evaluating each site based on these three sets of criteria, it determined the capacity to be developed at each site and the configuration of each facility based on an analysis of available infrastructure and the physical space available to locate the generation equipment (Exh. SMD-1, at 3-14 to 3-15). The Company stated that the configurations for the combined-cycle units were driven by the choice of the 501G turbine, which the Company selected based on its high efficiency (id.). Sithe Energies indicated that for the 501G, the most economical configuration is a two-on-one configuration -- two combustion turbines and one steam turbine -- where each block consists of approximately 700 MW (Tr. 5, at 529). Sithe Energies stated that, in addition to the physical size requirements of the equipment, it also considered the mix of abutters and surrounding land uses in determining the configuration of the units at each site (id. at 524).

Sithe Energies stated that it deliberately attempted to diversify its generating portfolio to incorporate non-baseload units for peak load and emergency back-up use (Exh. EFSB-SS-18; Tr. 5, at 526). Sithe Energies asserted that building a relatively limited amount of peaking capacity, relative to baseload capacity, is practical and meets its business objectives (Exh. EFSB-SS-32). The Company stated that Mystic Station and Edgar Station were excellent sites to construct combined-cycle units, while the West Medway Station had deficiencies in infrastructure and water supply that rendered combined- cycle development uneconomic (Exh. EFSB-SS-6; Tr. 5, at 527). The Company stated that the peaking capacity which it intends to construct at West Medway Station, together with the Company's existing peaking capacity, provide adequate peaking capacity for a diverse generating portfolio (Tr. 5, at 527).

The Company argues on brief that its site selection process contributes to the minimization of environmental impacts, as well as the minimization of costs associated with the mitigation, control, and reduction of such environmental impacts (Company Brief at 18). Sithe Energies indicated that it categorized its development plans and subsequent site selection as a "brownfield approach", which focused on identifying and evaluating appropriate sites with land uses already committed to power generation and

transmission (Exh. SMD-1, at 3-3). The Company argues that it achieved the minimization goals, listed above, by (1) adopting the brownfield strategy for development, and (2) evaluating the five sites and selecting the Mystic, Edgar and West Medway Stations for initial development (Company Brief at 18). The Company asserted that the environmental benefits of brownfield development arise from the use of existing infrastructure on or near the site for the development, construction and operation of the proposed facility (Exh. EFSB-SS-23). In addition, the Company noted that brownfield development largely avoids disturbing the features at or near a pristine site, and affords opportunities to provide environmental improvements at the existing sites (id.). In particular, Sithe Energies noted the specific opportunities to reduce air quality impacts at Mystic Station; to reduce visual impacts and remediate hazardous waste problems at Edgar Station; and to mitigate the noise impacts of the existing generating units at West Medway Station (Exhs. EFSB-SS-22; EFSB-23; Tr. 5, at 499-504).

1. Analysis

Sithe Energies has presented a site selection process which resulted in the selection of three sites to be developed on three distinct parcels: Mystic Station, Edgar Station, and West Medway Station. The Company described the development process and objectives which it used to determine the level of development for each site. Sithe Energies provided information on all five of the sites which it acquired from BECo, detailing their infrastructure strengths and weaknesses, and identifying base and alternative configurations and potential development risks. Sithe Energies applied criteria to assess each site's consistency with Company development objectives, environmental impacts, and community impacts. The Siting Board notes that the information provided by the Company was developed based on site visits, engineering and environmental analyses specific to each site, and economic and reliability analyses. The Siting Board finds that the applicant's description of the site selection process used is accurate.

As noted above, the record indicates that Sithe Energies identified the strengths and weaknesses of each of the five sites and the risks of developing facilities at each site. The Mystic site possessed the fewest risks, and one of the risks, permitting once-through cooling, was eliminated in light of a decision early in the development process to use air-cooled technology at the Mystic site. Further, Mystic Station was deemed to have the lowest noise impacts of the five sites and an economical electric interconnection.

Sithe Energies attributed minimization of environmental impacts to the use of a "brownfield approach". The Siting Board notes that the redevelopment and reuse of previously disturbed sites and the use of existing infrastructure can limit many of the environmental impacts that may be associated with industrial development. Additionally, where an industrial character and the presence of industrial support infrastructure are already evident, there often is the potential to develop additional facilities such as a generating plant, consistent with considerations of land use compatibility for such

development. The Siting Board encourages such "brownfield" development where appropriate. However, the Board notes that the benefits of such an approach are necessarily site and facility-specific. A review of any such site must take into account the scale, nature and physical attributes of any existing or recent use on the site, the existing character of the surrounding area, and the impacts which the specific proposed use will have on the surrounding area.

The Mystic facility is proposed as a baseload unit, and the operation of generating facilities on the site has always been baseload capacity. The land use surrounding the site is heavily industrial, and has historically been industrial in nature. The infrastructure to support the existing Mystic Station facilities is an integral component of the proposed project. Consequently, the Mystic Station site is an appropriate site for expanded generation use consistent with consideration of land use compatibility for industrial development.

Accordingly, the Siting Board finds that the Company's site selection process resulted in the selection of a site that contributes to the minimization of environmental impacts and the costs of mitigating, controlling, and reducing such impacts.

III. ENVIRONMENTAL IMPACTS

1. Standard of Review

G.L. c. 164, § 69J¼ requires the Siting Board to determine whether the plans for construction of a proposed generating facility minimize the environmental impacts of the proposed facility consistent with the minimization of costs associated with the mitigation, control and reduction of the environmental impacts of the proposed generating facility. In order to make this determination, the Siting Board assesses the impacts of the proposed facility in eight areas prescribed by its statute, including air quality, water resources, wetlands, solid waste, visual impacts, noise, local and regional land use, and health, and determines whether the applicant's description of these impacts is accurate and complete. G.L. c. 164, §69J¼.

The Siting Board also assesses the costs and benefits of options for mitigating, controlling, or reducing these impacts, and determines whether mitigation beyond that proposed by the applicant is required to minimize the environmental impacts of the proposed facility consistent with the minimization of costs associated with the mitigation, control and reduction of the environmental impacts of the proposed generating facility. Compliance with other agencies' standards does not establish that a proposed facility's environmental impacts have been minimized.

Finally, the Siting Board assesses any tradeoffs that need to be made among conflicting environmental impacts, particularly where an option for mitigating one type of impact

has the effect of increasing another type of impact. An assessment of all impacts of a facility is necessary to determine whether an appropriate balance is achieved both among conflicting environmental concerns and between environmental impacts and cost. A facility proposal which achieves this balance meets the Siting Board's statutory requirement to minimize environmental impacts consistent with minimizing the costs associated with the mitigation, control and reduction of the environmental impacts of the proposed generating facility.

1. Air Quality

This Section describes the air quality impacts of the proposed facility, the mitigation proposed by the Company, and the costs and benefits of any additional mitigation options.

1. Applicable Regulations

The Company indicated that regulations governing air impacts of the proposed facility include National Ambient Air Quality Standards ("NAAQS") and Massachusetts Ambient Air Quality Standards ("MAAQS");[(14)] Prevention of Significant Deterioration ("PSD") requirements; New Source Review ("NSR") requirements; and New Source Performance Standards ("NSPS") for criteria pollutants (Exh. SMD-1, at 4-3 to 4-4).

The Company indicated that, under NAAQS, all geographic areas are classified and designated as attainment, non-attainment[(15)] or unclassified for the six criteria pollutants: Sulfur dioxide ("SO_2"), fine particulates ("PM-10"), nitrogen oxide ("NO_x"), carbon monoxide ("CO"), ground level ozone ("O_3") and lead ("Pb") (Exh. SMD-1, at 4-3 to 4-4).[(16)] The Company further indicated that, although the Charlestown/Everett area is classified as "attainment" or "unclassified" for SO_2, PM-10, NO_x, CO, and Pb, the entire Commonwealth of Massachusetts is in "serious" non-attainment for O_3 (id. at 4-5).

The Company stated that under PSD requirements, it must (1) demonstrate that its proposed facility will comply with NAAQS, and (2) apply Best Available Control Technology ("BACT") at its proposed facility to emissions of CO, particulates ("PM"), and PM-10, pollutants for which emissions may potentially exceed 100 tons per year ("tpy") (Exh. EFSB-A-1-S (att.). at 5-3 to 5-4). The Company indicated it would voluntarily implement an Air Quality Improvement Plan ("AQIP") involving both the existing and proposed units at Mystic Station which would produce net reductions in SO_2, NO_x, and sulfuric acid mist s such that these emissions would not require PSD review

(Exh. EFSB-A-7-S (att.) at 3-3).[(17)] The Company also stated that lead emissions do not meet the regulatory threshold for PSD review (id.).

The Company stated that, to comply with the requirements of NSR for NO_x and VOCs, which are precursors of O_3, the proposed facility would be required to obtain emissions offsets at a minimum ratio of 1.26 to 1.0 if net increases in emissions of any non-attainment pollutant were to exceed 25 tpy (Exh. EFSB-A-1-S (att.) at 5-18). Sithe proposed a net decrease in total (including existing and proposed units) NO_x emissions at Mystic Station through its AQIP such that NO_x offsets would not be required under NSR (id.).

The Company stated, however, that the proposed facility, even with the AQIP in place, would result in a net increase in VOCs emissions of more than 25 tpy (id.). The Company proposed meeting the VOCs offset requirement on a net-out basis by using a portion of the net reduction of NOx emissions from the AQIP, applied at a ratio of two tons of NO_x emissions reduction for each ton of VOCs emissions reduction (id.). The Company indicated, however, that such an arrangement would require demonstration by MDEP to USEPA that additional NO_x reductions would be at least as effective as VOCs reductions in reducing ozone concentrations (id. at 5-18 to 5-19).[(18)] The Company stated that it would need to apply Lowest Achievable Emission Rate ("LAER") technology and "external" emissions offsets for VOCs at its proposed facility should the Company be unable to "net out" of NSR using NO_x offsets from its AQIP at a 2:1 ratio (id. at 5-5; 5-19).

With respect to NSPS requirements, the Company indicated that emissions of regulated pollutants -- NO_x and SO_2 -- would fall well below NSPS threshold levels (id. at 5-5).[(19)] In addition, the Company stated that the proposed facility would incorporate BACT for SO_2 and VOCs as well as for other non-criteria pollutants and air toxics that are regulated as part of the MDEP air plans approval process (id. at 5-6, 5-15 to 5-17).

The Company indicated that its proposed facility would meet Technology Performance Standards ("TPS") for air emissions from New Electric Generating Facilities promulgated in

980 CMR 12.00 by the Siting Board on July 17, 1998 (Exh. SMD-1, at 2-1 to 2-3). The Company provided documentation indicating that its proposed facility would meet TPS for both criteria and non-criteria pollutants (id. at Table 2.2-2, Revised Table 2.2-1).[(20)]

1. Emissions and Impacts

The Company indicated that the proposed facility would emit regulated pollutants, including criteria and non-criteria pollutants, and CO_2 (Exh. SMD-1, at 4-17 to 4-20). The Company asserted, however, that air quality impacts from the proposed facility

would be minimized through the use of natural gas as fuel, efficient combustion technology, advanced pollution control equipment and the proposed AQIP for Mystic Station (Exhs. EFSB-A-7-S (att.) at 4-1 to 4-10; EFSB -A-7-S (att.) at 1-1 to 1-2). The Company also asserted that dispatch of the proposed project in preference to older generating resources in the region would result in displacement of NO_x, SO_2 and CO_2 emissions (Exhs. SMD-1, at 1-32 to 1-33; EFSB-A-6; EFSB-RR-20).

The Company stated that its proposed facility would incorporate BACT for CO, PM-10, SO_2, and Pb as well as both BACT and LAER for NO_x and VOCs (Exhs. EFSB-A-1-S (att.) at App. C; EFSB-A-1-S-3, at 4-5 to 4-7). The Company further stated that emission rates for non-criteria pollutants would represent BACT for each substance (Exh. EFSB-A-1-S (att.) at App. C). In support of its contention that the proposed facility would represent BACT and/or LAER for the identified pollutants, the Company provided information regarding control options for the proposed facility (id.; Exhs. EFSB-A-7-S (att.) at 4-1 to 4-10; EFSB-A-1-S-3, at 4-1 to 4-7).

The Company estimated the quantity of pollutants that would be emitted from the proposed facility on the basis of information from manufacturers and vendors of plant equipment and from government data centers (Exhs. SMD-1, at 4-17; EFSB-A-7-S (att.) at App. D). The Company provided calculations of air emissions for the proposed facility assuming BACT emissions controls and full-load project operation (Mystic Units 8 and 9) for 365 days per year, including startups (Exh. EFSB-A-7-S (att.) at 1-9, 4-6 to 4-10).[(21)]

The Company provided results of local air quality modeling indicating that the air quality impacts of the proposed facility on ambient concentrations of criteria pollutants would be below established significant impact levels ("SILS") (Exhs. EFSB-A-1-S (att.) at 5-20; EFSB-RR-23). The Company stated that evaluation of predicted ambient air quality impacts from the proposed facility followed prescribed USEPA and MDEP procedures (Exh. EFSB-A-1-S (att.) at 5-20). The Company indicated that it had used the USEPA-approved Industrial Source Complex Short-Term ("ISCST3") and SCREEN3[(22)] atmospheric dispersion models to calculate ground-level concentrations resulting from the proposed facility's emissions (Exh. EFSB-A-7, at 5-8 to 5-12). The Company stated that it examined a range of stack heights and associated air quality impacts in selecting the stack height for the proposed facility (Exh. EFSB-RR-19).[(23)] The Company indicated that its selected stack height for the proposed facility, 305 feet, would be just above the height where air quality impacts due to building downwash effects are projected to increase significantly as the stack height is reduced (id.). Specifically, the Company stated that a stack height of less than 305 feet would produce air quality impacts greater than SILs at the proposed facility; conversely, if the stack height were increased above 305 feet, the incremental reduction of air emissions would be outweighed by the increased visual impacts (id.). Based on its analysis, the Company asserted that its proposed 305-foot stack height would minimize air quality impacts consistent with minimizing visual impacts (id.).

The Company also examined a range of cooling options for its proposed facility before choosing an air-cooled condenser to reduce water supply requirements (Exhs. SMD-1, at 4-1 to 4-6; EFSB-W-1; see also Section III.C, below). The Company indicated that the tradeoff associated with using air-cooled condensers is a decrease in facility power output, particularly at higher ambient air temperatures, and that the reduction in facility output requires additional operation of a marginal unit (Exh. EFSB-W-1). The Company stated that, because the marginal unit emits criteria pollutants at a greater rate than would the proposed facility for the same output, air cooling would have a corresponding negative effect on regional air quality (id.). The Company further stated that the proposed facility is designed to maintain plant output levels and to avoid potential negative air quality impacts through the use of evaporative coolers on the combustion turbine air intakes (id.).[(24)]

The Company also proposed implementing an AQIP for existing Mystic Station Units 4 through 9, inclusive, which would reduce total NO_x emissions from all units at Mystic Station by 21 percent, and would reduce total SO_x emissions from all units by 42 percent (Exh. EFSB-RR-21). The Company indicated that it would begin to implement its AQIP coincident with commercial operation of proposed Units 8 and 9 (Exhs. SMD-1, at 1-19 to 1-20; EFSB-A-2). The Company stated that, to accomplish these reductions, it would voluntarily (a) limit operations of each of the existing Mystic Station Units 4-6 to 720 hours per year at full-load equivalent; (b) modify Unit 7 to incorporate additional NO_x emissions control technology; and (c) adhere to an absolute station-wide cap on NO_x emissions of 3,000 tons per year, and on SO_2 emissions of 10,000 tons per year, to be met through selective fuel use and operational limits (Exhs. SMD-1, at 1-19 to 1-20; EFSB-A-2; EFSB-A-1-S-3, at 3-3 to 3-4).

The Company conducted dispersion modeling of the effect on ambient air quality of anticipated air emissions from the proposed facility, considered separately and together with emissions from the existing Mystic Station units and assumed background air quality (Exhs. SMD-1, at 4-18 to 4-19; EFSB-A-1-S (att.) at 5-20 to 5-21; EFSB-RR-23; EFSB-RR-46;

EFSB-A-1-S-3, at 2-6). The Company's dispersion modeling predicted ambient pollutant concentrations of criteria and non-criteria pollutants and air toxics from the proposed facility at receptor locations within a radius of 10 miles from the Mystic Station site (Exh. EFSB-A-1-S (att.) at 5-20 to 5-21).[(25)] The Company provided dispersion modeling results of cumulative air quality impacts from the proposed and existing Mystic Station units for three criteria pollutants, SO_2, NO_2, and PM-10 (Exh. EFSB-RR-46).

The Company indicated that, assuming maximum air emission impacts from the proposed facility, all of the predicted contributions of the proposed facility to ambient air quality would fall within the applicable SILs for criteria pollutants and the applicable MDEP limits for non-criteria pollutants and air toxics (Exhs. SMD-1, at 4-18 to 4-19; EFSB-A-1-S (att.) at 5-20 to 5-21; EFSB-A-1-S-3 at 2-6).[(26)] The Company's modeling of maximum cumulative air quality impacts, including emission additions from the proposed facility and emission reductions from implementation of the AQIP at the

existing Mystic Station units, showed that annual pollutant concentrations would decrease by 19 percent for SO_2 and 2 percent for NO_2 (Exh. EFSB-RR-46, (att.)). Twenty-four hour concentrations of PM-10 would increase by 1 percent, while 3-hour SO_2, 24-hour SO_2 and annual PM-10 concentrations would be essentially unchanged (id.).[(27),(28)]

The Company also provided vegetation sensitivity screening data for background plus predicted SO_2 concentrations from the proposed facility (Exh. EFSB-A-1-S (att.) at 4-21). The Company's data indicate that, for both the one-hour and three-hour averaging times, as predicted by ICSCT3 dispersion modeling, background plus maximum SO_2 concentrations from the proposed facility would be substantially below the screening threshold (id.).

The Company asserted that operation of the proposed facility would cause economic displacement of older, higher emitting units and therefore would be expected to result in regional air quality benefits (Exh. EFSB-A-6). In support of its assertion, the Company presented a formal dispatch analysis conducted by ISO New England for the year 1997 (id.; Exh. EFSB-RR-20). The Company suggested that the "1997 Marginal Emission Rate Analysis" (September 1998) could be used as the starting point for estimating the relationship between increasing/decreasing electric output capability at Mystic Station, and decreasing/increasing emissions at other electric generators in the region (Exh. EFSB-A-6).

In accordance with the above approach, the Company presented a table which compared emissions expected from the generation of 1500 MW in New England over a year (a) without the proposed facility and therefore with additional generation coming from existing marginal generating units, and (b) with the proposed facility operating fully and displacing other generation (id.). With operation of the proposed facility, the Company's analysis indicated that New England emissions of NO_x, SO_2 and CO_2 would be lower by approximately 16,740 tpy, 60,970 tpy and 4,631,850 tpy, respectively (id.).[(29)] The Company stated that even if New England's marginal rates of emission per unit energy output for NO_x and SO_2 were assumed to decline over five years to half their 1997 rates, the introduction of combined cycle generation would continue to displace significant quantities of the two pollutants; new combined cycle generation would continue to provide CO_2 displacement benefits even if New England's marginal emission rate for CO_2 declined by 20 percent over the next five years (id.).

1. Offset Proposals

The Company indicated that, to comply with the requirements of NSR for VOCs, the proposed facility might be required to obtain emissions offsets at a minimum ratio of 1.26 to 1.0, given that the expected net increase in VOC emissions with the proposed facility and the AQIP exceeds 25 tpy (Exh. EFSB-A-1-S (att.) at 5-18).[(30)] The Company

explained that while it proposes to use NO_x reductions from its AQIP at a 2:1 ratio to "net out" of the NSR offset requirement for VOCs, it is possible MDEP would not approve this proposal; if so, the Company would need to provide "external" emissions offsets at a ratio of 1.26:1.0 for the VOCs emissions from its proposed facility (id. at 5-5; 5-19; see Section III.B.1, above). The Company indicated that it had identified a company in Massachusetts with sufficient, available certified VOCs offsets for purchase to provide the necessary amount of "external" VOCs offsets if required

(Exh. EFSB-A-1-S-3, at 4-6 to 4-7).[(31)]

The Company indicated that the proposed facility would emit a maximum of 5.4 million tpy of CO_2 (Exh. EFSB-A-1-S (att.) at 5-19). The Company further stated that the AQIP would result in a reduction in CO_2 emissions at Mystic Station Units 4, 5 and 6 of 973,000 tpy, effectively offsetting approximately 18 percent of the added CO_2 emissions from the proposed facility (id.; Tr. 4, at 325-332).

Sithe stated that, to meet the Siting Board's CO_2 offset requirement, it proposes to use reductions in CO_2 emissions from curtailment of generation at Units 4, 5 and 6 as provided in its AQIP (Exh. EFSB-A-1-S (att.) at 5-19; Company Brief at 31).[(32)] Sithe argued that its proposed use of curtailment offsets for CO_2 emissions conforms to the Siting Board's requirement, set forth in the Berkshire Power Decision, that an applicant's CO_2 mitigation approach produce proven, incremental CO_2 reductions which would not otherwise occur (Company Brief at 31-32).

To support its position that the proposed CO_2 offsets would be incremental, Sithe stated that the AQIP and any emission reduction credits related thereto would not be implemented unless and until the proposed facility commences operation (Exh. EFSB-A-5). The Company also stated that the portion of curtailed operations at Units 4, 5 and 6 proposed for use in offsetting CO_2 emissions at the proposed facility was separate from the portion of such curtailed operations that is proposed for use in offsetting emissions of NO_x and VOCs at new facilities, including the proposed facility (Tr. 4, at 323- 335; Company Brief at 32).[(33)] The Company agreed that the portion of CO_2 emissions reductions used as offsets for emissions from the proposed facility would not be resold in the future as offsets for another CO_2 emission source (Tr. 4, at 344; Company Brief at 32).

1. Analysis

The record indicates that the proposed facility would consist of four highly efficient combustion turbines, four HRSGs with supplemental firing, and two steam turbines, all using natural gas as their sole fuel, and incorporating advanced pollution control equipment including dry low-Nox combustors and SCR. The Company proposes to achieve BACT for CO, PM-10, SO_2, and Pb, and to achieve BACT and LAER for NO_x and VOCs. The Company provided information regarding total facility emissions which demonstrates that the proposed facility would meet TPS for both criteria and non-criteria

pollutants. Consequently, the Siting Board finds that no alternative technologies assessment is required for the proposed facility.

The record also indicates that the Company intends to implement a voluntary AQIP for its four existing units at the Mystic Station site. The AQIP would reduce emissions from existing units sufficiently to result in net reductions in annual emissions of SO_2, NO_x, and sulfuric acid mist at the Mystic Station site, while leaving annual emissions of PM-10 essentially unchanged.

The Company has used MDEP-approved air modeling techniques to model both the emissions of the proposed facility and the cumulative air quality impacts of the existing and proposed facilities for certain pollutants. The modeling of proposed facility emissions demonstrates that emissions levels would be below SILs for all criteria pollutants, and within applicable limits for other hazardous or toxic air pollutants. These results were achieved assuming a stack height of 305 feet, approximately 38 percent below the GEP stack height. Because modeled impacts are below SILs, and within applicable limits for non-criteria pollutants, the Siting Board finds that the proposed 305 foot stack height would minimize air quality impacts consistent with minimizing visual impacts.

The Company's cumulative air quality modeling demonstrates that construction of the proposed facility, combined with implementation of the AQIP, would result in a 19 percent reduction in annual SO_2 concentrations and a 2 percent reduction in annual NOx concentrations at the point of maximum impact. Thus, the proposed facility/AQIP provide significant local improvements with respect to SO_2, and minor local improvements with respect to NOx.

The proposed facility/AQIP also would provide net reductions in total SO_2 and NO_x emissions from the site, while increasing on-site generating capacity by 150 percent. Sithe anticipates using some of these emissions reductions to meet other permitting requirements for the proposed facility. Specifically, Sithe proposes to use NO_x reductions from the AQIP to "net out" the VOCs emissions from the proposed facility. MDEP has expressed concern about this approach; the record demonstrates that Sithe has identified a source for 90 tpy of ERCs for VOCs consistent with NSR and MDEP requirements, in the event that MDEP does not accept the Company's netting proposal for VOCs.

In addition, the Company has indicated that it may use net reductions in NO_x emissions as offsets for proposed new facilities at its Edgar and West Medway stations. The regional significance of the emissions reductions from the Mystic Station site clearly would be less if the reductions were used as offsets for increased emissions elsewhere than it would be if the ERCs were retired. However, given that new emissions must be offset on a 1.26 to 1.0 basis, and given the significant reduction in emissions per MW at the Mystic site, the Siting Board concludes that the proposed facility/AQIP also will create net regional environmental benefits.

The Company also proposes to use emissions reductions from its AQIP to meet the Siting Board's CO_2 mitigation requirement. The Siting Board has set forth an approach to the

mitigation of CO_2 emissions that requires generating facility applicants to make a monetary contribution, within the early years of facility operation, to one or more cost-effective CO_2 offset programs, with such program(s) to be selected in consultation with the Siting Board staff. Dighton Power Associates, EFSB 96-3, at 42-43 (1997) ("Dighton Power Decision").[(34)] In the Dighton Power Decision, the Siting Board expressed an expectation that the contributions of future project developers would reflect that set forth in that decision, which was based on an offset of one percent of annual facility CO_2 emissions, at $1.50 per ton, to be donated in the early years of facility operation. Id. at 43.

In an earlier generating facility review, the Siting Board addressed a proposal to provide CO_2 mitigation by contracting for the shutdown or curtailment of an existing source of CO_2 emissions through direct purchase or through purchase collateral to transfer of NOx ERCs. Berkshire Power Decision, 4 DOMSB 221, at 370-374. Although the Siting Board did not accept that proposal, the Siting Board did set forth a standard for accepting such an offset approach should that applicant or a future applicant pursue it.[(35)] Id. at 373-374. The Siting Board stated that, to obtain approval of a CO_2 mitigation program based on shutdown or curtailment of existing sources, an applicant should demonstrate either

(1) that it would acquire CO_2 offsets or ERCs via a market that is operative or planned within an identifiable timeframe, and that is linked to meeting criteria for CO_2 emission limitations or reductions in the United States or other applicable region, or (2) that it would purchase CO_2 offsets that would lead to a source shutdown or curtailment which would not occur without such purchase. Id. at 373.

Here, Sithe proposes to provide CO_2 mitigation based on using a portion of CO_2 emission reductions from its AQIP to provide offsets for emissions from the proposed facility. Sithe argues that an offset level of 54,000 tpy, representing 5.5 percent of the emissions reduction available from the AQIP and 1 percent of the added emissions from the proposed facility, meets the requirements of the Siting Board for CO_2 mitigation as set forth in both the Berkshire Power Decision and the Dighton Power Decision.

The record indicates that, rather than purchasing CO_2 offsets from another source or entity as envisioned in the Berkshire Power Decision, Sithe would designate for use as offsets CO_2 emissions reductions from a facility that it now owns, and that in this case also is within the same Mystic Station site on which the proposed facility would be sited. The Siting Board finds that the transfer of offsets proposed by Sithe, although distinct in transactional terms, falls within the general scope of the offset transfer framework addressed in the Berkshire Power Decision.

As recognized by Sithe, there currently is insufficient development of a CO_2 offset market linked to meeting criteria for CO_2 emissions limitations or reductions in the United States or other applicable region to serve as a basis for establishing the consistency of Sithe's CO_2 offset proposal with the first prong of the standard set forth in Berkshire Power Decision. Thus, the Siting Board turns to the second prong of its standard for accepting CO_2 offsets from the shutdown or curtailment of existing sources -

that the shutdown or curtailment would not occur without the acquisition of the CO_2 offset as proposed.

The record shows Sithe has identified a number of netting or offset arrangements for criteria pollutants that it has developed to date based on the AQIP, including use of between 395 and 437 tpy of NO_x emissions reductions for netting out NO_x and possibly VOCs emissions from the proposed facility and use of approximately 800 tpy of NO_x emissions reductions for offsetting NO_x emissions at the Sithe Fore River and Sithe West Medway projects. The record further shows that Sithe's identified netting/offset arrangements would not consume such a large share of the emissions reductions from the AQIP for any pollutant as to necessarily be collateral to the CO_2 reductions to be used for meeting the Siting Board's CO_2 mitigation requirement, i.e., the identified arrangements would not consume more than 94.5 percent of the reductions available from the AQIP for any pollutant.

However, the record also shows Sithe plans to seek certification by MDEP of unused NOx reductions as Massachusetts Emission Reduction Credits. Beyond criteria pollutants, Sithe also may consider using CO_2 reductions from the AQIP to meet CO_2 offset requirements for other projects, for example the Sithe Fore River project or the Sithe West Medway project.

To ensure the consistency of Sithe's proposed CO_2 offset approach with the purpose of the second prong of the Siting Board's standard for accepting CO_2 offsets from the shutdown or curtailment of existing sources, the Siting Board must ensure that, going forward, Sithe would not develop netting or offset arrangements that would be collateral to the CO_2 reductions designated as offsets for the proposed CO_2 emissions from the proposed facility. Were the Company to make collateral use of the portion of the AQIP curtailment on which its CO_2 offsets are based, in order to provide emissions offsets relating to other pollutants and/or other sources, there would be little basis for the Siting Board to conclude that the affected portion of the AQIP curtailment would not have occurred without the CO_2 emission offset arrangement that constitutes the CO_2 mitigation for the proposed facility. In effect, with such collateral use of the AQIP curtailment, there would be little basis for the Siting Board to conclude that the proposed CO_2 emission offset arrangement would have any beneficial effect in reducing CO_2 emissions, in the absence of a CO_2 offset or ERC market linked to emissions limitations or reductions criteria.

Accordingly, as a condition of accepting Sithe's proposed CO_2 mitigation, the Siting Board will require that Sithe provide, as part of a CO_2 mitigation plan to be submitted to the Siting Board prior to or within the first year of operation, evidence of agreements or arrangements relating to the proposed AQIP emissions reductions that establish that the Company will make no collateral use, for purposes of providing emissions offsets for other pollutants and/or other sources, of the portion of the AQIP curtailment on which the CO_2 offsets for the proposed facility is based.

The record suggests that Sithe's proposal to provide offsets for 1 percent of facility emissions also would generally conform to the Siting Board's requirements set forth in the Dighton Power Decision, which provided for a monetary contribution for CO_2 mitigation, based on an offset level of 1 percent of facility emissions and an assumed mitigation cost of $1.50 per ton. While no monetary transaction is required as part of Sithe's proposal, the record evidence as to the range of recent transaction prices for CO_2 offsets is reasonably consistent with the assumed value of $1.50 per ton.[(36),(37)]

The Siting Board finds that, subject to the above condition that Sithe provide a CO_2 mitigation plan to establish that the Company will make no collateral use of the portion of the AQIP curtailment on which the CO_2 offsets for the proposed facility is based, Sithe's proposed approach of providing offsets for 1 percent of the proposed facility's CO_2 emissions, 54,000 tpy, from a portion of the CO_2 emissions reductions from the AQIP would conform to the Siting Board's requirement for CO_2 mitigation.

Alternatively, consistent with the CO_2 mitigation standard in the Dighton Power

Decision, the Company may elect to provide a monetary contribution in the early years of facility operation to a cost-effective program or programs to be selected upon consultation with the staff of the Siting Board, based on the maximum CO_2 emissions from the operation over 20 years of the proposed facility; or should the Company provide evidence to establish that it will make no additional use of the CO_2 reductions from the AQIP to provide CO_2 offsets, the Company may elect to provide such monetary contribution based on the maximum net CO_2 emissions from the proposed facility and the AQIP. If the Company elects to provide a monetary contribution, the Siting Board requires the Company to provide CO_2 offsets as described above through a total contribution of $1,720,161, or $1,410,213 if based on maximum net CO_2 emissions from the proposed facility and the AQIP,[(38)] to be paid in five annual installments during the first five years of facility operation.[(39)]

Accordingly, the Siting Board finds that, with implementation of the foregoing CO_2 mitigation, the environmental impacts of the proposed facility would be minimized with respect to air quality.

C. Water Resources

This Section describes the water resource impacts of the proposed facility, the mitigation proposed by the Company, and the costs and benefits of any additional mitigation options.

1. Description

The Company asserts that the water supply requirements of the proposed facility would be minimized (Company Brief at 37). The Company stated that, to minimize water supply requirements, the proposed facility would incorporate air (dry) cooling rather than evaporative (wet) cooling (Exh. SMD-1, at 4-24). The Company stated that water demand for the proposed facility as designed with air cooling would range from approximately 98,000 gallons per day ("gpd") to a peak of about 287,000 gpd during periods of high ambient temperature (91 degrees Fahrenheit or above) (id.). In contrast, the Company estimated that if evaporative cooling were used, the proposed facility would require as much as 7.8 million gallons per day ("mgd") of potable water (Exh. EFSB-W-1).

The Company stated that water-dependent activities at the proposed facility would include gas turbine water washes, steam cycle make-up, equipment washdown, chemical area washdown, potable water, air-cooled condenser wash, HRSG cleaning, and operation of evaporative coolers on the combustion turbine air intakes (Exh. SMD-1, at 1-14). The Company indicated that total water use for water-dependent activities excluding operation of the evaporative coolers would be 98,000 gpd; operation of the evaporative coolers would account for water use above 98,000 gpd (Exh. EFSB-W-1).[(40)] The Company estimated the total average daily water use of the proposed facility at 135,000 gpd based on operation with evaporative cooling for approximately 19 days of 91-degree plus Fahrenheit temperature per year (id.; Tr. 3, at 200 to 201).

The Company stated that the three categories of water supply needs for its proposed facility -- potable water, demineralized water, and on-site water storage -- all would be met by the Everett municipal water system, which is part of the Massachusetts Water Resources Authority ("MWRA") system (Exh. SMD-1, at 1-14; EFSB-W-2; EFSB-A-1-S (att.) at 8-1).[(41)] The Company stated, based on its discussion with Everett officials, that supplying water for the proposed facility would be within the capacity of Everett's existing municipal water system (Exhs. EFSB-W-2; EFSB-A-1-S (att.) at 8-1).

The Company stated that water pipelines with adequate capacity and pressure to serve the proposed facility currently are available on the Mystic Station site. (Exh. EFSB-A-1-S (att.) at 3-30). Data collected by the Company indicated no restrictions on water use have been imposed in Everett by either the Everett Water Department or the MWRA Waterworks Division in the past five years (Exh. EFSB-RR-10).

The Company submitted estimates of current water demand for the entire MWRA system which ranged between 250 and 260 mgd, 40-50 mgd below the 300 mgd safe yield of the MWRA system (Exhs. EFSB-RR-11; EFSB-RR-11-a). The Company stated that MWRA system demands are projected to decline slightly between 1999 and 2020 (Exhs. EFSB-RR-11; EFSB-RR-11-a). The Company indicated that water demand in Everett itself decreased from 8.96 mgd in 1985 to 4.8 mgd in 1998 (Exh. EFSB-RR-11). Based on information provided by the Company, it can be estimated that curtailed operation of existing Units 4, 5, and 6 as a result of construction of the proposed facilities would reduce potable water use for the entire Mystic Station by 131,000 to 132,000 gpd (Exh. EFSB-W-4).[(42)]

The Company stated that the proposed facilities would not withdraw water from surface or groundwater sources, including the Mystic River, adjacent to the Mystic Station site (Exh. EFSB-A-1-S (att.) at 8-1).[(43)] The Company further indicated that Mystic Station does not overlie a groundwater recharge area associated with a sole source aquifer, or an aquifer recognized as an important present or future source of drinking water supply (Exh. EFSB-W-15). In addition, there are no private drinking water wells known to be located in the vicinity of the site (id.).

The Company stated that the proposed facilities would generate a wastewater stream of approximately 91,000 gpd at average full-load operation and approximately 107,000 gpd during peak operation (Exh. EFSB-A-1-S (att.) at 8-7). The Company identified sources of wastewater from the proposed facilities as follows: demineralizer regeneration wastes, combustion turbine water washes, HRSG blowdown and cleaning wastes, floor and equipment drains, transformer containment areas, chemical storage and chemical unloading containment areas, and sanitary wastewater (id. at 3-26 to 3-27). The Company indicated that all wastewater would be either recycled, trucked off site to a licensed facility or treated and discharged to the Everett municipal sewer (id. at 3-26 to 3-27, 8-7). The Company stated that the wastewater discharged to the Everett municipal sewer would be required to meet MWRA pretreatment standards as well as USEPA standards for steam electric power generating facilities under 40 CFR 423.15, and that disposal of any wastewater discharges which might fall below such standards, e.g., HRSG cleaning wastes, would be off site (id. at 8-7 to 8-8). The Company stated that the proposed facilities as designed would recycle blowdown as make-up water to provide reductions in wastewater flows beyond those already achieved through the use of air cooling (id. at 8-7).

The Company stated that, at 91 degrees Fahrenheit, the proposed facilities would add 107,000 gpd to the 6,500 gpd current average discharge from the existing Mystic Station facilities (Exh. EFSB-W-5). The Company indicated that City of Everett wastewater is discharged into the MWRA sewage system at many different "public discharges" and that these "public discharges" are permitted by physical size rather than by flow capacity (id.; Exh. EFSB-W-6). The Company indicated that wastewater from the proposed facilities would enter the MWRA sewage system at Dexter Street via a new wastewater line (Exhs. SMD-1, at 1-23; EFSB-L-6; EFSB-W-6). The Company stated that the Dexter Street discharge pipe feeds into a 36-inch wide sewer pipe which in turn connects to a large tunnel under Alford Street (Tr. 3, at 216-217). The Company stated that the Dexter Street discharge pipe has an estimated flow capacity in excess of 7.5 mgd, the peak flow at the Dexter Street discharge location during the rainstorm of record rainfall (June, 1998) (id.).[(44)] The Company indicated, based on 1998 data,[(45)] that wastewater discharge at the Dexter Street discharge location normally ranges between 1.0 mgd and 5.0 mgd (Exh. EFSB-W-5(att.)).

The Company stated that, in addition to ensuring no discharge of process wastewater to adjacent ground and surface waters, it would implement the following measures to minimize impacts of the proposed facility on water quality, especially of the Mystic River: use of erosion and sediment controls between the proposed facilities site and the

Mystic River during construction; collection and treatment of industrial stormwater, including parking lot runoff, to meet MDEP stormwater guidelines; and development of a stormwater pollution prevention program ("SWPPP") (Exhs. EFSB-A-1-S (att.) at 10-16 to 10-17; EFSB-RR-13).

The Company indicated that measures to prevent release of pollutants into groundwater would include refueling over portable containment devices during construction and locating all hazardous chemicals and materials used during construction and operation within portable secondary containment systems (Exh. EFSB-W-7). The Company also stated that it would integrate the proposed facility into the existing Mystic Station Spill Prevention Control and Countermeasure ("SPCC") plan to direct spill response procedures (id.; Exh. EFSB-SF-1).

The Company further stated that detention and catch basins for the proposed facility's stormwater management system would be lined to prevent groundwater discharges prior to stormwater

treatment (Exh. EFSB-W-7).[(46)]

The Company reported pre- and post-development runoff at the proposed site (Exh. EFSB-A-1-S at App. D). The Company calculated current peak discharge for a 10-year, 24 hour rainfall at 44.14 cubic feet per second ("cfs") (id. at 27). The Company projected an increase in runoff of .26 cfs or .59 percent after development (id.).

1. Analysis

The record shows that the proposed facility is designed to use air rather than evaporative cooling. Based on the Company's estimate of 135,000 gpd total average water use, the proposed facility will require less than 90 gpd of water per MW of electricity generated.[(47)]

In addition, based on evidence submitted by the Company, curtailed operation of existing Units 4, 5, and 6 is likely to reduce water use for the entire Mystic Station by over 130,000 gpd.

The Company plans to draw its water supply from the Everett municipal water supply system, which in turn is supplied by the MWRA. The record demonstrates that, given the current and projected water demand for the entire MWRA system through 2020, and the current and projected water use of the City of Everett, the Company's designated water supply is adequate to meet the needs of the proposed facility over the 20-year planning horizon. The record further demonstrates that construction and operation of the proposed facility will not necessitate capacity or pressure upgrades to the Everett municipal water supply system, and will have no impact on the quality of surface and groundwater

adjacent to the Mystic Station site, including that of the Mystic River. In addition, the proposed facility will not affect groundwater recharge areas associated with a sole source aquifer or private drinking water wells.

Information submitted by the Company indicates that pretreatment will optimize the quality of wastewater discharged to the Everett municipal wastewater system and that wastewater discharge which cannot be treated to an acceptable level will be removed for off-site disposal. Air cooling and wastewater recycling at the proposed facility will reduce the volume of wastewater discharged. The Company's data also show that the Everett municipal wastewater system will have adequate capacity for wastewater discharges from the proposed facility. The record demonstrates that all appropriate measures to control run-off and stormwater discharge at the proposed facility will be instituted, including an SWPPP and an SPCC program, and that all applicable state and local guidelines will be met.

Based on a review of all evidence presented, the Siting Board concludes that the proponent has minimized the water resource impacts of its proposed facility. Accordingly, the Siting Board finds that the environmental impacts of the proposed facility would be minimized with respect to water resources.

D. Wetlands

This Section describes the wetland impacts of the proposed facility, the mitigation proposed by the Company, and the costs and benefits of any additional mitigation options.

1. Description

The Company asserts that the wetland impacts of the proposed facility would be minimized (Company Brief at 42 to 43). In support of its assertion, the Company stated that wetlands would not be disturbed by construction (including construction of utility interconnections) or operation of the proposed facility, except in connection with bank excavation to install two stormwater outfall structures and, possibly, dock modifications necessary to accommodate construction barges (Exhs. EFSB-A-1-S (att.) at 9-15; EFSB-L-7).[(48)] The Company described the construction process for the proposed outfall structures, and estimated that the total area of shoreline wetlands affected by outfall construction would be 500 square feet, or 250 square feet per outfall (Exh. EFSB-W-8-S). The Company stated that all bank excavation to accommodate the stormwater outfalls would require approval of the Everett Conservation Commission (Tr. 3, at 184). The Company anticipated that the portions of each outfall area not covered by rip rap or the outfall would revert to their original condition (Exh. EFSB-W-8-S). The Company stated that it currently planned no dock modifications in conjunction with the proposed facility (Tr. 3, at 184 to 185).[(49)]

With respect to floodplains, the Company provided a detailed topographic survey of the portion of the Mystic Station site closest to the adjacent Mystic River. This survey indicated that the elevation of all interior portions of the site, including the location of the proposed facility, is more than 10 feet above sea level (Exh. EFSB-L-10). The Company therefore asserted that the 100-year floodplain does not encroach upon interior portions of the site (id.).[(50)]

The Company submitted letters from the United States Department of the Interior, Fish and Wildlife Service, and the Natural Heritage and Endangered Species Program of the Commonwealth of Massachusetts, Division of Fisheries and Wildlife, indicating that these government agencies anticipated no impacts to federally- and state-listed rare and endangered species in the vicinity of the proposed facility (Exh. SMD-1, App. B).

2. Analysis

The record demonstrates that impacts to wetlands resulting from construction and operation of the proposed facility would be limited to 500 square feet of wetland disturbance in the vicinity of two planned stormwater outfall structures. The record also shows that any wetland excavation for the outfall structures will require approval of the Everett Conservation Commission, and that a portion of the affected wetlands would revert to their original condition.

The Company has indicated that wetland impacts also could result from dock modifications for barge delivery to the proposed site if such modifications are necessary. The Siting Board notes that any such modifications to the docks also will require approval of the Everett Conservation Commission.

The detailed topographic survey of Mystic Station submitted by the Company shows that the interior portions of the proposed site are outside the boundaries of the 100-year floodplain. Assuming the Company's request for an amendment to the FEMA Flood Insurance Rate Map for Mystic Station is granted by FEMA, as discussed in footnote 50, above, the Company will have satisfied FEMA's requirement that the 100-year floodplain not encroach upon interior portions of the proposed site.

Based on a review of all evidence presented, the Siting Board concludes that the proponent has minimized the wetland impacts of the proposed facility. Accordingly, the Siting Board finds that the environmental impacts at the proposed facility would be minimized with respect to wetlands. The Siting Board notes that should the Company modify the design or layout of its proposed facility due to a denial by FEMA of its amendment request, the Company would be required to notify the Siting Board, as discussed in Section V, below and to outline the changes in environmental impacts associated with the change in project design or layout.

E. Solid Waste and Hazardous Waste

This Section describes the solid and hazardous waste impacts of the proposed facility, the mitigation proposed by the Company, and the costs and benefits of any additional mitigation options.

1. Solid Waste

The Company estimated that a weekly average of three standard rolloff containers of waste and debris, including general waste, scrap metals and wood and paper products, would be generated during construction of the proposed facility (Exh. EFSB-SW-1).

The Company described the elements of the program it plans to implement to minimize solid waste during construction (Exh. SMD-1, at 1-23). The Company's proposed program includes: (a) segregating waste materials into stockpiles of metal and scrap wood which would be made available for salvage on a regular basis; (b) using excess excavation materials in the final grading plan; (c) relying on strict transfer procedures and containment structures to minimize the occurrence of spills when transferring fluids or refueling vehicles; and (d) including reuse and recycling in the evaluation criteria for purchasing construction materials and aids (id.). The Company also indicated that waste solvents and flushing materials generated during construction and pre-operational cleaning of the proposed facility would be removed by the contractor for proper off-site disposal (id.).

The Company indicated that, as a general practice, solid waste and debris unsuitable for recycling, reuse, or salvage, would be stored in on-site dumpsters or similar containers for disposal, and removed from the site by licensed contractors (Exh. SMD-1, at 1-23). The Company stated that hazardous wastes would be separated from normal wastes, containers would be properly labeled and storage areas would be segregated (id.).

The Company indicated that solid wastes produced by operation of the proposed facility would include spent catalyst from the NOx and CO removal systems, spent condensate polisher resin and general plant refuse (Exh. EFSB-SW-1). The Company estimated that approximately 800 cubic yards of spent catalyst from the NOx control system, and approximately 100 cubic yards of spent catalyst from the CO system, would require disposal a minimum of once every three years (id.). The Company stated that spent catalyst from the NOx control system would be sent to a reclamation facility, returned to the supplier for reclamation or, if reclamation were not an option, sent to an appropriate disposal facility; spent catalyst from the CO removal system would be sent for reclamation and disposal to a precious metal reclaimer or to the Company's supplier of replacement catalyst (id.; Company Brief at 66). The Company also estimated that approximately 7200 pounds per year of spent condensate polisher resin and less than one truckload per week of general plant refuse would require disposal at an appropriately licensed facility (Exh. EFSB-SW-1).[(51)] The Company also stated that during operation, office and other facility wastes would be recycled and non-recyclable materials would be disposed of by a private contractor (Exh. SMD-1, at 1-23).

2. Site Cleanup

The Company stated that oil and/or hazardous material releases had occurred in the past at a number of locations at the Mystic Station site, most recently in October and December, 1998 (Exh. EFSB-A-1-S (att.) at 11-1; Tr. 2, at 87). The Company indicated that prior to the October and December, 1998 releases, investigations[(52)] by the Company had identified three locations on the Mystic Site property with "the potential to present a risk to health, safety or public welfare" (Exh. EFSB-A-1-S (att.) at 11-3). A later study conducted by the Company and submitted to the Siting Board, "Preconstruction Site Assessment, Mystic Power Generating Facility," addressed the two 1998 releases as well (Exh. EFSB-RR-6-S (att.); Tr. 2, at 69). The Company indicated that it had retained a Licensed Site Professional ("LSP") who had prepared a remediation plan for the three pre-1998 release locations on the Mystic Station property (Exh. EFSB-A-1-S (att.) at 11-3).[(53)]

The Company presented detailed expert testimony with respect to the two latest releases of oil and/or hazardous material at the Mystic Station site (Tr. 2, at 86 to 94). The Company indicated that the October 1998 incident was a release of approximately 50 gallons of No. 2 fuel oil (id. at 87). The Company stated that remediation of the release was implemented and a "response-action outcome" ("RAO") achieved (id.).[(54)] The Company indicated that the December, 1998 incident involved a much larger spill of No. 6 fuel oil and required removal of as much as 50,000 gallons of fuel oil mixed with water, as well as removal of soils from the berm area where the spill was located (id. at 87 to 88). The Company explained that, in response to this release, its LSP initiated an "immediate response action" as required under regulations and prepared a final report on remediation effected (id. at 93).[(55)]

The Company indicated that only a small portion of the area designated for construction of the proposed facility overlapped with the area of the October and December, 1998 oil releases (Tr. 2, at 92). The Company emphasized that it would address contamination identified at the proposed site prior to the start of construction of its proposed facility; in particular, the Company stated it was in the process of evaluating the soil and groundwater at its proposed site to assess and prevent the risk of worker exposure to contaminants during proposed facility construction (id. at 85, 100 to 112, 114 to 122). The Company anticipated some residuals after remediation of releases at the proposed site, but stated that pre-construction cleanup of the site would meet a risk-based standard (id. at 85 to 86). The Company also stated that it has arranged for hazardous waste specialists to be available on call during construction of the proposed facility (id. at 85, 121 to 122).

1. Analysis

With respect to solid waste, the record demonstrates that where possible and cost-effective, solid waste from construction and operation of the proposed facility would be recycled, reclaimed or reused. The record also shows that the Company or its licensed contractor(s) would dispose of all remaining solid waste from construction and operation of the proposed facility at appropriate disposal sites in a manner consistent with applicable governmental regulations. In addition, the record shows that hazardous wastes would be segregated from normal wastes and disposed of appropriately.

The record further demonstrates that the Company intends, in accordance with MDEP specifications, to remediate past spills at Mystic Station, both in the vicinity of existing facilities at the site and within the area where the proposed facility would be constructed. The record demonstrates that, in conjunction with its efforts to remediate on-site contamination, the Company recently completed a study of oil and other hazardous waste releases at the Mystic Station site. The Company's investigation included an evaluation of three sites previously identified as within the area of proposed facility construction and two more recent releases of oil also within the proposed construction area.

The Company has demonstrated that it intends to achieve cleanup of oil and hazardous waste releases at Mystic Station to meet MDEP's risk-based standard and to prevent worker exposure to contaminants during construction of the proposed facility. The Company has provided information regarding the steps it will take to achieve mitigation of existing oil and other hazardous waste releases at Mystic Station as a whole and at the site of the proposed construction in particular. The record also includes measures the Company would take to respond to potential hazardous waste releases during construction, should such occur, and to minimize the likelihood of future releases of hazardous wastes and their environmental impacts.

Based on a review of the evidence presented, and assuming mitigation of oil and hazardous waste releases at the proposed site to meet the risk-based standard established by MCP regulations, the Siting Board finds that the environmental impacts at the proposed facility would be minimized with respect to solid and hazardous waste.

F. Visual Impacts

This Section describes the visual impacts of the proposed facility, the mitigation proposed by the Company, and the cost and benefits of any additional mitigation options.

1. Description

The Company stated that a large, densely-developed industrial area immediately surrounds the proposed facility site (Exh. SMD-1, at 4-72). The Company indicated that

intervening industrial structures would buffer views from many of the residential areas closest to the proposed facility site (id.). The Company stated that the nearest residences are located .02 to .03 miles north of the project site, between Alford Street/Broadway and Robin Street[(56)] (Exh. SMD-1, at 4-37). The Company also indicated that the proposed site is at a low elevation relative to the surrounding terrain and that hills to the north and south of the proposed site would afford additional buffering to areas beyond them (id.).

In support of its statements, the Company provided a study of the visibility of the project from twelve receptor locations[(57)] (id. at 4-72 to 4-87). The Company indicated that it selected the twelve receptor locations to include the most unobstructed, proximate views of the proposed facility site (id. at 4-73). The Company also stated that it considered the elevation of potential receptor locations as shown on the applicable United States Geological Survey ("USGS") topographic map (id.). The Company stated that photographs from each of its selected receptor locations were taken in mid-summer and that computerized perspective views of the structures of the proposed facility were superimposed to simulate the proposed facility's visual impacts to the surrounding areas (id.).

Based on viewsheds prepared for its selected receptor locations, the Company asserted that the proposed facility would blend with the visual character of the area around the Mystic Station site (id. at 4-72 to 4-73). The Company stated, however, that it had no objection to making appropriate fencing or vegetative screening available at identified receptor locations if discussions with local communities indicated the potential for reducing visual impacts of the proposed facility as a result of such measures (Exhs. EFSB-V-2; EFSB-V-6). The Company indicated that fencing or vegetative screening would be possible at all of the twelve visual receptors except Broadway (Route 99) at Parlin Junior High School in Everett and the Bunker Hill Monument in Charlestown (Exhs. EFSB-V-2; EFSB-V-6).

The Company listed a number of standard measures to reduce the visual impacts of large industrial facilities in mixed-use areas including: reducing visible emissions from exhaust stacks and cooling towers; using landscaping and non-reflective fencing; designing buildings with continuous sight lines; lowering structure height to maximize blockage of views; choosing materials of construction and coloring that blend with the landscape; and using low-impact lighting (Exh. EFSB-V-1). The Company indicated that it would rely on several of the standard mitigation measures it had identified to reduce visual impacts of the proposed facility (id.). The Company stated that the building sight lines, structure height, materials of construction, colors and lighting of its proposed facility would reduce its visual impacts (id.).

The Company indicated that it planned some landscaping in conjunction with its proposed facility and in addition to current landscaping around the Mystic Station site (Exh. EFSB-L-5).[(58)] The Company stated that it would seed or apply a layer of crushed stone to areas disturbed by construction after the completion of final grading activities (id.). The Company stated that it also intended to plant coniferous trees along that portion

of the northern edge of the Mystic Station property adjacent to Rover Street (id.; EFSB-V-7).[(59)]

With respect to building sight lines and structure height, the Company indicated that the generation building would house most of the equipment for the proposed facility, and that it would have a continuous roofline (Exh. EFSB-V-1). The Company stated that the air-cooled condensers for the proposed facility would be placed symmetrically at either end of the generation building (id.). The Company further stated that auxiliary equipment, including transformers and storage tanks, would be shielded from view by the generation building and the existing Mystic Station (id.). The Company indicated that the stack of the proposed facility would be almost 200 feet lower than the highest stack at the existing Mystic Station (id.).[(60)] In comparing the second highest buildings at the proposed facility and existing Mystic Station units, the Company indicated that the two air-cooled condensers for the proposed facility would be approximately 90 feet lower than the highest boiler building for an existing unit (id.; Exh. SMD-1, at 1-9).

The Company indicated that it anticipated using metal siding for the air-cooled condensers and generation building of the proposed facility and finished concrete for the stacks (Exh. EFSB-V-1). The Company indicated that the proposed exterior materials would be similar to those of Unit 7 at the existing Mystic Station (id.).[(61)] The Company stated that brick red and white were the dominant colors of the existing Mystic Station facilities, but that no final decision had been made with respect to exterior colors for the proposed facility (id.). The Company anticipated that a final color scheme would be chosen in cooperation with the City of Everett during the local zoning review of the proposed facility (id.).

The Company indicated that the existing Mystic Station operates continuously and is illuminated (id.). The Company stated that outdoor lighting specific to the proposed facility would also be required, including Federal Aviation Administration regulation obstruction lighting for the two stacks and high pressure sodium fixtures for a variety of locations (id.). With respect to the high pressure sodium fixtures, the Company anticipated using pole-mounted fixtures providing 0.5 foot-candles of illumination each for the site perimeter fence and plant roadways, 10 foot-candles each for outdoor walkways, stairways and platforms, and 2 foot-candles each for the outdoor transformer areas (id.). The Company stated that all outdoor lighting for the proposed facility would be photocell controlled and that lights would be downward-directed to reduce off-site light or glare (id.). The Company also stated that it would avoid exterior night lighting not required for safety or security reasons (Exh. EFSB-V-5). In addition, the Company stated that, in the transformer areas, lighting would be limited to a height of 20 feet above grade and further shielded from off-site view by transformer firewalls and strategic placement of the fixtures (id.).

With respect to mitigation of visible emissions, the Company indicated that any plume visibility at Mystic Station would be associated with the burning of No. 6 fuel oil (Exh. EFSB-V-3). The Company stated that existing Mystic Station Units 4, 5 and 6 always fire No. 6 fuel oil, while Unit 7 fires either No. 6 fuel oil or natural gas (id.). The Company

estimated that, with implementation of its AQIP, operation of Units 4, 5 and 6 would be reduced by 79 percent below the average annual capacity factor of those units over the two-year period 1997 to 1998 (id.). The Company indicated that plumes from Units 4, 5 and 6 would therefore be visible less frequently because of the reduced operation of the units (id.). The Company stated it was unable to predict the extent to which use of No. 6 fuel oil at Unit 7 and associated plume visibility would be reduced under the AQIP for Mystic Station (id). The Company indicated that to achieve AQIP target levels at Unit 7 it would use an array of strategies, including fuel switching, use of lower sulfur fuels, and curtailment of operations, and that use of No. 6 fuel oil and associated plume visibility would vary accordingly (id.).

2. Analysis

The record demonstrates that the Company analyzed the potential visual impacts of the proposed facility at twelve receptor locations in the surrounding area, selected based on considerations of elevation, proximity and unobstructed views. For each such site, the Company submitted a viewshed showing the current view from that location, and a second viewshed showing a computerized view of the Company's proposed structures superimposed on the current view.

The record demonstrates that in the wider area around the proposed facility site, views reflect industrial, commercial, residential and some recreational land use; however, industrial views predominate in the immediate vicinity of the proposed structures, except to the north, an area of mixed use which includes residential, recreational and commercial facilities.

The proposed facility would be located at a site presently used for electric power generation. The record demonstrates that the height of the proposed facilities generally would be lower than that of comparable existing structures at the Mystic Station site. In particular, the stacks of the proposed facility would likely be less obtrusive than the stacks of the existing Mystic Station structures, since they would be thirty feet lower than the stacks of existing Mystic Station Units 4, 5 and 6, and close to 200 feet lower than the 500-foot stack of existing Unit 7.

The record indicates, nonetheless, that at certain identified receptors, including Sonar Playground, Whidden Memorial Hospital and Sacramone Playground in Everett, Chelsea Memorial Park, Admiral's Hill and the Soldier's Home in Chelsea, Border Street in East Boston, Bunker Hill Street Playground and Ryan Playground in Charlestown, and the Mystic River Reservation in Medford, appropriate fencing or vegetative screening may provide some mitigation of visual impacts. The Company has stated that it has no objection to making fencing or vegetative screening available at identified receptor locations if discussions with local communities indicate the potential for reducing visual impacts of the proposed facility as a result of such measures. The Siting Board notes that

street trees or other landscaping may also be effective in mitigating the added visual presence of the proposed facility for the area of mixed uses, including some residential uses and a public ballfield, immediately north of the project site. The record indicates that the Company plans to extend landscaping along the perimeter of the existing Mystic Station site in conjunction with construction of its proposed facility, and to restore any existing landscaping at Mystic Station which may be disturbed by construction of the proposed facility. The record also shows that the Company would incorporate a number of standard measures to reduce visual impacts of large industrial facilities. Specifically, the Company's proposed facility incorporates building sight lines, structure height, materials of construction and lighting which would serve to minimize its visual impacts. The record demonstrates that the Company intends to work with the City of Everett to choose colors for the exterior of its proposed structures that would minimize their visual impacts. The record also demonstrates the likely reduction of the visual impacts of visible emissions at the entire Mystic Station site with implementation of the proposed AQIP.

Here, the Siting Board notes that the Company has provided analyses that support the predominantly industrial visual character of the Mystic Station site and its surroundings. The Company has also expressed a willingness to consider mitigation of visual impacts at identified public properties in the vicinity of the proposed site. However, the Siting Board notes that the nearest residential area, although bounded by industrial uses, is in close proximity to the project site, and in particular to the air-cooled condenser unit, which is situated just south of Dexter Street. Although consistent with uses in the area, the proposed facility would add structural mass that would affect views from the neighborhood, including the public ballfield, immediately north of the site.

In recent reviews, the Siting Board has required proponents of generating facilities to provide selective tree plantings in residential areas up to one mile from the proposed stack location to mitigate the visibility of the facility and the associated stack. ANP Bellingham Energy Company, EFSB 97-1, at 128 (1998); Millennium Power Decision, EFSB 96-4, at 140; Dighton Power Decision, EFSB 96-3, at 47-48; Berkshire Power Decision, 4 DOMSB at 395. Consistent with Siting Board precedent concerning the minimization of visual impacts, while taking into account the existing industrial viewshed, the Siting Board directs the Company to provide reasonable off-site mitigation of visual impacts, including shrubs, trees, window awnings or other mutually-agreeable measures, that would screen views of the proposed generating facility and related facilities at affected residential properties and at roadways and other locations in the residential area north of the site, extending to Bartlett Street and between and including Alford Street/Broadway and Robin Street, as requested by individual property owners or appropriate municipal officials.

Further, to minimize visual impacts at the public properties identified in Sithe's visual analysis, and at the public ballfield adjacent to the site, the Siting Board directs Sithe to consult with the Cities of Everett, Chelsea, and Boston, with regard to the public properties, and if determined to be appropriate, to provide fencing or vegetative screening.

In implementing the above directives for off-site mitigation of visual impacts, the Company: (1) shall provide shrub and tree plantings, window awnings or other reasonable mitigation on private property, only with the permission of the property owner, and along public ways, only with the permission of the appropriate municipal officials; (2) shall provide written notice of this requirement to appropriate officials in Everett, Chelsea and Boston, and to all potentially affected property owners in the residential areas north of the site, prior to the commencement of construction; (3) may limit requests for mitigation measures from local property owners and municipal officials to a specified period ending no less than six months after initial operation of the plant; (4) shall complete all agreed-upon mitigation measures within one year after completion of construction, or if based on a request filed after commencement of construction, within one year after such request; and (5) shall be responsible for the reasonable maintenance and replacement of plantings, as necessary, to ensure that healthy plantings become established.

Accordingly, the Siting Board finds that with the implementation of the above conditions, the environmental impacts of the proposed facility would be minimized with respect to visual impacts.

G. Noise Impacts

1. Description

This Section describes the noise impacts of the proposed facility, the mitigation proposed by the Company, and the costs and benefits of any additional mitigation options.

The Company asserted that its proposed facility would meet all governmental regulations and ordinances with respect to intrusive noise, and that noise from the proposed facility would not be noticeable in the surrounding community (Exh. SMD-1, at 4-64; Company Brief at 55). The Company further asserted that the proposed facility would incorporate comprehensive noise mitigation measures (Company Brief at 55 to 56).

The Company explained that applicable governmental regulations include: (1) federal regulations limiting noise from new trucks and trucks in interstate commerce; (2) federal regulations limiting occupational noise exposure; (3) the MDEP Policy 90-001 limiting noise increases at property lines and nearest residences to 10 dBA above background levels, and prohibiting tonal sounds; and (4) Everett ordinances prohibiting unreasonable, loud or excessive noise in excess of 50 dBA (Exh. SMD-1, at 4-64).[(62)] The Company indicated that there are various measures of noise, and noted that the MDEP 10-dBA limit is based on L_{90} noise, the sound level that is exceeded 90 percent of the time during the measurement period (id. at 4-58).[(63)] With respect to the effect of changes in noise, the Company stated that an increase of 3 dBA is the minimum increase in sound level that is generally perceptible to the human ear (Exhs. EFSB-A-7-S (att.) at 6-18; EFSB-N-11).

The Company monitored noise levels at four residential noise receptors and four property line receptors to ascertain ambient noise in the area surrounding the proposed facility (Exh. EFSB-A-7-S (att.) at 6-7 to 6-9). The Company compiled ambient noise data and projected facility-related operational noise impacts for both daytime and nighttime hours (id. at 6-14). The Company also projected the likely construction noise impacts at the proposed site (id. (att.) at 6-11).

The Company's noise analysis indicated that existing levels of L_{90} nighttime ambient noise at the four residential noise receptors ranged from 47 to 55 dBA (Exhs. SMD-1, at 4-61; EFSB-A-7-S (att.) at 6-16 to 6-17; EFSB-N-1). At the property line closest to residences, i.e., the property line to the north, the existing level of L_{90} nighttime ambient noise was measured at 58 dBA (Exhs. EFSB-A-7-S (att.) at 4-61; EFSB-N-1). The existing level of L_{90} daytime ambient noise at the property boundaries to the east and south of the proposed site ranged from 62 to 64 dBA (Exhs. EFSB-A-7-S (att.) at 6-17; EFSB-N-1).[(64)] The Company indicated that truck and general vehicular traffic, aircraft overflights, and industrial activity are dominant and relatively constant contributors to ambient noise levels in the vicinity of the proposed site (Exh. EFSB-RR-38; Tr. 6, at 683).

With respect to operating noise, the Company indicated that the proposed facility would result in a maximum increase of 2 dBA in L_{90} noise at the closest residential receptor on Mystic Street (Exh. EFSB-N-11). Expected L_{90} noise increases at the property line would range from 2 dBA on the Mystic River frontage, to 4 dBA at the frontage with Rover Street, to 6 dBA on the east property line which is not accessible by the public (Exh. EFSB A-7 (att.)).

To characterize further the existing noise environment, and the expected impact of the facility, the Company provided estimated day-night sound levels ("L_{dn}") at residential and property line receptors, with and without the facility (Exh. EFSB-RR-39).[(65)] The Company indicated that the existing L_{dn} levels at modeled receptors were currently well above the USEPA 55 dBA threshold, ranging from 61 to 65.6 dBA at the residential receptors, to 72 dBA at the Rover Street property line receptor (id.). The Company indicated that L_{dn} noise with the facility in operation would increase by 0.9 dBA, to 66.5 dBA, at the nearest residence (Mystic Street) and by 1 dBA, to 73 dBA, at the Rover Street property line receptor (id.).

The Company presented an analysis of the cost associated with reducing the noise impacts of the proposed facility at the nearest residence to 7, 4, and 2 dBA above ambient (id.).[(66)] Noise mitigation equipment was added for specific noise sources in the model until each noise reduction target (7, 4, and 2 dBA) was reached (id.). The major noise sources mitigated as part of the Company's analysis include: combustion turbine air intake and HRSG exhausts; air-cooled condensers and closed cooling water coolers; main power transformers; turbine walls and roof; and ventilation louvers (id.). The overall cost of noise mitigation for the proposed facility was estimated based on the cost of purchasing and installing the required equipment to achieve the incremental noise control targets (id.). The Company estimated that it would cost $1,010,000[(67)] to reduce noise

impacts from 10 dBA to 7 dBA; that it would cost $10,079,000[(68)] to reduce noise impacts from 10 dBA to 4 dBA; and that it would cost $16,031,000 to reduce noise impacts from 10 dBA to 2 dBA [(69)] (id.; Exh. EFSB-RR-37).[(70)]

The Company indicated that the highest predicted construction noise at the closest residences, except for pile driving, would be L_{eq} 61 dBA (Exh. EFSB-N-7).[(71)] The Company stated, by way of comparison, that the measured L_{eq} next to the baseball field at Dexter and Rover Streets, the northern property line of the Mystic Station site, was 71 dBA (a level caused by motor vehicle traffic), and that the lowest measured daytime L_{eq} level at the Mystic Street monitor, located at the nearest residence to the proposed site, was 60 dBA (Exhs. EFSB-N-12; EFSB-N-13). The Company further stated that excluding pile driving, the worst case combination of existing L_{eq} daytime noise and construction noise at the Mystic Street location would be 64 dBA, a maximum increase of 4 dBA (Exh. EFSB-N-12).

The Company proposed to limit construction noise impacts at the Mystic Station site by complying with federal regulations limiting truck noise; using, and maintaining in good repair, standard sound muffling devices on construction equipment; limiting all major construction activities to daytime hours to the extent practical; and limiting pile driving to daytime hours without exception (Exh. SMD-1, at 4-67). The Company stated that pile driving would be completed within a six to eight week period (Exh. EFSB-A-7-S (att.) at 6-14). In addition, the Company stated that "steam blows" to clean the piping before plant start-up would be conducted only during daytime hours, with muffled piping (Tr. 6, at 689 to 694). The Company made a commitment to notify the police and fire departments of impending steam blows, and to inform the public in advance through press releases and neighborhood signs (id.).

2. Analysis

In past decisions, the Siting Board has reviewed the noise impacts of proposed facilities for general consistency with applicable governmental regulations, including the MDEP's 10 dBA standard. ANP Blackstone Decision, EFSB 97-2/98-2, at 153; Millenium Power Decision , EFSB 96-4, at 152; Altresco-Pittsfield , Inc. ,17 DOMSC 351, at 401(1988). In addition, the Siting Board has considered the significance of expected noise increases which, although lower than 10 dBA, may adversely affect existing residences or other sensitive receptors. ANP Blackstone Decision, EFSB 97-2/98-2, at 153; Millennium Power Decision, EFSB 96-4, at 152; Northeast Energy Associates, 16 DOMSC 335, at 402-403 (1987).

The record demonstrates that the existing L_{90} nighttime ambient noise level at the residential receptors monitored by the Company ranges from 47 to 55 dBA. The record also demonstrates that ambient noise levels in the area, with or without the facility, are well above the 55 dBA guideline identified by USEPA in residential areas as the noise

level requisite to protect public health and welfare with an adequate margin of safety for both activity interference and hearing loss. Thus there is a compelling reason for the Company to use all cost-effective noise mitigation to limit noise increases at residential receptors closest to the Mystic Station site.

The record demonstrates that the Company voluntarily has committed to limiting the noise impacts of the proposed facility to no more than 2 dBA at residential receptors in the vicinity of its proposed facility, at an estimated incremental cost of $16,031,000 over the cost of mitigating noise impacts at the base level of 10 dBA. The Siting Board previously has recognized that a larger facility can, in general, support larger expenditures for mitigation of environmental impacts. Consistent with its mandate, the Siting Board requires such expenditures only when the specific circumstances of a case dictate that additional mitigation would be cost-effective. ANP Blackstone Decision, EFSB 97-2/98-2, at 157 n.137. The proposed facility, at 1550 MW, is larger by almost a factor of three than the largest generating facility previously approved by the Siting Board. Given the size of the proposed facility and the high existing ambient noise levels, the Siting Board finds that the level of mitigation proposed by Sithe is appropriate in this case.

Accordingly, the Siting Board finds that with the implementation of the Company's proposed level of mitigation of 2 dBA at residential receptors, the environmental impacts of the proposed facility with respect to operational noise would be minimized.

With respect to construction noise impacts, the Siting Board agrees that adherence to the Company's proposed construction site practices concerning machinery and hours of operation, combined with the proposed mitigation of steam release events, would minimize construction- related noise impacts. The Siting Board notes that such practices would be consistent with approaches to construction noise mitigation that it has reviewed in recent generating facility cases. Therefore, the Siting Board finds that the environmental impacts of the proposed facility with respect to construction noise would be minimized.

Accordingly, the Siting Board finds that the environmental impacts of the proposed facility would be minimized with respect to noise.

H. Safety

This Section describes the safety impacts of the proposed facility (excluding traffic safety impacts), the mitigation proposed by the Company, and the costs and benefits of any additional mitigation options.

The Company stated that to help ensure safety at the proposed facility it would:

(a) adhere to good engineering practices and comply with federal, state and local regulations in its design, construction and operation activities; (b) incorporate into its construction contracts provisions that require contractors to adhere to safety and health requirements; and (c) monitor operations on a regular basis (Exh. SMD-1, at 1-26 to 1-27, 4-133 to 4-134). In addition, the Company stated that, at a minimum, the proposed facility design would include the following safety features: (a) chemical storage vessels and areas with secondary containment;

(b) equipment and building layouts that incorporate provisions for safe access to and egress from the facility, as well as adequate access for fire fighting and other emergency equipment;

(c) emergency lighting with backup power supply; and (d) automatic shutdown systems with backup power supply for turbines, fuel supplies and chemical systems (id. at 1-26 to 1-27).

1. Materials Handling and Storage

The Company indicated it would store aqueous ammonia on site in two 100,000-gallon welded steel tanks (id. at 1-25). The Company stated that each tank would be double-walled and equipped with leak detection and an ammonia vapor treatment system (Exh. EFSB-SF-5). The Company indicated that the tanks would be leak-tested before use and inspected periodically (id.). The Company also stated that the tanks would be surrounded by concrete berms or fencing to prevent accidental contact with vehicles or other equipment (id.). Delivery would be via an average of thirteen approximately 5,500-gallon tanker truckloads of 19.5 percent ammonia concentration per week (id.). The Company indicated that transfer of ammonia from trucks to the storage tanks would be through heavy-duty rubber hoses connected to a permanent pump/pipe system (id.). Trucks would be stationed in a bermed unloading area during ammonia transfer (id.).

In order to assess the potential for off-site impacts of a worst-case release scenario, the Company stated that it evaluated a rupture of the primary/internal tank wall coupled with a loss of power to the ammonia vapor filtration system using protocols established in USEPA's Risk Management Program regulations (40 CFR Part 68) (Exhs. EFSB-A-7-S (att.) at 5-17 to 5-18); EFSB-SF-5).[(72)] The Company indicated that the 19.5 percent aqueous ammonia would not be subject to these regulations due to its dilute concentration (Exh. EFSB-A-7-S (att.) at 5-17). The Company stated, however, that it conducted an evaluation under 40 CFR Part 68 to assess potential impacts conservatively (id.).

The Company's dispersion modeling results predicted concentrations of ammonia of less than 0.5 ppm at the nearest property boundary in the event of a catastrophic ammonia release (id. at App. D; Exh. EFSB-SF-5). The Company indicated that the modeled concentrations would be well within USEPA's guidelines of 200 ppm.

The Company stated that operation of the proposed facility would require limited amounts of lubricating oils and other industrial chemicals, primarily for water and

wastewater treatment, and for operation of the SCR system (Exh. SMD-1, at 1-24). The Company documented the storage and use of hazardous materials associated with construction and operation of the proposed facility and provided material safety data sheets for use by state and local emergency planning committees as required under the regulations of the Emergency Planning and Community Right-to-Know Act (Exh. EFSB-A-1-S (att.) at 11-1). The Company indicated that all on-site chemical storage would be in covered containment areas, with secondary containment appropriate to each chemical and equal, at a minimum, to the volume of the stored material (Exh. SMD-1, at 1-24 to 1-25, 4-133; Tr. 2, at 126 to 129). The Company stated that employees would be trained to manage hazardous materials and respond to emergencies as appropriate (Exh. SMD-1, at 4-133).

2. Fogging and Icing

The Company indicated that fogging and icing hazards are normally associated with vapor plumes from water-cooled rather than air-cooled systems (Tr. 2, at 160 to 161). The Company stated that because the proposed facility would incorporate an air-cooled condenser, it would have no vapor plume and operation of its cooling loop would therefore produce no fogging or icing (id.). In addition, the Company indicated emissions from the stack of the proposed facility would produce no condensed water vapor which might cause or contribute to fogging or icing hazards (Tr. 4, at 349 to 350).

3. Emergency Response

The Company indicated that it would integrate the proposed facility into the existing Mystic Station SPCC Plan (Exh. EFSB-SF-1). The Company provided a detailed explanation of changes that it would make to the existing SPCC (id.). The Company anticipated that its action would contribute to minimizing the potential for oil and hazardous material spills and to responding effectively to their accidental release (id.). The Company also provided copies of two existing Mystic Station documents, the Mystic Station Emergency Response Plan and the Mystic Station Facility Response Plan, which the Company indicated would guide emergency response at the proposed facility to (a) a significant release of hazardous materials to the air, land or water, and (b) fires, explosions, natural disasters, off-site incidents and sabotage (Exhs. EFSB-RR-8; EFSB-RR-8-A; EFSB-RR-8-B). The Company also provided copies of emergency management plans maintained by the Cities of Boston and Everett, both of which address evacuation in the event of a hazardous material incident (Exhs. EFSB-RR-8-C; EFSB-RR-8-D). The Company indicated that the City of Everett Emergency Management Plan also discusses emergency response to natural disasters (Exhs. EFSB-RR-8; EFSB-RR-8-D).

1. Barge Deliveries

The Company anticipated that major equipment components of the combustion and steam turbine generators would be delivered by barge, and that such deliveries would be handled by qualified barge and tug corporations in conjunction with a heavy haul contractor (Exh. EFSB-SF-2). The Company indicated that delivery scheduling would take into consideration other activities, including docking and sailing times, related to the Mystic River DPA, would be coordinated with the Coast Guard and harbor pilots, and would not occur in conditions of high waves and wind (id.). The Company also stated that it would consolidate equipment deliveries to minimize water traffic on the Mystic River related to construction of the proposed facility (Exh. EFSB-SF-3).

1. Analysis

The record demonstrates that aqueous ammonia and other non-fuel chemicals would be properly managed and stored, in accordance with applicable public and occupational safety and health standards. The record shows that the 19.5 percent concentration of aqueous ammonia which the Company plans to use in its proposed facility would not be subject to regulation under the USEPA's Risk Management Program. However, the Company's modeling results demonstrate that aqueous ammonia concentrations for the proposed facility would be less than 0.5 ppm at the nearest property boundary in the event of a catastrophic release. This is well within the IDLH threshold of 500 ppm at sensitive receptors at or beyond the property boundary of the proposed facility applied in previous cases before the Siting Board.

The record demonstrates that the Company has arranged for proper storage, use and secondary containment of hazardous materials associated with construction and operation of the proposed facility, and that employees would be trained to manage hazardous materials and to respond to emergencies, as appropriate. The Siting Board also notes that the proposed facility would be incorporated into existing emergency management protocols at Mystic Station established by the Company and the Cities of Everett and Boston, including the two cities' procedures for emergency evacuation. The Company's emergency management plans include measures for construction-related contingencies.

With respect to fogging and icing, the record demonstrates that there would be no ground level fogging or icing resulting from operation of the proposed facility

The record further demonstrates that, to reduce the chance of mishap, barged delivery of equipment for the proposed facility would be scheduled to minimize disruption to the

Mystic River DPA and avoid heavy seas, and would be coordinated with all appropriate oversight authorities.

Accordingly, the Siting Board finds that the environmental impacts of the proposed facility would be minimized with respect to safety.

I. Traffic

1. Description

This Section describes the impacts to local traffic conditions of construction and operation of the proposed facility, and the costs and benefits of any additional mitigation options.

The Company asserted that traffic impacts associated with constructing and operating the proposed facility would be minimized (Exh. SMD-1, at 4-87). In support of its assertion, the Company provided traffic volume data for existing traffic conditions, and modeled future (Year 2000 and Year 2003) traffic conditions with and without the proposed facility (id. at

4-87 to 4-114).[(73)],[(74)] The Company also modeled Year 2000 traffic conditions with construction traffic from both the proposed facility and the Island End project, another project proposed for a site to the east of Mystic Station (id.).[(75)]

The Company's analyses focused on five major intersections in the vicinity of the proposed site: (a) Route 99/Mystic Station Access Drive -- a signalized T-intersection; (b) Route 99/Dexter Street -- a signalized, T-intersection (the first block north of the access drive); (c) Robin Street/Dexter Street/Rover Street -- an unsignalized, 3-way intersection on the northern boundary of Mystic Station; (d) Robin Street/Beacham Street -- an unsignalized, 4-way intersection north on Robin Street; and (e) Route 99/Beacham Street/McDonald's Restaurant ("McDonald's")-- a signalized 4-way intersection[(76)] north on Route 99 (id. at 4-87 to 4-92).

The Company's analysis of existing traffic conditions in the vicinity of the proposed site indicated peak commuter traffic periods from 6:30-7:30 a.m. and 5:00-6:00 p.m. (id. at 4-92). The Company based its identification of peak-hour conditions on its collection of intersection turning movement counts at the five intersections during weekday morning (6:00-9:00 a.m.) and afternoon (3:00-6:00 p.m.) hours in June 1998 (id.).

In modeling Year 2000 construction-related impacts of the proposed facility, the Company included passenger vehicle trips associated with the arrival and departure of workers and truck trips associated with the delivery of construction materials, equipment and supplies (id. at 4-100). The Company anticipated a maximum construction-related

workforce for the proposed project of 1,078 (980 craft workers and 98 supervisory and support personnel) (id.).[(77)] The Company stated that its traffic analysis assumed the number of employees and shift timing typical of the period of peak construction activity (id.). The Company indicated that construction would occur during a normal 8-hour shift, from 7:00 a.m. to 3:00 p.m., but that construction shift periods might be lengthened based on available daylight hours (id.).

The Company's Year 2000 build scenario traffic analysis assumed that 100 percent of the heaviest morning construction-related traffic would occur during the morning commuter peak period, and 50 percent of the heaviest afternoon construction-related traffic would occur during the afternoon commuter peak period (id.). The Company stated that it also made conservative assumptions about participation levels for ride sharing and the use of public transportation among its construction workforce (id.). Specifically, for purposes of its analysis, the Company estimated that ride sharing would result in 1.2 persons arriving per carload of supervisory and support workers, and 1.4 persons arriving per carload of workers in the construction crafts (id.). The Company also estimated that 15 percent of supervisory and support workers and one-third of workers in the construction crafts would use public transportation and shuttle busses to reach the Mystic Station site (id.).

Based on a monthly estimate of 280 truck deliveries, the Company projected 14 truck deliveries per day during the period of peak construction (id.). The Company anticipated that truck deliveries would be distributed approximately evenly over a 10-hour day, but conservatively assumed that two truck trips would occur to and from the site during each hour of peak traffic flow (id. at 4-100 to 4-101).

The Company examined journey-to-work information for Everett based on 1990 census data and existing traffic patterns (id. at 4-101). Based on this review, the Company projected the number and route of new trips likely to be generated during the predicted peak month of facility construction (id.). The Company developed projections for build and no-build scenarios for both morning and afternoon peak hour periods (id. at 4-101 to 4-106).[(78)]

With respect to facility operation, the Company indicated that, based on the proposed 24-hour, three-shift schedule, the facility would add 28 employee trips and four truck trips to area peak-hour traffic in the morning and 29 employee trips and two truck trips to area peak-hour traffic in the afternoon (id. at 4-109).[(79)]

The Company stated that traffic projections for the Year 2003 no-build scenario were developed using the same procedure as for the Year 2000 build scenario (id. at 4-107). Existing (1998) traffic volumes were increased by the background growth rate plus projected traffic from two other projects under consideration for the Mystic Station area, the Gateway Center and the Everett Recycling Facility (id.).

The Company's analysis indicated that one of the three signalized intersections studied, Route 99/Dexter Street, was, on average, already at Level of Service ("LOS") "D" during morning and afternoon peak hour traffic (Exh. SMD-1, at 4-105).[(80)] At the second

signalized intersection, the intersection of Route 99 with Beacham Street and the access drive to McDonald's, the Company stated that existing morning peak hour traffic was LOS "D" and existing afternoon peak hour traffic was at LOS "C" (id.).

The Company's analysis predicted deterioration to LOS "F" in the morning (afternoon LOS would not change) at the Route 99/Dexter Street intersection during Year 2000 construction of the proposed facility, assuming no mitigation of traffic impacts (id.). At the Route 99/Beacham Street/McDonald's intersection, again assuming no mitigation, the Company anticipated that traffic would deteriorate from LOS "D" to LOS "E" during morning peak hour traffic and from LOS "C" to LOS "D" in the afternoon (id.). The Company also anticipated that morning peak hour LOS at the Route 99/Mystic Station Access Drive intersection would drop from LOS "A" to LOS "C" (id.). LOS at the remaining two major intersections of the traffic study was expected to change less dramatically under the Year 2000 build scenario (id.). The Company also indicated that Year 2003 peak hour LOS at the intersections in its study area would be comparable under the build and no-build scenarios (id. at 113).

The Company proposed a number of measures to mitigate the deterioration in LOS associated with Year 2000 construction of the proposed facility (Exhs. EFSB-A-1-S (att.) at 12-19 to 12-20; EFSB-T-4; EFSB-T-5). For example, the Company expected to use a construction staging area off Route 99 north of Dexter Street for parking for some of its construction period workforce (Exhs. EFSB-A-1-S (att.) at 12-19 to 12-20; EFSB-RR-34, at 3).[(81),(82)] The Company estimated that this measure, coupled with striping a Route 99 southbound right turn lane into the staging area would remove over 300 vehicles from the Dexter Street and Mystic Station Access Drive intersections with Route 99 (Exh. EFSB-A-1-S (att.) at 12-19 to 12-20).

Other mitigation measures proposed by the Company to improve traffic flow during construction include: (1) optimizing signal timing at the three Route 99 intersections to maximize traffic flow, and manually controlling Route 99 traffic signals when beneficial; (2) using uniformed traffic-control police as necessary at each intersection; (3) encouraging workers' use of public transportation; (4) encouraging carpools among Company employees and subcontractors and providing preferred parking to those who carpool; (5) delivering large equipment by barge and rail as much as possible; and (6) scheduling deliveries during off-peak hours to the extent practicable (Exhs. EFSB-A-1-S (att.) at 12-19 to 12-20; EFSB-T-2; EFSB-T-4; EFSB-T-5; EFSB-RR-31; EFSB-RR-33; EFSB-RR-34; EFSB-RR-35; Tr. 5, at 550 to 552, 576 to 577, 598 to 599).[(83),(84)]

The Company's analysis indicated that, incorporating proposed mitigation of traffic impacts and arrival of the proposed construction workforce between 6:00 and 7:00 a.m., all major intersections of its traffic study would be at LOS "C" or better with the exception of the Route 99/Beacham Street/McDonald's intersection (Exh. EFSB-T-6-S-B). LOS "E" and "D" were predicted at the Route 99/Beacham Street/McDonald's intersection during morning and afternoon peak hour traffic, respectively (id.).[(85)]

The Company stated that it would maintain communication with local officials and police departments to address any traffic impacts arising from construction and subsequent operation of the proposed facility and, in particular, to ensure safe passage of safety and emergency vehicles at all times (Exh. EFSB-T-2; Tr. 5, at 566 to 568).

2. Analysis

Sithe Mystic has provided an analysis of traffic impacts for intersections in the vicinity of the Mystic Station site under build and no-build scenarios. The Company's analysis includes traffic impacts for the Year 2000, the period of peak construction activity and for the Year 2003, during operation of the proposed facility.

The record demonstrates that by the Year 2003, traffic levels in the Mystic Station site area would be greater than at present, but would have increased at the same rate with or without construction and operation of the proposed facility. With respect to Year 2000 traffic impacts, however, the record demonstrates that without proposed mitigation, LOS at three intersections in the Company's analysis would deteriorate more noticeably under the build scenario than under the no-build scenario. Specifically, without proposed mitigation the record shows deterioration to LOS "F" during morning peak traffic at the Route 99/Dexter Street intersection, deterioration to LOS "E" during morning peak traffic and LOS "D" during afternoon peak traffic at the Route 99/Beacham Street/McDonald's intersection, and deterioration from LOS "A" to LOS "C" during morning peak traffic at the Route 99/Mystic Station Access Drive. The record shows that under certain conditions in highly developed urban areas, LOS "D" and LOS "E" may be classified as acceptable levels of traffic flow. The Siting Board notes, however, that LOS "E" involves conditions at or near roadway capacity, and that LOS "F", projected at Route 99/Dexter Street during Year 2000 peak morning traffic, represents forced flow or breakdown conditions.

The record demonstrates that the Company would implement a number of measures to minimize traffic impacts from construction of the proposed facility: providing parking for 300 cars at the Company's proposed construction staging area to reduce traffic proceeding in a southerly direction through intersections of Route 99 in the vicinity of the Mystic Station site;[(86)] striping a Route 99 southbound right turn lane into the staging area; optimizing signal timing at the three Route 99 intersections near the proposed facility site to maximize traffic flow; manually controlling Route 99 traffic signals when beneficial; using uniformed traffic-control police as necessary at each intersection; encouraging workers' use of public transportation; encouraging carpools among Company employees and subcontractors and providing preferred parking to those who carpool; delivering large equipment by barge and rail as much as possible; and scheduling deliveries during off-peak hours to the extent practicable. The record demonstrates that the Company's proposed mitigation, assuming arrival of the Company's day-shift construction workforce between 6:00 and 7:00 a.m., would result in LOS "C" at

all major intersections of the Company's traffic study with one exception, the Beacham Street/McDonald's intersection with Route 99. At this last intersection, the record shows Year 2000 LOS at LOS "E" during morning peak hour traffic and LOS "D" during afternoon peak hour traffic. The record also demonstrates, however, that LOS at the Route 99/Beacham Street/McDonald's intersection is projected to revert to current (1998) morning and afternoon peak hour levels, LOS "D" and LOS "C", respectively, after construction of the proposed facility is completed. The record further demonstrates that the Company intends to maintain communication with local officials and police departments to address any traffic impacts arising from construction and subsequent operation of the proposed facility, and to ensure smooth passage of safety and emergency vehicles at all times.

The Company proposes to provide parking for 300 cars at its construction staging area located on the west side of Alford Street, north of Dexter Street. The Siting Board notes that the construction workers who park at this site will have to cross Alford Street to reach the project site. This crossing may affect traffic flow on Alford and Dexter Streets and raise pedestrian safety concerns. Therefore, the Siting Board directs Sithe to coordinate with the appropriate municipal authorities to identify and implement appropriate measures to address traffic and pedestrian safety in the vicinity of the off-site construction parking area north of Dexter Street.

The Siting Board notes that the Company's analysis of traffic impacts rests in part on the assumption that 15 percent of supervisory and support workers and one-third of workers in the construction crafts, or approximately 325 workers at the peak construction period, would use public transportation to reach the Mystic Station site. This level of craft-worker use of public transit is significantly higher than assumed in any other Siting Board case and may be difficult to achieve by relying entirely on existing MBTA services. Further, the Siting Board notes that the highest possible use of public transportation for this project would best mitigate traffic impacts. Therefore, the Siting Board directs the Company to provide a shuttle service throughout the construction period during the hours surrounding the beginning and end of the day shift running between the Sullivan Square MBTA stop (and /or any other public transit stops likely to be used by Mystic Station construction workers) and the Mystic Station site. The Company should coordinate with the MBTA and any appropriate municipal officials with regard to providing this shuttle service.

The Siting Board finds that, with the implementation of the proposed mitigation and the above conditions, the environmental impacts of the proposed facility would be minimized with respect to traffic. Should the Company modify the construction plans for its proposed facility due to the failure of its negotiations for its preferred construction staging area, the Company shall notify the Siting Board, as discussed in Section V, below.

J. Electric and Magnetic Fields[87]

1. Description

Sithe stated that the proposed facility would be interconnected to the bulk transmission system at BECo's Mystic substation, located within the Mystic Station property (Exh. SMD-1, at 1-20 to 1-21). Sithe indicated that it expected the proposed project would require system improvements, including a new BECo 345 kV line and upgrades to certain existing lines and substations, but added that it was working with BECo and the Independent System Operator - New England to determine the final interconnect configuration and related requirements for upgrading the existing transmission system (id.; Tr. 3, at 227-230; Company Brief at 78).

Sithe indicated that operation of the proposed facility would produce magnetic fields associated with increased power flows on bulk transmission lines extending from Mystic substation (Exh. SMD-1, at 4-114 to 4-115; Tr. 3, at 227-230).[88] The Company explained that one of the proposed facility's 775 MW power blocks would interconnect with the new BECo 345 kV line, to be installed in an existing underground duct extending to a substation in North Cambridge parallel to BECo's existing 358 line (Tr. 3, at 725, 727-729). The other 775 MW power block would interconnect with the 115 kV transmission system, specifically with one underground 115 kV line, the 211-514 line extending to a substation in Woburn, and two partially underground/ partially overhead 115 kV lines, the 488-518 line and the 423-515 line extending to substations in Chelsea and West Everett, respectively (id.).

In order to represent expected worst-case magnetic field levels with operation of the proposed facility, Sithe provided estimates of magnetic field levels along the four transmission lines, assuming (1) the addition of 775 MW of project power along the route of the new 345 kV line in combination with existing power flow along the 358 line and (2) the operation of the affected 115 kV lines at their expected maximum line capacity after required upgrades (Exhs. SMD 1, at 4-119 to 4-130; EFSB-RR-17). Above the new 345 kV line, the Company estimated a maximum magnetic field of 1.9 milligauss ("mG") with the proposed project, compared with 1.7 mG with the existing 358 line (Exh. SMD-1, at 4-127 to 4-132).[89] Above the 211-514 line, which is expected to be reconductored with a capacity of 186 megavolt-ampers ("MVA"), the Company estimated a maximum magnetic field of 4.5 mG (Exh. EFSB-RR-17). To reflect worst-case conditions for the 488-518 line and the 423-515 line, the Company estimated magnetic field levels for the above-ground segments of each line, located within railroad rights-of-way, based on the expected capacity of 172 MVA for each line (id.). The Company's calculations indicated the proposed project would result in maximum magnetic field levels of 110 mG at the edge of the right-of-way ("ROW") and 32 mG at the nearest residence along the 488-515 line, and levels of 110 mG at the edge of the ROW and 85 mG at the nearest residence along the 423-515 line (id.).[90]

The Company stated that the plan to interconnect one of the power blocks to the 115 kV system replaced an earlier plan to interconnect that block to a second new 345 kV line to

be installed in an existing underground duct parallel to BECo's existing 372 line (Tr. 3, at 228-229). The Company indicated that, under its earlier interconnection plan, both power blocks would be interconnected to underground 345 kV lines, and magnetic field changes along the affected lines from operation of the proposed project would be negligible (Exh. SMD-1, at 4-132).[(91)]

The Company stated that it may be possible to reduce magnetic field levels at the nearest residence to the 423-115 line by reconstructing the line in a delta configuration in the vicinity of the residence, in place of the existing vertical arrangement of conductors (Tr. 7, at 750-753). The Company's witness, Dr. Valberg, testified that such a reconfiguration could be expected to reduce magnetic fields by approximately 30 percent (id. at 753). The Company stated that it would explore the reconfiguration option in more depth with BECo (id. at 753).

The Company asserted that the estimated maximum magnetic field levels with the existing vertical arrangement of conductors, although ranging up to 85 mG at the nearest residence, would be a worst case occurrence, and that daily and seasonal load fluctuations would lower the exposure to approximately 75 percent of the maximum when averaged over a 24-hour period in the summer, and less in other seasons (Exh. EFSB-RR-43). In addition, the Company argued that the edge-of-ROW magnetic field benchmark of 85 mG, although cited in analyses of EMF impacts in past Siting Board facility reviews, does not set a level beyond which harmful effects would result (Company Brief at 80).[(92)]

2. Analysis

In a previous review of proposed transmission line facilities, the Siting Board accepted edge-of-ROW levels of 1.8 kV/meter for the electric field and 85 mG for the magnetic field. Massachusetts Electric Company et al, 13 DOMSC 119, at 228-242 (1985) ("1985 MECo/NEPCo Decision").[(93)] Here, based on worst case estimates reflecting the expected capacities of above-ground 115 kV transmission lines that would be upgraded to accommodate the proposed facility, edge-of-ROW magnetic field levels with operation of the proposed project would be 110 mG for two of the lines, both routed along railroad ROWs. At a residential building near one of the affected lines, the estimated maximum magnetic field level would be 85 mG, just within the edge-of-ROW level previously accepted by the Siting Board.

Although based on line capacities rather than modeled power flows, the Company's estimates of maximum magnetic field levels along affected above-ground 115 kV line segments are the highest reviewed by the Siting Board since the 1985 MECo/NEPCo Decision. In addition, the magnetic field estimates within and at the edge of affected above-ground 115 kV line ROWs appear to represent significant increases above existing measured levels, although again the estimates based on line capacities are not directly comparable to the measured levels.

The Siting Board notes that, in past transmission line reviews, applicants have recognized that some members of the public are concerned about magnetic fields and for that reason, the applicants have incorporated design features into proposed transmission lines that would reduce magnetic fields at low additional cost or no additional cost. See, e.g., New England Power Company, 4 DOMSB 109, at 148 (1995). The Siting Board has held that, as part of pursuing interconnection plans that require upgrades to the regional transmission system, generating facility applicants also should work with transmission providers to seek inclusion of practical and cost-effective designs to minimize magnetic field levels along affected ROWs. ANP Blackstone Decision, EFSB 97-2/98-2, at 173; Silver City Energy Limited Partnership , 3 DOMSB 1, at 353-354 (1994).

Here, the Siting Board notes that the Company has agreed to work with BECo on the final design of transmission interconnections in order to minimize magnetic fields for all necessary upgrades. As one possible design option, the Company would consider with BECo the option of incorporating a delta configuration of conductors, in place of the existing vertical arrangement, on the upgraded 423-515 line extending to West Everett.

The Company's commitment to work with transmission providers is similar to that of previous generating facility applicants, and the Siting Board accepts that approach as meeting its standard of review for EMF. As has been the case in a number of previous reviews, the project interconnection study had not been completed as of the close of the record, and therefore the Siting Board does not have complete information as to the extent or design of required transmission upgrades and the related opportunities to minimize EMF impacts.

We note the record in this review also shows that, for some of the affected transmission lines, the Company provided estimates of maximum magnetic fields with operation of the proposed project that were not based on modeling of transmission system power flow and thus are approximations of potential field levels. The record also shows that the interconnection plan the Company currently expects to be used replaced an earlier plan that would have involved an interconnection configuration resulting in substantially lower magnetic field levels.

Given the potential levels of magnetic fields estimated by the Company, and the pendency of more complete analysis based on the interconnection study and final design work, the Siting Board seeks to remain informed as to the progress and outcome of the plan and related upgrade designs for interconnecting the proposed project. Therefore, the Siting Board directs Sithe to provide to the Siting Board an update on the interconnection plan and on designs for required transmission upgrades, and the measures incorporated into the transmission upgrade designs to minimize magnetic field impacts, at such time as Sithe reaches final agreement with all transmission providers regarding transmission upgrades.

Accordingly, the Siting Board finds that, with the Company's pursuit of an interconnection plan and related designs for upgrading affected transmission lines that the Company and transmission providers determine would best limit magnetic field increases

at affected residences, and also be practical and cost-effective, the environmental impacts of the proposed facility would be minimized with respect to EMF impacts.

K. Land Use Impacts

This Section describes the land use impacts of the proposed facility, the mitigation proposed by the Company, and the costs and benefits of any additional mitigation options.

1. Description

The Company asserted that the development of the proposed facility at the Mystic Station site would be compatible with current land use characteristics and zoning for the site, and would be consistent with the development objectives of Everett and the region (Exh. SMD-1, at 4-37 to 4-40, 4-42 to 4-43; Company Brief at 47 to 49). The Company further asserted that the proposed project would be compatible with surrounding uses and would provide economic benefits to the region during both construction and operation of the proposed facility (Exh. SMD-1, at 4-37 to 4-40; 4-42 to 4-43; Company Brief at 47 to 49). The Company provided a detailed discussion of land uses in the vicinity of the Mystic Station site (Exh. SMD-1, at 4-37 to 4-40). The Company also submitted 1991 Massachusetts Geographic Information Systems ("MassGIS") data for the same area (id. at 1-5; Exh. EFSB-L-2). The MassGIS data submitted by the Company indicate the overall predominance of industrial land uses around the proposed facility site (Exh. EFSB-L-2).

The Company stated that the proposed facility would be constructed on a 17-acre portion of a 58-acre site, Mystic Station, owned by the Company (Exh. SMD-1, at 1-1). The Company indicated that the Mystic Station site, located in Everett, Massachusetts, is now principally occupied by approximately 1,000 MW of existing natural gas and residual oil-fired electric power generation facilities (id.). The Company stated that the portion of the site where the proposed facility would be constructed is largely vacant (id.).

The Company indicated that the proposed facility would be located within an Industrial Zoning District in Everett, and that all properties adjacent to the site are also part of the same Industrial Zoning District (id. at 4-40 to 4-41).[(94)] The Company explained that any use is allowed in industrial districts except for those specifically prohibited in Everett Zoning Ordinance Section 7(a)(1)-(4) (id. at 4-40). The Company stated that because of its proposed combustion of natural gas rather than solid fuels, no specific prohibitions of Everett Zoning Ordinance Section 7(a)(1)-(4) would apply to the proposed facility (id.). However, the Company indicated that the height of the air-cooled condenser buildings

(116 feet) and the main power house structures (102 feet) for the proposed facility would exceed the 100-foot maximum building height allowed within an industrial district under the Everett Zoning Ordinance; in addition, the two 305-foot-high stacks for the proposed facility would exceed the maximum stack height allowed under Everett Zoning Ordinance Section 7(b)(3) (id.). The Company stated that it would apply for variances to construct structures for the proposed facility as required (Exh. EFSB-L-11).

The Company indicated that heavy industrial activities dominate east/northeast of the proposed facility site to the Everett-Chelsea border, approximately one mile east of Mystic Station (Exh. SMD-1, at 4-38 to 4-39). The heavy industrial structures immediately east/northeast of the proposed facility include the existing Mystic Station equipment, a steel products facility, a cement manufacturing plant, two natural gas facilities, a terminal owned by Exxon Corporation, and a large industrial park composed primarily of warehouse/distribution facilities and several commercial establishments (id.). The Company noted that another power plant project subject to Siting Board review, the 350-MW Island End facility, has been proposed for this area (id.).[(95)] The Company stated that beyond the Everett-Chelsea border, existing land uses include recreational and residential uses in addition to limited commercial and industrial uses (id.).

The Company stated that the Mystic River borders the proposed facility site to the south (id.). The Company also noted that this portion of the river is classified as a DPA in recognition of the industrial character of the surrounding land uses (id.). The Company indicated that a portion of Charlestown borders the other side of the Mystic River to the immediate south of the Mystic Station site, and that mixed land uses -- industrial, commercial, residential and recreational -- characterize the area (id.). The Company stated that the majority of the industrial land uses in the Charlestown area are located along the Mystic River waterfront and include a cement manufacturing facility, a marine terminal and additional facilities operated by Massport (id.). The Company indicated that residences, intermingled with commercial and recreational land uses, lie to the south of the industrial waterfront, about 2,000 feet from the proposed facility site (id.).

The Company indicated that the Mystic Station site is bordered on the west by Alford Street, and that, beyond Alford Street, existing land uses are commercial and industrial (id.). The Company stated that beyond the commercial and industrial land along Alford Street is a former property of Monsanto Chemical Company now under consideration for a shopping/retail center (id.). The Company indicated that the area south-southwest of Alford Street and north of the Mystic River is used for two office buildings and a Massachusetts Bay Transportation Authority ("MBTA") train station (id.). The Company stated that Interstate 93, located on the opposite side of the river, divides land uses (id.). The Company described land use northeast of the highway as predominantly commercial, with some small industrial uses, and land use southwest of the highway as densely residential (id.).

The Company described the area to the north of the proposed site as one of mixed land use, combining single and multiple family residential units with commercial establishments, recreational facilities (a park/ballfield) and several small industrial

facilities (id. at 1-4, 4-37). The Company indicated that the closest residence to the proposed facility site is in this direction, between Route 99 and Robin Street, approximately 350 feet from the northern boundary of the existing Mystic Station (id. at 4-37; Exh. EFSB-L-1). The Company indicated that no other sensitive receptors, including schools, libraries, hospitals, childcare facilities, nursing homes and senior citizen centers, are located within 1000 feet of the Mystic Station site (Exh. EFSB-L-1).

The Company asserted that the proposed facility would be consistent with the goals of Everett's Open Space and Recreation Plan ("Open Space Plan") (Exh. SMD-1, at 4-39).[(96)] The Company stated that the Open Space Plan does not specifically reference industrial landscaping, and that there are no other guidelines pertaining to landscaping or open space for Everett except its zoning regulations (Exh. EFSB-L-4). The Company stated that Everett's zoning regulations do not require landscaping of industrial parcels (id.).

The Company asserted that construction and operation of the proposed facility would have no impacts on any historical or archeological resource areas, or on habitat of federally- or state-listed rare or endangered species (Exh. SMD-1, at 4-31, 4-48). In support of its assertion, the Company provided letters from the relevant jurisdictional authorities (id. at App. B and App. C; Exh. EFSB-A-1-S (att.) at App. C; see also Sections III.C and III.D, above).

The Company indicated that, under G.L. Chapter 91 and 310 CMR 9.00, it had considered opportunities to accommodate public access along the shoreline within the Mystic Station property boundary (Exhs. EFSB-A-1-S (att.) at 10-7 to 10-8; EFSB-L-13; EFSB-W-16-S-2 (att. at C-5)). The Company stated that there is currently limited public access to Mystic Station and no public access to the Mystic Station site shoreline due to public safety concerns (Exh. EFSB-W-16-S -2 (att.) at C-5). However, the Company stated that it does conduct pre-arranged tours of the station for school groups and other organizations and maintains landscaping between Mystic Station and the sidewalk for Route 99 (Alford Street), providing a point of access to the Mystic River via the Malden Bridge (id.).[(97)]

The Company stated that it would aim to enhance public access to the area consistent with limitations imposed by public safety and site security considerations (id. at C-7). The Company stated that, consistent with these goals, it would maintain the existing vegetated buffer along Alford and Dexter Streets and extend the buffer up Rover Street (id.). In addition, the Company indicated it would erect a plaque, of design and size acceptable to MDEP, which would educate the public about the Mystic River DPA (id.).

The Company rejected other options, including widening of the sidewalk between Alford Street and Mystic Station and providing a point of access to the Mystic Station riverfront for observation and fishing (id. at C-6 to C-7). The Company explained that this option would require reconfiguring a fence and arranging an easement through adjacent BECo and MWRA properties (id.). The Company indicated it rejected widening the sidewalk because pedestrian and bicyclist safety at this location, already adequate, would not be

improved (id.). In addition, widening the sidewalk would require removing a portion of the existing vegetated buffer between the sidewalk and Mystic Station (id.). The Company stated that it rejected providing a point of access on the Mystic Station site along the waterfront closest to Alford Street because BECo refused to allow a crucial easement through a gate on its property (id.). The Company stated that the alternative route to the point of access along the waterfront would require the public to walk between the high-voltage substation and the operating power plant, compromising site security and unnecessarily endangering public safety (id.). The Company indicated that it also saw a safety concern in the proximity of the point of access to the existing Mystic Station cooling water intake system (id.).

The Company indicated that its engineering, procurement and construction ("EPC") contractor might need docking facilities for construction barges (Exh. EFSB-L-14). The Company stated that the Company would provide the Siting Board with a copy of any applications submitted to support construction of such facilities, including any application the Company might file with Massachusetts Coastal Zone Management ("MCZM") demonstrating consistency with applicable program policies (id.).

2. Analysis

As part of its review of land use impacts, the Siting Board considers whether a proposed facility would be consistent with existing land uses, and state and local requirements, policies or plans relating to land use and terrestrial resources. Here, the record shows that the proposed site and surrounding areas on all sides are zoned for industrial use. The record shows that the use of the area in the vicinity of the proposed facility is consistent with industrial zoning in three directions, but that a neighborhood characterized by residential use, with some recreational space, lies to the north of the Mystic Station site. The record also shows, however, that construction of the proposed facility is consistent with the present use of the Mystic Station site, and that operation of the proposed facility would not result in an additional incursion of industrial use beyond the existing Mystic Station boundary. In addition, the record shows that pedestrian access to the park/ballfield recreational area proximate to the Mystic Station site to the north would not be affected by construction or operation of the proposed facility due to the relative location of park/ballfield and residences: access to the recreational area for children and others would not require crossing high-volume roadways.

The record also demonstrates that the proposed facility would not obstruct the goals of Everett's Open Space Plan. The record further demonstrates that the Company has considered options for public access to the Mystic Station site shoreline.

Based on the record, the proposed facility is an allowed use under the Everett zoning ordinances . However, the air-cooled condenser buildings and the main power house structures for the proposed facility would exceed the 100-foot maximum building height

allowed by Everett within an industrial district by 16 feet and two feet respectively. In addition, while the height of the four existing stacks at the Mystic Station site ranges from 335 to 500 feet, the two 305-foot-high stacks for the proposed facility would nonetheless exceed the maximum stack height allowed under Everett Zoning Ordinance Section 7(b)(3). The Company has stated on the record that it intends to apply for variances to construct structures for the proposed facility as required. The Siting Board notes the Company would be required to submit written notification to the Siting Board in the event that denial of any variance for the height of the structures identified above required redesign of the stacks or the proposed facility.

The Company has adequately considered the impacts of the proposed facility with respect to wildlife species and habitats, and historic and archaeological resources. Based on its review of information submitted by the Company, the Siting Board concludes that no such resource impacts are likely to occur as a result of construction or operation of the proposed facility.

The Siting Board has considered the visual impacts of the proposed facility in Section III.F, above, and has imposed conditions to mitigate such impacts. The Siting Board notes that these conditions address, to a significant degree, the issue of consistency with land use objectives.

Accordingly, the Siting Board finds that the environmental impacts of the proposed facility would be minimized with respect to land use.

L. Cumulative Health Impacts

This Section describes the cumulative health impacts of the proposed facility. The Siting Board considers the term "cumulative health" to encompass the range of effects that a proposed facility could have on human health through emission of pollutants over various pathways, as well as possible effects on human health unrelated to emissions of pollutants (e.g., EMF or noise effects). These effects are considered in the context of existing background conditions, existing baseline health conditions, and, when appropriate, likely changes in the contributions of other major emissions sources.

The analysis of the health effects of a proposed generating facility is necessarily closely related to the analysis, in Sections above, of specific environmental impacts which could have an effect on human health and any necessary mitigation measures. This Section sets forth information on the human health effects that may be associated with air emissions, including criteria pollutants and air toxics, emissions to ground and surface waters, the handling and disposal of hazardous wastes, and EMF; describes any existing health-based regulatory programs governing these impacts; and considers the impacts of the proposed project in light of such programs.

1. Baseline Health Conditions

Sithe Mystic provided information from a 1997 report published by the Massachusetts Department of Health which summarizes and analyzes data from the Massachusetts Cancer registry covering the years 1987 to 1994 ("Cancer Incidence Report") (Exh. EFSB-H-2). The Cancer Incidence Report compares the incidence rate of 22 types of cancer for each of the 351 Massachusetts cities and towns with the state-wide average for males, females, and the total population, and notes statistically significant deviations (id.). In Everett, the Cancer Incidence Report found an elevated rate of lung cancer among males to be significant at the 1 in 1000 level, and elevated rates of uterine cancer, leukemia, and "other" cancer that were significant at the 1 in 20 level (id.). In Chelsea, elevated rates of oral, esophageal and lung cancer were found that were significant at the 1 in 20 level, as well as a statistically significant deficit of breast cancer (Exh. EFSB-H-7). In Boston, statistically significant excesses of esophageal, larynx, liver, lung, non-Hodgkin's lymphoma, oral, stomach, prostate, and cervical cancers were found, along with statistically significant deficits in brain, breast, Hodgkin's, kidney, leukemia, melanoma, testis, thyroid and uterine cancers (id.). The Company noted that the report's authors stated "[t]he presence or absence of statistical significance does not necessarily imply biological or health significance" (id.).[(98)]

In summary, there are statistically elevated rates of male lung cancer, uterine cancer, leukemia, and "other" cancer reported in Everett, although it is unclear whether these elevated rates reflect an underlying biological or public health concern. Neighboring communities display elevated rates of various other types of cancer. There is no documentation of elevated rates of non-cancer diseases (respiratory ailments, for example) in Everett or in surrounding communities.

2. Criteria Pollutants

As discussed in Section Air, above, the MDEP regulates the emissions of six criteria pollutants under NAAQS: SO_2, PM-10, NO_2, CO, O_3, and lead. The Company indicated that PM-10, and particulate matter in general, is associated with increases in mortality or hospital admission from respiratory diseases such as chronic bronchitis; that carbon monoxide would be expected to aggravate heart disease conditions; that SO_2 might increase sensitivity to asthma; and that lead is a neurotoxin (Tr. 4, at 422-423).

The Company's witness, Dr. Valberg, provided an overview of how the USEPA determines NAAQS for each criteria pollutant. He indicated that USEPA first develops a "criteria document", which is a compilation of all the health-based studies that are available relevant to a specific standard (id. at 376). The criteria document also reflects

comments received at public hearings from various interest groups (id. at 377). Based on the criteria document, USEPA staff then recommend to the USEPA administrator a standard that is protective of public health with an adequate margin for safety, and which protects sensitive subgroups (id. at 377-378). The Company asserted that, when a geographical area is in compliance with NAAQS for a particular pollutant, there would be no discernable health effects in that area from that pollutant (id. at 383-384). The Company provided data from MDEP monitoring stations in Boston, Lynn, and Waltham indicating that regional background levels of NO_2 are approximately 53 percent of NAAQS, while background levels of all other criteria pollutants except ozone are well below 50 percent of the standard (Exh. SMD-1, at 4-14).

The Company indicated that new sources of criteria pollutants, such as the proposed project, may not cause or significantly contribute to a violation of the health-based NAAQS (Tr. 4, at 397, 405). The Company stated that, to simplify the review of new sources, USEPA established SILs for each criteria pollutant. These SILs represent a level of emissions low enough that it would not significantly affect modeled ambient air quality (id. at 408). A new source with emissions levels below SILs is not required to do detailed emissions modeling (id. at 406).

The record indicates that the USEPA has set in place ambient air quality standards, called NAAQS, for six criteria pollutants - SO_2, PM-10, NO_2, CO, O_3, and lead. These standards are set based on an extensive review of the medical literature regarding the health effects of each pollutant, and are designed to be protective of human health, including the health of sensitive subgroups, with an adequate margin for safety. The Siting Board gives great weight to these standards as indicators of whether incremental emissions of criteria pollutants will have a discernable impact on public health.

The record also shows that MDEP has set in place standards for reviewing the compliance of proposed new sources of criteria pollutants, such as the proposed project, with NAAQS. Specifically, new sources may not cause or contribute significantly to a violation of NAAQS. In addition, as discussed in Section III.B, MDEP requires major new sources to meet BACT (when the area is in attainment or is unclassifiable for a particular pollutant) or LAER (when the area is in non-compliance for a particular pollutant), and to obtain offsets greater than 100 percent of emissions when the area is in non-compliance for a particular pollutant. The Siting Board notes that MDEP's new source program balances environmental impacts and costs when an area is in compliance with NAAQS, but requires stronger measures, including emissions offsets, when an area is in non-attainment. The Siting Board finds that this approach is consistent with its own mandate to minimize both the environmental impacts and costs of proposed generating facilities. The Siting Board therefore gives great weight to compliance with MDEP air quality programs as an indicator of whether the health impacts of a proposed facility have been minimized.

In this case, the record shows that the Charlestown/Everett area, where the proposed project is located, is classified as attainment or unclassified for four of the six criteria pollutants, and is projected to be in attainment for a fifth. In addition, data from MDEP

monitoring stations in Boston, Lynn, and Waltham indicate that the regional background levels of five of the pollutants are 53 percent or less of the ambient standard; thus, Charlestown/Everett area levels of all criteria pollutants except O_3 are well within the standards set to protect human health. The proposed project's emissions of all criteria pollutants are anticipated to be below SILs. Consequently, the Siting Board concludes that the proposed project's emissions of SO_2, PM-10, NO_x, CO, and lead will have no discernable impact on public health.

Sithe Mystic has committed to meeting BACT or LAER, as applicable, and to obtaining offsets for its NO_x and VOCs emissions. In addition, the Company has demonstrated that implementation of its AQIP will result in net reductions in annual NO_2, SO_2, and PM-10 emissions from the Mystic Station site. Cumulative air modeling of the proposed project and the AQIP shows a 19 percent reduction in average annual SO_2 concentrations at the point of maximum impact, with a two percent reduction in average annual NO_2 concentrations and a one percent increase in 24-hour PM-10 concentrations.[(99)] For all modeled cases, the cumulative concentrations were below NAAQS. Consequently, based on its compliance with MDEP air quality standards, the Siting Board finds that the cumulative health impacts of criteria pollutant emissions from the proposed facility would be minimized.

3. Air Toxics

Air toxics, or hazardous air pollutants, are pollutants known or suspected to cause cancer or other serious health effects such as birth defects or reproductive effects (Exh. EFSB-H-1, at 3). Toxics include chemicals such as arsenic, beryllium, lead, mercury, nickel, dioxins, and formaldehyde (id. at Table ES-1).

The MDEP has in place an air toxics program, the primary purpose of which is to protect public health (Exh. EFSB-RR-27, at v). The program sets AALs for a broad range of chemicals through a three-stage process (id. at viii-ix). First, a Threshold Effects Exposure Limit ("TEL") which is protective of public health from threshold effects is established (id. at viii). Next, a Non-threshold Effects Exposure Limit ("NTEL") is derived (id.). Finally, the lower of the TEL and the NTEL is selected as the AAL (id.). Where carcinogenicity is the most sensitive effect, and adequate data are available to derive a cancer unit risk, the AAL is set to correspond to an incremental lifetime risk of developing cancer of one in one million (id. at ix). The Company asserted that AALs and TELs were designed to ensure that contributions from a single source would have an insignificant impact on public health (Exh. EFSB-H-3).

Sithe Mystic provided the Executive Summary of a 1998 study by the USEPA entitled "Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units - Final Report to Congress" ("HAPs Study") (id.). The HAPs Study assessed emissions of 67 hazardous air pollutants ("HAPs") from 52 fossil fuel generating units,

and used this data to model human inhalation exposures to HAPs from all 684 fossil fuel plants nation-wide (id. at ES-2 to ES-4). The HAPs study included a detailed analysis of inhalation exposures and risks for 14 priority HAPs, and conducted multipathway assessments for the four highest-priority HAPs - arsenic, mercury, dioxins, and radio nuclides (id. at ES-6). The HAPs study eliminated gas-fired power plants from its analysis at the screening stage, noting that "[t]he cancer risks for all gas-fired plants were well below one chance in one million ... and no noncancer hazards were identified" (id. at ES-7). Based on the USEPA's findings, the Siting Board concludes that, in the absence of project-specific evidence to the contrary, the air toxics emissions from a gas-fired generating facility should be considered to have no discernable public health impacts.

As noted in Section III.B, above, the proposed project's emissions of all regulated air toxics would be below MDEP TELs and AALs, which are designed to be protective of public health. In addition, there is no evidence in the record suggesting that the project's emissions of any air toxic is unusually high for a gas-fired power plant, or indicating that the proposed project would emit any specific air toxic at levels which would affect public health. Consequently, the Siting Board finds that the air toxics emissions from the proposed project would have no discernable public health impact.

4. Emissions to Ground and Surface Waters

The Company identified two water-linked pathways by which substances hazardous to human health could theoretically reach the local population: through stormwater discharges and construction dewatering that infiltrate groundwater used to supply potable water, and through wastewater discharges to surface water bodies (Exhs. EFSB-H-3; EFSB-H-4; EFSB-H-5). The Company indicated that groundwater quality is protected by MDEP through the establishment of drinking water standards which limit the levels of specific contaminants that may be present in drinking water sources (Exh. EFSB-H-3; Tr. 4, at 433). The Company asserted that the Mystic Station site is not located over a sole source aquifer or aquifer recognized as an important present or future source of water supply, and that runoff from the site therefore would not contaminate drinking water (Exh. EFSB-H-3, at 2; Tr. 4, at 429). The Company also indicated that it would comply with MDEP's Stormwater Management Policy, which is designed to control non-point source pollution (Exh. EFSB-H-3, at 2).

Sithe Mystic indicated that wastewater discharges are regulated by Everett through its sewer ordinances, which in turn incorporate MWRA pretreatment requirements which ensure that water discharged to the Massachusetts Bay will be in compliance with MWRA's NPDES permit (Exh. EFSB-H-3, at 3). The Company stated that NPDES permit limitations are set so as to protect existing ambient water quality and noted that water quality standards are both health- and ecologically-based (Tr. 4, at 429,435).

In Section III.C, above, the Siting Board determined that construction and operation of the proposed facility would have no impact on the quality of groundwater adjacent to the Mystic Station site, and that the proposed facility would not affect groundwater recharge areas associated with a sole source aquifer or private drinking water wells. Consequently, the Siting Board finds that the proposed project poses no health risks related to contamination of potable groundwater. In Section III.C, above, the Siting Board also determined that the quality of wastewater discharged to the Everett municipal wastewater system would be optimized through pretreatment, and that all applicable state and local guidelines will be met. Consequently, the Siting Board finds that the proposed project poses no health risks related to the disposal of wastewater.

5. Handling and Disposal of Hazardous Materials

As discussed in Section III.H, above, the proposed project will use 19.5 percent aqueous ammonia for NO_x control, and limited amounts of lubricating oils and certain other industrial chemicals for project operation, boiler feedwater treatment and SCR operation (Exh. SMD-1, at 1-24). The Company stated that, in the unlikely event of an ammonia tank failure, concentrations at the fence line would be de minimis and that health effects were therefore unlikely to result from the failure (Exh. EFSB-H-13, at 2). The Company indicated that the other hazardous substances stored on-site are of low volatility, and that any spill could be effectively controlled at the source with negligible impact on public health (id. at 3).

In Section III.H, above, the Siting Board reviewed the Company's plans for storage and handling of hazardous materials, including aqueous ammonia, and its plans for minimizing and responding to accidental releases of oil or other hazardous materials. The Siting Board determined that aqueous ammonia and other non-fuel chemicals would be properly managed and stored; that in the event of an ammonia tank failure, ammonia concentrations would be well below levels dangerous to life or health at the property boundaries; and that the Company is prepared to respond effectively to an accidental release of hazardous materials.

The Company has demonstrated that it has in place procedures for the proper handling, storage, and disposal of hazardous materials during construction and operation of the proposed project. In addition, the Company has demonstrated that ammonia concentrations from a accidental spill would be below levels hazardous to public health at the property boundaries, and that accidental spills of other hazardous materials could be contained at the source and therefore would not affect public health. Consequently, the Siting Board finds that the health risks of the proposed project related to the handling and disposal of hazardous materials would be minimized.

1. EMF

As discussed in Section III.J, above, Sithe estimated worst-case magnetic field levels resulting from the operation of the proposed facility as 1.9 mG above a proposed new 345 kV line; 4.5 mG above the 211-514 line; 110 mG at the edge of the ROW of the 488-515 line; 32 mG at the residence closest to the 488-515 line; 110 mG at the edge of the ROW of the 423-515 line; and 85 mG at the residence closest to the 423-515 line. The Company indicated that it had identified a possible configuration change which could reduce field levels at the residence closest to the 423-515 line by approximately 30 percent.

The possible health effects of exposure to EMF have been a subject of considerable debate. In a 1985 case involving the construction of the 345 kV overhead HydroQuebec line, the Siting Board heard expert testimony, reviewed the existing literature, and concluded that there was no affirmative evidence that the proposed facilities (which had edge-of-ROW levels of 85 mG) would produce harmful health effects. Massachusetts Electric Company et al, 13 DOMSC 119, 240 (1985). In this case, the Company has provided a summary of existing state and non-regulatory guidance regarding exposure to EMF, noting that the federal government has set no standards for such exposure (Exh. SMD-1, at 4-117 to 4-119). 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 4-118). The Company also stated that the American Conference of Governmental Industrial Hygienists had 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.). The Company indicated that seven states have adopted EMF guidelines which are generally based on levels in existing transmission corridors; the maximum permissible levels for magnetic fields under those guidelines range from 150 mG (for a 230 kV line in Florida) to 250 mG (for a 500 kV, double circuit line in Florida) (id. at 4-118 to 4-119).

The Company also 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-EE-3). The report concludes that the current body of evidence does not show that exposure to such fields presents a human health hazard (id. at 2). 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. at 3).[(100)] With respect to in vitro studies, the report finds that exposure to 50-60 Hz fields induces changes in cultured cells only at field strengths 1000 to 100,000 times the levels typically

found in residences (id. at 6). With respect to animal studies, the study finds no convincing evidence that exposure to power-frequency fields causes cancer or has any adverse effects on reproduction or development in animals (id. at 7). The report finds evidence of behavioral response to fields "considerably larger than those encountered in a residential environment"; however, there was no demonstration of adverse neurobehavioral impacts (id.).

The Company also provided an update on research published since the NRC report (Exh. EFSB-EE-4). The Company's witness, Dr. Valberg, discussed two recent epidemiological studies which focused on a link between EMF levels and childhood leukemia. Dr. Valberg indicated that the first study, conducted by the National Cancer Institute ("NCI"), found no correlation between exposure to present-day measured fields of over two mG and leukemia (id. at 1083). He noted that the researchers later regrouped the study data and found statistically significant correlations for some groups with higher levels of exposure, but could not conclude that there was a consistent pattern that would support a dose response effect (id. at 1083-1085). Dr. Valberg also indicated that a recent Canadian study, where field exposure was assessed through monitors in children's backpacks, did not support a relationship between field exposure and leukemia (id. at 1089-1090). Dr. Valberg also noted that two recent animal studies found little or no elevation of cancer rates from exposure to magnetic fields (id. at 1088 to 1089).

Overall, although there are some epidemiological studies which suggest a correlation between exposure to magnetic fields and childhood leukemia, and some evidence of biological response to exposure to magnetic fields in animal studies, there is no evidence of a cause-and effect association between magnetic field exposure and human health. 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. Nonetheless, consistent with its policy of encouraging transmission providers to take cost-effective steps to minimize magnetic fields, the Siting Board has required the Company to pursue an interconnection plan that minimizes magnetic fields at nearby residences. Accordingly, the Siting Board finds that the health effects, if any, of magnetic fields associated with the proposed project would be minimized.

M. Conclusions

Based on the information in Sections III. B through L, above, the Siting Board finds that the Company's description of the proposed generating facility and its environmental impacts is substantially accurate and complete.

In Section III.B, the Siting Board has found that, with the implementation of CO_2 mitigation, the environmental impacts of the proposed facility would be minimized with respect to air quality.

In Section III.C, the Siting Board has found that the environmental impacts of the proposed facility would be minimized with respect to water resources.

In Section III.D, the Siting Board has found that the environmental impacts of the proposed facility would be minimized with respect to wetlands.

In Section III.E, the Siting Board has found that, assuming mitigation of oil and hazardous waste releases at the proposed site to meet the risk-based standard established by MCP regulations, the environmental impacts at the proposed facility would be minimized with respect to solid and hazardous waste.

In Section III.F, the Siting Board has found that, with the implementation of the condition to provide off-site mitigation of visual impacts as requested by residents and municipal officials for the identified area north of the site and for identified public properties, the environmental impacts of the proposed facility would be minimized with respect to visual impacts.

In Section III.G, the Siting Board has found that the environmental impacts of the proposed facility would be minimized with respect to noise.

In Section III.H, the Siting Board has found that the environmental impacts of the proposed facility would be minimized with respect to safety.

In Section III.I, the Siting Board has found that, with the implementation of the condition to coordinate with the appropriate municipal authorities to identify and implement appropriate measures to address traffic and pedestrian safety in the vicinity of the off-site construction parking area north of Dexter Street, the environmental impacts of the proposed facility would be minimized with respect to traffic.

In Section III.J, the Siting Board has found that, with the Company's pursuit of an interconnection plan and related designs for upgrading affected transmission lines that the Company and transmission providers determine would best limit magnetic field increases at affected residences, and also be practical and cost-effective, the environmental impacts of the proposed facility would be minimized with respect to EMF.

In Section III.K, the Siting Board has found that the environmental impacts of the proposed facility would be minimized with respect to land use.

In Section III.L, the Siting Board has found that the cumulative health impacts of the proposed facility would be minimized.

Accordingly, the Siting Board finds that. with the implementation of the above-listed conditions relative to air quality, visual impacts, traffic, and electric and magnetic fields, the Company's plans for the construction of the proposed generating facility would minimize the environmental impacts of the proposed facility consistent with the minimization of costs associated with the mitigation, control and reduction of the

environmental impacts of the proposed generating facility. In addition, the Siting Board finds that an appropriate balance would be achieved among conflicting environmental concerns as well as between environmental impacts and costs.

IV. CONSISTENCY WITH THE POLICIES OF THE COMMONWEALTH

- Standard of Review

G.L. c. 164, §69 J¼ requires the Siting Board to determine whether the plans for construction of a proposed generating facility are consistent with current health and environmental protection policies of the Commonwealth and with such energy policies of the Commonwealth as are adopted by the Commonwealth for the specific purpose of guiding the decisions of the Siting Board. The health and environmental protection policies applicable to the review of a generating facility vary considerably depending on the unique features of the site and technology proposed; however, they may include existing regulatory programs of the Commonwealth relating to issues such as air quality, water-related discharges, noise, water supply, wetlands or river front protection, rare and endangered species, and historical or agricultural land preservation. Therefore, in this Section, the Siting Board summarizes the health and environmental protection policies of the Commonwealth that are applicable to the proposed project and discusses the extent to which the proposed project complies with these policies.[(101)]

- Analysis

In Sections II and III, above, the Siting Board has reviewed the process by which Sithe Mystic sited and designed the proposed project, and the environmental and health impacts of the proposed project as sited and designed. As part of this review, the Siting Board has identified a number of Commonwealth policies applicable to the design, construction, and operation of the proposed project. These are briefly summarized below.

As discussed in Section III.B, above, the MDEP extensively regulates emissions of criteria and non-criteria pollutants from new sources such as the proposed project. Sithe Mystic has demonstrated that it intends to comply with all MDEP standards, in part by implementing an AQIP which would produce significant net reductions in emissions of SO_2 and NO_x at the Mystic Station site.

As discussed in Section III.C, above, Sithe has demonstrated that it will comply with the Massachusetts Stormwater Management Policy and with MWRA pretreatment standards for wastewater.

As discussed in Section III.D, above, the Company has demonstrated that the wetlands impacts of the proposed project would be minimized. In addition, Sithe has filed a Notice of Intent for the proposed project with the Everett Conservation Commission, as required by the Massachusetts Wetlands Protection Act (Exh. EFSB-W-16).

As discussed in Section III.G, above, Sithe has demonstrated that it will comply with MDEP Policy 90-001, which limits noise increases at property lines and nearest residences to 10 dBA above background levels.

As discussed in Section III.K, above, Sithe has demonstrated that it has complied with state programs protecting historical and archeological resource areas and rare or endangered species.

In addition to the policies discussed above, because the Mystic Station is located within filled tidelands, it must comply with G.L. c. 91 and 310 CMR Chapter 9.00, which regulate areas within affected waterways (EFSB-W-16-S-2, at C-1). The Mystic Station site is located within a DPA as defined by the MCZM (id.). Only water-dependent industrial uses are permitted within filled tidelands in a DPA (id.).

Sithe has submitted a Chapter 91 License Application to MDEP's Bureau of Resource Protection - Waterways Program. The application states that the proposed project is a water dependent use because it is an expansion of Mystic Station, a facility which is dependent on marine transportation of oil, which withdraws and discharges large volumes of water for its once-through cooling system, and which existed as of the effective date of 310 CMR 9.00 (id.). MDEP has indicated that, pursuant to its regulations, it will presume the proposed project to be a water-dependent industrial use unless the presumption is overcome (Exh. EFSB-A-1-S-3, App. B). As discussed in Section III.K, above, the Company has identified options for providing appropriate public access consistent with public safety.

The proposed project also is subject to federal coastal zone consistency review implemented by MCZM (Exh. SMD-1, at 4-48). Sithe has provided an analysis of the proposed project's consistency with various policies and principles for development in the coastal zone, including Energy Policy #1 (dependance on existing infrastructure); Water Quality Policies #1 (point source discharges), #2 (nonpoint pollution controls), and #3 (subsurface waste discharges and protection of wetlands); Habitat Policy #2 (restoration of degraded wetland resources); Protected Areas Policies #1 (Areas of Critical Environmental Concern) and #3 (historic districts and sites); Coastal Hazards Policies #1 (preservation of natural coastal landforms) and #2 (interference with water circulation and sediment transport); Ports Policy #3 (DPAs); Ports Management Principle #1 (expansion of water dependent uses in DPAs); Public Access Policy #1 (effects on public recreation sites); and Public Access Management Principle #4 (expansion and

development of coastal recreational facilities) (Exh. SMD-1, at 4-50 to 4-55). The Siting Board concludes that the proposed project appears consistent with the policies of the Commonwealth regarding development in filled tidelands and coastal zone areas.

Finally, Sithe asserts that its proposed project is consistent with environmental policies set forth in Executive Order 385 (Company Brief at 85-88).[(102)] Executive Order 385 states in pertinent parts that:

The Commonwealth shall actively promote sustainable economic development in the form of : a) economic activity and growth which is supported by adequate infrastructure and which does not result in, or contribute to, avoidable loss of environmental quality and resources, and b) infrastructure development designed to minimize the adverse environmental impact of economic activity (Section 1).

All agencies shall promote, assist, and pursue the rehabilitation and revitalization of infrastructure, structures, sites, and areas previously developed and still suitable for economic (re)use. Such rehabilitation and revitalization, where practicable, shall be deemed preferable over construction of new facilities or development of areas with significant value in terms of environmental quality and resources, unless otherwise provided and supported by local or regional growth management plans (Section 5).

The Siting Board finds that the Company's plans to expand operations at its Mystic Station site, a previously-developed area that is currently used for generating electricity, is consistent with the goals of Executive Order 385. As discussed in Section II, above, the previous, or even current, use of a site for electric generation does not automatically demonstrate the suitability of that site for additional generation. A project proponent must still demonstrate that the environmental impacts of the proposed project can be, and have been, minimized consistent with minimizing mitigation costs. Similarly, previously undeveloped sites can be appropriate for new generation if the project proponent demonstrates that environmental impacts have been minimized consistent with minimizing mitigation costs. However, consistent with Executive Order 385, the Siting Board encourages the reuse of previously developed industrial sites for electric generation, particularly where, as here, significant necessary infrastructure is already in place.

Consequently, based on its review above, the Siting Board finds that plans for construction of the proposed project are consistent with current health and environmental protection policies of the Commonwealth and with such energy policies of the Commonwealth as have been adopted by the Commonwealth for the specific purpose of guiding the decisions of the Siting Board.

- DECISION

The Siting Board's enabling statute directs the Siting Board to implement the energy policies contained in G.L. c. 164 §§ 69H-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. Section 69 J¼ requires that, in its consideration of a proposed generating facility, the Siting Board review inter alia the site selection process, the environmental impacts of the proposed facility, and the consistency of the plans for construction and operation of the proposed facility with the environmental policies of the Commonwealth.

In Section II, above, the Siting Board has found that the Company's description of the site selection process it used is accurate, and that resulted in the selection of site that contributes to the minimization of environmental impacts of the proposed project and the costs of mitigating, controlling, and reducing such impacts.

In Section III, above, the Siting Board has found that with implementation of

listed conditions relative to air quality, visual impacts, traffic, and electric and magnetic fields, the Company's plans for the construction of the proposed generating facility would minimize the environmental impacts of the proposed facility consistent with the minimization of costs associated with the mitigation, control and reduction of the environmental impacts of the proposed facility.

In Section IV, above, the Siting Board has found that the plans for the construction of the proposed facility are consistent with current health and environmental protection policies of the Commonwealth and with such energy policies of the Commonwealth as have been adopted by the Commonwealth for the specific purpose of guiding the decisions of the Siting Board.

Accordingly, the Siting Board finds that, upon compliance with the conditions set forth in Sections III. B, III. F, III. I, and III. J, above, and listed below, the construction and operation of the proposed facility will provide 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 petition of Sithe Mystic Development LLC to construct a 1550 MW bulk generating facility in Everett, Massachusetts. The Company shall comply with the following conditions during construction and operation of the proposed

generating facility:

(A) In order to mitigate CO_2 emissions, the Siting Board requires the Company to offset 1 percent of its CO_2 emissions either: (1) through use of CO_2 offsets generated by its AQIP, if it can establish that it will make no collateral use, for purposes of providing emissions offsets for other pollutants and/or other sources, of the portion of the AQIP curtailment on which the CO_2 offsets for the proposed facility is based; or (2) through a monetary contribution in the early years of facility operation to a cost-effective CO_2 mitigation program or programs to be selected upon consultation with the staff of the Siting Board, based on the maximum operation of the proposed facility over 20 years; or (3) should the Company provide evidence to establish that it will make no additional use of the CO_2 reductions from the AQIP to provide CO_2 offsets, through a monetary contribution based on the maximum net CO_2 emissions from the proposed facility and the AQIP, as further discussed in Section III. B, above.

(B) In order to minimize visual impacts, the Siting Board directs the Company, consistent with the directives in Section III. F. 2 , to provide reasonable off-site mitigation of visual impacts including shrubs, trees, window awnings or other mutually-agreeable measures, that would screen views of the proposed generating facility and related facilities at affected residential properties and at roadways and other locations in the residential area north of the site, extending to Bartlett Street and between and including Alford Street/Broadway and Robin Street, as requested by individual property owners or appropriate municipal officials.

(C) In order to minimize visual impacts of the proposed project at the public properties identified in the Company's visual analysis, and at the public ballfield adjacent to the site, the Siting Board directs the Company to consult with the Cities of Everett, Chelsea, and Boston with regard to the public properties, and if determined to be appropriate, to provide fencing or vegetative screening, consistent with the guidelines specified in Section III. F. 2, above.

(D) In order to minimize EMF impacts, the Siting Board directs the Company to provide to the Siting Board an update on the interconnection plan and on designs for required transmission upgrades, and the measures incorporated into the transmission upgrade designs to minimize magnetic field impacts, at such time as the Company reaches final agreement with all transmission providers regarding transmission upgrades.

(E) In order to minimize traffic related impacts, the Siting Board directs the Company to coordinate with the appropriate municipal authorities to identify and implement appropriate measures to address traffic and pedestrian safety in the vicinity of the off-site construction parking area north of Dexter Street.

(F) In order to minimize traffic related impacts, the Siting Board directs the Company to provide a shuttle service throughout the construction period during the hours surrounding the beginning and end of the day shift running between the Sullivan Square MBTA stop (and/or any other public transit stops likely to be used by Mystic Station construction workers) and the Mystic Station site, and to coordinate with the MBTA and any appropriate municipal safety officials with regard to providing this shuttle service.

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

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

Selma Urman

Hearing Officer

Dated this 30th day of September, 1999

1. Sithe Mystic's original petition stated that the proposed facility would have a maximum

capacity of either 1500 or 1550 MW, depending upon whether the Company selected Westinghouse or Mitsubishi as its vendor for the facility's combustion turbines (Exh. SMD-1, at 1-1). At the commencement of evidentiary hearings, the Company indicated that it had selected Mitsubishi as its vendor, and therefore is seeking approval of construction of a 1550 MW facility (Tr. 1, at 7).

2. [2] Prior to September 1, 1992, the Siting Board's functions were effected by the Energy Facilities Siting Council ("Siting Council"). See St. 1992, c. 141. As the Siting Council was the predecessor agency to the Siting Board, the term Siting Board should be read in this Decision, where appropriate, as synonymous with the term Siting Council.

3. The Siting Board notes that parties and interested persons in generating facility cases pending before the Siting Board at the time of the issuance of the Request for Comments either have been or will be afforded an opportunity to comment on the standards of review applicable under the statutory mandate.

4. The Siting Board also reviews in this decision the environmental impacts of the proposed project including traffic, safety and EMF.

5. As set forth in Section II.B, below, the Siting Board finds that the expected emissions from the proposed generating facility do not exceed the technology performance standard specified in 980 CMR 12.00. Therefore, a generating technology comparison is not required in this case.

6. Five generating units currently are located at Mystic Station: three oil-fired units totaling 388 MW, one 592 MW dual-fuel unit and a 10-MW oil-fired combustion turbine (Exh. SMD-1, at 3-8). Two dual-fuel steam turbine units totaling 760 MW and an 18 MW combustion turbine currently are located at the New Boston Station (id.). Two combustion turbine units totaling 24 MW currently are located at Edgar Station (id.). Three combustion turbine units totaling 33 MW currently are located at Framingham Station (id.). Three combustion turbine units totaling 126 MW currently are located at the West Medway Station (id.).

7. In addition to the five generation sites listed above, the BECo package of assets included an ownership interest in 36 MW of Wyman 4 in Yarmouth, Maine (Exh. SMD-1, at 3-8).

8. Sithe Energies listed the strengths of the Mystic Station site as follows: a clean ten-acre site in industrial area; a smaller five to seven-acre site close to a potentially available pier; potential for once-through cooling; 345kV and 115kV switchyards adjacent to site; proximity to the Exxon marine oil terminal, the DOMAC LNG facility, and the Tennessee gas pipeline; on-site oil storage and pier facilities; a pro-development city; and location within a transmission-constrained area (Exh. EFSB-SS-7).

9. Sithe Energies noted that the potential development risks for the remaining four sites were as follows: Edgar Station - (1) permitting and construction of gas pipeline; (2) cost of transmission upgrades; (3) environmental liability; and (4) negative community reaction to possible visual, noise and water issues; West Medway Station - (1) cost and availability of water and sewer; and (2) negative community reaction to major power plant located in the community; New Boston Station - (1) negative community reaction; (2) lack of transmission capacity at site or reasonably accessible; (3) major gas line not accessible; and (4) stack height limitations due to proximity to Logan Airport; Framingham Station - (1) cost and availability of raw water and sewer; (2) negative community reaction to major power plant located in the community; and (3) potentially prohibitive cost of electric transmission upgrades (Exh. EFSB-SS-7).

10. The Company stated that in the beginning of the process of moving into Massachusetts, its goal was to diversify its portfolio through the acquisition of existing units as well as through new development (Exhs. EFSB-SS-5; SMD-1, at 3-4). Sithe Energies explained that originally it was looking for base load capacity; however, as the site-specific opportunities and constraints were analyzed, it considered different options (Exh. SMD-1, at 3-9).

11. The Company stated that the Framingham site is the most constrained with regard to transmission interconnection, and therefore would have the greatest costs associated with

interconnection (Tr. 5, at 457). The Company further indicated that although BECo has not yet completed the system interconnection studies, it would be feasible to interconnect Mystic, Edgar, and West Medway in an economical manner (id. at 466).

12. Sithe Energies indicated that water consumption criteria primarily referred to the ability to sustain once-through cooling (Exh. EFSB-SS-15; Tr. 5, at 468). Sithe Energies stated that initially it identified Mystic, Edgar, and New Boston Stations as having the potential for once-through cooling (Exh. EFSB-SS-15).

13. The Company reported that with respect to which sites possessed advantages based on potential noise impacts, Mystic would be the most preferable, Edgar and New Boston would be second, and West Medway and Framingham would be third (Tr. 5, at 470 to 471). The Company explained that it identified noise impacts based on the location of the sites, of which Mystic, Edgar and New Boston are industrial in nature, and on the extent of demolition necessary at each site (id.).

14. The Massachusetts Department of Environmental Protection ("MDEP") has adopted the NAAQS limits as MAAQS (Exh. SMD-1, at 4-4).

15. Non-attainment conditions may be further classified as to seriousness based on the level and frequency of such conditions (Exh. EFSB-A-7, at 3-1).

16. The United States Environmental Protection Agency ("USEPA") promulgated a Fine Particle (PM-2.5) NAAQS on July 18, 1997. USEPA is in the process of establishing a monitoring network for PM-2.5 (Exh. EFSB-A-7-S (att.) at 1-14). In the interim, USEPA has indicated that PM-10 should continue to be used as a surrogate (id.).

17. PSD review is a federally mandated program for new major sources or major modifications to existing major sources of criteria pollutants (Exh. EFSB-A-1-S (att.) at 5-4). Sithe proposes, through the AQIP, to reduce actual emissions from the existing Mystic Station to offset the potential emissions from the proposed facility (id.). Under PSD, a modification is not a "major modification" if the net increase in potential emissions is less than 100 tpy of CO; 40 tpy of NO_x, or SO_2; 25 tpy of PM (total); 15 tpy of PM-10; 0.6 tpy of Pb; or 7 tpy of sulfuric acid mist (H_2SO_4) (id.). Significant net increase is defined under PSD as the increase in potential emissions from the modification minus the reduction in actual emissions from the existing equipment (id.). If reductions in actual emissions from existing equipment are available to limit the net increase in potential emissions of all criteria pollutants below significance levels, the new equipment would not be a major modification under this rule and could "net out" of PSD (id.).

18. In its comment on the DEIR, MDEP cited its regulation 310 CMR 7.00, indicating that emission reduction credits ("ERC") generated through emissions reductions of one pollutant cannot be used for trading or averaging with another pollutant (Exh. EFSB-A-1-A (att.)).

19. The Company stated that although the proposed facility would "net out" of NSR for NO_x and could potentially "net out" of NSR for VOCs, LAER for NO_x would be demonstrated by the use of dry low-NO_x combustors and Selective Catalytic Reduction ("SCR") to achieve NO_x emissions of 2.0 ppm dry volume corrected to 15 percent O_2 (Exh. EFSB-A-1-S (att.) at 5-6). The Company also indicated that LAER for VOCs would be demonstrated by combustion control to minimize incomplete combustion (id.).

20. Because the Company provided documentation indicating that its proposed facility would meet TPS for both criteria and non-criteria pollutants, the Company is exempt from the requirements of 980 CMR 12.00 to provide data comparing its proposed facility to alternative fossil-fuel generating technologies (Exh. SMD-1, at 2-2 to 2-3, Revised Table 2.2-1). Provision of such information is intended to enable the Siting Board to determine whether the proposed facility will contribute on balance to "a reliable, low-cost, and diverse regional energy supply with minimal environmental impacts." M.G.L. c. 164,

§ 69J¼. Exempting projects which meet the TPS streamlines EFSB review of proposed facilities which incorporate "state-of-the art" environmental performance characteristics.

21. More specifically, annual emissions were provided for natural gas firing based on 51 degrees Fahrenheit ambient temperature for 8,760 hours at 100 percent load with duct firing (Exh. EFSB-A-7-S (att.) at 1-9, 4-6 to 4-10).

22. The SCREEN3 model calculates ground-level concentrations for complex terrain (Exh. EFSB-A-7, at 5-10 to 5-11).

23. For the configuration of the proposed facility as designed, Good Engineering Practice ("GEP") stack height would be 505 feet for Unit 8 and 475 feet for Unit 9 (Exh. EFSB-RR-19). The mathematical formula for GEP stack height is Hg=H+1.5L, where Hg is GEP measured from ground-level, H is the height of the dominant nearby structure, and L is the lesser of the height or width of the nearby structure (id.).

24. The evaporative coolers reduce intake air temperature to the gas turbines and increase inlet air density, resulting in increased mass flow through the turbine and additional power output at a slightly improved efficiency (Exh. EFSB-W-1).

25. The Company again relied on the EPA-approved SCREEN3 and ISCST3 dispersion models (Exh. EFSB-A-1-S (att.) at 5-20). Evaluated pollutant concentrations included formaldehyde, sulfuric acid and ammonia (Exhs. SMD-1, at 4-18 to 4-19; EFSB-A-1-S (att.) at 5-20 to 5-21; EFSB-A-1-S-3, at 2-6).

26. The applicable standards for non-criteria pollutants and toxics are MDEP Threshold Effects Exposure Limits ("TELS") and annual average Allowable Ambient Limits ("AALs") (Exh. EFSB-A-1-S-3, at 2-6).

27. Three-hour concentrations of SO_2 would increase by .1 percent; 24-hour concentrations of SO_2 would increase by .03 percent, and annual concentrations of PM-10 would decrease by .24 percent (Exh. EFSB-RR-46 (att.)).

28. For all measurements, existing background levels at the point of maximum predicted concentration were well below applicable ambient standards. Specifically, background levels of NO_x were 71 percent of the annual standard; background levels of SO_2 were 48 percent of the annual standard, 8 percent of the 24-hour standard, and 4 percent of the 3-hour standard; and background levels of PM-10 were 82 percent of the annual standard and 45 percent of the 24-hour standard (Exh. EFSB-RR-46 (att.)).

29. By comparison, the emissions produced by the proposed facility, which are a part of the analysis, would be 395 tpy of NO_x, 138 tpy of SO_2, and 5.4 million tpy of CO_2

(Exhs. EFSB-A-5; EFSB-A-7 (att.) at 4-6 to 4-7).

30. The proposed emissions of VOCs from the proposed facility would be 71 tpy, and the expected VOCs emissions reduction from the AQIP would be 30 tpy (Exh. EFSB-A-7 (att.) at 1-6, 4-9)

31. With the required 1.26:1.0 offset ratio applied to the proposed 71 tpy increase in VOCs emissions from the proposed facility, a total of 90 tpy of VOCs offsets would be required.

32. Sithe stated that there is currently no commodity market for CO_2 allowances or ERCs, but noted that there are occasionally trades for CO_2 emission reductions in the range of $1 to $2 per ton of emission reduction (Exh. EFSB-RR-22).

33. The Company indicated that the proposed operating and pollution control modifications at Units 4, 5, 6 and 7 are equivalent to 2157 tpy of NO_x emissions (Tr. 4, at 325-327). Of that amount, the Company would use 395 tpy to "net out" the added NO_x emissions from the proposed facility, and if allowed by MDEP, would use 142 tpy to "net out" the added VOCs emissions from the proposed facility (id. at 327-329). The Company also would use approximately 800 tpy to provide NO_x offsets for two other projects that Sithe affiliates are developing in Massachusetts - the Sithe Fore River project and the Sithe West Medway project (id. at 329-330). The Company stated that it has no specific plans regarding future use of the remainder of the NO_x emissions reductions from the existing units, over 800 tpy or 37 percent, but indicated that it would seek certification by MDEP of such unused reductions as Massachusetts Emission Reduction Credits (id. at 330; Exh. EFSB-A-7 (att.) at 1-1). The Company did not identify any plans with respect to reductions in emissions of other criteria pollutants from the existing units. Regarding CO_2 offsets, the Company indicated that the curtailed operations at units 4, 5, and 6 is equivalent to 973,000 tpy, and that of that amount 54,000 tpy, or 5.5 percent, would provide an offset for 1 percent of the emissions from the proposed facility consistent with the Siting Board's requirement (Exhs. SMD-1, at 4-20; EFSB-A-5).

34. Prior to the Dighton Power Decision, the Siting Board required generating facility applicants to commit to a specific program of CO_2 mitigation, such as a tree planting or forestation program, designed to offset a percentage of facility CO_2 emissions within the early years of facility operation. See Berkshire Power Decision, 4 DOMSB 221, at 373-374.

35. The Siting Board noted that offsets from shutdown or curtailment of existing CO_2 sources could provide a significantly greater level of offsets at a cost similar to that of tree planting arrangements previously accepted by the Siting Board. Berkshire Power Decision, 4 DOMSB 221, at 371. Because offsets based on shutdown or curtailment of existing sources would potentially allow larger offset levels and be more cost-effective, the Siting Board encouraged future applicants to pursue such offset approaches. Id. at 373.

36. The Siting Board recognizes that, in future reviews, evidence may be developed that supports use of a different assumed monetary value for the cost of providing CO_2 offsets, or use of a range of monetary values, or a greater or sole use of a non-monetary basis, in determining the appropriate level of CO_2 mitigation. Future applicants are put on notice that the Siting Board may seek to develop evidence relating to the appropriateness of the review standards set forth in the Dighton Power Decision or other reviews, and separately that the Siting Board may adjust its existing monetary standard to account for inflation or other similar minor changes based on the passage of time.

37. We also note that the selection by applicants of a CO_2 mitigation program or programs in consultation with the staff of the Siting Board -- a conditional requirement in recent generating facility reviews consistent with the CO_2 mitigation standard set forth in the Dighton Power Decision -- must include consideration of the relative cost-effectiveness of various reasonably available programs. EFSB 96-3, at 42-43. See, e.g., ANP Blackstone Decision, EFSB 97-2/98-2, at 113-114.

38. The contribution is based on offsetting 1 percent of facility CO_2 emissions over 20 years, at $1.50 per ton. The 20-year amount is first distributed as a series of payments to be made over the first five years of project operation, then adjusted to include an annual cost increase of 3 percent. See ANP Blackstone Decision, EFSB 97-2/98-2, at 114; Cabot Power Decision, EFSB 91-101A at 57; Millennium Power Decision, EFSB 96-4, at 117-118.

39. If the Company chooses, the CO_2 offset requirement also would be satisfied by a single first-year contribution for CO_2 offsets as described above, based on the net present value of the five-year amount. The net present value is to be based on discounting, at ten percent, the five annual payments totaling $1,720,161 or $1,410,213 if based on the net maximum CO_2 emissions from the proposed facility and the AQIP.

40. The Company explained that air cooling commonly reduces the water supply requirements of a generation facility but decreases plant output at higher ambient air temperatures, and that the decrease in plant output at the proposed facility would be

partially offset by the addition of the evaporative coolers (Exh. EFSB-W-1). The Company noted that water supply requirements of the proposed facility with air cooling and evaporative coolers would still be significantly less than with wet cooling (id.).

41. The Company indicated that potable water needs would consist of water for domestic uses including drinking fountains, showers, toilets, and sinks, for firewater and for make-up water for the turbine inlet evaporative coolers and plant demineralizers; demineralized water needs would consist of water for steam cycle make-up; and on-site water needs would consist of water for two on-site 350,000-gallon tanks (Exh. SMD-1, at 1-14, 1-17). The on-site storage tanks would supply firewater for two hours of operation during maximum fire pump flow and water for the demineralized water treatment system (id. at 1-17).

42. Prorating present water use of Units 4, 5, and 6 to reflect the future average 720-hour annual operating restriction proposed for those units results in a water use reduction of approximately 266,000 gpd. Of this amount, proposed Units 8 and 9 would use approximately 135,000 gpd, resulting in a total approximate water use reduction of 131,000 to 132,000 gpd (roughly 15 percent) from the current 860,000 gpd usage level for the entire Mystic Station (Exh. EFSB-W-4).

43. The Company anticipates some reduction in withdrawals from the Mystic River for cooling for the existing Mystic Station units as a result of construction of the proposed facilities. The Company estimated that the future 720-hour annual operating restriction proposed for Units 4, 5, and 6 would reduce the volume of Mystic River water currently used as circulating water for once-through cooling at Mystic Station by 123,423 gpd (Exh. EFSB-W-11).

44. Based on information from the Everett City Engineer, the Company stated that there are no combined sewer overflows ("CSOs") for disposal of excess wastewater in the sewer system along the discharge route for wastewater from the proposed facility (Exh. EFSB-W-9). The Company also stated that, according to the MWRA, there are no permitted CSOs in Everett (id.).

45. The Company indicated that wastewater flows were greater in 1998 than in 1997 or 1996 (Exh. EFSB-W-5).

46. The Company stated that the proposed stormwater management system would use deep sump catch basins and detention ponds with sediment forebays to remove 80 percent of suspended solids as required in Massachusetts (Exh. EFSB-W-8). The Company further stated that periodic removal of sediment from catch basins and detention ponds would be conducted to maintain the operating condition of the units (id.).

47. This compares favorably with the per MW water use of other facilities recently before the Siting Board. The comparable usage rates in recent reviews were: 99,450 gallons per year ("gpy") per MW (with 20 percent steam augmentation) for the 580 MW air-cooled ANP Blackstone project; 224,000 per gpy per MW for the 170 MW air-cooled Dighton

Power project; 2.4 million gpy per MW for U.S. Generating Company's 360 MW water-cooled project in Charlton. ANP Blackstone Decision, EFSB 97-2/98-2, at 132; Dighton Power Decision, EFSB 96-3, at 219, 240; Millennium Power Decision, EFSB 96-4, at 58, 118-119.

48. The Siting Board notes that barge deliveries would replace some deliveries by truck (see

Section III. G, below).

49. The Company indicated, however, that its contractor might require dock modifications for delivery of construction equipment (Tr. 3, at 184 to 185). The Company stated that it would inform its contractor of its representations in the instant proceeding before signing an agreement with the contractor (id.). The Company indicated that it would pursue modifications to its filing as necessary to reflect any changes in its plans introduced by its contractor (id.).

50. A Federal Emergency Management Agency ("FEMA") map, FEMA Flood Insurance Rate Map, Panel number 250192 0001 B, for the Mystic Station site submitted by the Company appears to show that portions of the proposed site are within the 100-year floodplain (Exh. EFSB-L-10). The Company has approached FEMA to request an amendment of the FEMA Flood Insurance Rate Map for the Mystic Station site to reflect the location of the 100-year floodplain as indicated by the Company's topographic survey of the area (id.).

51. According to the Company, spent condensate polisher resin is classified as a solid waste in accordance with 310 CMR 19, and not as a hazardous waste in accordance with 310 CMR 30 (Exh. EFSB-SW-3C). The Company stated that the disposal facility currently identified to receive the spent resin is Turnkey Landfill in Hamden, Maine (id.).

52. According to the Company, it conducted its studies in accordance with MDEP regulations (Exh. EFSB-A-1-S (att. at 11-3)).

53. The Company stated that these areas of identified contamination are officially designated under MDEP regulations as "recognized environmental conditions" ("RECs") (Exh. EFSB-A-1-S (att. at 11-3)).

54. Pursuant to MDEP regulations, an RAO is the endpoint of an oil or hazardous material release incident (Tr. 2, at 87). The Company explained that under the Massachusetts Contingency Plan ("MCP") there are very specific procedures governing whom to notify when spills occur or previous contamination is uncovered and equally specific standards governing spill remediation (id. at 89 to 90).

55. The Company noted that some oil remained in the soil around the foundations of tanks in the berm area where the spill occurred (Tr. 2, at 101 to 102). The Company stated that this was because, due to structural considerations, it was not possible to dig at

depth around the foundations of these facilities, which were still in use (id.). The Company indicated that no free oil remained from the December, 1998 spill, and that, with the possible exception of maintenance-related exposure, no contact to the oil from the spill would occur (id.). The Company stated that, in conjunction with MCP regulations, MDEP would include the 1998 spill in its tracking of oil and/or hazardous waste releases at the Mystic Station site (id.). The Company also stated that it intended to achieve RAO status for the proposed site prior to the beginning of construction of the proposed facility (id.).

56. Information provided by the Company delineates the nearest residential area to be north of the project site, bounded by Robin Street to the east, Alford Street/Broadway to the west, also encompassing a number of blocks north of Beacham Street extending to Bartlett Street (Exh. EFSB-L-2 (att.)).

57. The Company's selected receptor locations include: Broadway (Route 99) at Parlin Junior High School, Sonar Playground, Whidden Memorial Hospital and Sacramone Playground in Everett; Chelsea Memorial Park, Admiral's Hill and the Soldier's Home in Chelsea; Border Street, Bunker Hill Street Playground, Ryan Playground and the Bunker Hill Monument in Charlestown; and Mystic River Reservation in Medford (Exh. SMD-1, at 4-73).

58. The Company stated that the Mystic Station site is currently landscaped with trees and/or shrubs along the length of its perimeter to the west (along Alford Street) and along a portion of its perimeter to the north along Dexter Street (Exh. EFSB-L-5).

59. Specifically, the Company indicated it would plant trees along Rover Street from approximately where the west end of Rover Street intersects with Robin Street to the Mystic Station site gate located adjacent to Prolerized (Exh. EFSB-L-5).

60. The Company indicated that further reductions to stack height at the proposed facility would result in corresponding increases in local ambient air quality impacts (Exh. EFSB-V-1; see Section III. B., above).

61. The Company described the exterior of Unit 7 as coated metal, cream-colored with a red brick-toned band, with finished concrete stacks and smaller buildings and tanks of painted metal (Exh. EFSB-V-1).

62. The designation "dBA" indicates sound measured in decibels using the "A-weighting" network, which, within the range of sounds heard by the human ear, emphasizes middle frequency sounds and de-emphasizes lower and higher frequency sounds (Exh. SMD-1,

at 4-56).

63. The Company explained that L_{90} noise is a measure of residual noise that is observed in the absence of louder, transient noises (Exh. SMD-1, at 4-58).

64. The proposed site is bordered on the west by the existing Mystic Station facilities (Exh. EFSB-A-7-S (att.) at 6-11). Active industrial facilities border the proposed site to the east (Exh. SMD-1, at 1-4). The Mystic River abuts the Mystic Station property boundaries to the south (id.).

65. USEPA has identified an outdoor L_{dn} of 55 dBA in residential areas as the noise level requisite to protect public health and welfare with an adequate margin of safety for both activity interference and hearing loss (Exh. EFSB-RR-36 (att.) at 28). L_{dn} is defined as the 24-hour equivalent sound level, with a 10 dBA penalty added to sounds occurring between the hours of 10:00 p.m. and 7:00 a.m. (Exh. SMD-1, at 4-58).

66. As a basis for comparison, the Company provided a standard design for noise mitigation at the proposed facility (Exh. EFSB-N-11). The Company stated that standard design for noise mitigation at a facility such as the proposed would use acoustical enclosures over the primary noise sources, including the combustion turbine, steam turbine, and auxiliary skids (id.). The combustion turbine air inlets have standard vendor silencers (id.). The turbine buildings have thermally insulated steel walls with conventional weather louvers on the ventilation openings (id.). The HRSG is designed to provide additional turbine exhaust silencing (i.e., without specific silencer equipment) (id.). The air-cooled condensers and main power transformers are standard units with no special noise control (id.). The Company stated that noise propagation analysis of the standard design predicts a total noise level at the nearest residential receptor (on Mystic Street) of 10 dBA above ambient (id.).

67. The Company stated that to achieve the 7 dBA target, the following modifications would have to be made to the base level of noise mitigation for the proposed facilities: the combustion air intake silencers lengthened; weather louvers on the building ventilation openings replaced with acoustical louvers; and the transformers provided with a small noise level reduction (Exhs. EFSB-N-11; EFSB-RR-37).

68. The Company stated that to achieve the 4 dBA target, all measures incorporated into the 7 dBA design would be necessary plus the addition of a small HRSG exhaust stack silencer, a significantly greater amount of built-in main power transformer silencing, and a small reduction in the noise of the closed cooling water cooler (Exhs. EFSB-N-11; EFSB-RR-37). Noise from the air-cooled condensers would be reduced by increasing the number of cells by 12 percent, slowing the fans down, and increasing the number of fan blades (Exhs. EFSB-N-11; EFSB-RR-37).

69. The Company indicated that achieving the 2 dBA target would require all noise mitigation to achieve the 4 dBA target, plus double-steel insulated walls for the turbine building. In addition, the acoustic louvers for building ventilation would need to be replaced with silencers (Exhs. EFSB-N-11; EFSB-RR-37). The air-cooled condensers and the cooling water coolers would require further reductions in fan speed

(Exhs. EFSB-N-11; EFSB-RR-37).

70. The Company indicated that the actual cost of achieving its 2 dBA target would depend on the cost of noise mitigation equipment chosen by its contractor (Tr. 6, at 666-668).

71. L_{eq} is the designation of the equivalent sound level, in dBA. The L_{eq} is the level of a hypothetical steady sound which would have the same energy (i.e., the same time-average mean square sound pressure) as the actual fluctuating sound observed (Exh. SMD-1, at 4-58). The L_{eq} is strongly influenced by occasional loud, intrusive noises (id.).

72. The USEPA protocol uses a "toxic endpoint" guideline of 200 parts per million ("ppm"), based on a short-term exposure standard derived from the American Industrial Hygiene Association's Emergency Response Planning Guidelines 2 (Exh. EFSB-SF-5).

73. The Company's Year 2000 traffic modeling identified and located increases in traffic from construction of the proposed facility (Exh. SMD-1, at 4-97 to 4-107). The Company's Year 2003 traffic modeling identified and located increases in traffic from operation of the proposed facility (id. at 4-110 to 4-114).

74. Modeling of future traffic conditions with construction of the proposed facility is referred to as the "build" scenario, without construction of the proposed facility as the "no-build" scenario.

75. The Company analyzed the potential impacts to traffic of simultaneous or overlapping construction of the Island End project (Cabot Power Decision ,EFSB 91-101A); and the proposed facility (Exh. EFSB-T-7).

76. The end of Beacham Street faces the end of the McDonald's driveway.

77. The Company anticipated that its peak construction workforce would be reached in July 2000, and would drop to between 800 and 900 over the following three months (Exh. SMD-1, at 4-100).

78. With respect to the build scenario, the Company estimated the likely number of new trips from communities other than Everett and distributed the new trips based on the likely route from a given community to the proposed facility site (Exh. SMD-1, at 4-101 to 4-106). The Company estimated that, in general, 45 percent of the year 2000 Everett workforce would reside in Everett (id. at 4-101).

79. The Company pointed to the variation in shift hours of facility operators to explain the difference in employee trips generated in the morning and afternoon (Exh. SMD-1, at 4-109).

80. The Company stated that LOS is a measure of the efficiency of the traffic operations at a certain location (Exh. SMD-1, at 4-94). The Company stated that traffic conditions on roadways and intersections are represented by the letters A through F on the LOS scale, where A represents a "free flow" condition with minimal delays, and F represents

"forced flow" or breakdown conditions characterized by erratic vehicle movements (id. at 4-94 to 4-95).

81. Access would be via Chemical Lane/Horizon Way, off Route 99, on the northern border of the staging area (Tr. 4, at 598 to 599).

82. The Company indicated that it anticipated obtaining land in the vicinity of the Mystic Station site to use for construction staging (Exh. EFSB-A-1-S (att.) at 12-20). The Company stated that it is currently negotiating access to a 35-acre parcel of land accessible via the MBTA property directly across from the Mystic Station Site Access Drive and Chemical Lane, north of the Route 99/Dexter Street intersection (id.). The Company indicated it would need to secure an alternative site if its negotiations were unsuccessful and that it would notify the Siting Board if it failed to obtain its targeted construction staging area (Exh. EFSB-RR-34).

83. The Company indicated that it would schedule deliveries during off-peak hours to avoid traffic impacts, but would delay unloading until normal working hours to avoid undue noise impacts (Tr. 5, at 552).

84. The Company stated that arrangements for police officers in the vicinity of the Mystic Station site would be coordinated with the Cities of Everett and Boston (Exh. EFSB-A-1-S (att.) at 12-20).

85. The Company indicated that LOS "D" and LOS "E" represent acceptable operating conditions for peak-hour periods in highly developed urban areas (Exh. EFSB-T-7; Tr. 5, at 574 to 577; 595 to 599). The Company also stated, based on its traffic analysis, that LOS at the Route 99/Beacham Street/McDonald's intersection would revert to current (1998) morning and afternoon peak hour levels, LOS "D" and LOS "C", respectively, after construction and during operation of the proposed facility, in Year 2003 (Exh.

SMD-1, at 4-109 (Table 4.13-7)).

86. The record demonstrates that the Company would seek another area for construction staging and parking if its negotiations for its preferred construction staging/parking area were unsuccessful.

87. Electric fields produced by the presence of voltage, and magnetic fields produced by the flow of current, are collectively known as electromagnetic fields ("EMF").

88. The Siting Board notes that BECo's and other utilities' existing transmission lines are not ancillary facilities as defined in G.L. c. 164, § 69G. However, in order to allow comprehensive analysis of environmental impacts associated with the construction and operation of the proposed generating facility, the Siting Board may identify and evaluate any potentially significant effects of the facility on magnetic field levels along existing transmission lines. See ANP Blackstone Decision, EFSB 97-2/98-2, at 170; Altresco

Lynn, Inc., 2 DOMSB 1, at 213 (1993); Boston Edison Company, 1 DOMSB 1, at 148 (1993).

89. The Company stated that its estimate reflects a tenfold attenuation of magnetic field from the expected use of pipe-type cable installation (Exh. SMD-1, at 4-127 to 4-129, 4-132). The Company also indicated that its estimate does not include magnetic fields from nearby distribution lines, and noted that it measured typical distribution line magnetic fields of 8.8 mG along Rindge Avenue in Cambridge (id. at 4-131).

90. The Company stated that the maximum magnetic field would be 134 mG directly under the above-ground lines (Exh. EFSB-RR-17, at 4). The Company indicated that it also had monitored existing magnetic field levels of up to 8.3 mG along the above-ground portion of the 488-515 line, and up to 39.4 mG at street crossings along the above-ground portion of the 423-515 line (Exh. EFSB-RR-17). The Company indicated the above magnetic field levels were measured at selected street crossings on June 2, 1999, between 12:55 p.m. and 4:05 p.m., and noted that weather conditions were hazy and humid with a temperature of approximately 85 degrees (id.).

91. The Company stated that the 372 line extends from Mystic substation to the BECo Kingston Street substation in Boston (Exh. SMD-1, at 4-114; Tr. 7, at 228-229). Above a new 345 kV line parallel to the 372 line, the Company estimated a maximum magnetic field of 1.7 mG with the proposed project, compared with 1.1 mG with the existing 372 line (Exh. SMD-1, at 4-127 to 4-132).

92. The Company argues that the Siting Board has not re-examined the 85 mG benchmark since the 1985 Hydro Quebec review on which it is based (Company Brief at 80). Citing a more recent National Academy of Science report concerning EMF research (Exh. EFSB-EE-4), the Company argued that there still is no evidence that EMF causes harmful health effects, even at much higher levels than 85 mG (Company Brief at 80). This report is summarized in Section III.L, below.

93. As argued by Sithe, the Siting Board did not conclude in the 1985 MECo/NEPCo Decision, or any later review referencing that decision, that an edge-of-ROW magnetic field of 85 mG is a level above which harmful effects would necessarily result. Rather, the edge-of-ROW magnetic field level of 85 mG serves as a benchmark of a previously accepted impact along a 345 kV transmission ROW in Massachusetts, not as a limit of acceptable impact.

94. The Company indicated that it had identified a parcel of land west of Route 99 which, assuming negotiations were successful, it would lease for construction staging (Exh. EFSB-L-12-S). The Company stated that a portion of the identified parcel is within Boston city limits, in the Charlestown General Industrial Subdistrict of the Charlestown Waterfront Harborpark District (id.). The Company indicated that Boston Zoning Code regulations apply to the Charlestown General Industrial Subdistrict, and that Article 8 of the Boston Zoning Code allows any industrial use, except industrial uses which are objectionable or offensive due to special danger or hazard (not applicable to construction

staging or parking) and provided that all dust and dirt incident to storage or handling is contained at the parcel (id.). The Company also noted that Article 23 of the Boston Zoning Code requires that parking facilities be graded, surfaced, drained and maintained; parking facilities cannot be used for automobile storage or repairs; and that parking spaces be at least 8.5 feet wide, 20 feet long and located on site (id.).

95. The Island End facility, docketed as EFSB 91-101A, was approved by the Siting Board on October 9, 1998.

96. The Company stated that the three major goals of the plan are: to preserve and enhance existing open space and parcels of land used for recreation; to identify opportunities for creating and acquiring additional open space parcels, inland and along the waterfront; and to integrate new forms of recreation within Everett (id. at 4-39 to 4-40). The Company argued that the proposed facility would be consistent with the first goal because it would be located entirely within the existing Mystic Station property, with the second goal because the present condition and location of the proposed site would make its acquisition by Everett for open space inappropriate, and with the third goal because the proposed site, as the location of on-going industrial activity, would not be suitable for the type of recreational development envisioned in the Open Space Plan (id.).

97. The Company stated that this existing landscaping, composed of ornamental trees and shrubs surrounded by mulch, provide a natural buffer and visual barrier to the Mystic Station site for pedestrians and bicyclists using the Alford Street sidewalk (Exh. EFSB-W-16-S-2 (att.) at C-5).

98. Sithe the Mystic also provided an abstract from a 1995 article comparing asthma rates in different neighborhoods of Boston (id.). The Company noted that the data provided in the article indicated that asthma hospitalization rates in Charlestown and East Boston (areas near the Mystic Station) were in the lower third of all neighborhoods analyzed (id.).

99. Changes in 3-hour SO_2 concentrations, 24-hour SO_2 concentrations, and annual PM-10 concentrations were negligible.

100. The report notes a statistically significant link between "wire-code rating", which has been used as a proxy for magnetic field strength levels in residences, and childhood leukemia; however, it notes that no association has been found between childhood leukemia and average measured magnetic fields within homes (id.) The report suggests that the correlation between wire-code rating and childhood leukemia could be explained by a correlation between wire-code rating and a true risk factor either related to magnetic fields but not directly to average field strength (e.g., peak field strength, field variability, frequency and strength of transients) or unrelated to magnetic fields (e.g., age of home, sociodemographic characteristics of the inhabitants), and suggests areas of further research to clarify uncertainties identified in the review of the literature (id. at 201-204).

101. The Siting Board notes that its Technology Performance Standard at 980 CMR 12.00 could be construed as an energy policy of the Commonwealth adopted for the purpose of guiding the decisions of the Siting Board. The proposed project's compliance with 980 CMR 12.00 is discussed in Section I.C, above. The Commonwealth has not adopted any other energy policies pertaining to the Siting Board's review of generating facilities since G.L. c. 164, §69 J¼ was enacted.

102. Sithe also asserts that its proposed project is consistent with environmental policies embodied in the Restructuring Act and in Chapter 206 of the Acts of 1998 ("Brownfields Act") (Company Brief at 85-87).[(103)]

103. ' ' " " -