

Decisions and Orders

Massachusetts Energy Facilities Siting Board

VOLUME 10

TABLE OF CONTENTS

		<u>Page #</u>
Sithe Edgar Development LLC	98-7	1
Brockton Power, LLC	99-1	157
Sithe West Medway Development LLC	98-10	274

COMMONWEALTH OF MASSACHUSETTS
Energy Facilities Siting Board

In the Matter of the Petition of)
Sithe Edgar Development LLC for Approval)
to Construct a Bulk Generating Facility in)
in the Town of Weymouth, Massachusetts)
_____)

EFSB 98-7

FINAL DECISION

Selma Urman
Hearing Officer
February 11, 2000

On the Decision:

Jenna Ide

Jeffrey Brandt
Barbara Shapiro
William S. Febiger

APPEARANCES:

John A. DeTore, Esq.
Robert D. Shapiro, Esq.
Michael D. Ernst, Esq.
JoAnne A. Pierce, Esq.
Robin P. Daniels, Esq.
Rubin & Rudman LLP
50 Rowes Wharf
Boston, Massachusetts 02110
FOR: Sithe Edgar Development LLC
Petitioner

William S. Stowe, Esq.
Boston Edison Company
800 Boylston Street
Boston, Massachusetts 02199
FOR: Boston Edison Company
Intervenor

Michael Lang
74 Cotton Avenue
Braintree, Massachusetts 02184
FOR: Fore River Watershed Association
Intervenor

Peter S. Lapolla, Director
Braintree Conservation Commission
One John Fitzgerald Kennedy Memorial Drive
Cambridge, Massachusetts 02184
FOR: Braintree Conservation Commission
Interested Person

Edward L. Selgrade, Esq.
200 Wheeler Road, 4th Floor
Burlington, Massachusetts 01803
FOR: American National Power, Inc.
Interested Person

Mary Beth Gentleman, Esq.
Eileen M. McGettigan, Esq.
Foley, Hoag & Eliot LLP
One Post Office Square
Boston, Massachusetts 02109
FOR: USGen New England, Inc.
Interested Person

Kathryn Reid, Esq.
New England Power Company
25 Research Drive
Westborough, Massachusetts 01582
FOR: New England Power Company and
Massachusetts Electric Company
Interested Persons

J. Gary Peters
34 Bluff Road
Weymouth, Massachusetts 02191
Interested Person

TABLE OF CONTENTS

I.	<u>INTRODUCTION</u>	Page 1
A.	<u>Description of Proposed Project, Site, and Interconnections</u>	Page 1
B.	<u>Procedural History</u>	Page 3
II.	<u>SITE SELECTION</u>	Page 5
A.	<u>Standard of Review</u>	Page 5
B.	<u>Description</u>	Page 6
C.	<u>Analysis</u>	Page 12
III.	<u>ENVIRONMENTAL IMPACTS</u>	Page 14
A.	<u>Standard of Review</u>	Page 14
B.	<u>Air Quality</u>	Page 15
1.	<u>Applicable Regulations</u>	Page 15
2.	<u>Emissions and Impacts</u>	Page 17
3.	<u>Offset Proposals</u>	Page 24
4.	<u>Analysis</u>	Page 25
C.	<u>Water</u>	Page 33
1.	<u>Water Supply</u>	Page 33
2.	<u>Wastewater and Stormwater</u>	Page 37
3.	<u>Water Supply Impacts with Once Through Cooling</u>	Page 40
4.	<u>Analysis</u>	Page 44
D.	<u>Wetlands</u>	Page 50
1.	<u>Description</u>	Page 50
2.	<u>Analysis</u>	Page 55
E.	<u>Solid Waste</u>	Page 58
1.	<u>Solid Waste</u>	Page 58
2.	<u>Analysis</u>	Page 59
F.	<u>Visual Impacts</u>	Page 60
1.	<u>Description</u>	Page 60
2.	<u>Positions of Parties</u>	Page 69
3.	<u>Analysis</u>	Page 70
G.	<u>Noise</u>	Page 76
1.	<u>Description</u>	Page 76
2.	<u>Analysis</u>	Page 82
H.	<u>Safety</u>	Page 85
1.	<u>Materials Handling and Storage</u>	Page 86
2.	<u>Barge Deliveries of Oil</u>	Page 88
3.	<u>Fogging and Icing</u>	Page 89
4.	<u>Emergency Response</u>	Page 89
5.	<u>Existing Hazardous Conditions</u>	Page 90
6.	<u>Transmission Lines Over the Fore River</u>	Page 92
7.	<u>Analysis</u>	Page 93
I.	<u>Traffic</u>	Page 95

	1.	<u>Description</u>	Page 95
	2.	<u>Analysis</u>	Page 101
J.		<u>Electric and Magnetic Fields</u>	Page 103
	1.	<u>Description</u>	Page 104
	2.	<u>Analysis</u>	Page 106
K.		<u>Land Use</u>	Page 107
	1.	<u>Description</u>	Page 107
	2.	<u>Northern Portion</u>	Page 113
	3.	<u>Analysis</u>	Page 114
L.		<u>Cumulative Health Impacts</u>	Page 118
	1.	<u>Baseline Health Conditions</u>	Page 118
	2.	<u>Criteria Pollutants</u>	Page 119
	3.	<u>Air Toxics</u>	Page 123
	4.	<u>Discharges to Ground and Surface Waters</u>	Page 124
	5.	<u>Handling and Disposal of Hazardous Materials</u>	Page 125
	6.	<u>EMF</u>	Page 126
	7.	<u>Noise</u>	Page 128
	8.	<u>Conclusions</u>	Page 129
M.		<u>Conclusions</u>	Page 130
IV.		<u>CONSISTENCY WITH THE POLICIES OF THE COMMONWEALTH</u>	Page 131
	A.	<u>Standard of Review</u>	Page 131
	B.	<u>Analysis</u>	Page 132
V.		<u>DECISION</u>	Page 136

LIST OF ABBREVIATIONS

<u>Abbreviation</u>	<u>Explanation</u>
AALs	Allowable Ambient Limits
ACC	Air-cooled condenser
ACOE	United States Army Corps of Engineers
Algonquin	Algonquin Gas Transmission Company
ANP	American National Power, Inc.
<u>ANP Blackstone Decision</u>	<u>ANP Blackstone Energy Company, EFSB 97-2/98-2 (1999)</u>
AQIP	Air Quality Improvement Plan
Baseline Report	<u>Health Draft Baseline Report</u>
<u>Berkshire Power Decision</u>	<u>Berkshire Power Development, Inc., 4 DOMSB 221 (1996)</u>
BACT	Best available control technology
BECo	Boston Edison Company
Braintree	Town of Braintree
Brownfields Act	c. 206 of Acts of 1998
Cancer Incidence Report	1997 Massachusetts Department of Health Report on cancer incidence in 351 cities and towns
cfs	Cubic feet per second
CO	Carbon monoxide
CO ₂	Carbon dioxide
Company	Sithe Edgar Development LLC
Company Initial Brief	Sithe Edgar Development's initial brief
Company Reply Brief	Sithe Edgar Development's reply brief
CSOs	Combined Sewer Flows
CTGs	Combustion Turbine Generators
dBA	Decibel
DEIR	Draft Environmental Impact Report
<u>Dighton Power Decision</u>	<u>Dighton Power Associates, EFSB 96-3 (1997)</u>

DMF	Massachusetts Division of Marine Fisheries
DO	Dissolved Oxygen
DPA	Designated Port Area
Earth Tech	Earth Tech, Inc.
EMF	Electric and magnetic fields
EOEA	Massachusetts Executive Office of Environmental Affairs
EPC	Engineering, procurement, and construction
Epsilon	Epsilon Associates, Inc.
ERC	Emission Reduction Credits
EUA	Eastern Utilities Associates
FEIR	Final Environmental Impact Report
FEMA	Federal Emergency Management Agency
Fore River	Weymouth Fore River
FRP	Facility Response Plan
FRWA	Fore River Watershed Association
FRWA Initial Brief	Fore River Watershed Association Initial Brief
FRWA Reply Brief	Fore River Watershed Association Reply Brief
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
<u>IDC Bellingham Decision</u>	<u>IDC Bellingham, LLC, EFSB 97-5 (1999)</u>
I/I	inflow and infiltration
IPS	Intermediate Pump Station

ISO-NE	Independent System Operator-New England
kV	Kilovolt
L ₉₀	The level of noise that is exceeded 90 percent of the time
LAER	Lowest Achievable Emission Rate
LCS	Land Containing Shellfish
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
LSCSF	Land Subject to Coastal Storm Flowage
LSP	Licensed site professional
LUO	Land Under the Ocean
MAAQS	Massachusetts ambient air quality standards
MassGIS	Massachusetts Geographic Information Systems
MBTA	Massachusetts Bay Transportation Authority
MCZM	Massachusetts Coastal Zone Management
MCP	Massachusetts Contingency Plan
MDEP	Massachusetts Department of Environmental Protection
mG	Milligauss
mgd	Million gallons per day
MHC	Massachusetts Historical Commission
MHD	Massachusetts Highway Department
MHD project	Fore River Bridge Project
<u>Millennium Power Decision</u>	<u>U.S. Generating Company, EFSB 96-4 (1997)</u>
MHI	Mitsubishi Heavy Industries
MW	Megawatt
MWRA	Massachusetts Water Resources Authority

MWRA project	Braintree-Weymouth Sewer Interceptor Project
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
<u>1985 MECo/NEPCo Decision</u>	<u>Massachusetts Electric Company et al., 13 DOMSC 119 (1985)</u>
NML	Noise Measurement Location
NO _x	Nitrogen oxides
NPDES	National Pollution Discharge Elimination System
NSPS	New source performance standards
NSR	New source review
NTEL	Non-threshold Effects Exposure Limit
O ₃	Ground-level ozone
OTC	Once-through cooling
Pb	Lead
PM	Particulates
PM-10	Fine particulates of 10 microns or less
ppm	Parts per million
ppmdv	Parts per million dry volume
Primary Health Study	<u>Health Studies–Supplemental Baseline Report: Primary Health Study</u>
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
SED	Sithe Edgar Development LLC
sf	Square Feet
SILs	Significant Impact Levels
Sithe Edgar	Sithe Edgar Development LLC
Sithe Energies	Sithe Energies, Inc.
Sithe Mystic	Sithe Mystic Development LLC
Sithe Mystic AQIP	Sithe Mystic Station Air Quality Improvement Plan
Siting Board	Energy Facilities Siting Board
Siting Council	Energy Facilities Siting Council
SO ₂	Sulfur dioxide
SO _x	Sulfur oxides
SPCC	Spill Prevention and Countermeasure Plan
SPPP	Stormwater Pollution Prevention Plan
STGs	Steam Turbine Generator
Stone & Webster	Stone & Webster Engineering Corporation
SWEC	Salt water evaporative cooler
Table 1	Comparison of proposed facility emissions to regulations
Table 2	Comparison of proposed facility emission concentrations to concentrations of other pollutants.
tanker	Ocean-going tank barge
TEL	Threshold effects exposure limit
TPS	Technology Performance Standards
tpy	Tons per year
TURA	Massachusetts' Toxic Use Reduction Act
USCG	United States Coast Guard

USEPA	The United States Environmental Protection Agency
USGen	U.S. Generating Company
USGS	United States Geological Survey
VOCs	Volatile organic compounds
WCC	Weymouth Conservation Commission
WESRRC	Weymouth Edgar Station Reactivation and Review Commission
Weymouth	Town of Weymouth
WRC	Massachusetts Water Resources Commission

The Energy Facilities Siting Board (“Siting Board”) hereby approves the petition of Sithe Edgar Development LLC for approval to construct a net nominal 775 megawatt bulk generating facility at the proposed site in Weymouth, Massachusetts.

I. INTRODUCTION

A. Description of Proposed Project, Site, and Interconnections

Sithe Edgar Development LLC (“Sithe Edgar” or “Company”) has proposed to construct a natural gas-fired, combined-cycle, electric generating facility with a net nominal electrical output of 775 megawatts (“MW”) in the Town of Weymouth, Massachusetts (“proposed generating facility” or “proposed project”) (Exh. SED-1, at 1-1). The Company has proposed to use natural gas to fuel the proposed project, with a 720 hour (30 day) back-up supply of .05 percent sulfur distillate oil (Exh. EFSB-B-23). The proposed generating facility would be located on a portion of the existing site of Edgar Station, which was retired in 1978 (Exh. SED-1, at 1-1). In May, 1998, Sithe Energies, Inc. (“Sithe Energies”) purchased the Edgar 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 1-3; G.L. c. 164, §1A).

The proposed site is located on industrially zoned land in North Weymouth on the Weymouth Fore River (“Fore River”) (Exhs. SED-1, at 4.9-1; EFSB-L-11-S). The total upland developable acreage¹ is approximately 57 acres. The Route 3A Bridge runs over the site in an east/west direction, dividing the site into two sections: (1) a 16 acre section north of the bridge (“northern portion”); and (2) a 41 acre area to the south of the bridge (“southern portion”) (Exhs. SED-1, at 1-2; EFSB-SS-8; SED-3). The site is bounded by the Fore River on the north, south, and west sides (Exhs. EFSB-B-2-S-A; SED-1 (fig. 1-2)). The remainder of the site is bordered to the east by Mills Cove, King’s Cove and a residential neighborhood on Monatiquot Street in Weymouth (Exhs. EFSB-B-3; SED-1 (fig. 1-2)). Across the Fore River from the site are other

¹ The total site acreage also includes 20 acres below sea level; therefore the total land size is 77 acres – 57 acres of useable land and 20 acres below sea level (Exh. SED-3).

residential neighborhoods of Weymouth, the Town of Braintree (“Braintree”), and the City of Quincy (“Quincy”) (Exh. EFSB-B-3).

The site contains both active and inactive structures including: an eleven million gallon tank (operational), access roads, and a retired coal loading dock on the northern portion of the site; a 3.4 million gallon oil tank, a guard gate house, access roads, a BECo 115 kilovolt (“kV”) switchyard, two transmission towers, two oil-fired peaking units, circulating water intakes, and discharge canals on the southern portion of the site (Exh. SED-1, at 1-15 (fig. 1-4)).

The Company has proposed to remove the existing turbine building and switch house on the southern portion of the site and construct a new building that would house two Mitsubishi Heavy Industries (“MHI”) 501G combustion turbine generators (“CTGs”), two heat recovery steam generators (“HRSGs”) and one steam turbine generator (“STG”), a dry low nitrogen oxides (“NO_x”) system, a selective catalytic reductions system (“SCR”), a 50 cell air-cooled condenser (“ACC”) and a single dual flue 255-foot stack (id. at 1-17 to 1-18; Exh. EFSB-B-23). Additional project components would include three main step-up transformers, two additional bays on the existing 155 kV BECo switchyard, one 385,000 gallon raw water storage tank, two demineralized water storage tanks (an 85,000 gallon tank and an 850,000 gallon tank), and one 90,000 gallon ammonia storage tank (Exh. EFSB-WG-6-S2 (att. C at 3-7, 3-18)).

Back-up distillate fuel oil would be delivered to the site by barge, and unloaded at a distillate oil barge pier to be constructed by the Company on the southern portion of the site (id. (att. C at 3-7)). The Company would store distillate fuel oil on the southern portion of the site of the proposed facility in a new 6.3 million gallon above-ground storage tank (Exh. EFSB-B-23-S (att.)).²

Sithe Edgar has proposed to deliver natural gas to the generating facility via an existing Algonquin Gas Transmission Company (“Algonquin”) pipeline. In order to serve the proposed facility, Algonquin would upgrade approximately 7.7 miles of its existing pipeline from Randolph, and would install an approximately 2000 foot new 24-inch interconnect running from

² The Company indicated that it would demolish the existing tank, and construct a new oil storage tank of the same size at the same location (Exh. EFSB-B-23-S).

the Potter Street Meter Station in Braintree, beneath the Fore River, to the proposed facility (Exh. EFSB-WG-6-S2 (att. C at 3-7)). The Company has proposed to interconnect the facility with the existing 115 kV transmission lines that cross from the site over the Fore River west to the Holbrook substation (Exh. EFSB-B-11, at 3-29). The Company has indicated that some of the lines would require upgrading in order to serve the proposed facility (*id.* at 3-29). Electric power generated by the proposed project would be delivered via interconnection with BECo's existing switchyard at Edgar Station (Exh. SED-1, at 1-44).

Sithe Edgar would refurbish the existing dock on the northern portion of the site for use during construction (Exh. EFSB- B-25). The construction phase of the proposed facility would coincide or overlap with two other construction projects that are being staged in the area proximate to the proposed facility: (1) the construction of the facilities associated with the Massachusetts Water Resources Authority ("MWRA") Braintree-Weymouth Sewer Interceptor project ("MWRA project"); and (2) the construction by the Massachusetts Highway Department ("MHD") of a temporary four-lane drawbridge parallel to the existing bridge, to be followed by the construction of the Fore River Bridge ("MHD project") (Exh. SED-1, at 4.6-1).

Sithe Edgar is a wholly-owned subsidiary of Sithe New England Holdings LLC, which is a wholly-owned subsidiary of Sithe Northeast Generating Company, Inc., which is a subsidiary of Sithe Northeast Holdings, Inc., which is a wholly-owned subsidiary of Sithe Energies (Exh. EFSB-B-4-S). 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 (Exh. SED-1, at 1- 3).

B. Procedural History

On October 30, 1998, Sithe Edgar filed with the Siting Board³ a petition to construct and operate a net nominal 750 MW natural gas-fired, combined-cycle power generating facility in the

³ 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.

Town of Weymouth, Massachusetts.⁴ The Siting Board docketed the petition as EFSB 98-7.

On December 10, 1998, the Siting Board conducted a public hearing in Weymouth. 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 Town of Weymouth ("Weymouth"); BECo; the Fore River Watershed Association ("FRWA"); and J. Gary Peters. Timely petitions to participate as interested persons were filed by U.S. Gen New England, Inc. ("USGen"); American National Power, Inc. ("ANP"); the Braintree Conservation Commission; and New England Power Company and Massachusetts Electric Company ("NEPCo"). Sithe Edgar filed opposition to the petitions of BECo and Mr. Peters.

The Hearing Officer granted the petitions to intervene filed by Weymouth,⁵ BECo and the FRWA. Sithe Edgar Development LLC, EFSB 98-7, Hearing Officer Procedural Ruling, February 2, 1999, and Hearing Officer Procedural Ruling, February 5, 1999. The Hearing Officer granted the petitions to participate as interested persons of USGen; ANP; Braintree Conservation Commission; and NEPCo. Sithe Edgar Development LLC, EFSB 98-7, Hearing Officer Ruling, February 2, 1999, at 9. The Hearing Officer denied the petition to intervene of Mr. Peters, but granted Mr. Peters status as an interested person in the proceeding. Sithe Edgar Development LLC, EFSB 98-7, Hearing Officer Ruling, February 5, 1999.

The Siting Board conducted fourteen days of evidentiary hearings, commencing on July 21, 1999, and ending on September 2, 1999. The Company presented the testimony of the following witnesses: James P. McGowan, Vice President of Development for Sithe Energies, who testified as to the Company's site selection process and general project matters; George G.

⁴ Sithe Edgar's original petition stated that the proposed facility could have a maximum capacity of 775 MW depending upon whether the Company selected Siemens Westinghouse Power Corporation or MHI as its vendor for the combustion turbines (Exh. SED-1, at 1-17). Sithe later indicated that it had selected MHI as its vendor, and is therefore seeking approval of construction of a 775 MW facility (Exhs. EFSB-B-12-S).

⁵ On September 2, 1999, the Hearing Officer granted the August 5, 1999 motion of the Town of Weymouth to withdraw from the proceeding (Tr. 14, at 1274).

Wilson, Fore River Station Project Manager for Sithe Energies, who testified as to general project matters; Samuel G. Mygatt, Principal of Epsilon Associates, Inc. ("Epsilon"), who testified as to project description, and visual, traffic, land use, cultural resources, and water resources impacts; Frederick M. Sellers, Vice President of Environmental Sciences and Planning of Earth Tech, Inc., who testified as to site selection and air impacts; Theodore A. Barten, P.E., Managing Principal of Epsilon, who testified as to technology performance standards, water, hazardous substances and safety impacts; Dale T. Raczynski, Principal of Epsilon, who testified as to technology performance standards and air impacts; David Keast, an independent acoustical engineer, who testified as to noise impacts and noise mitigation issues; Susan F. Tierney, Ph.D., a partner at Lexecon Inc., who testified as to the Company's site selection process, market analysis 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. ("Stone & Webster"), who testified as to project design and engineering; John B. Davenport, Project Engineer at Stone and Webster, who testified as to project design and engineering; Michael E. Guski, CCM, Principal of Epsilon, who testified as to air impacts; Douglas Sheadel, Principal Scientist of Modeling Specialties, who testified as to noise impacts; Gregg McBride, Principal at GZA GeoEnvironmental, Inc., who testified as to hazardous waste impacts; and Michael D. Scherer, Ph.D., President of Marine Research, Inc., who testified as to fisheries impacts.

On October 1, 1999, Sithe Edgar and the FRWA submitted initial briefs. On October 12, 1999, Sithe Edgar and FRWA submitted reply briefs. The record includes approximately 1180 exhibits, consisting primarily of the Company's responses to information requests of the Siting Board, Weymouth, and the FRWA, as well as the Company's responses to record requests of the Siting Board.

II. SITE SELECTION

A. 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.

B. Description

Sithe Edgar is an affiliate of Sithe Energies, Inc. (Exh. EFSB-B-4). Sithe Energies is involved in the development, financing, construction, operation and ownership of generating facilities worldwide (Exh. SED-1, at 1-5 to 1-6). Decisions regarding the development of the entire portfolio of the BECo properties, including the Edgar 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 (id., 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 solicitations 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, BECo, and Eastern Utilities Associates (“EUA”) (id. at 3-7 and 3-8; Exh. EFSB-SS-3). The BECo assets for which Sithe Energies bid included five sites: (1) Edgar Station in Weymouth; (2) Mystic Station in Everett; (3) New Boston Station in South Boston; (4) Framingham Station in Framingham; and (5) West Medway Station in Medway (Exh. SED-1, 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 infrastructure, ability to share infrastructure and operations personnel with existing units, and consistency with the Commonwealth’s policy of encouraging brownfield development (id. at 3-8).

The Company stated 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 and weaknesses, Sithe Energies identified base and

⁶ Two combustion turbine units totaling 24 MW currently are located at Edgar Station (Exh. SED-1, at 3-8). 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 (id.). Two dual-fuel steam turbine units totaling 760 MW and an 18 MW combustion turbine currently are located at the New Boston 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 purchased BECo assets include an ownership interest in 36 MW of Wyman 4 in Yarmouth, Maine (Exh. SED-1, at 3-8).

alternative development configurations and potential development risks for each site (id.).⁸ Sithe Energies stated that the strengths of the Edgar Station site included: the availability of two potential sites for medium to large projects; its potential for once-through cooling; transmission capacity for at least 300 MW at 115kV; a marine oil terminal on site with storage; the nearly successful prior development of a brownfield project on the site; and its proximity to gas interconnect at Potter Station, Braintree (id.). Sithe Energies noted that the potential development risks for Edgar Station included: permitting and construction of a gas pipeline; the cost of transmission upgrades; environmental liability; and negative community reaction to possible visual, noise and water issues (id.).⁹

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

⁸ Sithe Energies stated that although a combined-cycle facility was identified for both base case and alternative configurations for four of the five sites, it was always understood that a simple-cycle configuration could be an option at any of the sites (Tr. 3, at 249). The New Boston Station initial site review identified a simple-cycle facility as an alternative case (Exh. EFSB-SS-7; Tr. 3, at 249).

⁹ Sithe Energies noted that the potential development risks for the remaining four sites were as follows: Mystic Station - (1) permitting once-through cooling; and (2) renegotiating property taxes; 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; SED-1, at 3-4). Sithe Energies explained
(continued...)

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 (Exh. SED-2, at 454).

On December 10, 1997, BECo announced that it had selected Sithe Energies to purchase its generating assets (Exhs. SED-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. SED-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 3-10 to 3-11). 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;

¹⁰ (...continued)
that originally it was looking for base load capacity; however, based on its analysis of the site-specific opportunities and constraints, the Company considered different options (Exh. SED-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 (Exh. SED-2, at 457). The Company further indicated that although BECo has not yet completed the system interconnection studies, it would be feasible to interconnect new generation at Mystic Station, Edgar Station, and the West Medway Station in an economical manner (*id.* at 466).

¹² Sithe Energies indicated that the water consumption criterion primarily referred to the ability to sustain once-through cooling (Exhs. EFSB-SS-15; SED-2, at 468). Sithe Energies stated that it initially identified Mystic, Edgar, and New Boston Stations as having the potential for once-through cooling (Exh. EFSB-SS-15; Tr. 3, at 243). The Company explained that the opportunity for once-through cooling at both Medway and Framingham did not exist due to their lack of proximity to a large water body (Tr. 3, at 242). Further, the Company noted that the lack of potable water in Medway and Framingham would limit the use of a combined-cycle facility even if it were to be air-
(continued...)

(7) historical and cultural resources; (8) visual impacts; (9) traffic impacts; (10) solid and hazardous waste; (11) safety; and (12) EMF effects (id. at 3-11; 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. SED-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 (Exh. SED-2, at 479-480). Sithe Energies indicated that it relied heavily on judgment in reviewing the criteria (id. at 476, 480; Tr. 3, at 271 to 272). The Company stated that all of the criteria were important, and explained that the application of any one criterion could have identified a fatal flaw for development at any of the five sites (Exh. SED-2, at 476, 480; Tr. 3, at 271 to 272). The Company defined a fatal flaw as an aspect of the project that could not be mitigated due either to prohibitive cost or technical difficulties, as opposed to a negative feature that lends itself to the required mitigation (Tr. 3, at 273 to 274).¹⁴ Sithe Energies provided information which tracked the general application of its environmental and community issues criteria (Exhs. SED-4; SED-5).

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

¹² (...continued)
cooled (id. at 247).

¹³ The Company reported that it classified the Mystic Station site as the site raising the fewest noise concerns with Edgar Station and New Boston Station ranked second, and West Medway and Framingham ranked third (Exh. SED-2, at 470 to 471). The Company explained that it made these classifications based on the industrial nature of the Mystic, Edgar and New Boston sites and on the extent of demolition necessary at each site (id.).

¹⁴ Sithe noted that all three of the sites it proposed for development have a relatively negative feature (Tr. 3, at 274). However, the Company explained that all of the sites are attractive for development since each site has the opportunity for mitigation to counter the relatively negative feature (id.).

facility based on an analysis of available infrastructure and the physical space available to locate the generation equipment (Exh. SED-1, at 3-15; Tr. 3, at 281-282). 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 (Exh. SED-1, at 3-15; Tr. 3, at 282). 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 (Exh. SED-2, at 529; Tr. 3, at 268). 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 (Exh. SED-2, 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 (Exhs. EFSB-SS-18; SED-2, at 526). The Company asserted that Mystic Station and Edgar Station are excellent sites to construct combined-cycle units, while the West Medway Station has deficiencies in infrastructure and water supply that render combined-cycle development uneconomic (Exhs. EFSB-SS-6; SED-2, 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 (Exh. SED-2, at 527).

The Company argued 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 Initial Brief at 14). Sithe Energies described 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. SED-1, at 3-3). The Company argued 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 Initial Brief at 14-15). 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 visual impacts and remediate hazardous waste problems at Edgar Station; to reduce air quality impacts at Mystic Station; and to mitigate the noise impacts of the existing generating units at West Medway Station (Exhs. EFSB-SS-22; EFSB-SS-23; SED-2, at 499-504).

In regard to costs for mitigation and development, the Company discussed the offsetting costs of brownfield and greenfield sites (Tr. 3, at 278). Sithe Energies explained that sites where electric transmission or generation previously has been located, generally have lower costs for interconnection, site clearing, and construction or enhancement of the road system (*id.*; Exh. EFSB-SS-23). However, the Company indicated that such sites may require additional expenditures for site remediation or demolition, complicating features associated with nearby land uses, and taxes (due to the high expectation of communities that already receive taxes from electric facilities) (Tr. 3, at 279).

C. Analysis

Sithe Energies has presented a site selection process which resulted in a decision to develop generating facilities on three separate sites: Edgar Station, Mystic Station, and West Medway Station. The Company described its development process and the 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 its development objectives, environmental impacts, and community impacts. The Siting Board notes that the Company provided information that it developed based on site visits, engineering and environmental analyses specific to each site, and economic and reliability analyses. The Siting Board finds that the Company's description of the site selection process used is accurate.

Sithe Energies asserted that its proposal minimizes environmental impacts in part through

the use of a "brownfield approach" to development. 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 Siting 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 would have on the surrounding area.

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 Company has identified benefits to brownfield development at the Edgar Station site including existing infrastructure, on-site transmission capacity, on-site oil storage, and barge access for oil and construction deliveries. However, the record also shows that the proposed project is located in close proximity to a densely settled neighborhood to the east of the site, and that development on the site is constrained due to the existence of both permanent and temporary easements and environmental restrictions. Therefore, the noise and visual impacts of the proposed facility will affect a significant number of people, while the Company's ability to minimize the impacts through design may be limited. In addition, while the location of the proposed facility, situated along the Fore River, is advantageous in that it allows for delivery of construction materials and equipment, and oil by barge, it also creates disadvantages with regard to wetland impacts and recreational uses along the river.

The record reflects the advantages and disadvantages of brownfield redevelopment at the Edgar Station site. On balance, the advantages contribute to the minimization of environmental impacts; however the disadvantages create the potential for environmental impacts which will need to be minimized by the Company through design or mitigation. These issues are discussed in Sections III.D, III.F and III.G, below. 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

A. 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.

B. Air Quality

This Section describes the project's proposed emissions and impacts, compliance with existing regulations, offset proposals, and mitigation proposed by the Company.

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");¹⁵ Prevention of Significant Deterioration ("PSD") requirements; New Source Review ("NSR") requirements; MDEP's Air Toxics Policy; New Source Performance Standards ("NSPS") for criteria pollutants; the MDEP Major Comprehensive Plan Approval, Operating Permit; Non-Attainment Area Regulations; MDEP Emission Limits; MDEP Requirements for BACT; and Title IV Acid Rain Sulfur Dioxide Allowances (Exhs. SED-1, at 4.2-4 to 4.2-9; EFSB-A-1-S-2 (att.) at 1-1). The Company stated that the MDEP has been given the authority by the United States Environmental Protection Agency ("USEPA") to administer NSR, NSPS, non-attainment review provisions and PSD requirements (Exhs. SED-1, at 4.4 to 4.5; EFSB-A-1-S-2 (att.) at 3-1).

The Company indicated that, under NAAQS, all geographic areas are classified and designated as attainment, non-attainment or unclassified for the six criteria pollutants: nitrogen oxides ("NO_x"), carbon monoxide ("CO"), particulate matter ("PM-10"), sulfur dioxide ("SO₂"), ground level ozone ("O₃"), and lead ("Pb") (Exh. SED-1, at 4.2-6 to 4.2-7). The Company further indicated that, although the Weymouth area (Norfolk County) is classified as "attainment" or "unclassified" for SO₂, PM-10, NO₂, CO, and Pb, the entire Commonwealth of Massachusetts is in "serious" non-attainment for O₃ (*id.* at 4-7).¹⁶ The Company stated that, under the PSD review, the proposed facility would be required to incorporate BACT and comply

¹⁵ The Massachusetts Department of Environmental Protection ("MDEP") has adopted the NAAQS limits as MAAQS (Exh. SED-1, at 4.2-6).

¹⁶ Non-attainment conditions may be further classified as to seriousness based on the level and frequency of such conditions (Exh. EFSB- A-1-S-2 (att.) at 3-4 to 3-5).

with NAAQS for SO₂, PM-10, NO_x, CO, VOCs, Pb, and sulfuric acid mist (Exh. EFSB-A-1-S-2 (att.) at 3-4).¹⁷ The Company stated that since Massachusetts is in serious non-attainment for O₃, special rules apply to NO_x and VOCs, which are precursors to O₃ (*id.* at 3-1). The Company explained that non-attainment NSR would apply to both NO_x and VOCs emissions (*id.* at 3-1 to 3-2). The Company stated that in order to meet the applicable requirements for NO_x and VOCs at the proposed facility, MDEP would require Sithe Edgar to incorporate the Lowest Achievable Emission Rate ("LAER") and obtain emission offsets at a minimum ratio of 1.26 to 1 (*id.* at 3-2).

With respect to NSPS requirements, the Company indicated that emissions of regulated pollutants -- NO_x and SO₂ -- would fall well below NSPS threshold levels (*id.* at 3-7).¹⁸

However, Sithe Edgar noted that the proposed facility would be subject to the Title IV Sulfur Dioxide Allowances and Monitoring regulation, which would require the Company to monitor SO_x and to purchase annual SO_x allowances to account for the proposed facility's emissions in the previous year (Exhs. EFSB-A-1-S-2 (att.) at 3-8; EFSB-A-36; Tr. 4, at 422-223).

The Company stated that MDEP also has an Air Toxics Policy, which establishes Threshold Effects Exposure Limits ("TELEs") and annual Average Allowable Limits ("AALs"), regulating the maximum 24 hour and the yearly average allowable emissions of over 100 toxic air pollutants (Exh. EFSB-A-1-S-2 (att.) at 3-10).

The Company stated that its proposed facility would meet Technology Performance Standards ("TPS") for Air Emissions from New Electric Generating Facilities promulgated by the Siting Board on July 17, 1998 in 980 CMR 12.00 (Exh. SED-1, at 2-1 to 2-3). Sithe Edgar provided documentation indicating that its proposed facility would meet TPS for both criteria

¹⁷ The Company stated that lead emissions do not meet the PSD regulatory threshold for the application of BACT, but that Massachusetts requires BACT for all criteria pollutants (Exh. EFSB-A-1-S-2 (att.) at Table 3.1-1, 3-9).

¹⁸ Sithe Edgar explained that NSPS regulates the amount of an air contaminant that may be emitted from a given process, which for combustion processes is typically expressed as a fuel quality or exhaust gas concentration (Exh. EFSB-A-1-S-2).

and non-criteria pollutants (id.; Exh. EFSB-A-25-S).¹⁹

2. Emissions and Impacts

Sithe Edgar argued that the proposed facility would have an insignificant impact on air quality, since the proposed facility's emissions would result in concentrations below Significant Impact Levels ("SILs"), which represent a small percentage of the NAAQS concentrations (see Appendix 1 to Decision, Table 2) (Exh. EFSB-B-11, at 5.1-1; Tr.3, at 352).²⁰ The Company asserted that the air quality impacts of the proposed facility would be minimized through the use of natural gas as the primary fuel with back-up use of low-sulfur oil for up to 30 days, the use of efficient combustion technology, and use of advanced pollution control equipment (Exh. SED-1, at 4.2-7). Sithe Edgar also asserted that dispatch of the proposed project in preference to older generating resources in the region would result in displacement of NO_x, SO₂ and CO₂ emissions (id.; Exhs. EFSB-A-20; EFSB-A-20-S).

Sithe Edgar stated that its proposed facility would incorporate BACT for CO, PM-10, SO₂, and Pb, and LAER for NO_x and VOCs (see Table 1) (Exh. EFSB-A-1-S-2 (att.) at 3-4, 3-8 to 3-9). To meet LAER for NO_x, Sithe Edgar proposed to use Selective Catalytic Reduction ("SCR")²¹ together with an efficient gas-fired combined cycle turbine (id. at 4-1 to 4-3). The Company asserted that LAER for VOCs would be achieved by efficient combustion (id. at 4-12

¹⁹ 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 that requires an applicant to provide data comparing its proposed facility to alternative fossil-fuel generating technologies. Provision of such information is intended to enable the Siting Board to determine whether the proposed facility would contribute, on balance, to "a reliable, low-cost, and diverse regional energy supply with minimal environmental impacts." 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.

²⁰ The Company stated that SILs represent an air pollutant concentration that ranges from one to five percent of NAAQS (Exh. EFSB-A-1-S-2 (att.) at 2-5, 3-5).

²¹ The Company explained that SCR uses ammonia to convert nitrous oxides into nitrogen and water (Exh. SED-1, at 4.2-1).

to 4-13).²² In addition, the Company proposed to use an oxidation catalyst to reduce CO emissions, to achieve BACT for SO₂ through the use of very low sulfur fuel, and to limit the emissions of PM-10 by using natural gas as the primary fuel (*id.* at 4-15 to 4-17).^{23,24}

With respect to non-criteria pollutants regulated by MDEP, the Company proposed an ammonia slip of two parts per million dry volume ("ppmdv") (*id.* at 4-17). The Company provided modeling of estimated emissions of toxic chemicals that indicates that the proposed facility's emissions would be well below all of MDEP's established TELs and AALs (Exhs. EFSB-A-1-S-3; EFSB-A-41-S).

Sithe Edgar provided calculations of maximum potential air emissions for the proposed facility assuming emissions controls and full-load operation for 365 days per year, including one hundred starts per year (see Table 1) (Exhs. EFSB-A-1-S-2 (att.); Tr. 3, at 325 to 326). The Company stated that this evaluation of predicted ambient air quality impacts from the proposed facility followed prescribed USEPA and MDEP procedures (Exh. EFSB-A-1-S-2 (att.) at 6-2 to 6-3). The Company indicated that it had used the USEPA-approved SCREEN3, CTSCREEN, and Industrial Source Complex Short-Term ("ISCST3")²⁵ atmospheric dispersion models to calculate ground-level concentrations resulting from the proposed facility's emissions (see Table

²² Sithe Edgar explained that the controls used in NO_x reduction reduce the flame temperature, which causes an increase in CO and VOC emissions (Exh. EFSB-A-8). According to the Company, by regulating the flame temperature, it can alter the balance among CO, VOC and NO_x emissions (*id.*).

²³ Sithe Edgar stated that the projected PM-10 emissions for the proposed facility include particulates in the form of ammonium sulfates that can result during combustion from the use of ammonia to control NO_x (Exhs. EFSB-A-1-S-2 (att.) at 4-16 to 4-17; EFSB-A-7).

²⁴ The Company's proposed emission rates for BACT and LAER regulated pollutants are summarized in Table 1.

²⁵ Sithe Edgar explained that the SCREEN3 model calculates ground-level concentrations conservatively, providing a first cut, whereas the ISCST3 is a more complex model that can incorporate more site-specific meteorological conditions (Exhs. EFSB-A-13; EFSB-A-14). The Company stated that CTSCREEN is required by the USEPA to model the facility's impact in complex terrain at receptors above stack height (Exhs. EFSB-A-15; EFSB-A-1-S-2 (att.) at 6-9).

2) (Exh. EFSB-A-1-S-2 (att.) at 6-1 to 6-13).²⁶

The Company's modeling indicated that the proposed facility's maximum short-term impacts (3-hour SO₂ and 24 hour SO₂ and PM-10) would be at a location 7,300 meters west southwest of the site at Reservation Hill in the Blue Hills Reservation in Braintree and Milton (Exh. EFSB-RR-21).²⁷ The Company stated that the maximum long-term impacts (annual NO₂, SO₂, and PM-10) would occur 12,000 meters to the southeast of the proposed facility, at Judges Hill in Norwell (Exh. EFSB-RR-21).²⁸ Sithe Edgar stated that its modeling shows that the proposed facility's emissions would not result in maximum ground level concentration above SILs (see Table 2) (Exhs. EFSB-B-11, at 5.1-1; EFSB-A-1-S-2 (att.) at Table 6.5-1).

Sithe Edgar also performed cumulative impact modeling using existing ambient air quality data added to the modeled "worst case" scenario for all permitted facilities located within ten miles of the proposed site which have the potential to emit 50 tons per year ("tpy") or more of NO_x, SO₂, CO, and PM, and then subsequently added to the maximum impacts of the proposed facility under the same conditions (see Table 2) (Exh. EFSB-A-1-S-2 (att.) at 6-14 to 6-18; Tr. 4, at 453). The Company calculated cumulative impacts ranging from 20 to 96 percent of NAAQS, with the proposed facility's contribution not higher than 0.008 percent of the cumulative impact levels (see Table 2) (Exh. EFSB-A-1-S-2 (att.) at 6-15, Table 6.6-2).

Sithe Edgar also calculated the contribution of all other sources at the location and under the conditions for which the impact of the proposed facility would be the greatest (Exh. EFSB-

²⁶ Sithe Edgar explained that since its SCREEN3 modeling had predicted some maximum concentrations above SILs, it performed refined modeling using ISCST3 to incorporate more accurate and less conservative inputs (Exh. EFSB-A-1-S-2 (att.) at 6-5).

²⁷ The Company explained that the maximum short-term impacts occur during oil firing (Exh. EFSB-A-1-S-2 (att.) at 6-9).

²⁸ Sithe Edgar stated that under the two stack design, the point of maximum annual air impact would be closer to the proposed facility (10,000 meters away in Hingham) and all maximum impact concentrations would be higher, but still under SILs (Exh. EFSB-RR-21). The record indicates that the short-term and long-term concentrations would be approximately 1.5 to 2 times higher using the two stack design, assuming both turbines running (*id.*).

RR-35). In this analysis, the calculated cumulative impact ranged from 31 to 45 percent of NAAQS, while the percent contribution of the Fore River Station rose to 0.1 to 3 percent of the cumulative impact (Exhs. EFSB-RR-35; EFSB-A-1-S-2 (att.) at Table 6.6-2).

The Company currently proposes a single stack, with two flues, 255 feet tall and 50 feet in diameter, for the proposed facility (Exh. EFSB-A-1-S-2 (att.) at 5-24; Tr. 3, at 334). Sithe Edgar stated that 255 feet is the good engineering practice ("GEP") stack height for the proposed facility and speculated that, in order to remain below SILs, the stack height could not be lower than 250 feet (Exhs. EFSB-A-1-S-2 (att.) at 5-24; W-A-3-S2; EFSB-A-10; W-A-11).²⁹ The Company noted that it originally had proposed two stacks, each 255 feet tall and 20 feet in diameter (Exhs. EFSB-WG-6 (att.) at 5.3-1); SED-1, at 4.4-2). The Company stated that the single stack design would increase the buoyancy of the facility plume, thus reducing emissions concentrations in the vicinity of the facility and moving the maximum impact location further from the proposed facility (Exh. EFSB-RR-21; Tr. 3, at 327-330). However, Sithe Edgar noted that the single stack design is more expensive and has a greater noise impact than a traditional two-stack design (Exhs. W-A-2; W-A-3). The Company initially stated that the single stack would have a greater visual impact; however, Sithe Edgar later indicated that it would have some visual advantage, based on its belief that some community members have expressed a preference for a single stack design (Exhs. W-A-2; W-A-11; Tr. 3, at 333).

Sithe Edgar also provided vegetation sensitivity screening data for background and predicted SO₂ concentrations from the proposed facility (Exh. EFSB-A-1-S-2 (att.) at 6-22 to 6-23). The Company's data indicate that, for both the one-hour and three-hour averaging times, background plus maximum SO₂ concentrations from the proposed facility would be substantially below the screening threshold (*id.* at 6-22 to 6-23). In addition, Sithe Edgar conducted a visibility analysis of the proposed project's impact on federal Class I areas (national parks and wilderness areas) under the Clean Air Act and concluded that neither its emissions of particulates nor its emissions of NO₂ would have a significant effect on the visibility of the closest area,

²⁹ The Company did not conduct an analysis of the air quality impacts of reducing the height of the stack; it merely speculated as to the level to which it believed the stack height could be reduced (*see* Exhs. EFSB-A-10; W-A-3-S2).

which is in Vermont (Exh. EFSB-A-1-S-2 (att.) at 6-19 to 6-22).

Sithe Edgar 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 (Exhs. SED-1, at 4.2-1; EFSB-A-20). In support of this assertion, Sithe Edgar presented a dispatch analysis conducted by Independent System Operator New England ("ISO-NE") for the year 1997 (Exhs. EFSB-A-20; EFSB-A-20-S). 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 the proposed facility, and decreasing/increasing emissions at other electric generators in the region (Exhs. EFSB-A-20; EFSB-A-20-S).

In accordance with the above approach, Sithe Edgar presented a table which compared emissions expected from the generation of 775 MW in New England over a year (1) without the proposed facility and therefore with additional generation coming from existing marginal generating units, and (2) with the proposed facility operating fully and displacing other generation (Exh. EFSB-A-20; EFSB-A-20-S). The Company's analysis indicated that operation of the proposed facility would reduce New England emissions of NO_x, SO₂ and CO₂ by approximately 8090 tpy, 29,693 tpy and 1,940,600 tpy, respectively (Exhs. EFSB-A-20; EFSB-A-20-S).³⁰ The Company stated that even if New England's marginal rates of emission per unit energy output for NO_x and SO₂ 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 these two pollutants, and that new combined-cycle generation would continue to provide CO₂ displacement benefits even if New England's marginal emission rate for CO₂ declined by 20 percent over the next five years (Exh. EFSB-A-20; Tr. 3, at 402-404). Sithe Edgar asserted that its plant would be dispatched continuously, because its heat rate is well below heat rates of peaking and swing units (Tr. 3, at 317). The Company indicated that the displacement analysis does not address changes in power supply or demand, but argued that these changes would not

³⁰ By comparison, the emissions produced by the proposed facility, as used in this analysis, would be 230 tpy of NO_x, 167 tpy of SO₂, and 2.832 million tpy of CO₂ (Exh. EFSB-A-20-S).

negate the benefit of the proposed facility's displacement (Exh. EFSB-A-33; Tr. 3, at 400-402).

The Company stated that it intends to seek a permit allowing it to use oil for up to 720 hours annually during periods of gas curtailments (Exh. EFSB-A-1-S-2 (att.) at 4-2; Tr. 3, at 342-343).³¹ The Company also provided estimates of its annual emissions if it were to use only natural gas as a fuel (Exh. EFSB-A-5; Tr. 3, at 379).³² Sithe Edgar indicated that it could not predict the exact number of days it would use oil in an average year, but stated that it expects to use oil for 10 to 20 days in an average year, based upon the average number of days below 25 degrees Fahrenheit (Exhs. EFSB-A-22; EFSB-RR-29). Sithe Edgar's Air Plan application includes a proposed condition that the facility would not use oil during the ozone season (May through October) (Exh. EFSB-A-1-S-2 (att.) at 8-11; Tr. 3, at 349). In addition, Sithe Edgar noted that the likelihood of using oil would be greatest in the colder months when gas supplies are more likely to be constrained (Exh. FRWA-A-5). The Company argued that the proposed facility would still have minimal impacts when burning oil, because calculations for maximum impacts are based on periods of oil use (Tr. 3, at 346-347, 359-360). Sithe Edgar also asserted that even during oil firing, the proposed facility would produce less pollution than marginal units, and Sithe Edgar provided a displacement analysis comparing the proposed facility's emissions while firing oil to those of marginal units (Exh. EFSB-RR-27).

The Company testified that it based its decision to seek a permit allowing the use of oil as a backup fuel upon a number of factors including: (1) its inability to obtain a 365-day firm gas supply from Algonquin;³³ (2) its ability to minimize the air quality impacts of oil; (3) the need for

³¹ The Company defined gas curtailment as a time when gas supply was constrained or demand for natural gas was very high (Exh. W-A-4; Tr. 342-343).

³² The record contains the following decrease in pollutants if the facility were to burn natural gas only: 15.6 percent for NO_x, 8.4 percent for CO, 19.5 percent for VOCs, 28 percent for PM, 59 percent for SO₂, and 3.6 percent for CO₂ (Exh. EFSB-A-5).

³³ The Company estimated that it would cost approximately \$200 million to construct the a 60-70 mile pipeline from Rhode Island that would be needed to ensure a 365-day gas supply (Tr. 3, at 358). The Company provided a copy of its agreement with Algonquin which provides that gas supplies are guaranteed for only 335 days (Exh. EFSB-RR-23

(continued...)

fuel diversity; and (4) the location of the facility in a port area (Tr. 3, at 357-360). Sithe Edgar also indicated that the ISO-NE had expressed concern about development of new facilities lacking dual-fuel capability, and had commissioned a study on the reliability of New England's gas supply (Exhs. EFSB-A-5; EFSB-A-28 (atts. a, b, c); EFSB-RR-26; Tr. 3, at 353-355). The Company did not calculate the economic impact of shutting down the facility for up to 30 days, as opposed to burning oil, but indicated that the ISO-NE might impose economic consequences if the proposed facility did not have 365 day fuel supply (Tr. 3, at 370-372).

The FRWA asserted that the Company's proposed use of oil as a back-up fuel would increase both the emissions and the cost of the proposed facility (FRWA Initial Brief at 6). FRWA questioned the need for oil at the proposed facility (*id.*).

Sithe Edgar asserted that there would be a slight decrease in air emissions if it operated its proposed facility with once-through-cooling ("OTC") as opposed to air-cooled condensers ("ACC") (Exhs. EFSB-A-41; EFSB-B-11 (app. H at H-8)).³⁴ In addition, Sithe Edgar indicated that the use of ACC would decrease facility power output,³⁵ particularly at higher ambient air

³³ (...continued)
(redacted)).

³⁴ The Company also evaluated the feasibility of salt water evaporative coolers ("SWEC") for cooling steam (Exh. B-11(app. H at H-20-H-26)). The Company argued that, although it is technically feasible to use this type of cooling technology on the site, the air impacts would be increased as a result of salt drift (*id.*; Exh. EFSB-CT-18). The Company explained that as the water evaporates, salt is precipitated out and accumulates on nearby structures which it calculated would increase the natural salt deposition rate in the area by up to 20 times (Exh. B-11 (app. H at H-28)). The Company expressed concern regarding the impact of the salt on the switchyard (in the predominate path of the drift) and on the Monatiquot Street neighborhood (*id.* (app. H at H-28 to H-29); EFSB-CT-28). The Company also discussed the potential problem of fogging and icing on Route 3A from SWEC, and calculated that the facility would cause up to 14 more hours of fogging or 3.8 hours of icing annually (Exh. EFSB-H-23).

³⁵ The Company estimated an annual average loss of efficiency of 2.1 percent, with the greatest loss, 5.4 percent, during warmer weather (Exh. EFSB-B-11 (app. H at H-5)). The Company estimated that the loss of efficiency would result in a operational cost of 2.2 million dollars per year (Exh. EFSB-CT-13).

temperatures, and that the reduction in facility output would require additional operation of a marginal unit (Exhs. EFSB-A-41; EFSB-CT-6). The Company stated that, because the marginal unit would emit criteria pollutants at a greater rate than would the proposed facility, use of ACC would have a negative effect on regional air quality (Exhs. EFSB-A-20; EFSB-A-20-S). The Company asserted that the ACC structure would not have an impact on the dispersion of the plume from the proposed facility or of the peaking units (Exhs. EFSB-A-43; W-A-7; W-A-15).

3. Offset Proposals

Sithe Edgar stated that to comply with NSR requirements for NO_x and VOCs, it would need to acquire 275 tpy of NO_x offsets and 88 tpy of VOC offsets (Exhs. EFSB-A-1-S-2 (att.) at 8-7; EFSB-RR-31). The Company proposed to offset NO_x at a 1.26 to 1 ratio using reductions at Mystic Station and provided information indicating that NO_x offsets were available to offset or "net out" the emissions of the proposed power plants at Fore River Station, Medway Station, and the Mystic Station (Exh. EFSB-RR-31). The Company indicated that it had identified a company in Massachusetts with sufficient, available certified VOC offsets for sale to provide the necessary amount of VOC offsets (EFSB-A-1-S-2 (att.) at 3-2).

Sithe Edgar indicated that the proposed facility would emit a maximum of 2,832,351 tpy of CO₂ (Exh. EFSB-RR-33). The Company stated that, to meet the Siting Board's CO₂ offset requirement, it proposes to use reductions in CO₂ emissions from Sithe's planned implementation of an Air Quality Improvement Plan at Mystic Station in Everett, based on curtailment of generation at Mystic Station Units 4, 5 and 6 ("Mystic Station AQIP") (Exh. EFSB-WG-6-C (att.) at 5.1-14); Company Brief at 32). Sithe argued that its proposed use of curtailment offsets for CO₂ emissions conforms to the Siting Board's requirement, set forth in the Berkshire Power Decision, that an applicant's CO₂ mitigation approach produce proven, incremental CO₂ reductions which would not otherwise occur (Company Initial Brief at 32-33). See Berkshire Power Development Inc., 4DOMSB at 221 (1996) ("Berkshire Power Decision").

To support its position that the proposed CO₂ offsets would be incremental, the Company stated that the portion of the planned curtailment of operations at Mystic Station Units 4, 5 and 6 that is proposed for use in offsetting CO₂ emissions at the proposed facility is separate from the

portion of such curtailed operations that is proposed for use in offsetting emissions of NO_x at new facilities, including the proposed facility (Exh. EFSB-RR-33).³⁶ The Company also agreed that the portion of Mystic Station AQIP reductions used as offsets for CO₂ emissions from the proposed facility will not be used in the future for any collateral purpose (id.; Tr. 4, at 373-374).

4. Analysis

The record indicates that the proposed facility would consist of two highly efficient combustion turbines, two HRSGs with duct firing, and a steam turbine, all incorporating advanced pollution control equipment. The record shows that the proposed facility would achieve BACT for CO, PM-10, SO₂, and Pb, and LAER for NO_x and VOCs.³⁷ The Company

³⁶ The Company indicated that the expected curtailment of operations at Mystic Station Units 4, 5 and 6 under the Mystic Station AQIP is equivalent to 2157 tpy of NO_x emissions reductions (Exh. EFSB-RR-31). Of that amount, Sithe would use 395 tpy to “net out” the added NO_x emissions from the new Units 8 and 9 at Mystic Station (id.). Sithe also would use 567-945 tpy to provide NO_x offsets for the proposed generating facility and one other project that it is developing in Massachusetts – the proposed Sithe West Medway project (id.). The Company identified no specific plans regarding: (1) future use of the remainder of the NO_x emissions reductions from the Mystic Station AQIP, over 800 tpy or 37 percent; or (2) use of reductions in emissions of other criteria pollutants from the Mystic Station AQIP.

Regarding CO₂ offsets, the Company indicated that the planned curtailment of operations at Mystic Station Units 4, 5, and 6 is equivalent to 973,000 tpy, and that of that amount, consistent with the Siting Board’s CO₂ mitigation requirement: (1) Sithe plans to use 54,000 tpy, or 5.5 percent, to provide an offset for 1 percent of the emissions from the new Mystic Station Units 8 and 9, approved by the Siting Board in the Sithe Mystic Development LLC, EFSB 98-8 (1999) (“Sithe Mystic Decision”); and (2) Sithe proposes to use 28,342 tpy, or an additional 2.9 percent, to provide an offset for 1 percent of the emissions from the proposed Fore River project (Exh. EFSB-RR-33).

³⁷ With regard to the use of SCR or a zero ammonia technology to achieve BACT, the Siting Board is of the opinion that, due to its primacy of jurisdiction and to its greater expertise in emissions control technologies, MDEP is the agency best suited to determine whether and when to introduce new emissions control technologies into the Commonwealth. See IDC Bellingham, LLC, EFSB 97-5, at 35 (1999) (“IDC Bellingham Decision”). As a result, the Siting Board will not require use of such technology (id.).

(continued...)

also has shown that its facility would not emit toxics or other non-criteria pollutants at levels that exceed state or federal standards. 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.

Sithe Edgar has used MDEP-approved air modeling techniques to model, for certain pollutants, both the air quality impacts of the proposed facility and the cumulative air quality impacts of the proposed facility and other existing and proposed facilities. This modeling indicates that the concentrations of pollutants from the proposed facility would be below SILs, which are a small percentage of NAAQS, for all criteria pollutants, and that concentrations of hazardous or toxic pollutants from the facility would be within the TELs and AALs. In addition, the interactive analysis shows that the proposed facility, when considered together with other facilities, would make little to no contribution (less than 0.008 percent) to total air pollution at locations of maximum cumulative impact. At locations of the proposed facility's maximum impact, the proposed facility's contribution would be higher -- up to 3 percent of the total ambient air pollution -- but the cumulative ambient levels at those locations would be substantially less than the worst case cumulative impacts identified in the interactive analysis.

The record indicates that the proposed facility may benefit regional air quality through the offsets required for NO_x and VOCs and through the displacement of older generating facilities. In addition, the Company's purchase of SO₂ allowances could decrease SO₂ nationally.

Sithe Edgar also provided information on the effect of three design choices -- cooling

37

(...continued)

The Siting Board also notes that MDEP in a recent gas facility permit effectively has allowed the use of SCR rather than a zero ammonia technology at this time, with a review of the cost-effectiveness of retrofitting a zero ammonia technology to be conducted within five years. ANP Bellingham Decision on Compliance, EFSB 97-1, at 6 (1999). The Siting Board therefore concludes that by incorporating the control technology that MDEP determines to be LAER for NO_x, the Company will have minimized its NO_x emissions and ammonia slip consistent with minimizing the cost of mitigating and controlling such technologies.

technology, stack design, and choice of back-up fuel -- on its expected emissions. The record shows that the use of ACC rather than OTC increases facility emissions slightly and reduces regional air quality improvements due to displacement.

Sithe Edgar has proposed a single 255 foot dual-flue stack in order to minimize air quality impacts. The Company did not conduct modeling analyses to determine whether the stack height could be further reduced without significantly affecting air quality; however, it speculated that it could not lower the stack by much more than five feet while maintaining the proposed facility's emissions under SILs. In Section III.F. below, the Siting Board has reviewed the visual impacts of the proposed stack, and has concluded that reducing the stack height by a larger amount, such as 15 to 20 feet, would not result in a significant reduction in the visual impacts of the proposed facility. Consequently, the Siting Board finds that the proposed 255 foot stack height minimizes air quality impacts consistent with the minimization of the visual impacts of the proposed facility.

Sithe Edgar proposes to seek a permit to burn oil as a backup fuel during periods of gas curtailment for a maximum of 30 days annually, with a restriction limiting its use of oil to periods outside of the summer ozone season. The record shows that the Company's proposed air emissions are higher than they would be if the proposed facility used only natural gas; however, modeled impacts remain below SILs and in most years the Company expects between 10 and 20 days of oil-fired operation rather than 30 days. The record also shows that the Company is unable, at this time, to obtain a firm 365-day gas supply without the construction of a second pipeline interconnect to serve the Edgar Station site. Such a pipeline would have significant costs and could have significant environmental impacts. The record also shows that the proposed facility, when burning oil, would have emissions below those of existing marginal units, and that it therefore has the potential to contribute to regional air quality through displacement even when burning oil. Further, because the site is located in a port area, the traffic impacts normally associated with the delivery of oil can be minimized through barge deliveries. On balance, the Siting Board concludes that the air quality and limited traffic benefits that would be associated with eliminating oil firing would be outweighed by the costs and potential environmental impacts either of obtaining a 365-day supply of natural gas, or of shutting down the proposed

facility when gas is unavailable. Consequently, the Siting Board finds that Sithe Edgar's proposal to seek a permit to burn oil as a backup fuel during periods of gas curtailment for a maximum of 30 days annually minimizes environmental consistent with minimizing the cost of mitigation, control and reduction of such impacts.³⁸

The Company proposes to use emissions reductions from the Mystic Station AQIP to meet the Siting Board's CO₂ mitigation requirement. The Siting Board has set forth an approach to the mitigation of CO₂ emissions that requires generating facility applicants to make a monetary contribution, within the early years of facility operation, to one or more cost-effective CO₂ 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").³⁹ 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 CO₂ emissions, at \$1.50 per ton, to be donated in the early years of facility operation. Id. at 43.

In two previous generating facility reviews, the Siting Board has addressed proposals to provide CO₂ mitigation based on the shutdown or curtailment of an existing source of CO₂

³⁸ In making this finding, the Siting Board notes that the Company also has raised fuel diversity issues, and has indicated that ISO-NE has concerns about the trend toward eliminating dual-fuel capability in power plants being proposed in New England. The Siting Board notes that, while there is considerable fuel diversity in the New England generation stock, much of that diversity is represented by older, less efficient plants, and that there may be regional environmental and economic advantages to having a number of more efficient plants that can be dispatched on oil when natural gas is unavailable or uneconomic. However, as part of the Siting Board review, any applicant proposing to use oil as a backup fuel must demonstrate, based on the specific circumstances, that such use of oil minimizes environmental impacts consistent with minimizing the cost of mitigation, control and reduction of such impacts.

³⁹ Prior to the Dighton Power Decision, the Siting Board required generating facility applicants to commit to a specific program of CO₂ mitigation, such as a tree planting or forestation program, designed to offset a percentage of facility CO₂ emissions within the early years of facility operation. See Berkshire Power Decision, 4 DOMSB 221, at 373-374.

emissions, using either direct transfer of CO₂ offsets or transfer collateral to transfer of NO_x emission reduction credits (“ERCs”). Berkshire Power Decision, 4 DOMSB 221, at 370-374; Sithe Mystic Decision, EFSB 98-8, at 26-30. In the Berkshire Power Decision, the Siting Board set forth a standard for approval of a CO₂ mitigation program based on shutdown or curtailment of existing sources which stated that an applicant should demonstrate either: (1) that it would acquire CO₂ offsets or ERCs via a market that is operative or planned within an identifiable timeframe, and that is linked to meeting criteria for CO₂ emission limitations or reductions in the United States or other applicable region; or (2) that it would purchase CO₂ offsets that would lead to a source shutdown or curtailment which would not occur without such purchase.⁴⁰ Berkshire Power Decision, 4 DOMSB at 373-374. In the Sithe Mystic Decision, the Siting Board accepted for the first time a CO₂ mitigation program based on voluntary curtailment of operations at an existing source, subject to conditions precluding collateral use of the curtailed operations for offsetting other pollutant emissions. Sithe Mystic Decision, EFSB 98-8, at 26-30.

Here, Sithe proposes to provide CO₂ mitigation based on using a portion of CO₂ emission reductions from the Mystic Station AQIP to provide offsets for emissions from the proposed facility. Sithe argues that an offset level of 28,342 tpy, representing 2.9 percent of the emissions reduction available from the Mystic Station AQIP and 1 percent of the added emissions from the proposed facility, meets the requirements of the Siting Board for CO₂ mitigation as set forth in both the Berkshire Power Decision and the Dighton Power Decision.

The record indicates that, rather than purchasing CO₂ offsets from another source or entity as envisioned in the Berkshire Power Decision, Sithe would designate, for use as offsets, CO₂ emissions reductions from a facility that it now owns. The Siting Board finds that the transfer of offsets proposed by Sithe, although distinct in transactional terms, falls within the

⁴⁰ The Siting Board noted that offsets from shutdown or curtailment of existing CO₂ 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.

general scope of the offset transfer framework addressed in the Berkshire Power Decision.

As recognized by Sithe, there currently is insufficient development of a CO₂ offset market linked to meeting criteria for CO₂ emissions limitations or reductions in the United States or other applicable region to serve as a basis for establishing the consistency of Sithe's CO₂ 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 CO₂ offsets from the shutdown or curtailment of existing sources – that the shutdown or curtailment would not occur without the acquisition of the CO₂ 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 Mystic Station AQIP, including use of 395 tpy of NO_x emissions reductions for netting out NO_x emissions from the new Mystic Station units and use of up to 945 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 of the 973,000 tpy of CO₂ emissions reductions from the Mystic Station AQIP, Sithe has planned to use 54,000 tpy, or 5.5 percent, to meet the Siting Board's CO₂ offset requirement for the new Mystic Station Units 8 and 9. Considering Sithe's identified netting/offset arrangements to date for both NO_x and CO₂, the record demonstrates that the proposed use of 28,342 tpy, or 2.9 percent, of the CO₂ emissions reductions from the Mystic Station AQIP to meet the Siting Board's CO₂ mitigation requirement would not be collateral to any of the other identified netting/offset arrangements, *i.e.*, the identified arrangements in aggregate would not consume more than 97.1 percent of the reductions available from the Mystic Station AQIP.

However, Sithe may seek certification by MDEP of unused NO_x reductions from the Mystic Station AQIP as Massachusetts Emission Reduction Credits. See Sithe Mystic Decision, EFSB 98-8, at 24. Beyond criteria pollutants, Sithe also may consider using CO₂ reductions from the Mystic Station AQIP to meet CO₂ offset requirements for other projects, for example the Sithe West Medway Project.

To ensure the consistency of Sithe's proposed CO₂ offset approach with the purpose of the second prong of the Siting Board's standard for accepting CO₂ 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 CO₂ reductions designated as offsets for the proposed CO₂ emissions from the proposed facility. Were the Company to make collateral use of the portion of the Mystic Station AQIP curtailment on which its CO₂ 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 Mystic Station AQIP curtailment would not have occurred without the CO₂ emission offset arrangement that constitutes the CO₂ mitigation for the proposed facility. In effect, with such collateral use of the Mystic Station AQIP curtailment, there would be little basis for the Siting Board to conclude that the proposed CO₂ emission offset arrangement would have any beneficial effect in reducing CO₂ emissions, in the absence of a CO₂ offset or ERC market linked to emissions limitations or reductions criteria. See Sithe Mystic Decision, EFSB 98-8, at 28-29.

Accordingly, as a condition of accepting Sithe's proposed CO₂ mitigation, the Siting Board requires that Sithe provide, as part of a CO₂ 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 planned Mystic Station 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 Mystic Station AQIP curtailment on which the CO₂ offsets for the proposed facility are based.

Sithe has argued that its 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 CO₂ mitigation, based on an offset level of 1 percent of facility emissions and an assumed mitigation cost of \$1.50 per ton. We note that, as was the case in the Siting Board's recent review of proposed CO₂ mitigation for the Sithe Mystic project, no monetary transaction is required as part of Sithe's proposed CO₂ mitigation in this review. In the Sithe Mystic Decision, the Siting Board held that based on evidence of recent transaction prices, the assumed value of \$1.50 per ton is reasonably consistent with the current

cost range for acquiring CO₂ offsets.^{41,42} Sithe Mystic Decision, EFSB 98-8, at 29.

The Siting Board finds that, subject to the above condition that Sithe provide a CO₂ mitigation plan to establish that the Company will make no collateral use of the portion of the Mystic Station AQIP curtailment on which the CO₂ offsets for the proposed facility is based, Sithe's proposed approach of providing offsets for 1 percent of the proposed facility's CO₂ emissions, 28,342 tpy, from a portion of the CO₂ emissions reductions from the Mystic Station AQIP would conform to the Siting Board's requirement for CO₂ mitigation.

Alternatively, consistent with the CO₂ 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 CO₂ emissions from the operation over 20 years of the proposed facility. If the Company elects to provide a monetary contribution, the Siting Board requires the Company to provide CO₂ offsets as described above through a total contribution of \$902,842,⁴³ to be paid in five annual installments during the first five years of facility operation.⁴⁴

⁴¹ 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 CO₂ 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 CO₂ 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.

⁴² We also note that the selection by applicants of a CO₂ mitigation program or programs in consultation with the staff of the Siting Board -- a conditional requirement in recent generating facility reviews consistent with the CO₂ mitigation standard set forth in the Dighton Power Decision -- must include consideration of the relative cost-effectiveness of various reasonably available programs. Dighton Power Decision, EFSB 96-3, at 42-43. See, e.g., ANP Blackstone Energy Company, EFSB 97-2/98-2, at 113-114 (1999) ("ANP Blackstone Decision").

⁴³ The contribution is based on offsetting 1 percent of facility CO₂ 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
(continued...)

Accordingly, the Siting Board finds that, with the implementation of the above condition concerning CO₂, the environmental impacts of the proposed facility would be minimized with respect to air quality.

C. Water Resources

In this section, the Siting Board addresses the water-related impacts of the proposed facility, including: the water supply requirements of the facility and related impacts on affected water supply systems and on wetlands and other water resources, the water-related discharges from the facility, including wastewater discharges and discharges from on-site stormwater management facilities, and related impacts of wastewater systems on wetlands and other water resources.

1. Water Supply

Sithe Edgar stated that the annual average water use for the proposed facility would be 131,268 gallons per day ("gpd"), for sanitary and process use, including steam/power generation, emissions control, cleaning and cooling (Exh. EFSB-WG-6-C (att.) at 6-3). The Company indicated that its water use would be approximately 46,214 gpd under normal operating conditions, approximately 129,690 gpd during warmer months when additional water would be needed for evaporative cooling in order to increase the power output, and approximately 895,961 gpd during oil firing (id. at 6-3 to 6-4; Exh. EFSB-B-11 (figs. 3-8 to 3-10)). The Company stated

⁴³ (...continued)
increase of 3 percent. See IDC Bellingham Decision, EFSB 97-5, at 38; Sithe Mystic Decision, EFSB 98-8 at 30; U.S. Generating Company, EFSB 96-4, at 117-118 ("Millenium Power Decision").

⁴⁴ If the Company chooses, the CO₂ offset requirement also would be satisfied by a single first-year contribution for CO₂ offsets as described above, based on the net present value of the five annual payments totaling \$902,842, discounted at 10 percent per year. See IDC Bellingham Decision, EFSB 97-5, at 38; Sithe Mystic Decision, EFSB 98-8 at 30; Millenium Power Decision, EFSB 96-4, at 117-118 (1997). The single up-front payment of \$734,868 would be due by the end of the first year of operation.

that it would minimize its water consumption through use of dry low NOx combustion instead of water injection during gas firing, and by recycling the HRSG blowdown, flash steam blowdown, GT evaporative cooler blowdown, and demineralizer backwash (Exhs. EFSB-WG-6-C (att.) at 6-5; EFSB-WU-8). The Company testified that the only other option it could use to reduce water supply requirements would be to recycle miscellaneous water lost during the steam cycle, but that it rejected this option because the recycled water could potentially contaminate the plant equipment (Tr. 11, at 1023-1024). The Company proposed to construct on the proposed site one 385,000 gallon raw water tank (for fire, landscaping, and other non-process needs), and two demineralized water tanks with capacities of 850,000 gallons and 85,000 gallons, respectively (Exh. EFSB-WG-6-C (att.) at 3-7(fig. 2-2)).

Sithe Edgar presented two water supply alternatives: (1) its preferred alternative, to obtain water from the MWRA system through an existing utility pipe that runs from Quincy across the Fore River to the northern portion of the site; and (2) its backup alternative, to barge in demineralized water from Sithe's Mystic and New Boston plants (*id.* at 4-12 to 4-13; Exh. SED-1, at 1-33, 4.3-4 to 4.3-6).⁴⁵

Sithe Edgar stated that since a portion of the proposed site crosses the boundary between Quincy and Weymouth, the Company is eligible to interconnect with Quincy's water supply system under the MWRA's "Straddle Policy"⁴⁶ (Exhs. SED-1, at 4.3-4 to 4.3-5; EFSB-WU-2). The Company indicated that it had received approvals from the MWRA, Quincy, and Weymouth to connect into the Quincy system (Exhs. EFSB-WU-2-B (att.); EFSB-WU-2-C (att.); EFSB-

⁴⁵ Sithe Edgar initially considered a third alternative — purchasing water from the Weymouth municipal system (Exhs. EFSB-B-11, at 3-20; EFSB-WU-11). However, during the course of the proceeding, the Company raised questions about the ability of the Weymouth system to provide a reliable supply of water to the proposed facility, and indicated that Weymouth is under an Administrative Consent Order with MDEP as a result of withdrawals beyond its permitted rate (Exhs. EFSB-WU-6; EFSB-B-11, at 4-33 to 4-34; EFSB-WU-25). The Company subsequently testified that it no longer considers the Weymouth municipal system to be a viable water supply option for the proposed facility (Tr. 11, at 1025-1026).

⁴⁶ MWRA Policy # OP.09, Water Connections Serving Property Partially Located in a Non-MWRA Community (Exh. EFSB-WU-2-B).

WU-2-S5). The Company indicated that the MWRA approval was based upon an evaluation of the availability of water from the local (Weymouth) water supply, the impact of water use on MWRA's and on the host community's (Quincy) system, and the applicant's demonstration of water conservation and water supply improvements or protection measures (Exhs. EFSB-B-11 (app. K); EFSB-WU-2-B (att.)). Sithe Edgar stated that the MWRA approval was conditioned on: (1) assurance by the Company that no additional connections or resale of water would occur without MWRA review; (2) agreement by the Company to be subject to and participate in all water conservation and demand management programs implemented by Quincy or the MWRA; and, (3) payment of an entrance fee into the MWRA system (Exhs. EFSB-B-11 (app. K); EFSB-WU-2-S3). Sithe Edgar received approval from Quincy on the condition that the Company clean and line 700 feet of water main on Washington Street in Quincy and that it construct a new 12-inch water main from Wharf Street in Quincy to the Weymouth Town Line (Exhs. EFSB-WU-2-S (att. a); EFSB-B-11 (app. N)).

Sithe Edgar stated that the MWRA has a long-term system capacity of 300 million gallons per day ("mgd"), which it obtains from its Quabbin, Ware, and Wachusett reservoirs (Exh. EFSB-WU-4). The Company indicated that the MWRA's water use has been approximately 250 mgd since 1989, and that in 1996 the MWRA projected that water demand could decline within its system (*id.*). The Company stated that Quincy's hydraulic modeling and flow testing indicated that the system currently could reliably provide 1,000 gallons per minute (1.44 mgd) of water to Sithe Edgar (Exhs. EFSB-WU-2-S (att. a); EFSB-B-11 (app. N)). The Company stated that the MWRA, on average, supplies 9.7 mgd of water to Quincy, with a peak of 13.4 mgd, and that Quincy's maximum capacity is 20 mgd (Exhs. SED-1, at 4.3-4 to 4.3-5; EFSB-B-11, at 3-20). Sithe Edgar asserted that Quincy's water supply capacity would increase to 32 mgd once local reservoir improvements are completed in 2002, because of an increase in hydraulic pressure (Exhs. SED-1, at 4.3-4; EFSB-WU-2-S). The Company asserted that it is unlikely to need a back-up water supply if it obtains its water from Quincy (Exh. EFSB-WU-5). The Company stated that it had received a Determination of Applicability or Insignificance under the Interbasin Transfer Act from the Massachusetts Water Resources Commission ("WRC") for

its proposed water transfer (Exhs. EFSB-WU-2-D; EFSB-B-20-S).⁴⁷

Sithe Edgar's backup water supply alternative would involve barging demineralized process water from Sithe's facilities in Everett (Mystic Station) and Boston (New Boston Station), through Boston Harbor to the proposed site (Exhs. EFSB-B-11, at 3-20, 4-31 to 4-32; EFSB-WU-16; EFSB-WU-17).⁴⁸ Under the barging alternative, the Company stated that it would acquire a 440,000 to 792,000 gallon barge for the sole purpose of hauling demineralized water (Exh. EFSB-B-11, at 4-32). The Company stated that it also would need to construct a larger demineralized water tank if it pursued the barging alternative (Exh. EFSB-WU-12). Sithe Edgar estimated that a maximum of 105 barge trips per year would be necessary in order to meet its water supply needs, with a maximum of two barges required a day in order to provide enough water to run the facility on oil (Exh. EFSB-B-11, at 4-32). The Company estimated that it would take 11 to 14 hours round-trip to transport water to and from the site, and that it would use additional barges if the single barge could not meet the water supply needed during oil firing (Exh. EFSB-WU-20). The Company asserted that the barge trips would not have any noise, air, fisheries or water impacts, and probably would not require the opening of the Fore River Bridge (Exhs. EFSB-WU-15; EFSB-WU-18; EFSB-WU-19; EFSB-WU-22). Sithe Edgar argued that neither the Quincy alternative nor the barging alternative would have any noticeable environmental impact, and therefore the two alternatives are comparable from an environmental standpoint (Exh. EFSB-WU-40).

Sithe Edgar presented information demonstrating that no public water supplies -- ground or surface, private wells, MDEP Zone II recharge areas, or high or medium yield aquifers -- are

⁴⁷ The Interbasin Transfer Act can apply to transfers of under 1 million gallons of water from one basin into a different basin (Exh. EFSB-B-20-S). In this proceeding, the Company is transferring up to .89 million gallons of water only during oil firing, from the Chicopee River and Nashua River basins in Central Massachusetts to Boston Harbor or the atmosphere (*id.*; EFSB-WU-2-D)

⁴⁸ The Company indicated that it expects its water needs at Sithe Mystic Station to decrease as a result of restrictions on the operation of certain units, and that neither Everett, the MWRA nor the City of Boston imposes any water use limits on Sithe Mystic (Exhs. EFSB-B-11, at 4-31; EFSB-WU-13).

located within one mile of the proposed facility (Exh. EFSB-SS-17 (att.)). The Company asserted that since no ground or surface water resources are located near the proposed facility, it would have no impact on water supplies in the area (Exh. SED-1, at 4.3-2).

In its application filed with the Federal Energy Regulatory Commission ("FERC"), Algonquin indicated that the natural gas pipeline, which would be upgraded to serve the proposed facility, would cross over 2,000 feet of high or medium yield aquifers, three miles of an Outstanding Resource Water, and six Class A (suitable for public water supply) waterbodies (Exh. EFSB-B-18 (att. A at 2-1 (tabs. 2.1-1, 2.2-1))). Algonquin indicated in its application that most construction impacts to these resources would be temporary (id. (att. A at 2-1 to 2-11)).

2. Wastewater and Stormwater

Sithe Edgar stated that the proposed facility's wastewater flows would be minimized by meeting applicable regulations that require the installation of low-flow fixtures for sanitary wastewater and through the recycling, reductions and reuse of process water (Exh. EFSB-WG-6-C (att.) at 6-10). The Company estimated that the proposed facility would generate a wastewater stream of between 39,983 and 42,858 gpd (id. at 6-6 to 6-8). The Company indicated that this wastewater would be discharged to either the Weymouth or the Quincy sewer system, both of which discharge into MWRA's system (id. at 6-6 to 6-10; Exh. EFSB-RR-71).

Sithe Edgar indicated that its preferred option would be to connect into the Weymouth sewer system using an existing ten-inch sewer pipe that runs along King's Cove Beach (Exh. EFSB-WG-6-C (att.) at 6-8 (fig. 6-1)). The Company performed a capacity analysis which indicated that the sewer system had adequate capacity for the projected wastewater flows, and noted that Weymouth had indicated there were no problems affecting this part of its sewer system (id. at 6-8 to 6-9 (Tab. 6.3-1); Tr. 11, at 1092). However, the Company stated that the Weymouth sewer system generally has experienced severe overflow problems, and noted that Weymouth is subject to an Administrative Consent Order with MDEP that establishes a sewer bank and requires that new sewer customers provide improvements to remove inflow and infiltration ("I/I") at a ten to one ratio (Exhs. EFSB-WG-6-C (att.) at 6-6 to 6-10; EFSB-B-11, at 3-31; EFSB-B-7; EFSB-B-7-S; EFSB-WQ-3-B). Further, in comments in response to the Final

Environmental Impact Report ("FEIR"), MDEP, MWRA, and the Office of Coastal Zone Management ("CZM") all expressed concerns regarding the ability of the local sewer systems to handle the proposed facility's wastewater (Exh. EFSB-RR-73). The Company indicated that MWRA's proposed sewer project is designed to remediate the sewer overflow problems (Exhs. EFSB-B-7; EFSB-B-7-S). In addition, the Company stated that it would meet MWRA's standards for pretreatment of wastewater (Exhs. EFSB-RR-73; EFSB-WG-6-C (att.) at 4-16).

The Company indicated that if it were unable to meet the I/I removal requirement, it would instead connect with and discharge to an existing ten-inch sewer line in Quincy (Exhs. EFSB-WG-6-C (att.) at 6-10; EFSB-RR-71). The Company indicated that it had initiated discussions with Quincy concerning this alternative (Exhs. EFSB-WG-6-C (att.) at 6-10; EFSB-RR-71).

With respect to stormwater discharge, Sithe Edgar estimated that the proposed site currently has 5.8 acres of impervious surface, which would increase to 6.8 acres following construction of the proposed facility (Exh. EFSB-WW-7). The Company stated that the existing stormwater management system on the proposed site does not appear to be in good working order, to have any pollution removal capabilities, or to collect all the runoff from impervious surfaces (Exhs. EFSB-RR-69; EFSB-B-11(app. B at B-2); Tr. 11, at 1064-1071). Sithe Edgar therefore proposes to redevelop the stormwater system by collecting all drainage from impervious surfaces on the southern portion of the proposed site into deep sump catch basins for oil separation, funneling the stormwater into two detention ponds, and eventually discharging the stormwater to the Weymouth Fore River (Exh. EFSB-WG-6-C (att.) at 5.4-11; Tr.11, at 1087-1088).

The Company stated that it would meet all applicable MDEP stormwater standards administered under the Wetlands Protection Act ("WPA") (Exhs. EFSB-WG-6-C (att.) at 5.4-11; EFSB-B-11 (app. B)).⁴⁹ The Company expects to remove at least 80 percent of total suspended

⁴⁹ The Company stated that Standard 2, which does not allow post-development discharge rates to exceed pre-development peak discharge rates, does not apply to discharges to tidal waters (Exhs. EFSB-WG-6-C (att.) at 5.4-16; EFSB-WW-18). The Company noted
(continued...)

solids from the stormwater (Exh. EFSB-WG-6-C (att.) at 5.4-15). Regarding Standard 6, which relates to shellfishing areas, the Company asserted that stormwater would not be discharged directly to the designated shellfishing areas located in the King's Cove and Mill Cove areas that abut the site (*id.* at 5.4-17, (fig. 5.4-5); Tr. 11, at 1051-1052). However, the Company testified that, in any case, calculations of on-site stormwater volumes are based upon one inch of rainfall, which meets Standard 6 (Tr. 11, at 1095-1097).⁵⁰

The Company testified that it owns and will use the access roads on the northern portion of the site during the construction and operation of the proposed facility (*id.* at 1072-1073). The Company did not propose to redevelop the stormwater systems on the northern portion of the site, arguing that a chemical or oil spill on the access road which lies on that portion of the site would be highly unlikely, and that responsibility for the cleanup of any such spill would lie with the trucking company (Tr. 10, at 1001-1003; Tr. 11, at 1072, 1078-1079). However, the Company acknowledged that Standard 5 applies to areas of higher pollutant loads, which for the proposed facility would include all access roads on the proposed site used for the operation of the facility (Exh. EFSB-RR-70).

In order to construct and operate the proposed facility, Sithe Edgar stated that it would be required to obtain the following permits related to the proposed facility's wastewater and stormwater discharge: a sewer connection permit from the Weymouth Department of Public Works; a Minor Sewer Connection/Extension permit from MDEP; a sewer use permit from MWRA; a cross connection permit from MDEP; an Order of Conditions from the Weymouth Conservation Commission; a 401 Water Quality Certification from MDEP; a Section 404 permit

⁴⁹ (...continued)
that Standard 3 states "Loss of annual recharge to groundwater should be minimized through the use of infiltration measures to the maximum extend practicable" (Exh. EFSB-WG-6-C (att.) at 5.4-16). The Company noted that Standard 5, which pertains to higher potential pollutant loads such as that from the proposed facility, does not allow infiltration of stormwater (*id.* at 5.14-15 to 5.14-16).

⁵⁰ The stormwater regulations submitted by the Company state that only one-half inch of stormwater runoff needs to be treated when it is not near a sensitive resource area (Exh. EFSB-B-11 (app. B at B-12)).

from the US Army Corps of Engineers ("ACOE"), and a National Pollutant Discharge Elimination System ("NPDES") stormwater discharge permit for industrial facilities (Exhs. EFSB-B-20-S; EFSB-B-11, at 2-20; EFSB-WG-6-C (att.) at 5.4-11).

Sithe Edgar stated that it would file a Stormwater Pollution Prevention Plan ("SPPP") under USEPA's Stormwater General Construction program and a NPDES General Stormwater Permit under USEPA (Exhs. EFSB-WG-6-C (att.) at 5.12-8; EFSB-B-20). During construction, the Company has proposed to maintain silt fences and/or hay bales along downslope sides of the construction area adjacent to the Fore River and around unstabilized fill or pile areas and catch basins, to stockpile fill or materials at least 100 feet from the river, to intercept and trap runoff water and sediment, and to permanently stabilize the site after construction (Exh. EFSB-WG-6-C (att.) at 5.12-8 to 5.12-9). The Company indicated that it would meet state construction stormwater guidelines under the WPA and comply with any construction conditions imposed by the Weymouth Conservation Commission (*id.*).

3. Water Supply Impacts with Once Through Cooling

In its initial petition, Sithe Edgar proposed the use of once-through cooling ("OTC") (Exhs. SED-1, at 1-20 to 1-24; EFSB-B-11, at 3-10 to 3-13). The Company subsequently altered its proposal, and now proposes an ACC system (EFSB-WG-6-C (att.) at 2-7). In order to determine whether environmental impacts have been properly balanced with the ACC proposal, we here summarize the water quality impacts of the Company's original OTC proposal.

Sithe Edgar stated that OTC would require 310,000 gpm (446,400,000 gpd) of non-contact cooling water to cool the steam exiting the steam turbine, and would raise the temperature of the cooling water by up to 12 degrees Fahrenheit during full facility load (Exh. EFSB-B-11, at 3-10).⁵¹ The cooling water would be withdrawn from the mid to upper portions of the Fore River through a new 112 foot intake structure located on the southwestern edge of the site, and would be discharged through a new floating weir discharge structure downstream of the

⁵¹ Sithe Edgar also considered a variation of the OTC alternative that would decrease the volume of intake water to 256,000 gpm, but increase the potential temperature increase to 14.5 degrees Fahrenheit (Exh. EFSB-B-11, at 3-10).

intake structure (Exh. EFSB-B-11, at 3-11 (figs. 3-4 and 3-5)). The Company indicated that the intake structure would contain traveling screens and fish return systems designed to protect marine life (*id.* (fig. 3-5)). The Company stated that, if it were using OTC, it would discharge treated process water to the Fore River in combination with the OTC discharge, rather than to the Weymouth or Quincy sewer system, as currently proposed (*id.* at 5.4-63 to 5.4-65). The Company stated that it would need a NPDES permit from the USEPA and MDEP to construct and operate the proposed facility with OTC, and indicated that the OTC discharge would be reviewed under other permits the project would require, such as CZM consistency review, MDEP's 401 water quality certification, the WPA permit, and ACOE Section 404 permit (Exhs. EFSB-B-11 (tab. 2.1); EFSB-B-20).

Sithe Edgar submitted documents indicating that the Fore River is classified as a Class SB (saltwater swimmable/fishable) waterbody, but does not consistently meet water quality standards for this classification, due primarily to sewer overflows, but also to industrial discharges and urban runoff (Exhs. EFSB-WQ-3 (atts.); EFSB-WG-2 (att.); EFSB-B-11, at 5.4-6 to 5.4-7; EFSB-WG-5; FRWA-10). The Company provided water quality studies showing that the Fore River periodically violates criteria for dissolved oxygen ("DO"), total fecal coliform, gross alpha, nickel, and zinc (Exhs. EFSB-B-11, at 5.4-5 to 5.4-7; EFSB-WG-2). The Company stated that the majority of the flow from the Fore River is tidal, with relatively little freshwater input, and that the daily circulating water volume of the OTC would be less than five percent of the low tide volume of the Fore River above the Fore River Bridge (Exh. EFSB-WQ-24).

Sithe Edgar modeled the expected impact of the OTC discharge of heated water into the Fore River during high, low, ebb, and flood tides and calculated the predicted temperature changes at different levels within the water column during the spring and summer (Exh. EFSB-B-11, at 5.4-7 to 5.4-53 (figs. 5.4-2 to 5.4-27)). The Company indicated that the proposed discharge would increase the temperature of the Fore River by more than 1.5 degrees outside the mixing zone⁵² in the summer, requiring a waiver under the Clean Water Act (*id.* at 5.4-2 to 5.4-6;

⁵² The Company explained that the mixing zone is defined by MDEP as "an area of volume of a waterbody in the immediate vicinity of a discharge where the initial dilution of the
(continued...)

Exh. EFSB-WF-7). The Company asserted that the discharge would not raise the temperature of the Fore River above 85 degrees Fahrenheit, the upper temperature limit for waterbodies to meet the SB classification (*id.* at 5.4-3). The Company also asserted that water temperature increases associated with OTC discharges would not affect other water quality indicators, such as DO, dissolved nitrogen, and total suspended solids, or shellfish, but later testified that temperature does in general affect all those water quality parameters (Exhs. EFSB-WQ-16; EFSB-WQ-24; EFSB-WF-2; Tr. 14, at 1311-1313).

Sithe Edgar stated that the use of OTC would result in some unavoidable entrainment (ichthylplackton that get sucked through fish screens) and impingement (fish caught in the screens) impacts to the fisheries of the Fore River (Exh. EFSB-B-11, at 5.5-32 to 5.5-34). The Company also stated that it would use a biofouling agent in the intakes that could affect fisheries if improperly used (*id.* at 5.4-66; Exh. EFSB-WF-8; Tr. 11, at 1097-1098). The Company indicated that fish species using the Fore River include: alewife, blueback herring, Atlantic menhaden, Atlantic silverside, Atlantic tomcod, cunner, rainbow smelt, silver hake, windowpane, winter flounder, American lobster, and soft shelled clam (Exhs. EFSB-B-11, at 5.5-4 to 5.5-7; EFSB-WF-1-R). The Company did not formally estimate the number of fish that might be impinged or entrained; however, it discussed the likely relative impacts to species based upon their life histories, use of the Fore River, and abundance in the area (Exhs. EFSB-WF-9; SED-1, at 4.3-30 to 4.3-32). Specifically, the Company noted that Atlantic silversides, cunner, and windowpane are numerically dominant in the Fore River, and thus might represent the highest number of impinged fish (Exh. EFSB-WF-9). However, the Company suggested that impacts on winter flounder and rainbow smelt might be more significant because winter flounder is an important species economically and the Fore River is an important habitat for rainbow smelt (Exh. EFSB-WF-9). The Company indicated that it would reduce impacts on the fish by using a low approach velocity intake structure that incorporates traveling screens and an escape passage

⁵²

(...continued)

discharge occurs..., excursion from certain water quality criteria may be tolerable" (Exh. EFSB-WF-7b (att.)).

(Exh. SED-1, at 4.3-33 to 4.3-35).⁵³ In addition, Sithe offered to provide \$250,000 a year during the life of operation for watershed restoration in the Fore River, including fish habitat restoration and storm water remediation (Exh. EFSB-B-11, at 5.5-34 to 5.5-35; EFSB-WF-10).

Comments on the Draft Environmental Impact Report ("DEIR") from the USEPA, MDEP and several other agencies, suggest that the Company's analyses of the environmental impacts and cost impacts of different cooling technologies and the thermal and fisheries information provided by the Company were incomplete (Exh. EFSB-WG-6-S). The agencies also: (1) expressed concerns about the proposed facility's impact on the fisheries, citing large fish kills at other power plants; (2) noted the significant efforts that have been directed towards the clean-up of Boston Harbor; and (3) expressed concern over the decline of certain fisheries in this region (*id.*; Exh. EFSB-RR-74; Tr. 11, at 1101-1103). In response to these comments, the Company testified that its analyses of temperature impacts were accurately modeled, but indicated that not enough information was available at the time it prepared the DEIR to accurately assess the fisheries impacts associated with OTC (Tr. 11, at 1032-1037, 1116-1120).

Sithe Edgar testified that USEPA clearly discouraged the use of OTC for the proposed project (Tr. 11, at 1125). The Company submitted a letter from the USEPA stating that Sithe Edgar would be required to undergo a section 316 (b) review to ensure use of Best Technology Available and to prepare an Environmental Impact Statement ("EIS") if it proposed to use OTC, and that the permitting process could take 18 months to three years (Exh. EFSB-RR-74). In its letter, USEPA stated that "Any of the environmental analyses,..., could have resulted in the preclusion of the once-through cooling alternative proposed by Sithe" (*id.*). The Company testified that it therefore considered the OTC option a regulatory risk, and indicated that the delay and regulatory risk would have an economic impact on its proposal; however, the Company did not attempt to quantify that economic impact (Tr. 11, at 1037-1039; Tr. 14, at 1312-1219).

The Company estimated that its current proposal to use ACC rather than OTC would increase the construction cost of the proposed facility by \$20.6 million (including increased

⁵³ The Company also proposed to reduce entrainment rates by up to 20 percent by decreasing the volume withdrawn which would result in a higher thermal change, 14.5 degree Fahrenheit, in the cooling water (Exh. SED-1, at 4.3-35 to 4.3-36).

equipment and noise mitigation costs), and would increase operating costs by \$2,136,000 per year (including the decrease in the amount of electricity the Company could produce) (Exh. EFSB-CT-13). Sithe asserted that the use of ACC rather than OTC would result in an increase in the on-site impervious surface of less than 20 percent, and otherwise would not significantly change stormwater impacts (Exhs. EFSB-WW-7; EFSB-WW-23; EFSB-RR-64). Sithe stated that the only direct impacts to fisheries of the proposed project with ACC are the impacts to shellfish as a result of dredging associated with the construction of the dock (Exh. EFSB-WF-13).⁵⁴

4. Analysis

The record indicates that the proposed facility would have an annual average water use of 131,268 gpd, with 45,589 gpd used during normal operation, 129,690 gpd used during evaporative cooling, and 895,336 gpd used during oil firing. The Company has demonstrated that it would employ all feasible means to reduce water use during normal operation, and that it has significantly reduced the estimated water use for the facility from that set forth in the initial Petition. In addition, the record indicates that the highest level of water use, during oil firing, would occur only in the winter, when water supply systems are less likely to be under stress. The Company's average annual water demand would be approximately 61,823 gpy per MW, which is the third lowest reviewed by the Siting Board to date, and the lowest for a facility using oil back-up.⁵⁵

⁵⁴ See Section III. D, below, concerning shellfish mitigation proposed by the Company.

⁵⁵ The Siting Board estimates annual water demand per MW by taking the highest proposed average annual water use in gpd, multiplying it by 365 days (assuming the worst case scenario), and dividing that number by the MW of the proposed power plant. This method accounts for different water uses found during the year and accounts for different plant sizes. The comparable usage rates in recent reviews were: up to 19,249 gpy per MW for the 700 MW air-cooled IDC Bellingham project; 31,790 gpy per MW for the air cooled 1550 MW Sithe Mystic station; 99,450 gpy per MW for the 580 MW air-cooled ANP Blackstone project; 93,448 gpy per MW for the 580 MW air-cooled ANP Bellingham facility; and 224,000 gpy per MW for the 170 MW air-cooled Dighton Power (continued...)

The Company has evaluated multiple water supply alternatives, including the options of water obtained from MWRA through Quincy, water obtained from Weymouth, and water delivered via barges from Sithe's other sites. The record demonstrates that the Company eliminated the Weymouth water supply option from consideration because it was not certain that Weymouth could meet the proposed facility's demands with its permitted water supply or current infrastructure.

The Company has received the necessary approvals under the Straddle Policy to receive water from MWRA and has obtained support from Quincy. The record indicates that the MWRA has 300 mgd of supply and currently uses on average 250 mgd of water. In addition, the record indicates that the demand for MWRA water supply services may decrease in the future. The record demonstrates that the Company intends to comply with applicable laws and regulations concerning water supply.

The Company also submitted information on the barging alternative; however, it discussed the environmental impacts of barging only briefly, and did not quantify the impacts of the barging alternative on water or traffic, address the impacts of constructing a new demineralized water tank, or demonstrate the support of Boston, Everett, or MWRA for this alternative. In addition, the Company did not fully discuss how it would manage barging water and oil during oil firing, but stated that it would secure a back-up barge if necessary. Consequently, the Siting Board finds that insufficient information has been provided to approve the facility using the barging alternative for water supply under normal operating conditions, although the record does support approval of plans to use the barging alternative on an emergency basis.

Of the three water supply alternatives, the record demonstrates that the Quincy alternative is the most feasible, would result in minimal environmental impacts, and has the approval of other regulatory agencies. Consequently, the Siting Board finds that the Company has

⁵⁵

(...continued)

Project. IDC Bellingham Decision, EFSB-97-5, at 41; Sithe Mystic Decision, EFSB 98-8, at 35; ANP Blackstone Decision, EFSB 97-2/98-2, at 132; ANP Bellingham Decision EFSB 97-1, at 118; Dighton Power Decision, EFSB 96-3, at 219, 240.

demonstrated that it has chosen the water supply alternative that would minimize environmental impacts.

The Company testified that the proposed project (excluding the interconnections) would not have an impact on any groundwater or surface water sources, because of its proximity to a tidal area. The proposed project is not located near or on any high or medium yield aquifer, MDEP Zone I or II recharge area, or any ground or surface water supply. The Siting Board notes that Algonquin's upgrade of its pipeline system to serve the proposed project could affect a significant amount of surface and ground water public water supplies, but also recognizes that impacts to these resources can be minimized through FERC and Conservation Commission reviews. Consequently, the Siting Board finds that the proposed project's impacts to ground and surface freshwater or public water supplies would be minimized.

The record indicates that the Company proposes to discharge a maximum of 42,858 gpd of wastewater into the sewer system, and that the Company has reduced its expected wastewater stream through proposed steps to minimize water supply requirements and install low flow fixtures at the proposed facility. In addition, in order to address concerns regarding sewer overflows in Weymouth's sewer system, the Company, as part of its connection permit requirements, would provide for sewer inflow and infiltration reductions at a ratio of ten to one. The record indicates that there are uncertainties as to the ability of Sithe to use its proposed approach of discharging to Weymouth's sewer system, given concerns of MDEP and MWRA about existing overflow problems. However, it appears Weymouth believes this is a feasible option, and that the MDEP and MWRA would be able to address any concerns as part of their review of the proposed discharge.

The Company indicated that if the Weymouth option were not feasible, it would discharge process wastewater to Quincy. The Siting Board notes that there is not enough information to determine if the Quincy option is feasible and would minimize environmental impacts; therefore, if the Company cannot discharge project sewage into the Weymouth system the Company is required to notify the Siting Board of such change, so that the Siting Board may decide whether to inquire further into this issue.

The Siting Board concludes that the Company has shown it would minimize its expected

use and production of wastewater, and would offset its contribution of wastewater to Weymouth by providing I/I reductions, while also choosing a wastewater discharge alternative that minimizes impacts. Accordingly, the Siting Board finds that the impacts of the proposed facility on wastewater would be minimized.

Site Edgar demonstrated that it intends to comply with state and federal regulations concerning the discharge of stormwater during construction and operation. The record demonstrates that the existing site, which currently has extensive areas of impervious surface, has minimal, if any, stormwater remediation prior to discharging to the Fore River. On the southern portion of the site, the record indicates that the Company would significantly improve the stormwater discharges by removing 80 percent of the suspended solids in the stormwater, by treating up to one inch of rain to protect shellfishing areas, and by providing means to prevent oil and hazardous waste from entering stormwater discharges. The record also indicates that the Company would also create a SPPP and a SPCC program plan and employ measures to reduce stormwater runoff and contamination and the risk of hazardous spills during operation (see Section III.H).

The record indicates that the Company intends to comply with USEPA, ACOE, and Weymouth Conservation Commission's regulations concerning stormwater during construction. However, the Company's plans for site utilization during construction and for permanent access road improvements raise two concerns with respect to stormwater impacts.

First, the record shows that during construction there would be no on-site buffer between the construction area and the Fore River, and that there would be limited space for the Company to accommodate significant requirements for parking and lay down areas while also providing adequate stormwater protection at the site. The Siting Board notes that, by taking steps to reduce the space required for construction parking, the Company could provide more space to protect the Fore River during construction. As discussed in Section III. I, below, the applicant expects to employ measures such as encouraging workers to carpool and to use mass transit, and possible subsidizing of the cost of MBTA passes for workers. The Siting Board encourages the applicant to use any additional space created by a decrease in parking needs to create a construction buffer along the Fore River.

Second, the Siting Board notes that the Company did not propose to renovate the stormwater system for the access roads on the northern portion of the site. The Company argues that this area is not part of the proposed facility, since the Company is not constructing on this portion of the site. However, the record demonstrates that the access roads on the northern, as well as the southern, portions of the site would carry increases of traffic, including increases in the amounts of hazardous materials delivered as a result of the proposed facility. In addition, the record shows that there are critical areas and important environmental resources in the Weymouth Fore River, such as shellfishing beds and significant fisheries near the proposed facility.⁵⁶

The Siting Board is concerned that there would be untreated stormwater discharging from the proposed facility site into a tidal river resource which is a highly productive fishery. Consequently, to minimize the impact of the proposed facility's stormwater discharges on water quality and fisheries, the Siting Board requires the applicant to provide stormwater management on all access roads owned by Sithe at the Fore River Station site as necessary to meet identified stormwater quality and flow standards, consistent with the stormwater management approach and standards used for proposed access road improvements on the southern portion of the proposed facility site. The Siting Board finds that, with the provision of stormwater management on all access roads at the Edgar Station site, the environmental impact of stormwater from the proposed facility would be minimized.

With the implementation of the above condition, the Siting Board finds that the environmental impacts of the proposed facility on water quality, public water supplies, wastewater systems, stormwater, and groundwater would be minimized. Accordingly, based upon the review of all evidence presented, and upon compliance with the conditions noted above concerning stormwater, the Siting Board finds that the environmental impacts of the proposed facility would be minimized with respect to water resources.

⁵⁶ The Company acknowledges that at least one of MDEP's stormwater regulations under the Wetlands Protection Act, Standard 5, likely is applicable to the site access roads. The record shows that the Company has not made the required WPA filing with the Weymouth Conservation Commission (see Section III. D, below).

The record indicates that as part of project development, the Company has analyzed both OTC and ACC for purposes of facility cooling, and selected ACC based on its evaluation to date, with input from USEPA and other regulatory agencies. The record indicates that the Company initially proposed use of OTC, that the Company had initially concluded use of OTC would provide substantial cost advantages, and that as mitigation for OTC impacts on fisheries the Company was prepared to contribute \$250,000 per year to a watershed restoration projects in the Fore River area. In addition, the record shows that use of OTC would have provided important advantages with respect to reducing the noise impacts and the visual impacts of the proposed facility, as discussed in Sections III. F and III. G, below. Thus, the record provides support for the position that, considering overall environmental impacts and cost together with possible mitigation for fisheries impacts of OTC, it may well be possible that use of OTC would have minimized the environmental impacts of the proposed facility, consistent with minimizing cost.

However, as discussed above, Sithe Edgar's decision to switch to ACC significantly reduces the expected environmental impacts of the proposed facility with respect to water resources, since the record indicates that use of OTC would have resulted in thermal impacts and impingement/entrainment that could not have been fully avoided, and also would have resulted in additional wetlands impacts. Further, the Company did not fully explore the impacts of the OTC discharge on the ecology of the Fore River, and several agencies expressed significant concern about the use of OTC and the availability of information concerning its impacts. Thus, although the Company initially concluded it could minimize the impact of the proposed facility with OTC on the Fore River, uncertainties remain as to the full extent of the impacts of OTC and the benefits of the Company's proposed mitigation.

The record indicates that the Company's decision to switch to ACC was based in large part on the time frame and uncertain outcome of the USEPA's permitting review for use of OTC. Although the economic impacts of the delay associated with OTC are not quantified, based upon letters submitted by state and federal agencies, the record shows that it is uncertain whether the Company would have received the necessary permits to operate with OTC.

The record demonstrates that impacts to water quality and fisheries would be substantially fewer with use of ACC than with use of OTC. The record indicates that the impacts

of the proposed facility on stormwater discharges and sewer systems would be slightly greater with use of ACC than with use of OTC. Consequently, the Siting Board finds that the proposed project with ACC, rather than with OTC, would minimize water resource impacts.

As noted above, use of ACC results in significant disadvantages with respect to noise and visual impacts. However, use of OTC entails a permitting time frame that threatens the viability of the project. In addition, based on the proposed and required mitigation for noise and visual impacts, use of ACC would not result in environmental disadvantages that outweigh its environmental advantages. Accordingly, the Siting Board finds that use of ACC is consistent with the minimization of environmental impacts.

D. Wetlands

This Section describes the wetland impacts of the proposed facility and its interconnections and the mitigation proposed by the Company.

1. Description

The Company delineated and described the wetlands, as defined by the ACOE and the MDEP, that exist on or are adjacent to the proposed site (Exhs. EFSB-B-11 (fig. 5.6-1); EFSB-WG-6-C (att.) at 5.4-2 to 5.4-10).⁵⁷ On the proposed site, the Company described two areas of Coastal Beach, one in the proposed location of Lovell's Grove adjacent to Route 3A and one upstream of the existing powerhouse (*id.*; EFSB-WG-6-C (att.) at 5.4-7). In addition, the Company noted that the entire site is bordered by Coastal Bank that separates the land and the water⁵⁸, and that large portions of the proposed site contain Land Subject to Coastal Storm

⁵⁷ The Company noted that there is one freshwater resource on or adjacent to the proposed site (Exh. SED-1, at 4.3-1 to 4.3-2). The Company stated that it is defined as an isolated wetland under federal jurisdiction and that MWRA will replicate it as part of its proposed project (*id.*).

⁵⁸ Based upon 310 CMR 10.30(2) and MDEP Wetlands Protection Program Policy 92-1, the Company defined an area of Coastal Bank extending into the upland portions of the proposed site near the location of the proposed ACC (Exh. EFSB-RR-67).

Flowage ("LSCSF") (id.; EFSB-WG-6-C (att.) at 5.4-7 to 5.4-9).⁵⁹

The Company indicated that the WPA 100-foot buffer zone runs along the coastal bank associated with the river and coves (Exhs. EFSB-B-11 (fig. 5.6-1)). The Company stated that the MDEP also protects riverfront areas that lie within 200 feet of a river, but noted that the DEP regulations exclude any portions of land that are on filled tidelands (id.; Exh. EFSB-WG-6-C (att.) at 5.4-5 to 5.4-6). Consequently, the Company explained that it delineated three separate fingers of riverfront area that are surrounded by filled tidelands on the proposed site (Exhs. EFSB-B-11 (fig. 5.6-1); EFSB-WG-6-C (att.) at 5.4-5 to 5.4-6). Site stated that it would meet the performance standards for each isolated section of Riverfront Area on the site, including less than 5000 square feet ("sf") of disturbance in areas not previously developed and an improvement of the conditions of previously developed riverfront areas (Exh. EFSB-WW-22-S). The Company stated that its property extends into the water and that all the area under water is Land Under the Ocean ("LUO"), that Land Under an Anadromous Fish Run ("anadromous fish run") borders the west of the site, and that Land Containing Shellfish ("LCS") exists in Mill Cove and King's Cove (Exhs. EFSB-B-11 (fig. 5.6-1); EFSB-WG-6-C (att.) at 5.4-4 to 5.4-5, 5.4-9 to 5.4-10).

The Company has proposed to construct a fuel oil unloading dock on the southern portion of the site and to refurbish the existing dock on the northern portion of the site, requiring alteration of 2.9 acres of LUO, including the removal of 30,650 cubic yards of sediment (Exh. EFSB-WG-6-C (att.) at 5.4-5). Site indicated that the ACOE, under a Section 10 permit and Section 103 of the Marine Protection, Research, and Sanctuaries Act, and the MDEP, under a Section 401 Water Quality Certification permit, regulate dredging and disposal activities in waterways (id. at 5.5-1 to 5.5-5; Exh. EFSB-B-20-S). The Company stated that the dredging would result in a temporary and localized increase in turbidity of the water column (Exh. EFSB-WG-6-C (att.) at 5.5-10). The Company stated that it would use silt curtains to confine the suspended sediments (id.). The Company also indicated that it had sampled the sediments in the

⁵⁹ The Company explained that LSCSF is defined by the area below the elevation of water during a 100 year storm surge (Exh. EFSB-WG-6-C (att.) at 5.4-7 to 5.4-9).

area of proposed dredging, using a plan approved by the ACOE, and stated that preliminary results show that the dredged material is of suitable quality for open water disposal (id. at 5.5-6 to 5.5-11). The Company noted that it had reduced dredging impacts by switching from OTC to ACC and relocating the fuel oil barge to less productive shellfishing areas (id. at 5.5-10). In its comments on the FEIR, the ACOE noted its concern about the filling of LUO and tidal areas on the site (Exh. EFSB-RR-73-A). The Company originally proposed to reconstruct the existing dock on the northern portion of the site for oil deliveries, which it indicated may have reduced the impact to LUO; subsequently, Sithe decided to build the oil unloading dock on the south side in order to coordinate more effectively with MWRA's construction activities and to increase the safety of oil delivery (Exhs. EFSB-B-8; EFSB-S-1; EFSB-S-11).

The Company stated that the construction of the oil barge unloading facility would also have an impact on two small areas of LCS (Exh. EFSB-WG-6-C (att.) at 5.4-9). Sithe stated that its tests show that these areas are not very productive shellfish beds; however, the Company indicated that it would work with DMF and the Weymouth Shellfish Warden to implement a shellfish seeding program as mitigation for any impact (id. at 5.4-9 to 5.4-10; Exh. EFSB-WW-22-S).⁶⁰ The Company stated that its proposed project would not have an impact on anadromous fish runs since the project would not affect water quality and circulation, which are the identified interests under the WPA for this resource area (Exh. EFSB-WG-6-C (att.) at 5.4-10).

Sithe Edgar indicated that in order to raise the proposed facilities above the 100 year storm surge, the Company would fill over six acres of the LSCSF located on the site, and build upon much of this area (id. at 5.4-7; Exh. EFSB-WW-12 (att.)). Sithe asserted that the filling of LSCSF would not increase flooding, and stated that MDEP does not have any standards that apply to LSCSF (Exhs. EFSB-WG-6-C (att.) at 5.4-7; EFSB-WW-12 (att.); EFSB-WW-3, at 1-2). The Company stated that there would not be any impacts to Coastal Beach at the proposed

⁶⁰ In its comments in response to the FEIR, the Massachusetts Division of Marine Fisheries ("DMF") stated that it is unsure how effective such a program would be and suggests that the Company consider alternative mitigation measures or conducting a trial program (Exh. EFSB-RR-73 (atts.)).

site (Exhs. EFSB-WG-6-C (att.) at 5.4-7; EFSB-B-2-S2-B).⁶¹

The Company indicated that because the site is in a DPA, fewer WPA standards are applicable to the site (Exhs. EFSB-WG-6-C (att.) at 5.4-2 to 5.4-3; EFSB-B-5). The Company stated that LUO is the only type of wetland in a DPA presumed to be significant to the interests of the WPA, and it is presumed to be significant only for storm damage protection, marine fisheries, and flood control (Exh. EFSB-WG-6-C (att.) at 5.4-1 to 5.4-4). In addition, the Company noted that the WPA regulations specifically provide for electric generation facilities and allows for the construction of certain structures and interconnections associated with electrical generation even when a project area is determined to be significant to one or more interests of the WPA (*id.* at 5.4-2).

The Company stated that it would alter a portion of natural bank, at least 800 sf, landward of an existing riprap structure and south of the existing powerhouse in order to build the ACC (*id.* at 5.4-9; Exhs. EFSB-RR-67; EFSB-WW-12). The Company testified that it could not feasibly move the proposed location of the ACC (Tr. 1, at 75-76).

The Company provided information concerning the impacts of Algonquin's proposed natural gas pipeline interconnect on wetlands (Exhs. EFSB-WG-6-C (att.) at 6-12 to 6-20; EFSB-18-A (att.)). In its application to FERC, Algonquin stated that its project would have a permanent impact on 17.6 acres of wetlands, and would have a temporary impact on 8.1 acres of wetlands. In this proceeding, the Company asserted that Algonquin would cross the Fore River using directional drilling, which would not require dredging (Exhs. EFSB-B-18; EFSB-WG-6-C (att.) at 6-10; EFSB-B-11, at 6-17). However, Algonquin's November, 1999 FERC application indicates that the proposed means to cross the river is still being studied, and that both open-cut and directional drilling are under consideration (Exh. EFSB-B-18-A).

Sithe Edgar testified that it would not conduct wetland restoration as part of its landscaping plans, other than to revegetate disturbed areas and replant the areas with native

⁶¹ In a supplemental response to an information request, however, the Company indicated that it would fill the "coastal beach area" of the southwest bulkhead (Exh. EFSB-WW-22-S). The Siting Board assumes that this inconsistency is a result of the inadvertent use of the word "beach" instead of "bank" in the Company's supplemental response.

coastal species (Tr. 10, at 985-994). The Company stated that CZM's habitat policy #2 provides that project proponents should "Restore degraded or former wetland resources in coastal areas and ensure that activities in coastal areas do not further wetland degradation but instead take advantage of opportunities to engage in wetland restoration" (Exh. EFSB-WG-6-C (att.) at 5.6-3). The Company indicated that it would comply with this policy because the site has been previously filled for industrial activities, and it would contribute to the shellfish seeding program (id.).

The Company also stated that the proposed project is subject to MDEP's Chapter 91 regulations, because it is located on filled and flowed tidelands, and provided a copy of its Chapter 91 application (id. at 5.5-19 (figs. 5.4-6, 5.4-7); EFSB-WW-5-S (att.)). The Company stated that Chapter 91 regulates the activities which can take place in filled or flowed tidelands, sets the performance standards for dredging, construction, public access rights, and requires consistency with other regulatory performance standards (Exh. EFSB-WG-6-C (att.) at 5.4-27). The Company indicated that different standards apply to water dependent and non-water dependent facilities that alter areas subject to Chapter 91 (id. at 5.4-27 to 5.4-28). In addition, the Company noted that different standards apply to facilities built in a DPA (id. at 5.4-28; Exh. EFSB-B-11).

The Company asserted in its Chapter 91 application that it is a water dependent facility, and cited that Chapter 91 regulations providing that the "Department shall presume to be water dependent... any energy facility for which the proposed location has been approved by the Energy Facilities Siting Council; this presumption may be overcome only upon a clear showing the proposed ... facility can reasonably be located or operated away from tidal or inland waters." (Exh. EFSB-WW-5-S (att.) at B-6 to B-7). The Company also asserted that its dependence on barging for construction and oil delivery and its dependence on existing industrial structures located in a DPA demonstrates its water dependent use status (id. at B-7 to B-8)).

The Company also provided information on the wetland impacts of the proposed facility if it were built with OTC rather than ACC (Exh. EFSB-WW-12 (att.)). The Company estimated that under the OTC scenario, 67,500 sf of Coastal Beach and 800 feet of Coastal Bank south of the existing powerhouse would have been permanently altered by the construction of the intake structure and the construction dock, 5.04 acres of LSCSF would have been lost south of Route

3A, and that 191,660 sf of LUO, 29,600 sf of riverfront area, and 53,300 sf of LCS would have been temporarily altered in order to construct the proposed facility (Exh. EFSB-WW-12 (att.)). Sithe noted that there might have also been indirect impacts to resource areas such as an Anadromous Fish Run caused by the thermal impacts of the proposed facility using OTC (*id.*).

The Company stated that it needs to obtain the following wetlands-related permits to construct the facility as proposed: a section 404 permit from the ACOE; a Section 10 permit from the ACOE (for work within a navigational waterway); a Section 103 permit from the ACOE (for disposal of dredge material); an Order of Conditions from the Weymouth Conservation Commission; a CZM federal consistency permit; and a Weymouth Board of Zoning Appeals Special Permit for construction in a flood zone (Exhs. EFSB-WG-6-C (att.) at 5.4-1 to 5.4-2; EFSB-B-20-S (att.)). The Company received approval of its wetland boundaries from the Weymouth Conservation Commission through an Order of Conditions for demolition, but has not submitted its Notice of Intent to construct the proposed facility or the other necessary wetland permits (Exhs. EFSB-WG-6-C (att.) at App. H); EFSB-RR-66 (att.); EFSB-L-7; EFSB-B-20-S (att.)).

2. Analysis

The record indicates that the construction of the proposed facility and ancillary facilities including the ACC, oil delivery dock, and construction dock, would result in the permanent filling of six acres of LSCSF, temporary and permanent impacts to 2.9 acres of LUO, permanent impacts to 800 linear feet of bank, less than 5000 sf of permanent impacts to the riverfront area, and potential impacts to anadromous fish runs and LCS. In addition, the record indicates that Algonquin's Fore River project upgrades would result in permanent and temporary impacts to 25 acres of wetlands.

The Siting Board notes that the extent of wetlands resource areas affected by the proposed facility is significantly higher than for other recent facilities. However, the record indicates that opportunities to move structures outside of the wetland resource areas are limited and could increase other environmental impacts. In response to comments from MDEP, the Company already has modified its proposal to lessen its impacts to the riverfront area and coastal

beach. The record demonstrates that the proposed filling of LSCSF is necessary in order to decrease the likelihood of the flooding of the proposed facility.⁶² Although safety considerations associated with oil delivery by barge require construction of the oil dock in the southern location with consequent impacts to LOU, LCS, and potentially anadromous fish runs, the traffic impacts of delivering oil by truck are reduced by use of barging. Similarly, the record demonstrates that if the ACC were moved away from the river, the noise impacts of the proposed facility on residential neighborhoods would be greater (see Sections III.G and III.K). Finally, the record indicates that the impacts of the proposed facility using ACC would be fewer than the impacts of the proposed project using OTC. The Siting Board therefore concludes that the Company has minimized the direct impacts of the proposed facility on wetlands to the extent possible given the constraints of the site, the need to minimize other impacts, and the use of oil.

The Siting Board recognizes that under state regulations applicable to DPAs, only LUO is presumed to be significant to the protection of the interests of the WPA. In addition, we recognize that the Commonwealth has adopted policies that encourage the redevelopment of brownfield sites (see Section IV, below) and that, although the proposed facility will result in the alteration of significant areas of wetlands, these areas are, for the most part, already disturbed. Therefore, our concern about the extent of the anticipated wetland impacts is considerably less than it would be if similar alterations were proposed at a different site. In addition, we note the upcoming reviews of wetland impacts of the proposed facility and the natural gas interconnect by conservation commissions, ACOE, CZM, and MDEP help ensure that the wetlands impacts would be minimized.⁶³

⁶² The Siting Board notes that the MDEP does not have standards for the alteration of LSCSF which might have otherwise limited the extent of the Company's filling of LSCSF.

⁶³ The Siting Board notes that although many areas are not presumed to be significant under the WPA in a DPA, this presumption can be overcome, and the results of the Weymouth Conservation Commission's, ACOE's, or MDEP's review of this application have yet to be determined. In addition, the record does not indicate whether the proposed facility complies with federal wetland regulations. The Siting Board recognizes the impacts of

(continued...)

Nonetheless, the Siting Board notes that existing wetlands on or adjacent to the proposed site, although disturbed and located within a DPA, still provide some environmental value, as evidenced by significant fisheries that exist in the Fore River, and that it is appropriate for the Company to take cost-effective steps to mitigate impacts to fisheries. Since Edgar has offered to participate in a shellfish seeding program to mitigate its impacts to shellfish areas. However, it is possible that limited wetland restoration or improvement of the previous natural conditions of the site may also be feasible. Therefore, the Siting Board encourages the Company to pursue opportunities for wetlands restoration on the site in conjunction with its landscaping plans (see Section III. F, below), with input from state, local, and federal agencies, and consistent with objectives for minimizing visual impacts. Opportunities for wetland restoration many include, but are not limited to: the restoration of bank areas to a more natural condition; and the relocation of fill on edges of the site to inland portions of the site to encourage certain edges to revert back to flowed wetland resource areas, such as salt marsh or tidal flats.

The Siting Board also notes that Since Edgar has indicated that the natural gas pipeline serving the proposed facility would be directionally drilled under the Fore River. However, Algonquin's Fore River Project application filed with FERC indicates that both open cut and directionally drilling are being considered and that open cut would result in greater impacts to fisheries and wetlands. Therefore, the Siting Board requests the Company to work with Algonquin to encourage the use of directional drilling to cross the Fore River.

Based on the above, with the implementation of the mitigation proposed by the Company, the Siting Board finds that the wetland impacts of the proposed facility would be minimized.

63

(...continued)

the proposed facility on wetlands may change during permitting reviews by other agencies, and will require the Company to notify the Siting Board of project changes resulting from these reviews only if impacts to wetland resource areas increase significantly or if the changes result in significant increases in another environmental impact.

E. Solid Waste

This section describes the solid waste impacts of the proposed facility and the mitigation proposed by the Company.

1. Solid Waste

The Company stated that it would reuse brick and concrete from the existing buildings that will be demolished as fill for the proposed facility (Exh. EFSB-SW-6). The Company also proposed to separate and recycle other trash created during construction and to reuse construction materials such as wood (*id.*).

The Company indicated that the proposed facility would generate the following waste during operation: (1) approximately 50 to 60 tons per year of general trash including non-recyclable scrap metal, wood, plastic, cardboard, glass and other trash; (2) 10 tons per year of cardboard and paper; and (3) 1 to 2 tons per year of hazardous waste including batteries, light bulbs, chemical/oily rags, and other cleaning agents (Exhs. EFSB-SW-1; EFSB-SW-2; EFSB-RR-38). The Company indicated that during maintenance outages, there would be an increase in the production of solid waste, especially cleaning agents (Tr. 5, at 545-555). Sithe indicated that it would recycle paper, scrap metal, corrugated cardboard, glass, metal, plastic, and landscaping material (Exh. EFSB-RR-39). In order to reduce, reuse or recycle waste, the Company stated that it would properly segregate and label all non-hazardous and hazardous solid waste at the source and employ a chemistry/environmental technician responsible for coordinating waste management and training personnel in waste handling (Exh. EFSB-SW-6; Tr. 5, at 555-556).⁶⁴

The Company noted that Weymouth does not provide recycling services to businesses or industries; Sithe therefore proposed either to take recyclable materials to an appropriate facility itself, or to retain a contractor to transport the materials to a recycling facility (Exhs. EFSB-RR-38; EFSB-RR-28; EFSB-RR-37).

The Company indicated that, in order to comply with Massachusetts' Toxics Use

⁶⁴ The Company indicated that it is not aware of any averages or standards for solid waste production from gas-fired combustion plants (Tr. 5, at 547-549).

Reduction Act ("TURA"), it would engage in a planning process intended to evaluate the feasibility of reducing the use of certain chemicals, and it might be required to report on an annual basis the quantity of chemicals used and produced by the facility (Exh. EFSB-RR-39). In response to staff questioning regarding potential toxic use reduction strategies,⁶⁵ the Company argued that these practices are used to reduce the use of toxic materials in older facilities, but that newer facilities are already minimizing their use of chemicals (Exh. EFSB-RR-39; Tr. 5, at 552-553). The Company discussed various means to dispose of spent NO_x and CO catalyst, through off-site disposal handled by an appropriately licensed contractor or supplier (Exhs. EFSB-A-3; EFSB-A-4).

2. Analysis

The record indicates that the proposed facility would produce 50 to 60 tpy of solid waste, including 1 to 2 tons of hazardous waste. The Company has stated that it would reduce, reuse and recycle solid waste to the maximum extent possible during construction and operation, and indicated it would encourage recycling by the separation of solid waste and the designation of a person responsible for solid and hazardous waste plans and management. The record shows that all remaining waste would be removed by licensed waste contractors and disposed of at appropriate disposal sites for hazardous and non-hazardous waste. In addition, the record indicates that the Company would be required to comply with TURA, which could lead to the reduction of the use and production of toxic chemicals.

The Siting Board notes that the proposed facility is a gas-fired plant, and that the Company's choice of fuel contributes considerably to the minimization of solid waste impacts, when compared to a coal fired plant. See Silver City Energy, 3 DOMSB, at 173-174 (proposed coal-fired plant would generate 77,000 tpy of solid waste as compared to 500 tpy for gas-fired

⁶⁵ The Office of Technical Assistance under the Executive Office of Environmental Affairs ("EOEA") has standard toxic use reduction strategies that companies can employ to minimize the use and production of toxic chemicals, including: input substitution, production reformulation, process redesign or modification, process modernization, improved operation and maintenance of equipment and methods, and the recycling, reuse or extended use of toxic materials (Exh. EFSB-SW-9).

alternatives). The Company's plans to reuse materials from the existing Edgar structures as fill for the new facility, and its commitment to recycle both construction and operational waste, where possible, contributes to minimizing the solid waste impacts of the proposed facility. Accordingly, for the purposes of this review, the Siting Board finds that the environmental impacts of the proposed facility would be minimized with respect to solid waste.

In making this finding we note that although natural gas-fired generating facilities produce significantly less solid waste than facilities which are fueled by coal, the levels of solid waste produced from natural gas-fired facilities are not necessarily insubstantial or minimal. Consequently, the Siting Board concludes that further review of measures to minimize solid waste impacts of gas or oil fired facilities is warranted. The Siting Board, therefore, will require future applicants of proposed generating facilities, regardless of fuel type or size, to demonstrate that they have minimized solid waste impacts by characterizing the estimated waste stream from the proposed facility, describing the solid waste minimization and recycling strategies proposed for the facility, and as applicable, providing comparisons with statewide policy initiatives and/or governmental or industry guidelines or averages.

F. Visual Impacts

This Section describes the visual impacts of the proposed facility on Weymouth, Quincy, Braintree and surrounding communities.

1. Description

The Company stated that the proposed project site is located in a DPA near several existing industrial facilities (Exh. SED-1, at 4.4-1). The Company described the site as exposed in all directions and visible from several other communities (*id.*). Site provided maps which show that a number of areas have direct views across the water toward the site, including: (1) heavily industrialized DPAs in Quincy and East Braintree west and southwest of the site; (2) residential areas in Quincy northwest and north of the site; and (3) residential areas of East Braintree and Weymouth to the south and southeast of the site (Exhs. WG-6-C (att. fig. 5.3-1); EFSB-RR-2-A; EFSB-A-17-C (att.)). The record contains evidence that there are three

waterbody approaches to the site that provide viewsheds, including: (1) the upstream Fore River to the southwest in Weymouth; (2) the Town River to the northwest in Quincy; and (3) the downstream Fore River to the northeast towards Boston Harbor ((Exhs. WG-6-C (att. fig. 5.3-1)). The record contains evidence that approximately 15 recreational areas and approximately 22 marinas, yacht clubs, or boat launching facilities exist within two miles of the proposed site (Exhs. FRWA-S-5; EFSB-LU-1 (att.); FRWA-S-18 (att.)). In addition, the record reflects that the City of Quincy is close to obtaining the official designation of the Weymouth/Fore River as a Gateway to the Boston Harbor Islands National Park, and that there is a Harbor Express/Boston Harbor Islands Gateway Ferry Terminal that could serve up to 1,200 passengers daily (Exh. FRWA-6-A).

Sithe Edgar listed the existing structures on the site, which it proposes to demolish, as a 520 by 230 by up to 155 foot high powerhouse,⁶⁶ a 146 by 110 by 89 foot high switch house, and other ancillary facilities (Exh. EFSB-V-5-C).^{67, 68} The Company estimated that the existing structures have a mass of 20,049,100 cubic feet and can be seen from communities one half to three quarters of a mile away (Exhs. EFSB-V-5-C; SED-1, at 5.5-1). The Company proposes to build a 350 by 255 by 102 foot high turbine building and a 200 by 425 by 102 foot high ACC (Exh. EFSB-V-5). Sithe Edgar estimated that the proposed facility would increase the total mass of structures by approximately eight percent (Exh. EFSB-V-5-C).⁶⁹

⁶⁶ The Massachusetts Historical Commission determined that the demolition of the proposed powerhouse would have "an adverse effect of the historical, architectural, and cultural characteristics of the ... property and will diminish the integrity of the property's design, setting, materials, workmanship, and feeling ..." (Exh. EFSB-B-11, at 8-23 (att.)).

⁶⁷ The Company noted that the powerhouse height varies from 97.5 feet to 155.5 feet (Exh. EFSB-V-5-S). The Company also included three fuel oil tanks and coal unloading/conveying buildings in its list of existing structures (Exh. EFSB-V-5-S).

⁶⁸ The Company submitted evidence that it had received a demolition permit in April 1999 (Exh. EFSB-RR-8).

⁶⁹ The Company noted that the proposed turbine building has a lower portion that is 350 by 75 by 43 feet tall (Exh. EFSB-V-5-S). The Company included many ancillary facilities

(continued...)

Sithe Edgar stated that the proposed facility's stack would be 255 feet tall, 50 feet in diameter, and painted white (Exh. EFSB-V-5-S). The Company indicated that the 255 foot stack represented the GEP stack height and, as discussed in the Section II.B. above, theorized that it could reduce the stack to 250 feet and still maintain air impacts below SILs (Exh. EFSB-W-A-3-S2). Sithe Edgar provided a list of nine stacks, ranging from 60 to 255 feet in height and 1 to 17 feet in diameter, and one Goliath crane, 350 feet in height, located in the area surrounding the site and indicated that one of the stacks and the Goliath crane have Federal Aviation Administration ("FAA") lighting (Exh. EFSB-RR-80). Given the location of the site in a heavily industrial area with existing stacks, transmission towers, and other tall structures and with many open views of the site, the Company asserted that a lower stack height would not have a significant visual advantage (Exh. EFSB-A-10). The Company provided the FAA approval of its proposed facility and stated that the FAA would require one level of medium intensity white obstruction lights on top of the proposed stack (Exh. EFSB-V-2-S2; EFSB-V-15; EFSB-V-27).

The Company stated that it identified all the areas from which the stack might be visible based upon an interpretation of USGS maps and subsequently visited these areas to evaluate the view of the facility (Exhs. SED-1, at 4.4-2 to 3; EFSB-V-4; EFSB-V-29). Sithe Edgar explained that it screened out certain areas and chose representative viewsheds based on compass points where the view would be most prominent from residential areas (Exhs. SED-1, at 4.4-3; EFSB-V-4; EFSB-V-29). Sithe Edgar stated that it conducted a thorough drive-through analysis to make sure that no potential visual receptor was overlooked (Exhs. EFSB-V-17; EFSB-V-29; Tr. 13, at 1229-1231). The Company asserted that although one might be able to see the proposed facility from locations outside of the area its viewshed analysis, the proposed facility would not be very discernable, especially at distant locations (Tr. 13, at 1229-1233).

Sithe Edgar provided existing and proposed views of the site from eleven receptor locations (Exhs. EFSB-WG-6-C (att.) figs. 5.3-2 to 5.3-16)); EFSB-V-26 (atts.); EFSB-V-28

⁶⁹ (...continued)
in its total mass, including two fuel oil tanks, two water tanks, an ammonia tank, a gas compressor building, and other associated facilities (Exh. EFSB-V-5-S).

(att.); EFSB-V-6-S).⁷⁰ The Company calculated the angular elevation from the viewpoint to the proposed facility and used these calculations to estimate the size and angles of the proposed facility from each viewshed (Exh. SED-1, at 4.4-5 and fig. 4.4-2). Using a computer, the Company digitized a representative view of the proposed facility with the existing structures removed, for each of the eleven viewsheds described above (Exh. SED-1, at 4.4-7).

The photographs from Monatiquot Street and Bluff Road (#1 and #2) show close-up and significant views of portions of the existing and proposed facility in which existing vegetation provides some amount of screening (Exh. EFSB-WG-6-C (att.) fig. 5.3-2 to 5.3-3). Photographs from across King's Cove located to the northeast of the site (#3 and #4) show views of the facility in which the existing facility appears larger than the new facility, but the new facility stack is highly visible; in addition existing trees provide some screening of the southern oil tank and small portions of the existing and proposed buildings (Exh. EFSB-WG-6-C (att.) figs. 5.3-5 to 5.3-7). The record indicates that the photographs from the southeast, south and southwest in Weymouth and Braintree (#6, #7, and #8) show views of the existing and proposed facility across Mill Cove and the Fore River, in which the new facility, except the stack, appears shorter than the existing structures, but as a result of the ACC, the facility appears larger; in addition, existing and proposed vegetation appears to provide minimal screening (Exh. EFSB-WG-6-C (att.) figs. 3-11 to 3-15 and 5.3-9 to 5.3-12). Photographs from sections of Quincy west of the

⁷⁰ The Company stated that Viewshed (#1) was taken from the east side of Monatiquot Street near Bluff Road in Weymouth (defoliate), (#2) on Bluff Road off Monatiquot Street in Weymouth (foliate and defoliate conditions), (#3) along the west-facing coast of Kings Cove in Weymouth (defoliate), (#4) from the roadway on Babcock Avenue overlooking Kings Cove in Weymouth (defoliate and foliate), (#5) looking west from Route 3A near its intersection with Bayview Street (foliate), (#6) at a community park in the northeastern extreme of the Idlewell neighborhood of Weymouth (foliate), (#7) at a community park at the northwestern portion of Idlewell (defoliate), (#8) overlooking the Fore River in Braintree at the end of a residential neighborhood (defoliate and foliate), (#9) at a parking lot of the Quincy Mental Health Center which is near a high density residential neighborhood (defoliate), (#10) from the Fore River Bridge (Route 3A) (defoliate), and (#11) from the southern extreme of Germantown Point in Quincy (defoliate) (Exh. SED-1, at 4.4-4 to 4.4-5). There are two Viewshed #1's, one taken on the facility side of Monatiquot Street (defoliate) and one taken on the residential side of the street (foliate) (Exhs. EFSB-WG-6-C (att. fig. 5.3-2)); EFSB-V-28).

proposed site show the existing and proposed facility screened by other industrial facilities, and photographs from Quincy to the northwest and north of the site show a more prominent view of the proposed facility than the existing facility as a result of the stack, while larger trees appear to screen the existing 6.3 million gallon oil tank (EFSB-WG-6-C (att.) fig. 5.13-13 to 5.3-15).

The Company also provided cross sections of the proposed facility from a transect that runs from the Fore River east to Monatiquot Street, including a comparison of the outline of a thirty-foot sailboat, a typical house, and the USS Salem (Exh. FRWA-V-1 (att.)).⁷¹ In addition, Sithe Edgar provided an aerial simulation of the proposed facility layout and a three dimensional illustration of the proposed facility (Exhs. SED-6; EFSB-V-24-S2).

The Company asserted that the proposed facility is consistent with the existing industrial character of the area and that construction of the proposed facility would improve the view for all the receptors because of the substantially reduced building heights, the removal of a deteriorating facility, and the addition of attractive landscaping (Exhs. SED-1, at 4.4-1; EFSB-V-11-C-S; WG-6-C (att.) at 5.3-4)). Sithe Edgar also acknowledged that the removal of existing structures would make certain industrial structures, such as the Goliath Crane and the transmission towers, more visible from certain residential viewpoints; however, the Company noted that these background features are further away from affected receptors than the proposed facility (Exh. EFSB-V-22).

The Company stated that BECo's existing 277 and 349.5 foot transmission towers would remain on the site (Exhs. EFSB-V-32; FRWA-P-3; FRWA-P-2 (att.)). The Company indicated that in the draft system impact study the option of relocating the lines underground was considered and dropped for economic reasons (Exh. FRWA-P-3).⁷² FRWA submitted digitized views of the Fore River area with the existing transmission towers, and the same views with the lines relocated underground and the towers removed (Exh. FRWA-7 (att. E)).

⁷¹ The USS Salem is a naval museum located across the Fore River in Quincy with up to 500 visitors per day in the summer (Exh. FRWA-S-7).

⁷² The Siting Board notes that only an outline of the System Impact Study has been submitted into the record (Exh. EFSB-E-4-S2).

Sithe Edgar stated that it employed the FOG model to predict the number of days on which the proposed facility would emit a visible plume (Exh. EFSB-V-1-S).⁷³ The Company stated that the model indicates that a plume would be visible during approximately 20 to 25 percent of daylight hours (Exh. EFSB-V-1-S; Tr. 13, at 1216-1217). The Company testified that the plume would be approximately two to three hundred feet in length (Tr. 13, at 1218). The Company stated that in general, oil firing would not dramatically affect the number of hours of visible plume, but that the plume would be more visible in winter (*id.* at 1212-1213).

The Company indicated that the facility would have some night lighting, including lights every thirty feet along the roads, lights at the transformers, and lights, which would normally be turned off, surrounding and on top of the ACC (Exhs. EFSB-B-11, at 5.3-22; EFSB-V-3; EFSB-V-3-S; W-L-1 (att.)). The Company indicated that the exterior night lights would have cutoff features to reduce glare (Exhs. B-11, at 5.3-22; EFSB-V-3). The Company stated that the existing powerhouse has lighting, and that with the proposed landscaping much of this lighting would be screened from the Monatiquot Street neighborhood (Exhs. EFSB-V-3; EFSB-V-16). Sithe Edgar asserted that other nearby residential areas would not be affected by the exterior night lights because the lights would be barely perceptible from those distances (Exh. EFSB-V-16). Sithe Edgar stated that any exterior night lighting not mandated for safety or security reasons would be avoided (Exh. EFSB-V-3).

The record indicates that the proposed site has little dense vegetation, but that mature trees are found on the site partially screening the view of the existing facility (Exhs. EFSB-V-8; WG-6-C (att.) figs. 5.3-2 to 5.3-16). Sithe Edgar stated that significant lay down and parking space would be required on the entire site for construction of the proposed facility, as well as for the MHD and MWRA (Exh. EFSB-V-8; EFSB-B-11 (fig. 5.15-2)). The Company stated that it would make every effort to retain existing trees, especially those around Route 3A and along

⁷³ The Company explained that a plume occurs when the water vapor in the exhaust hits colder temperatures, and the water vapor consequently condenses and forms droplets (Tr. 13, at 1215). The Company noted that it excluded 1,839 hours from the model for rain of .01 inches or more per hour, because the Company theorized that the plume would not be visible during these periods (Exh. V-1-S; Tr. 13, at 1214).

Monatiquot Street (Exh. EFSB-V-8; EFSB-WG-6-C (att.) 3-30, figs. 3-11 through 3-15). Based upon its construction plans, the Company testified that the trees on the eastern portion of the site would be easier to retain than those on the western portion of the site (Tr. 13, at 1243). The Company stated that it was not likely to be able to retain the trees near the proposed plant, but that it likely could retain the trees along Monatiquot Street and along the oil tank berm (*id.* at 1244 to 1246).⁷⁴

Sithe Edgar has proposed to landscape the facility in four main areas of the site: (1) along Monatiquot Street; (2) along the southwestern edge; (3) along the King's Cove edge on the northern portion of the site; and (4) along the Lovell's Grove area next to the river and Route 3A on the southern portion of the site (Exhs. EFSB-V-7-S-2; EFSB-WG-6-C (att.) sec. 3.0). The Company indicated that the Weymouth Board of Selectmen, the Weymouth Historical Commission, and the Massachusetts Historical Commission would have formal design review, under legal agreements, of the proposed facility (Exhs. EFSB-B-27; EFSB-WG-6-C (att.) app. D; EFSB-B-11 (app. F)). The Company also stated its commitment to involving the Weymouth Edgar Station Reactivation and Review Commission ("WESRRC")⁷⁵ and Weymouth in the development of landscaping plans (Exhs. EFSB-V-7; EFSB-V-9).

The Company proposed to plant deciduous and coniferous trees and other vegetation along the eastern portion of the site, including an area up to 300 feet wide alongside the oil tank and for a length of 120-150 feet further south alongside Monatiquot Street (Exhs. EFSB-V-7-S; EFSB-V-7-S-2; WG-6-C (att.) (figs. 3-13 to 3-14)). Sithe Edgar stated that this area is very important for creating a buffer between the proposed facility and the neighborhood (Tr. 13, 1250

⁷⁴ The Company noted, however, that the MWRA and MHD might not be able to retain the existing trees in some areas (Tr. 13, at 1244).

⁷⁵ The Company described WESRRC as a group that was convened by Weymouth's selectmen to coordinate its and the community's review of the project so that Sithe would have one entity with which to discuss issues (Tr. 1, at 42-43). The Company stated that WESRRC was composed of members from the Town of Weymouth government and from the neighborhood, but did allow informal participation from unappointed members (Exhs. EFSB-B-11 (app. O); EFSB-L-8-S; Tr. 1, at 43-44). The Company indicated that WESRRC does not replace formal town review (*id.*).

to 1251).

The Company noted that the area along Monatiquot Street to the south of the water tank is currently under a long-term lease with BECo, and is not included in the Company's landscaping plans (Exh. WG-6-C (att.) fig. 3-13); Tr. 1252-1253). In response to the Company's inquiry, BECo stated that providing landscaping would be acceptable conceptually, but BECo wanted the right of approval with respect to any vegetation placed along the eastern portion of the site (Exh. EFSB-RR-81).

The Company proposed to plant a thirty-foot wide area of trees and vegetation along the southwestern edge of the property (Exh. EFSB-WG-6-C (att.) fig. 3-15). The Company proposed to plant only grass along the edge of the ACC facing the Fore River (*id.*). The Company asserted that it could not hide the facility from persons traveling on the Fore River, but that the plantings would frame the ACC (*id.* at 3-30; Exh. FRWA-V-9).

The Company proposed to landscape two public access areas, known as Lovell's Grove and King's Cove (Exh. EFSB-WG-6-C (att.) figs. 3-11 to 3-12).⁷⁶ At Lovell's Grove, along the western edge of the site, south of and adjacent to Route 3A, the Company proposed to provide a parking lot, a lawn, some trees/vegetation, and pathways along the edge of the Fore River for passive recreation (*id.* at 3-26, fig. 3-12). Sithe Edgar asserted that this area would be an attractive public access area, but it would provide little visual buffer for the views from across the river (Tr. 13, at 1247 to 1248).⁷⁷

The Company would also provide public access in the King's Cove area along the eastern edge of the northern portion of the site from Route 3A to the site of the proposed MWRA IPS station (Exh. EFSB-WG-6-C (att.) at 3-28, fig. 3-12). The Company proposed trees, a pathway, a lookout, and informal gathering spots along this area that overlooks King's Cove and the Fore River (*id.*). The Company asserted that this proposed public access area does not provide

⁷⁶ For further discussion of the public access areas, see Section III. K. below.

⁷⁷ In addition, Sithe Edgar proposed to plant scattered trees to the east of Lovell's Grove surrounding the facility and the proposed oil tank (Exh. EFSB-WG-6-C (att.) at 3-30, fig. 3-14).

significant visual screening opportunities (Tr. 13, at 1249-1250).

The Company stated that the proposed facility would be white with a blue stripe around the perimeter and asserted that the white would blend in with the horizon (Exh. EFSB-WG-6-C (att.) at 5.3-1). The Company depicted the ACC as suspended in the air with small support columns, but a photograph of a similar ACC displays a facility supported by an extensive bracing network (id. fig. 5.3-2; Exhs. EFSB-CT-7; SED-6). The Company testified that the ACC could either have smaller columns with bracing, or larger columns (Tr. 13, 1238-1239). The Company also indicated that it has entered into an agreement with Weymouth to repaint the oil tank on the northern portion of the site (Exh. EFSB-B-27).

The Company stated that the nearest scenic landscape listed in the Massachusetts Landscape Inventory is the Boston Harbor Islands (Exh. EFSB-V-10). The Company asserted that the proposed facility would not have an impact on this view, as the view is already a mixture of rural and industrial landscapes, and the proposed facility blends in with the existing view (id.).

Sithe Edgar stated that it would be willing to plant up to fifteen trees in the Monatiquot Street and Bluff Road neighborhoods at locations selected in consultation with the neighborhood (Exh. EFSB-V-31). Sithe Edgar asserted that planting trees at other receptors to screen the view of the proposed facility would also result in a reduced view of the Fore River (Exhs. id.; EFSB-V-9). The Company also noted that it was able to change the facility design so that it steps back the turbine building from the river (Exhs. EFSB-V-10; EFSB-V-26). The Company dismissed a number of other visual mitigation options including: screening the ACC, mitigating the appearance of existing structures, such as the peaking units and the oil tank,⁷⁸ moving structures on the site, and using murals or different colors of paint (Exhs. EFSB-V-12; EFSB-V-13; EFSB-V-14; EFSB-V-18; FRWA-V-9; FRWA-V-10; FRWA-ACC-4; FRWA-ACC-5; FRWA-ACC-6; FRWA-ACC-7; FRWA-ACC-8; W-V-1). Finally, the Company argued that surrounding the proposed transformers that are directly along the Fore River with walls would result in less efficient cooling and that engineering issues prevented relocating of the transformers (Exh.

⁷⁸ The Company has committed to refurbish the historic gatehouse as part of the MHC Memorandum of Understanding and to paint the northern oil tank as part of the settlement agreement with Weymouth (Exhs. EFSB-V-12; EFSB-B-23).

FRWA-V-10; Tr. 14, at 1284-1287).

Sithe Edgar also produced viewsheds at the 11 receptors of the proposed facility with OTC (Exh. SED-1 (figs. 4.4-3 to 4.4-15); EFSB-V-6-S (att.)).⁷⁹ The Company estimated that the proposed facility using OTC would have 40 percent less mass than the existing facility due primarily to the replacement of the ACC with a 55 by 50 by 30 foot high circulating water pumphouse (Exh. EFSB-V-5-S).⁸⁰ The Company asserted that, overall, the proposed facility using OTC would have more favorable visual impacts than the proposed facility using ACC, and expressed concern about the size of the ACC near a residential neighborhood (Exhs. EFSB-B-11 (app. H, at H-13); SED-1, at 1-28). Specifically, the Company asserted that the views from receptors 1, 3, 4-8, and 11 would be improved with the elimination of the ACC structure, while views from receptors 2, 9, and 10 would not be affected (Exh. EFSB-V-11-C).

2. Positions of Parties

The FRWA argued that the entire northern portion of the site, except the area being used permanently by MWRA, should be protected for public access in order to protect and enhance public views and the visual quality of the natural and built environment of the shoreline (FRWA Initial Brief at 2-3). FRWA asserted that the preservation of the northern shoreline would benefit neighboring residential areas, because the site juts into the Fore River and is easily visible from many areas (*id.* at 2; FRWA Reply Brief at 3). The FRWA also requested that the oil tank on the northern portion of the site be removed (FRWA Initial Brief at 2-3). FRWA argued that the Siting Board should condition approval on landscape construction documents that are sufficiently detailed and have large and substantial plantings between the facility and the river (FRWA Reply

⁷⁹ The Siting Board notes that at the time these photos were created, the proposed facility had a two-stack design, and the facility was represented as beige instead of white and blue.

⁸⁰ The Siting Board notes that the dimensions given for the other structures that are part of the proposed facility using OTC are different from those same structures which are part of the proposed facility using ACC because the proposed facility has changed over the course of the review.

Brief at 3).

In addition, the FRWA argued that the Company should place underground all power line facilities, or at minimum the powerlines supported by the two smallest towers near Smith Beach in Braintree (FRWA Initial Brief at 4-5; FRWA Reply Brief at 3). The FRWA asserted that the power lines are part of the proposed project's infrastructure and contended that the power lines have visual impacts on both the neighborhoods surrounding the Fore River and recreational users of the river (*id.*).

In response, Sithe Edgar argued that the disposition of the northern oil tank is outside the Siting Board's jurisdiction, because the oil tank is an existing structure entirely independent of the proposed facility (Company Reply Brief at 4). The Company asserted that the Siting Board has previously acknowledged that it has no jurisdiction over existing structures on parcels of land adjacent to the site of a proposed project (*id.*, citing Hearing Officer Procedural Ruling, EFSB 98-8, at 5 (February 23, 1999)). The Company stated that it has agreed to work cooperatively with the Town of Weymouth for a mutually agreeable plan for the reuse of the northern portion of the site after all construction activities are finished (*id.* at 12). The Company also asserted that the Siting Board does not have jurisdiction over the existing transmission lines since they are existing structures not owned by the Company (*id.* at 7-8). Furthermore, the Company noted that, pursuant to Sections 22D through 22N of Chapter 164 the Legislature has required municipalities, rather than utilities, to bear the cost of burying transmission lines (*id.* at n. 3).

3. Analysis

The record demonstrates that the Company analyzed the potential impacts of the proposed facility at eleven receptor locations in the surrounding area that were selected based upon land use, proximity, and unobstructed views. For each such receptor, the Company submitted a viewshed showing the current view from that location, and a second viewshed showing future views with the proposed facility.

The record shows that current views from the Monatiquot Street neighborhood are mostly of the existing facility. The record indicates that some views from Monatiquot Street and the King's Cove neighborhood, which is northeast of the proposed facility, would improve as a

result of the lower building heights and landscaping of the proposed facility. However, the record also indicates that, while it appears that existing trees screen the facility and the 6.3 million gallon oil tank from the northeast and east,⁸¹ the stack would be clearly visible to the residential communities to the northeast and east, including residents on Bluff Road in the Monatiquot Street neighborhood. To minimize impacts of the proposed facility at the closest residences, which are in the Monatiquot Street neighborhood, the Company stated that it would (1) provide 15 tree plantings, (2) create a mixed evergreen and deciduous buffer area between the proposed facility and the Monatiquot Street neighborhood, and (3) place most structures as far as possible from this neighborhood. The Company also has proposed to minimize the visual impacts of the proposed facility in the King's Cove neighborhood to the east/northeast of the site by (1) providing landscaping and public access along King's Cove which could soften and partially screen the facility, and (2) painting the northern oil tank pursuant to the Company's agreement with Weymouth.

The Company has expressed a willingness to implement certain visual mitigation measures as outlined above. However, the Siting Board notes that to the east in the Monatiquot Street neighborhood, the facility's mass and the stack would be clearly visible to nearby residents. Further, the screening of other facility structures is highly dependant on existing and proposed vegetation. Although the Company has offered to plant 15 trees in this neighborhood, it is not clear from the record that this number would minimize visual impacts. In recent reviews, the Siting Board has required proponents of generating facilities to provide selective tree plantings and other reasonable mitigation in residential areas up to one mile from the proposed stack location to mitigate the visibility of the facility and the associated stack. IDC Bellingham Decision, EFSB 97-5, at 64-65; Sithe Mystic Decision, EFSB 98-8, at 49-50. This requirement is appropriate here to further minimize visual impacts in the close-lying Monatiquot Street neighborhood. Therefore, the Siting Board directs the Company to provide reasonable off-site mitigation of visual impacts, including shrubs, trees, window awnings or other mutually

⁸¹ The record indicates that the Company may be able to retain some of the existing trees in this direction.

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 to the east of the proposed site, extending to and including the residential properties on Bluff Road, as requested by individual property owners or appropriate municipal officials.⁸²

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 Weymouth, and to all potentially affected property owners in the residential areas east 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 of plantings, as necessary, to ensure that healthy plantings become established.

Further, we note that the Company has stated that it would provide on-site tree plantings to help minimize visual impacts to the east. With respect to all on-site plantings done by the Company, and especially the landscaped area located to the east of the facility footprint, useful screening is dependent upon mature trees that can effectively screen the facility, because smaller trees (under 10 feet) would only provide minimal screening until they are mature. Consequently, the Siting Board requires that the Company's tree plantings around the proposed site, especially plantings to the east, include a sufficient number of 20 foot trees to create some immediate

⁸² The Siting Board notes that the record indicates that plantings at any neighborhood across the River would not necessarily provide substantial mitigation of the view of the proposed facility, and might interfere with the views of the river itself. In addition, the Siting Board notes that, to require the facility to provide mitigation within one-mile of the proposed facility, would not necessarily result in a reduced visual impact consistent with minimizing cost, because the record indicates that a one mile radius encompasses thousands of homes.

screening of the facility after it is constructed.

The record demonstrates that although the site does not contain extensive existing vegetation, the existing on-site vegetation would contribute to screening the proposed facility from residential neighborhoods to the east. Further, the Company has indicated that it would attempt to save existing trees, but that during construction trees on the eastern portion of the property would be more easily saved than those trees on the western portion. Therefore, to help ensure that screening benefits from the existing on-site vegetation are not lost, the Siting Board requires the Company to replant any existing trees in the area bounded approximately by Route 3A, the western edge of the existing 3.4 million gallon oil tank, Monatiquot Street, and the Town of Weymouth Water Tank, that are 16 feet or higher and removed for construction of the proposed facility, with trees that are between 16 to 20 feet high. Based on the record, this is the area closest to residences on the east and the area where the Company is most likely to be able to save trees.⁸³

The record demonstrates that the proposed facility would be sited adjacent to the Fore River on the western side of the site, with no existing or proposed visual buffer from the river and the largely industrial areas on the opposite shore. To provide some mitigation of visual impacts of the proposed facility on river users and areas to the west, the Company would step back the proposed facility so that some smaller structures are closer to the river, and would frame the view of the proposed facility by placing areas of landscaping on either side of the facility.

The record demonstrates that north and northwest of the proposed site there would be visual impacts to the residential areas in Quincy because the proposed 255 foot stack would be more visually intrusive than the existing facility. Further, the record indicates that because of the stack height, there could be significant visual impacts to river uses to the north and northwest of the proposed facility. The Siting Board therefore requires the Company to provide landscaping

⁸³ The Siting Board recognizes that the MWRA and MHD will be using the proposed site for construction, and therefore requests the applicant to work with MWRA and MHD to adhere to the goal of retaining or replanting as many 20 foot or higher trees as feasible.

that will provide vegetative screening and shoreline restoration and improvements⁸⁴ along the northwestern shoreline of the northern portion of the proposed site which would serve as a continuation of the proposed King's Cove area.⁸⁵ This landscaping along the northwestern shoreline shall be designed to minimize the visual impacts of the proposed facility on residential areas to the northwest and north and recreationists on the Fore River and Town River Bay consistent with maintaining the potential for future use of the northern portion of the site. As discussed in Section, III.K, below, the Company has entered into an agreement with the Town of Weymouth to work cooperatively toward a mutually agreeable plan for the future development or use of the northern portion of the site. The Siting Board recognizes that the use of the northern portion has not yet been determined, and consequently requires the minimization of visual impacts as described above to be maintained, in the form established or an equivalent, on the northern portion of the site for the life of the operation of the proposed facility, regardless of future use or ownership of the northern portion of the site.

The record demonstrates that to the south of the proposed facility, river users and certain residential neighborhoods would have a view of the ACC and the existing BECo transmission towers and associated transmission lines. The record shows that the Company has initiated discussions with BECo concerning the landscaping of the southeastern and southern portions of the site. Further, the Company stated that to screen the facility slightly from the river and from the residential areas, the Company would provide limited landscaping along the southwestern side of the site.

The FRWA has raised concerns related to the visual impact of BECo's existing transmission lines, which extend from the site over the Fore River, and about safety issues related to recreational boating on the river. To resolve such visual and safety issues, FRWA argues that the transmission lines should be relocated underground in conjunction with the

⁸⁴ As stated in Section III. D, above, the Siting Board encourages the Company to pursue wetland restoration on the site.

⁸⁵ The Siting Board notes that the Company is required under a NPDES Stormwater Permit for Construction to stabilize and replant all areas after construction is complete.

interconnection of the proposed project. The record indicates that at least some of the transmission lines crossing the Fore River would carry power from the proposed project, and would be subject to changes in power flow with operation of the project to accommodate the project output. However, under the most likely interconnection scenario, only one line would likely be reconducted and no line would be rebuilt (see Section III. H, below).

We note that the BECo transmission lines are not ancillary facilities within the scope of the Company's petition to the Siting Board for approval of its generating facility. Further, to the extent that some determination could be made in the future that BECo's transmission lines pose a safety concern, whether under applicable law or industry or company criteria, it presumably would be BECo's responsibility to address such concern. Similarly, any request that the transmission lines be relocated underground for aesthetic reasons is properly directed to BECo, rather than to the Siting Board.⁸⁶ Nonetheless, because the transmission lines extend from Sithe's Fore River Station property, we encourage the Company to participate in any discussions between BECo and FRWA, Weymouth or others concerned about the visual and safety impacts of these lines.

Concerning stack height, Sithe Edgar has proposed a single 255 foot dual flue stack. The Company did not conduct modeling analyses to determine whether the stack height could be reduced without significantly affecting air quality; however, it speculated that it could reduce the stack height by no more than five feet. An analysis of the viewsheds presented in this case suggests that because almost the full length of the stack above the plant would be visible from almost all viewpoints, reducing the stack height would be of limited benefit even for a reduction of up to 15 to 20 feet. Moreover, the record indicates that views of other stacks and the Goliath crane already exist in many viewsheds. Thus, the Siting Board finds that even a substantial reduction in stack height would not significantly reduce the visual impacts of the facility.

⁸⁶ We note that the cost of placing the existing transmission lines under the Fore River likely would be high, and it is unclear that relocation of the transmission lines underground would meet the Siting Board's mandate to minimize environmental impacts consistent with minimizing costs, even if the lines were ancillary and therefore jurisdictional.

Accordingly, the Siting Board finds that, with the implementation of the foregoing conditions, the environmental impacts of the proposed facility would be minimized with respect to visual impacts. In implementing the above conditions, the Siting Board requires the Company prior to commercial operation to submit to the Siting Board an updated landscaping plan for the entire site, addressing all the directives and conditions noted above as well as opportunities for wetland restorations as encouraged in Section III. D, above. facility is surrounded on three sides The Siting Board requires the Company to consult with the Town of Weymouth, parties in this case, and any appropriate state agencies in developing its landscaping plans.

G. Noise

This Section describes the proposed project's noise impacts, compliance with existing regulations, and mitigation proposed by the Company.

1. Description

The Company asserted that it had presented a comprehensive analysis of the noise impacts of the proposed facility consistent with Siting Board requirements (Company Initial Brief at 77, citing Exhs. SED-1, at 4.5-1 to 4.5-24; EFSB-WG-6-C (att.) at 5.2-1 to 5.2-17; EFSB A-1-S-2 (att.) at 7-1 to 7-33)). The Company further asserted that the proposed facility would meet applicable state and local noise regulations, and that its noise impacts would be minimized consistent with minimization of cost (Company Initial Brief at 77, 78, 85-86, citing Exhs. SED-1, at 4.5-4; EFSB-WG-6-C (att.) at 5.2-2, 5.2-9, 5.2-11; EFSB-RR-79 (att.)).

The Company stated that the calculated increases in off-site noise from operation of the proposed facility would be well below MDEP's limit of 10 decibels ("dBA") (MDEP Policy 90-001) at nearest residences, and would be at or below MDEP's 10 dBA limit at the project property lines (Exh. EFSB-WG-6-C (att.) at 5.2-11; EFSB-RR-79 (att.)).⁸⁷ The Company also

⁸⁷ 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. EFSB-A-
(continued...))

indicated that the off-site noise impacts from operation of the proposed facility (1) would be well below the ambient levels set forth in the Weymouth Health Code and (2) would be well within Braintree's limit of 60 dBA for noise in residential zones (Exhs. SED-1, at 4.5-4; EFSB-WG-6-C (att.) at 5.2-2, 5.2-4, 5.2-9, 5.2-11)).

To determine the noise impacts of the proposed facility, the Company provided analyses of existing noise levels in the vicinity of the proposed site and the expected changes in noise levels resulting from construction and operation of the proposed facility (Exhs. EFSB-WG-6-C (att.) at 5.2-2 to 5.2-17; EFSB- A-1-S-2 (att.) at 7-1 to 7-33; EFSB-RR-54 (att.)).⁸⁸ To establish existing background levels, the Company conducted surveys at eight noise measurement locations ("NML"), including seven NMLs selected to represent the nearest residences in various directions from the site, and one NML selected to represent the Lovell's Grove portion of the site adjacent to the river south of the Fore River Bridge (Exh. EFSB-WG-6-C (att.) at 5.2-2 to 5.2-11). For each off-site NML, the Company provided a set of noise measurements from 20-minute sampling periods, including daytime and nighttime periods on both weekdays and weekends (Exh. EFSB-B-11, at 5.2-5). The Company indicated that existing L_{90} levels at residences ranged from 40 to 48 dBA during the day and from 35 to 42 dBA at night (*id.* at 5.2-8 to 5.2-17).⁸⁹ At the closest residence on Monatiquot Street, near the eastern site boundary, the quietest existing L_{90} noise level was 48 dBA during the day and 41 dBA at night (*id.* at 5.2-11). For the on-site NML at Lovell's Grove, the Company provided noise measurements for 20-minute daytime periods, on a weekday and a weekend, and indicated that the quietest daytime L_{90} noise level was 55 dBA (*id.* at 5.2-18). The Company indicated that the principal sources of

⁸⁷ (...continued)
1-S-2 (att.) at 7-1).

⁸⁸ The Company indicated that, generally, an increase of 3 dB is considered the minimum increase that is noticeable in a typical residential community environment (Exh. EFSB-B-11, app. J at J-3).

⁸⁹ The Company indicated that there are various measures of noise, and that L_{90} noise is the sound level that is exceeded 90 percent of the time during the measurement period (Exh. EFSB-A-1-S-2 (att.) at 7-3). The Company explained that L_{90} noise is a measure of residual noise that is observed in the absence of louder, transient noises (*id.*).

noise on and around the site included traffic on Route 3A and other local roads, industrial activities around the Fore River harbor, boat engines and horns, and the BECo transformer located on the southern portion of the site (*id.* at 5.2-8; Tr. 7, at 693-702).

To analyze the noise impacts of facility operation, the Company estimated daytime and nighttime facility noise and combined background and facility noise for six residential receptors and three on-site or property line receptors (Exh. EFSB-WG-6-C (att.) at 5.2-1 to 5.2-17). The Company indicated that its noise impact analysis reflected predicted attenuation of facility noise with distance from the source, due to geometric spreading and atmospheric absorption (Exh. EFSB-B-11(app. J at J-8 to J-9)). The Company added that its analysis did not reflect other transient factors that may be present and serve to attenuate noise impacts at receptor locations, such as ground absorption, wind and temperature gradient effects, and that therefore actual facility noise impacts may be less than estimated (*id.*).

Based on its noise impact analysis, the Company indicated that with operation of the proposed facility, L_{90} noise at the nearest residential receptor on Monatiquot Street would increase by 2 dBA to a level of 50 dBA during the day, and by 6 dBA to a level of 47 dBA at night (Exh. EFSB-A-1-S-2 (att.) at 7-23 (app. A)). In response to concerns of neighbors about the wider noise impact of the proposed facility in the built-up residential area extending east from Monatiquot Street, the Company provided additional analyses indicating that nighttime L_{90} noise increases would be between 3 dBA and 6 dBA for residential areas east of the site within a radius of approximately 1400 feet of the ACC (Exh. EFSB-RR-76 (att.)).⁹⁰ For all of the other residential receptors in other neighborhoods, the Company indicated that with operation of the proposed facility, L_{90} noise levels would increase by from zero to 1 dBA during the day and by 1 dBA at night (Exh. EFSB-A-1-S-2 (att.) at 7-23 (app. A)).

For the on-site and property line receptors, the Company indicated that with operation of the proposed facility: (1) L_{90} noise on the eastern site boundary, fronting on Monatiquot Street,

⁹⁰ The limit of the identified impact zone would extend in an arc from the bank of the Fore River approximately 600 feet east of Monatiquot Street to the north side of Route 3A just east of the site boundary on King's Cove, encompassing an area of approximately 45 to 50 residences (Exh. EFSB RR-76 (att.)).

would increase by 3 dBA to a level of 51 dBA during the day and by 7 dBA to a level of 48 dBA at night; (2) L_{90} noise in the Fore River southwest of the proposed oil unloading dock, 200 feet from the ACC, would increase by 9 dBA to a level of 57 dBA during the day and by 16 dBA to a level of 57 dBA at night; and (3) daytime L_{90} noise at the on-site receptor at Lovell's Grove would increase by 1 dBA to a level of 56 dBA (*id.*; Exhs. EFSB-N-41; EFSB-RR-52; Tr. 12, at 1195-1203). With respect to the estimated noise increases of up to 16 dBA in the Fore River near the oil unloading dock, the Company stated that its western property boundary extends to the extreme low water line shown in the Land Court plan attached to its deed, located near the middle of the river (Exh. EFSB-RR-78). The Company estimated that at the middle of the Fore River, approximately 500 feet from the ACC, the maximum increase in nighttime L_{90} noise would be 10 dBA (Exh. EFSB-RR-79).⁹¹

The Company also provided estimated day-night sound levels (" L_{dn} "),⁹² with and without the proposed facility, for residential receptors and NMLs (Exh. EFSB-N-19-S). The Company indicated that the existing L_{dn} level is 56 dBA, exceeding the USEPA guideline of 55 dBA, at one NML, near King's Cove, and ranges from 51 dBA to 55 dBA at the other residential NMLs (*id.*). The Company indicated that with operation of the proposed facility, L_{dn} noise at the nearest

⁹¹ Regarding MDEP's 10 dBA limit, the Company asserted that even if the estimated project noise impact exceeded the limit at the identified project boundary in the Fore River, it expected that MDEP would consider the Fore River to be a right of way which is not noise-sensitive, and that therefore MDEP would not apply the limit at the in-river boundary but would instead apply the limit at the nearest inhabited building on the far bank (Company Initial Brief at 84, *citing* Tr. 12, at 1201). In support of its expectation, the Company stated that when a project property line fronts on a road right of way, MDEP applies the 10 dBA limit on the opposite side of the road (*id.*). The Company also argued that, to the extent there may be boating uses in areas that could be affected by project noise impacts, such impacts would be temporary and insignificant, and not a relevant issue for review by MDEP or the Siting Board (*id.* at 83-85, *citing* Tr. 12, at 1187-1193, 1200).

⁹² USEPA has identified an outdoor L_{dn} of less than or equal to 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-N-1, 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. (*id.* at 13).

residence, on Monatiquot Street, would increase from 53 dBA to 56 dBA, but L_{dn} noise at all other residential receptors would be unchanged (*id.*).

To achieve its noise control targets, Sithe Edgar indicated that it would implement a combination of the following noise mitigation measures or an equivalent: (1) integration of the closed water cooling system into the ACC with quieter fans; (2) maximum silencing of the ACC and closed water cooling system, through reduction of fan speed, addition of more blades of quieter aerodynamic design, and expansion of the ACC's size; (3) enclosure of the combustion turbines and HRSGs in acoustically designed buildings with silencers for the air intakes and exhaust stacks; (4) use of built-in sound barriers in main power transformers; (5) enclosure of most noise producing equipment inside acoustically designed buildings with acoustical insulation of turbine walls and roof; (6) use of acoustical ventilation louvers and duct silencing; and (7) use of acoustical lagging over the breeching to one stack (Exhs. EFSB-A-1-S-2 (att.) at 7-27 to 7-28; EFSB-N-40).⁹³ In addition, to help minimize noise at the nearest residences on Monatiquot Street, the Company stated the proposed location of the facility footprint is at the western side of the site, and the proposed layout includes placement of noisy equipment on the western side of facility buildings (Tr. 1, at 75-77; Tr. 7, at 703-704).⁹⁴

As part of its PSD/NSR Air Plans Application, Sithe Edgar provided two alternatives for additional noise mitigation: (1) installation of a 110 foot high, 500-foot long barrier along the eastern side of the ACC, reducing the maximum expected increase in L_{90} noise at the nearest residences from 6 dBA to 3 dBA at an additional cost of \$4,703,000 ("Alternative 1"); and

⁹³ The agreement between Sithe and Weymouth provides that Sithe: (1) will meet all noise limits under applicable operating permits and governmental regulations; (2) will incorporate the noise mitigation accepted by MDEP as best available noise control technology; (3) will operate the facility so as to not cause a L_{90} noise increase of greater than 6 dBA at any residence after commencement of commercial operation; and (4) will comply with the applicable MDEP noise monitoring protocol and forward the results of such monitoring to Weymouth (Exh. EFSB-B-27).

⁹⁴ Under the proposed layout, the new facility footprint would come to within approximately 500 feet of the nearest residence, while the loudest source of noise – the ACC – would be at a distance of 800 feet from the nearest residence (Exh. EFSB-A-1-S-2 (att.) app. A at figure 2.1-3).

(2) installation of the barrier in Alternative 1 plus a 75-foot high, 1000-foot long barrier along the eastern property line, reducing the maximum expected increase in L_{90} noise at the nearest residences from 6 dBA to 1 dBA at an additional cost of \$6,980,000 ("Alternative 2") (Exh. EFSB A-1-S-2 (att.) at 7-26, 7-29 to 7-33). The Company asserted that both alternatives for additional noise mitigation would be infeasible, and that it was unable to identify other alternatives that would provide the identified levels of noise reduction and be feasible (*id.* at 7-29 to 7-32). The Company explained that a barrier along the ACC would be excessively costly, produce off-site visual impacts and restrict air circulation under the ACC units, while a barrier along the eastern property line would be excessively costly and unsightly and conflict with expected on-site activities of BECo and MWRA (*id.*).

With respect to construction noise, Sithe Edgar estimated varying noise impacts at the nearest residence, on Monatiquot Street, for different construction activity stages, including: (1) equivalent sound (" L_{eq} ") levels of from 58 dBA to 65 dBA during the ground clearing, foundation and erection stages; (2) an L_{eq} level of 69 dBA during the excavation and finishing stages; and (3) a peak sound level of 82 dBA during pile driving (*id.* at 7-23 to 7-26). In addition, the Company stated that it expects noise impacts from periodic steam or air blows during the final stages of construction, but noted that such impacts would not exceed the applicable local limits of 20 dBA above ambient levels in Weymouth and 50 to 60 dBA in portions of Braintree (*id.* at 7-26; Exh. EFSB-N-20).

To mitigate construction noise impacts, the Company stated that the noisiest construction activities, particularly pile driving and steam blows, would be limited to daytime hours (Exh. EFSB-N-20; Tr. 7, at 769). In addition, the Company as feasible: (1) would locate noisy equipment at the maximum distance from sensitive areas; (2) would use the quietest types of equipment, for example electric-powered equipment rather than diesel- or air-powered equipment; (3) would use and maintain appropriate muffling on all equipment; (4) would turn off idling equipment; and (5) would use muffling for steam blows (Exhs. EFSB-N-2; EFSB-N-20). Finally, Sithe Edgar agreed to develop, with Weymouth, a comprehensive construction protocol (Exh. EFSB-WG-6-C (att.) at 8-32).

The Company also submitted information concerning the projected noise impacts of the

proposed facility with OTC rather than ACC (Exh. EFSB-B-11, at 5.2-1 to 5.2-28). The Company asserted that its proposed use of ACC considerably increases the projected noise impacts of the proposed facility (id. at 4-28 to 4-29). Based on its noise impact analysis, the Company stated that without ACC, the operation of the proposed facility would increase L_{90} noise at the nearest residential receptor on Monatiquot Street by only 1 dBA to a level of 49 dBA during the day, and by 3 dBA to a level of 44 dBA at night (id. at 5.2-28). The Company provided a map depicting the approximate radius of a 3dBA increase, an area which includes one to two residences (Exh. EFSB-RR-76 (att.)). For all of the other residential receptors in other neighborhoods, the Company indicated that operation of the proposed facility with OTC would increase L_{90} noise levels by from 0 to 1 dBA during the day and from 1 to 3 dBA during the night (Exh. EFSB-B-11, at 5.2-28). Sithe estimated that at the nearest residential receptor, the L_{dn} noise would increase from 52 to 53 dBA (Exh. EFSB-N-19). However, Sithe testified that construction noise impacts with OTC would be slightly greater than those with ACC, as a result of a greater amount of pile driving activity (Tr. 7, at 758-761).

2. Analysis

In prior 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. IDC Bellingham Decision, EFSB 97-5, at 76; Mystic Decision, EFSB 98-8, at 54; 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. IDC Bellingham Decision, EFSB 97-5, at 76; Mystic Decision, EFSB 98-8, at 54; Northeast Energy Associates, 16 DOMSC 335, at 402-403 (1987) ("NEA Decision").

The record demonstrates that the existing L_{90} nighttime noise levels at the residential NMLs range from 35 to 42 dBA, and that the existing day-night noise levels at the residential NMLs approach, and in one case slightly exceed, the 55 dBA guideline identified by USEPA as the level requisite to protect public health and welfare with an adequate margin of safety. Although located in a DPA opposite a heavily industrialized riverfront area, the proposed site

presents ambient noise conditions, including L_{90} and L_{dn} noise levels in surrounding residential areas, that are generally similar to or slightly louder than those identified in several earlier Siting Board reviews of generating facilities proposed for sites in mixed land-use areas, but at inland locations. See IDC Bellingham Decision, EFSB 97-5, at 65-79; ANP Bellingham Decision, EFSB 97-1, at 130-144; Berkshire Power Decision, 4 DOMSC at 396-406; NEA Decision, 16 DOMSC at 401-403.

The record further shows that the Company has committed to limiting the noise impacts of the proposed facility to no more than 6 dBA at residential receptors in the vicinity of the proposed facility. The proposed maximum residential L_{90} noise increase of 6 dBA is comparable to or slightly less than proposed maximum residential increases accepted in past Siting Board reviews with similar existing noise environments, increases ranging from 7 to 8 dBA. See ANP Bellingham Decision, EFSB 97-1, at 130-144; Berkshire Power Decision, 4 DOMSC at 396-406; NEA Decision, 16 DOMSC at 401-403.

Although expected to experience a maximum noise impact that compares favorably with earlier Siting Board reviews involving similar noise environments, the nearest residential neighborhood to the proposed site includes numerous residences in an approximately 600-foot band for which noise impacts would be noticeable, *i.e.*, increases of between 3 and 6 dBA. The record indicates that, in order to hold noise increases at the nearest residences to the target level of 6 dBA, the Company will need to incorporate all practical noise mitigation for its loudest source, the ACC. The only identified method of further reducing noise impacts from the ACC, sound barriers, would be impractical based on the requisite dimensions of such barriers and the associated cost and visual impact.

Although the record indicates that Site Edgar will be required by MDEP to conduct compliance noise monitoring after the facility begins operation, such monitoring typically involves only the first year of operation. We note that the settlement between Weymouth and the Company is premised on the Company holding noise impacts to the levels set forth in the record. Given the proximity and extent of the residential neighborhood to the east of the proposed facility, and the extent of noise mitigation necessary to attain the Company's noise target, additional verification of the facility's compliance with identified noise targets over time is

appropriate.

Therefore, to help ensure that the noise impacts of the proposed facility are as estimated, the Siting Board directs the Company, in consultation with Weymouth and MDEP, to develop a noise monitoring protocol and baseline noise measurements, taken on a schedule chosen in consultation with MDEP and Weymouth, that allow for the implementation of an ongoing periodic noise monitoring program to begin within six months of the commencement of commercial operation, and a reporting procedure that provides for dissemination of monitoring results to Weymouth and/or the community areas that are affected by L_{90} noise increases from the facility of 3 dBA or more. The Company shall submit a copy of the noise compliance monitoring protocol to the Siting Board prior to commercial operation. In the process of developing this protocol the Company should provide to other intervenors in this proceeding an opportunity to comment on their proposed protocol.

With respect to construction noise impacts, the Siting Board agrees that adherence to the construction site practices proposed by the Company or set forth in its agreement with Weymouth, including provisions regarding use of machinery and mitigation of steam release events, would help minimize construction-related noise impacts. The Siting Board notes that such practices are consistent with approaches to construction noise mitigation that we have reviewed in recent generating facility cases.

We also note that the nearest residence is located within approximately 500 feet of the new facility footprint and within 700 to 800 feet of principal facility buildings including the ACC and the turbine buildings. Additionally, 45 to 50 residences are located within approximately 1100 feet of the new facility footprint. Given the proximity of a sizable residential area, the estimated residential area noise impacts of up to 69 dBA during excavation and finishing and a peak of 82 dBA during pile driving, and possible additional noise from the MWRA and MHD projects, neighborhood concerns relating to construction noise impacts could arise.

We recognize that the Company would limit construction, particularly noisiest construction, to daytime hours, and also would work with Weymouth to develop a construction protocol. While the protocol should provide a means to clarify the Company's commitments and

help ensure that communication is maintained with the community as construction proceeds, the Siting Board is concerned that measures beyond those identified in the record may be warranted to adequately minimize construction impacts, such as avoiding certain types of construction during early evening and weekend periods as well as at night, using temporary noise barriers or other methods to further reduce construction noise impacts, and providing advance notice of noisy construction activities.

The Siting Board therefore requires that the Company develop and provide to the Siting Board a plan for noise mitigation during construction, consistent with the noise protocol developed with Weymouth, that includes provisions to limit noisier construction during evening and weekend hours consistent with safe construction practices, and to use on an as-needed basis measures to further mitigate impacts of noisy activities on the community, such as temporary noise barriers and advance community notification procedures.

Accordingly, the Siting Board finds that, with the implementation of the above conditions, the noise impacts of the proposed facility would be minimized.

H. Safety

This section describes the safety impacts of the proposed facility with regard to materials handling and storage, barge deliveries of oil, fogging and icing, emergency response, and existing hazardous conditions.

The Company indicated that it would enclose the portions of the site used for the proposed facility with a security fence, employ 24 hour security personnel, and restrict visitor access to the facility (Exhs. EFSB-S-10; EFSB-S-19). The Company also stated that it would separate public access areas from the proposed facility with fencing and would not allow any public access to the entire site until all construction projects, including the MWRA and MHD projects, are complete (Exhs. EFSB-S-19; WG-6-C (att.) at 3-33)).

The Company stated that the Algonquin pipeline serving the facility would be constructed, operated, and maintained in accordance with federal pipeline safety codes (Exh.

FRWA-M-2).⁹⁵

1. Materials Handling and Storage

The Company indicated that it would store # 2 distillate oil in a nominal 6.3 (5.65 operating) million gallon tank located on the southern portion of the site (Exh. WG-6-C (att.) at 5.10-1). Site Edgar stated that the oil tank is surrounded by an earthen berm that is partially impervious to oil, which could hold 110 percent of the volume of the tank (id. (att.) at 5.10-1); Exh. EFSB-RR-40; Tr. 6, at 568). The Company stated that it would need a permit from the state Fire Marshall and a Flammable Storage Permit from Weymouth in order to store fuel above ground (Exh. EFSB-B-20-S).

The Company stated that it would take the following measures in order to ensure that a spill would not occur during oil delivery: (1) the transfer process would be fully staffed and monitored; (2) all unloading systems would be equipped with fast-action shut-off valves and drip collection mechanisms; (3) an oil absorbing boom would be installed around the entire barge upon docking; (4) advance notice would be given to a spill control contractor; and (5) a complete listing of all applicable equipment, procedures, and responsible parties would be available (Exhs. EFSB-B-11, at 5.13-2; EFSB-S-2 (att. a); Tr. 6, at 585). The Company also explained that the existing truck delivery area is equipped with a containment area to control spills and that oil delivery trucks would follow the community-established truck route from Rt. 3 (see Traffic Section III.I, above) (Exh. EFSB-S-16; Tr. 6, at 625).

Site Edgar stated that the facility would include a 90,000 gallon double-walled aqueous ammonia storage tank located directly east of the turbine building (Exh. EFSB-WG-6-C (att.) at 5-10-3 (fig. 2-2)). The Company stated that the tank would be equipped with leak detection, a level gauge, an alarm system, and an ammonia vapor treatment system, and would be surrounded by concrete berms or fencing to prevent accidents (Exh. EFSB-A-1-S (att.) at 6-26). The Company stated that 19 percent ammonia would be delivered by 5,500 to 6,700 gallon tanker trucks (Exhs. EFSB-WG-6-C (att.) at 5.10-3); EFSB-B-11, at 5.13-4). The Company estimated

⁹⁵ U.S. Department of Transportation, 49 CFR Part 192.

that it generally would use four to eight ammonia truck deliveries per week (Exhs. EFSB-WG-6-C (att.) at 5.10-3)). Sithe Edgar indicated that it would provide a bermed truck unloading area for the ammonia truck, heavy duty hoses, and automatic shut-off valves (*id.* (att.) at 5.10-4); Exh. EFSB-B-11, at 5.13-5; Tr. 6, at 652-653).

Sithe Edgar performed modeling of a worst case release (100 percent of volume) of ammonia using USEPA guidance techniques (Exh. EFSB-B-11, at 5.13-5 to 5.13-7).⁹⁶ The Company stated that the model produced ammonia concentrations of 31 parts per million ("ppm") at the closest fenceline and 29.5 ppm at the closest property line, well below the toxic endpoint of 200 ppm (*id.* at 5.13-8; Exh. EFSB-A-1-S (att.) at 6-26-27)).⁹⁷

Sithe Edgar provided a list of ten other chemicals that would be stored on site, which it indicated would be used primarily for treating process water (Exhs. EFSB-WG-6-C (att.) (tab. 5.10-1); EFSB-S-6). The Company indicated that these chemicals would be stored in tanks surrounded by spill containment structures sized to hold 110 percent of tank volume, and would be enclosed within the building where they would be used (Exhs. EFSB-S-6; EFSB-S-5; Tr. 6, at 628-631). The Company stated that the proposed facility with ACC would use a slightly smaller amount of chemicals than the proposed facility using OTC (Exhs. EFSB-S-21; EFSB-S-23). The Company indicated that the frequency of deliveries for various chemicals would range from once a week to once every six months (Exhs. EFSB-S-6; EFSB-S-15). Sithe Edgar stated that it would ensure that a reputable supplier that meets federal safety and training requirements would be chosen for deliveries (Exh. EFSB-S-16). The Company stated that the chemical unloading areas would be designed to provide containment of spills (Exh. EFSB- B-11, at 5.13-10).

Sithe Edgar stated that all plant staff would receive annual hazardous material

⁹⁶ The Company stated that it modeled the "worst case" assuming a full leak of the inner wall of the tank and a failure of the tank's ventilation system, which would result in a release of ammonia from a four inch ventilation hole (Exh. EFSB-A-1-S (att.) at 6-26).

⁹⁷ The toxic endpoint value, as established by the American Industrial Hygiene Association based on USEPA's Emergency Response Planning Guidance 2, is the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without sustaining serious or irreversible health impacts symptoms that could impair the individual's ability to take protective action (Exh. EFSB-S-18).

communication and hazardous material handling training, and that the Company would employ a Chemistry/ Environmental Technician to coordinate the handling and transport of materials (Exh. FRWA-SY-2). Furthermore, Sithe Edgar explained that it is required, under the WPA's Stormwater Guidelines, to provide a stormwater management system designed for industrial facilities, which includes the lining of detention ponds, containment areas with oil dispensation areas, and over flow/spill containment tanks to prevent hazardous materials from entering the stormwater system (Exh. EFSB-WG-6-C (att.) at 5.4-15); Tr. 6, at 665-666).

2. Barge Deliveries of Oil

The Company stated that the primary means of distillate fuel oil delivery would be by ocean-going tank barges ("tankers") (Exhs. EFSB-B-11, at 5.13-1). The record indicates that the site is located in a DPA with existing barge traffic and a well-dredged navigational route (Exh. EFSB-WG-6-C (att.) at 2-29, 3-4)). The Company indicated that each tanker would hold a maximum of four million gallons of oil and that two barge deliveries per week would be required in order to run the facility on oil at full load operation (Exhs. EFSB-WG-6-C (att.) at 5.10-1); FRWA-S-20). Sithe Edgar stated that it would be required to produce a Facility Response Plan in accordance with USCG regulations prior to the handling, transport, or storage of any oil (33 CFR Section 154.1010) (Exhs. SED-1, at 4.7-2; EFSB-S-2). The Company indicated that each oil delivery barge must also have a USCG approved Vessel Response Plan and that the barge must be manned by USCG certified personnel (Exh. SED-1, at 4.7-2). The Company also stated that it would schedule all barge deliveries in advance and would not deliver oil during unsafe conditions (high waves or strong winds) (*id.*; Exh. EFSB-S-3).

The Company stated that it evaluated two potential locations for a docking facility, one south and one north of the Fore River Bridge, and decided to locate the docking facility in the southern portion, directly west of the main turbine building (Exhs. EFSB-B-1-S-2; EFSB-B-1-S; EFSB-B-10 (att. A); EFSB-S-12; EFSB-S-11). The Company stated that it chose to site the facility at this location because: (1) the use of a docking facility on the northern portion would interfere with MWRA construction activities; (2) the southern location is a shorter distance to the oil tank; and (3) the southern location is more proximate to security and other personnel (Exhs.

EFSB-S-1; EFSB-S-11; Tr. 6, at 592-593). In its comments on the DEIR, the ACOE indicated that it would review, under a Section 10 permit, the safety of the barge delivery location with respect to navigational issues (Exhs. EFSB-B-20; EFSB-RR-73 (att. a)).

3. Fogging and Icing

The Company testified that the proposed facility using ACC would not have fogging or icing problems (see Section III. E., above) (Tr. 14, at 1357-1358).

4. Emergency Response

Sithe Edgar stated that, within six months after operation of the proposed facility commences, it would be required by USEPA to submit a Spill Prevention Control and Countermeasure Plan ("SPCC Plan"), which would address the storage and handling of oil and other hazardous chemicals (Exhs. EFSB-S-2; SED-1, at 4.7-2; Tr. 6, at 598). The Company stated that this plan would include a detailed description of all facilities, routine operations, and measures taken during an emergency, as well as applicable emergency supplies and contact lists (Tr. 6, at 599-600). Sithe Edgar stated that it has two other waterfront plants with updated and approved SPCC plans, which it will use to create Fore River Station's SPCC Plan (id. at 600, 612). Comments on the FEIR indicated that Weymouth has concerns about the adequacy of Sithe Edgar's emergency and spill response plans during construction (Exhs. EFSB-RR-73). The Company indicated that it would work with the Town to resolve the problems (Exh. EFSB-WG-6-C (att.. at 8-34 to 8-35)).

The Company indicated that the site would have an extensive fire prevention and suppression system including a 300,000 gallon water storage tank, fire pumps, hydrants around the proposed facility footprint, fire detectors, a central alarm system, a sprinkler system, a CO₂ fire suppression system for the turbines, and a foam suppression system for the oil tank (Tr. 6, at 662-667, 679). The Company stated that there is a standard cooperative agreement for mutual aid among the Braintree, Weymouth, and Quincy Fire and Police Departments, but that none of the towns has an evacuation plan specific to the Fore River area (Exhs. EFSB-RR-43; EFSB-RR-46). The Company noted that Weymouth would be responsible for the first response to an

emergency at the proposed site (Exh. EFSB-RR-46; Tr. 6, at 665-666). The Company stated that Weymouth had indicated that it has adequate fire fighting capability for emergencies that could occur at the proposed Fore River station (Exh. EFSB-RR-46; Tr. 6, at 665-666). The record also indicates that Sithe Edgar will be providing \$150,000 to the Town of Weymouth Fire Department to contribute to the costs of safety training and equipment (Exh. EFSB-B-27).

5. Existing Hazardous Conditions

Sithe Edgar indicated that the Fore River Station site historically has been used for coal- and oil-fired electric generation, and that this long-term use has resulted in the presence of hazardous substances on portions of the property (Exh SED-1, at 4.8-1). Specifically, Sithe indicated that four separate studies conducted between 1991 and 1997 identified a total of ten Recognized Environmental Conditions ("RECs")⁹⁸ at the Fore River Station site (*id.*; Exh. EFSB-B-11, at 5.12-1 to 5.12-7).

Sithe Edgar indicated that at least three of the ten RECs had been investigated and found to pose no significant risk (Exh. EFSB B-11, at 5.12-1 to 5.12-7).⁹⁹ Two additional RECs have been remediated¹⁰⁰ by the Company or another responsible party, and two further RECs are being addressed by BECo, as the responsible party (Exhs. EFSB-HS-1; EFSB-HS-1-S; EFSB-HS-2-

⁹⁸ The Company stated that the RECs "reflect past and current activities at the site, prior investigations, and ongoing actions under the Massachusetts Contingency Plan to address reported areas of contamination" (Exh. SED-1, at 4.8-2).

⁹⁹ The Company stated that REC No. 1 (closed underground storage tanks), REC No. 5a (the area of the proposed powerblock), and REC No. 6 (the water in the turbine pits), had all been investigated, and no remediation was required to achieve a situation posing no significant risk (Exhs. EFSB-B-11, at 5.12-1 to 5.12-7; EFSB-HS-3; EFSB-HS-1-S).

¹⁰⁰ The Company explained that a Class A Response Action Outcome ("RAO") indicates that a permanent solution of no significant risk was achieved through remediation; a Class B RAO means that a permanent solution of no significant risk was achieved without the need for remediation; and a class C RAO is a temporary solution that poses no significant threat, is stabilized, and is monitored and reevaluated (Exh. EFSB-HS-1-S; Tr. 5, at 494-495, 499-500).

S).¹⁰¹

The Company stated that the King's Cove area, which had formerly been filled with coal ash and is one site of the Company's proposed public access, had already achieved site closure with a Class B Response Action Outcome ("RAO") in July of 1997; however, as a result of public concern, Sithe conducted its own risk assessment of the proposed public access area (Exhs. EFSB-HS-3-S; EFSB-WG-6-C; EFSB-HS-1-S). The Company stated that the study confirmed that the area posed no significant risk to the public or employees and that no activity use limitation was needed (Exhs. EFSB-HS-3-S; EFSB-WG-6-C; EFSB-HS-1-S).

The Company explained that a release of petroleum near the Route 3A overpass, REC No. 5c, was remediated and given a Class C RAO, because the bridge structures prevented full remediation (Exhs. EFSB-B-11, at 5.12-5; EFSB-HS-4; Tr. 5, at 501-502). The Company indicated that it would conduct a risk assessment study of REC No. 5c, which is near its proposed Lovell's Grove public access area, in order to determine if the area is safe for public access and whether a better solution could be achieved (Exhs. EFSB-B-1-R; EFSB-WG-6-C, at 5.9-2; Tr. 5, at 506). The Company indicated that one other contaminated area, REC No. 5d, was only able to achieve a Class C RAO during July 1999, due to the existing substation on the site which would need to be removed in order to complete remediation (Exh. EFSB-HS-2; Tr. 494-494).

¹⁰¹ The Company explained that REC No. 5a, the area of the existing and proposed power house, had achieved a Class B RAO. The Company indicated that it removed five cubic yards of oil-stained soil from REC No. 3 near the oil tanks on the southern portion of the site, and achieved a Class A RAO site closure in December 1998 (Exhs. EFSB-B-11, at 5.12-3; EFSB-HS-4). The Company stated that Sprague Oil Company, the former lessee of the oil tank on the northern portion of the site, released 2000 gallons of oil, which was designated REC No. 5e, promptly cleaned, and a Class A RAO was achieved (Exhs. EFSB-B-11, at 5.12-6; EFSB-HS-2; EFSB-HS-1-S). In addition, the Company indicated that a significant amount of oil was found beneath the transformers, REC No. 2, and that in January 1999, BECo, the responsible party, removed 700 cubic yards of contaminated soil (Exhs. EFSB-B-11, at 5.12-2; EFSB-HS-2). The Company indicated that BECo expects to achieve a Class A RAO by March 2000 at REC No. 2 and that Sithe will evaluate BECo's risk assessment to confirm that the area does not pose a significant risk to the Company's contractor (Exhs. EFSB-HS-1; EFSB-HS-2-S).

The Company indicated that it must demolish the old Edgar Station in order to construct the proposed facility, and thus it had started abating the asbestos in the Edgar building, REC No. 4, which it must complete prior to demolition (Exhs. EFSB-B-11, at 5.12-4; SED-1, at 4.8-3). The record indicates that since all the RECs have or will achieve a solution requiring no activity use limitation, the presence of hazardous substances would not affect the design or placement of structures (Exhs. EFSB-B-1-R; EFSB-HS-10; Tr. 5, at 519-520). The Company stated that its redevelopment of the site would improve the condition of the site with respect to hazardous substances, since it would be responsible under G. L. c. 21E to remediate releases of oil and hazardous materials (Exh. EFSB-HS-6). The Company explained that in the areas where BECo, MWRA, and MHD lease or have access rights to the property, Sithe has included provisions in each agreement requiring the lessee to notify the Company in the event of an environmental condition and to remediate any hazardous conditions that it creates as a result of its activities on the property (Tr. 5, at 529-532).

6. Transmission Lines Over the Fore River

The FRWA raised concerns regarding the safety of recreational boats passing under existing electric transmission lines which cross the Fore River at a number of locations, and submitted documents indicating that the mast height of some recreational boats may be higher than the clearance of some of the existing transmission lines (Exh. FRWA-5(atts.); FRWA Initial Brief at 4; FRWA Reply Brief at 3). The FRWA requests that all power lines along the Fore River shore line, or at a minimum, the lowest lines which cross the river adjacent to Braintree's Smith Beach, should be put underground for safety reasons (FRWA Initial Brief at 4; FRWA Reply Brief at 3).

In response to FRWA's request, Sithe Edgar contends that the Siting Board has no jurisdiction over the transmission lines, since they are not part of the proposed facility (Company Reply Brief at 2, 7). The Company asserted that the transmission line upgrades proposed to serve the proposed facility are limited to the reconductoring of lines at the same voltage within an existing ROW, and argued that the Siting Board's statute does not authorize it to review the reconductoring of transmission lines (Company Reply Brief at 7, citing G.L. c. 164 § 69G).

In addition, the Company argued that the transmission lines involved in a recent boating accident entailing a mast "represent a separate transmission interconnection between Braintree Electric Light Department's Potter Station and BECo's transmission line #478", and are unrelated to the Fore River Station project (Tr. 14, at 1335-1339, 1369; Company Reply Brief at 7-8).

7. Analysis

Sithe Edgar has demonstrated that it would properly store and handle aqueous ammonia and other non-fuel chemicals in accordance with applicable public safety standards and that it would have in place secondary or tertiary systems to contain chemical spills. The record shows that, in the event of a failure of the inner ammonia tank and ventilation system, the ammonia concentration at the closest property line and fence line would be 29.5 ppm and 31 ppm respectively, which is well below the 200 ppm guideline set by USEPA. The record also demonstrates that Sithe Edgar has arranged for the proper storage, use, and secondary containment of hazardous materials associated with the construction and operation of the proposed facility and that emergency supplies and training will be provided concerning the safe handling of those chemicals. The record demonstrates that the Company would employ measures to help ensure the safe transport and delivery of oil, including filing with the USEPA and the USCG all plans and procedures in the event of a spill. The Company intends to take measures to prevent spills and accidents, or in the event of a spill or accident, to respond and remediate quickly. The record further indicates that the Company has chosen a site for barge delivery that maximizes safety.

The record indicates that the municipalities of Braintree, Quincy, and Weymouth do not have emergency response plans for the Fore River area; however, the record also shows that the Town of Weymouth would be able to handle an emergency at the site, that Braintree and Quincy would be available for assistance, and that Sithe would provide funding to the Weymouth Fire Department to increase its ability to handle emergencies. The Siting Board also notes that the Company intends to develop emergency procedures and response plans similar to those found acceptable in previous Siting Board decisions. However, the Company has not yet developed

such plans. The Siting Board directs the Company to complete the construction section of its emergency response plan and file it with Weymouth, Braintree and Quincy before construction begins in order to cover possible contingencies related to construction accidents.

With respect to fogging and icing, the record contains no evidence that ground level fogging or icing would result from the operation of the proposed facility.

With respect to site clean-up and the existing presence of hazardous substances, the record shows that the existing site has been thoroughly assessed for the presence of hazardous materials. The Company has also demonstrated that all but four RECs have achieved a permanent solution under state regulations and that these RECs do not pose a significant threat to the public or to the environment. The Company further has demonstrated that all but two RECs for which Sithe Edgar is responsible have achieved a permanent solution under state regulations, and one other REC will achieve a permanent solution in the near future. The Company has shown that it has begun the abatement and demolition of the powerhouse, and that it intends to comply with all applicable regulations relating to asbestos removal. The Company also has taken precautions to ensure that the development and use of the proposed public access areas would not pose a threat to the public. Furthermore, the record indicates that the Company, or another responsible party, has achieved the highest level of clean-up feasible at these Class C sites. Finally, the Company has shown that it is capable of and responsible for addressing hazardous waste spills and clean-up, and that it will hold other parties leasing or using the site responsible for remediating hazardous conditions that they have caused. Based on a review of the evidence presented, and assuming mitigation of any remaining 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 Company has minimized the safety impacts of the existing hazardous conditions on the site.

The FRWA has raised safety concerns related to interference of BECo's existing transmission lines, which extend from the site over the Fore River, with recreational boating on the river. To remove such safety concerns, FRWA argues that the transmission lines should be relocated underground in conjunction with the interconnection of the proposed project. The record indicates that at least some of the transmission lines crossing the Fore River would carry

power from the proposed project, and would be subject to changes in power flow with operation of the project to accommodate project output. However, under the most likely scenario, only one line would likely be reconductored and no line would be rebuilt.

As discussed in Section III.F, above, we note that the BECo transmission lines are not ancillary facilities within the scope of the Company's petition to the Siting Board for approval of its generating facility. Further, to the extent that some determination potentially could be made in the future that BECo's transmission lines pose a safety concern, whether under applicable law or an industry or company criteria, it presumably would be BECo's responsibility to address such concern. However, as stated above, because the transmission lines extend from Sithe's Fore River Station property, we encourage the Company to participate in any discussions between BECo and FRWA, Weymouth or others concerned about the visual and safety impacts of these lines.

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

I. Traffic

This Section describes the impacts to local traffic conditions of both construction and operation of the proposed facility.

1. Description

The Company asserted that the proposed facility would be sited, designed and mitigated such that traffic impacts would be minimized (Company Initial Brief at 90). In support of its assertion, the Company provided traffic volume data for existing traffic conditions, modeled future traffic conditions during construction of the proposed facility, and examined traffic conditions during operation of the proposed facility (Exh. EFSB-WG-6-C (att.) at 5.8-3).¹⁰² The

¹⁰² The Company stated that since traffic impacts would be temporary and related to construction only, it did not need to evaluate a no build scenario (Exh. EFSB-B-11, at (continued...))

Company stated that the traffic counts used in its analysis were made in 1998 and that the capacity limitations of the roadway would prevent peak volumes from growing in the near future (Exh. EFSB-B-11, at 5.11-13).¹⁰³ The Company indicated that existing peak commuter traffic periods in the vicinity of the proposed site are between 7:45 a.m. and 8:45 a.m., and between 5:00 p.m. and 6:00 p.m. (*id.* at 5.11-24). Site Edgar stated that all workers would be on site at 7:00 a.m., and the afternoon peak for site traffic would be between 3:30 p.m. and 4:30 p.m. (Exh. EFSB-WG-6-C (att.) at 5.8-6).¹⁰⁴ Site Edgar stated that 75 percent of all construction traffic would come from the north and 25 percent from the south (Exh. EFSB-B-11, at 5.11-25 and 5.11-27). The Company estimated that of the 75 percent of traffic from the north, 47 percent would come from Route 128 via South Street and the remaining 53 percent would come from the Southern Artery (*id.*).¹⁰⁵ The Company stated that the 25 percent of traffic from the south would come via Route 3A (*id.*). The Company provided a model timetable for construction of the proposed facility, and indicated that construction would take place over a 24 month period, with peak construction traffic occurring in the last quarter of 2000 (Exh. EFSB-WG-6-C (att.) at 5.8-2). The Company stated that up to 685 construction workers could be employed on the site at any one time during the peak months of construction (*id.* at 5.8-1).

The Company identified three key roadway intersections near the site that would be affected by construction-related traffic, and presented a comparison of expected levels of service

(...continued)
5.11-32).

¹⁰³ The Company noted that increases in regional traffic volumes are likely to be reflected in longer peak periods rather than in an increase in volumes at the height of the peak (Exh. EFSB-B-11, at 5.11-32).

¹⁰⁴ The Company originally stated that construction workers would arrive at the site between 7:00 a.m. and 7:30 a.m., but has revised its schedule in order to avoid the morning peak traffic hour (Exhs. EFSB-B-11, at 5.11-24; EFSB-WG-6-C (att.) at 5.8-6).

¹⁰⁵ Staff calculated percentages from data provided by the Company (Exh. EFSB-B-11, at 5.11-26 to 5.11-27).

("LOS")¹⁰⁶ at those intersections with and without the proposed facility (*id.* at 5.8-8 to 5.8-9). These three intersections are: (1) Washington Street at Southern Artery in Quincy; (2) Washington Street at Baker/South Streets in Quincy; and (3) Bridge Street at Neck/Green Streets in Weymouth (*id.*).

To address traffic impacts for the construction period, the Company presented an analysis incorporating background traffic conditions for the proposed hours of arrival and departure of construction workers at the site, assuming that 90 percent of the workers would arrive and 10 percent would leave the site at the designated hours of 6:15 a.m. to 7:15 a.m. (morning arrival time), and 90 percent of the workers would leave the site and 10 percent arrive at the site between 3:00 p.m. to 4:00 p.m. ("afternoon departure time") (*id.* at 5.8-6). The Company assumed that the peak day workforce required for the Sithe Edgar project would be 685 employees and that the MWRA and MHD projects would require an additional 130 and 100 employees, respectively (Exhs. EFSB-WG-6-C (att.) at 5.8-1; EFSB-B-11, at 5.11-25).¹⁰⁷ Based on this analysis, the Company indicated that: (1) the Washington Street/Southern Artery intersection currently operates at LOS D during the early morning peak hour and LOS C during the afternoon peak hour; (2) that the Washington Street at Baker/South Street intersection currently operates at LOS B in both the early morning peak and afternoon peak hours; and (3) that the Bridge Street at Neck/Green Street intersection currently operates at LOS B in both the

¹⁰⁶ The Company stated that in an LOS analysis, traffic conditions on roadways and at intersections are represented by the letters A to F, where A represents a free flow condition with minimal delays, B represents a stable flow with short delays, C represents a stable flow where speed and maneuverability begin to be restricted with average delays, D represents a high-density traffic condition approaching unstable flow with long delays, E represents conditions at or near capacity with very long delays, and F represents forced flow or breakdown conditions with highly unstable operating conditions (Exh. EFSB-B-11, at 5.11-34).

¹⁰⁷ The Company calculated project related traffic volumes and parking requirements assuming: (1) 90 percent of employees arrive by car and 10 percent by public transportation; (2) car pooling will result in an average of 1.4 employees per car; and (3) only 90 percent of the employees will be on site during the daytime work shift (Exhs. EFSB-WG-6-C (att.) at 5.8-1 and 5.15-6; EFSB-B-11, at 5.11-26).

early morning peak and afternoon peak hours (Exh. EFSB-WG-6-C (att.) at 5.8-8 to 5.8-9).¹⁰⁸ The Company noted that construction traffic associated with the project would not decrease the LOS ratings of these intersections but that overall wait times would increase at all three intersections with a maximum individual wait time increase of 10.1 seconds in the east bound direction of Washington Street at Southern Artery (*id.*).¹⁰⁹ The Company noted that it based its LOS calculations on the assumption that improvements would be made to the Washington Street at Baker/South Street intersection prior to the Company's proposed construction schedule (*id.* at 5.8-5). The Company provided data that showed that if these improvements are not made prior to construction of the Sithe Edgar project, construction traffic for the Sithe Edgar project would change the Washington Street at Baker/South Street LOS from an LOS C to an LOS F (Exh. EFSB-RR-16).

With respect to site access, the Company stated that construction traffic can enter and leave the project location without conflicting movements because of a cross-over under the bridge that connects the north and south sides of the project area (Exh. EFSB-B-11, at 5.11-8). The Company explained that the underpass creates a half-clover-leaf which allows site traffic to leave and enter Route 3A with right turns only (*id.*). Furthermore, the Company explained that the right turnouts, which would be controlled by stop signs, are in the direction of the lightest flows along Route 3A during peak hours, so that they will have little effect on roadway capacity (*id.*).¹¹⁰ For example, the Company explained that during the morning peak hour, only 41

¹⁰⁸ The Company stated that it refers to the 6:15 to 7:15 a.m. hour as the early morning peak hour as opposed to the morning peak hour and the 3:00 p.m. to 4:00 p.m. hour as the afternoon peak hour to distinguish it from the evening peak hour.

¹⁰⁹ The Company provided an additional analysis which assumed: (1) 95 percent of employees arrive by car and 5 percent by public transportation; and (2) car pooling would result in an average of 1.2 employees per car (Exh. EFSB-RR-16). The Company stated that there would be small changes in LOS or average delay when compared to the previous calculations and assumptions (*id.*).

¹¹⁰ The Company stated that it did not perform capacity calculations on the site entrance because of the very minor effect this would have on traffic capacity (Exh. EFSB-B-11, at 5.11-8).

vehicles per hour would enter Route 3A in the direction of the heavy Boston bound flow, and in the evening when site outbound flow is higher, most vehicles would be entering Route 3A in the direction of the lighter flow (id.).

With respect to parking, Sithe Edgar asserted that the Fore River Station site has the capacity to accommodate all the necessary construction parking, and that Sithe Edgar would reserve land on both sides of Route 3A for a total of 535 vehicle parking spaces (Exhs. SED-1, at 4.6-3; EFSB-B-11, at 3-34, 5.11-25 and 5.11-37; EFSB-WG-6-C (att.) at 3-25). To achieve the Company's parking projections, the Company stated that it would encourage construction workers to carpool and use mass transit (Exh. EFSB-B-11, at 5.11-40 to 5.11-41). Specifically, the Company stated that it may provide shuttle bus service between the project site and the MBTA (id.). The Company stated that a shuttle bus could serve the construction workers for all three projects at the site (Sithe Edgar, MWRA, and MHD) and that construction workers therefore would be more likely to use the service (id.). The Company indicated that it considers the Quincy Adams MBTA Station the most likely choice for shuttle service, as it would allow use of a relatively congestion-free route to the project site (id.). The Company noted that it may also provide shuttle service between the site and the Quincy Center and Braintree MBTA stations (id.).¹¹¹ The Company stated that in order to encourage travel via the MBTA, it may subsidize the cost of MBTA passes for workers on the project (id.).

With respect to truck traffic, the Company stated that during the peak construction period for trucks, it expects an average of 55 daily movements (one trip in - one trip out) (Exh. EFSB-B-11, at 5.11-38). The Company stated that of these, 17 would be for pieces of construction equipment, three for materials, and the remainder for cement trucks (id.). The Company added that the cement trucks would average about 20 loads per day, but that this could rise to 50 per day during heavy pours (id.). The Company stated that most of these trips would occur during the middle part of the day and not during peak commuter hours (id.). The Company noted that to minimize impacts from truck traffic, major equipment components such as the combustion

¹¹¹ Although asked to describe the costs and benefits of operating a shuttle bus, the Company did not provide the requested information regarding the cost of such a service (Exh. EFSB-T-24).

turbines, steam turbine, HRSGs and transformers would be delivered via water transportation, and barges may also bring construction equipment for the MWRA and MHD projects (id. at 5.11-37; Exh. W-T-6).

The Company stated that while it intends to deliver oil to the site primarily by barge, it may at times elect to deliver oil via truck to top off the oil storage tank (Exh. EFSB-B-11, at 5.11-37; Tr. 6, at 621 to 622). The Company stated that the amount of oil it would transport by truck to top off the tank would be less than a full barge load and that barges typically hold between 3 million and 4 million gallons (Tr. 6, at 618, 622). The Company stated that oil trucks hold 10,000 gallons which would convert to a worst case delivery requirement of 300 to 400 truck trips per barge load (id.).¹¹²

The Company stated that it has considered traffic issues related to the MHD's Fore River Bridge Reconstruction project and the MWRA's Braintree-Weymouth Sewer Relief Facilities project (Exh. EFSB-B-11, at 5.11-2). The Company stated that the Fore River Bridge Reconstruction project would use a temporary draw bridge so as not to affect car or boat traffic (id. at 5.11-2 to 5.11-3). The Company stated that its construction traffic estimates take into account the additional traffic volumes from both the MHD and MWRA projects and that the traffic for the MWRA project would not peak until well after the Sithe Edgar project is completed (id.).¹¹³ The Company stated that the project entities that transport materials using marine traffic would not require the Fore River Bridge to open during peak traffic hours (Exh. EFSB-WG-6-C (att.) at 5.8-11 to 5.8-12). The Company stated that a bridge opening stops traffic for ten minutes and such marine traffic would traverse the bridge before 7:00 a.m., during the middle part of the day, or after 6:00 p.m. (id.). The Company noted that in 1997, there were

¹¹² The Company noted that it would take 100 truck trips per day to meet the fuel needs of the facility when operating on oil (Tr. 6, at 619). However, the Company added that the facility would avoid this large number of trips in a single day by first using its oil stored on site (id.).

¹¹³ According to the Company's traffic estimates, the MWRA and MHD projects would result in 84 and 65 vehicle round trips during peak hours, respectively (Exh. EFSB-B-11, at 5.11-13).

about as many openings during the single hour between 6:00 a.m. and 7:00 a.m. as there were between 7:00 a.m. and 9:00 a. m., indicating an effort by bridge operators to minimize openings during peak traffic (id.).

The Company stated that once the facility is fully operational, up to 25 employees would be on site in two shifts over a typical 24-hour period and asserted that this level of staffing would not have any affect on traffic (id. at 5.11-23). The Company stated that it would maintain communication with local officials and police departments to address any traffic impacts arising from the construction and subsequent operation of the proposed facility and, in particular, to ensure safe passage of safety and emergency vehicles at all times (id. at 5.11-42).

2. Analysis

Sithe Edgar has provided an analysis of the impacts of construction traffic for the proposed facility on intersections in the vicinity of the Fore River Station site. The record demonstrates that: (1) the Washington Street/Southern Artery intersection currently operates at LOS D during the early morning peak hour and LOS C during the afternoon peak hour; (2) the Washington Street at Baker/South Street intersection currently operates at LOS B in both the early morning peak and afternoon peak hours; and (3) the Bridge Street at Neck/Green Street intersection currently operates at LOS B in both the early morning peak and afternoon peak hours. The record shows that project construction would not change the traffic LOS ratings of these intersections but that overall wait times would increase at all three intersections with a maximum individual wait time increase of 10.1 seconds in the east bound direction of the Washington Street at Southern Artery.

To further mitigate traffic impacts, the record shows that Sithe Edgar proposes to use an underpass that connects the north and south sides of the project area so that vehicles must enter and leave the site taking right turns only. The Company has shown that the right turn only requirement would mean that most workers would enter and exit Bridge Street in the direction of light traffic flow during peak hours, without affecting traffic in the direction of heavy flow.

The record shows that Sithe Edgar would minimize traffic impacts associated with deliveries of large equipment and oil by having most of these deliveries made by barge.

However, the record shows that the Company may use trucks to top off its fuel tank and that the Company may require truck delivery of less than a barge load of oil (300 to 400 trucks). In order to minimize traffic impacts associated with any potential oil deliveries made by truck, the Siting Board directs Sithe Edgar to avoid peak traffic hours when making such deliveries.

In addition, the record shows that the Company 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.

The record shows that the project entities that transport materials using marine traffic would not require the Fore River Bridge to open during peak traffic hours. The record shows that a bridge opening stops traffic for ten minutes and such marine traffic would traverse the bridge before 7:00 a.m., during the middle part of the day, or after 6:00 p.m. The Company noted that in 1997, there were about as many openings during the single hour between 6:00 a.m. and 7:00 a.m. as there were between 7:00 a.m. and 9:00 a.m., indicating an effort by bridge operators to minimize openings during peak traffic. The Siting Board notes that the heavy marine traffic (non project related) during the 6:00 a.m. to 7:00 a.m. period appears to coincide with the commuting time of Sithe Edgar employees who must arrive on the site by 7:00 a.m.

In addition, the record shows that the Company based its LOS calculations on the assumption that improvements would be made to the Washington Street at Baker/South Street intersection prior to the Company's proposed construction schedule. The record shows that if these improvements are not made prior to construction of the Sithe Edgar project, project construction traffic would change the Washington Street at Baker/South Street LOS from an LOS C to an LOS F.

The Siting Board notes that while the Company appears to have minimized its impact on traffic, we remain concerned about the project's effect on traffic if the road construction at the Washington Street and Baker/South Street intersection is not completed prior to the beginning of construction for the Sithe Edgar project. In addition, the record is not clear as to whether the proposed commuting hours for Sithe workers are reasonable given the Fore River Bridge opening schedule, and whether Sithe construction traffic could have a disproportionate impact on

levels of service when combined with the disruptions caused by bridge openings. We also recognize that it is possible that the currently proposed commuting times may change again, to more closely coincide with peak traffic hours and that overtime workers may leave at a time closer to the evening peak. Accordingly, the Siting Board directs the Company, at the time of commencement of construction, to file with the Siting Board an updated traffic analysis showing the status of the road improvements at the Washington Street and Baker/South Street intersection and the details of the final shift schedule. The traffic analysis should provide information on the schedule and volume of project-related and non-project-related marine traffic, the need to open the bridge between the hours of 6:00 a.m. and 7:00 a.m., and the extent that this will cause traffic problems. If the Washington Street and Baker/South Street intersection improvements are not complete at that time, or if marine traffic impacts or some other issue creates traffic impacts that are greater than the Company has previously stated, the Company shall submit a traffic plan that shows how it intends to mitigate traffic issues. Such plan should include: (1) a detailed analysis of the costs and benefits of providing shuttle bus service between an appropriate MBTA Station and the site during the peak construction quarter; (2) a discussion of the costs and benefits of subsidizing the MBTA fares of the Company's workers; and (3) comments from the City of Quincy and Town of Weymouth about how to mitigate traffic at this intersection. After receiving this compliance filing, the Siting Board will expeditiously make a determination as to whether additional traffic mitigation is needed during the quarter of peak construction traffic.

Accordingly, the Siting Board finds that, with implementation of the foregoing condition requiring an updated traffic analysis, the environmental impacts of the proposed facility would be minimized with respect to traffic.

J. Electric and Magnetic Fields¹¹⁴

This Section describes the electric and magnetic field impacts of the proposed facility and potential mitigation.

¹¹⁴ Electric and magnetic fields are produced by the flow of electricity, with electric fields being proportional to voltage and magnetic fields being proportional to current. Both fields are collectively known as EMF.

1. Description

The Company indicated that operation of the proposed facility would produce magnetic fields associated with increased power flows on certain existing transmission lines (Exh. SED-1, at 4.11-1).¹¹⁵ The Company indicated that the proposed facility would interconnect with the BECo 115 kV 478 line, which occupies BECo's right-of-way ("ROW") and terminates at a substation in Holbrook, Massachusetts, approximately 5.9 miles away (id.).

The Company stated that the transmission line ROW for the 478 line is 150 feet wide and contains two sets of towers and a total of three circuits (id.). The Company stated that the 478 line is split over two sets of conductors (478-502X and 478-502Y) which are on towers located about 45 feet from the south side of the ROW and that the second set of towers, which carry the remaining circuits, is located 105 feet from the south side of the ROW (id.).

The Company stated that future electric field strength should remain unchanged because BECo does not intend to alter voltage on these transmission lines (Exh. SED-1, at 4.11-25). The Company noted that the existing maximum electric field strength at three feet above grade at the edge of the ROW ranges from 0.5 to 1.0 kV/m, below the 1.8 kV/m value previously accepted by the Siting Board (id.).

The Company indicated that the principal human exposure to project-related magnetic fields would occur at residences located adjacent to the 478 line (id.). The Company performed field measurements that indicated that present day magnetic field levels at the edge of the 478 line range from 10.0 to 11.5 milligauss ("mG") (Exh. SED-1, at 4.11-24). In addition, the Company provided calculations that showed that the 1992 average and peak magnetic field strengths at the edge of the ROW were 19 mG and 48 mG, respectively (id.). The Company stated that with the proposed facility on line, the maximum EMF levels at the ROW edge likely

¹¹⁵ 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 IDC Bellingham Decision, EFSB 97-5, at 91 to 93; Sithe Mystic Decision, EFSB 98-8, at 68; 1993 BECo Decision, 1 DOMSB at 148, 192.

would increase to 63 mG (id.).¹¹⁶

The Company stated that the electric and magnetic field strength at the facility property lines would originate from three different sources (Exh. EFSB-E-1). The first source would be the transmission lines which extend from the facility site over the Weymouth Fore River (id.). The maximum electric and magnetic fields at the property line from these transmission lines would be 0.03 kV/m and 3.3 mG, respectively (id.). The second source of EMFs would be the 775 MW generating equipment and step up transformers, which would generate maximum electric and magnetic fields at the property line of 0.001 to 0.050 kV/m and 1 to 2 mG respectively (id.). The third source of EMFs would be BECO's relocated switchyard, which would cause maximum electric and magnetic fields of 0.02 kV/m and 2.4 mG at the closest residence, which is located opposite the eastern site boundary along the southern end of Monatiquot Street (id.).¹¹⁷

The Company stated that BECO currently is conducting a system impact study to determine the extent of transmission system reinforcements needed to accommodate the Company's proposed project (Exh. SED-1, at 1-44). On the basis of preliminary results, BECO expects that no new transmission facilities would be required and an upgrade in voltage would not be necessary (id.). The Company stated that BECO expects that reconductoring one of the three existing 115 kV lines would be the most cost-effective transmission arrangement for the project (id.).¹¹⁸ The Company noted that it may be possible, during final design, to rearrange the

¹¹⁶ The Company did not provide the number of residences adjacent to the 5.9 mile BECO ROW; however, it noted that such residences would be exposed to a maximum of 63 mG at the edge of the ROW, and that the field strength would drop off to 36 mG, 25 mG and 16 mG at distances from the edge of the ROW of 25 feet, 45 feet and 75 feet, respectively (Exh. EFSB-E-5, at 2).

¹¹⁷ EMF levels from the switchyard were measured at the closest residence rather than at the property line (Exh. EFSB-E-1). The closest residence is on Monatiquot Street, approximately 420 feet from the switchyard (id.).

¹¹⁸ The Company explained that reconductoring means that the current wires are replaced with somewhat heavier gauge wires, enabling the line to carry more current over the same towers (id.).

phases on each transmission line to reduce magnetic fields (Exh. EFSB-E-7).

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 at 228-242 (1985) (“1985 MECO/NEPCO Decision”). Here, off-site electric and magnetic fields would remain below the levels found acceptable in the 1985 MECO/NEPCO Decision. Although consistent with edge-of-ROW levels previously accepted by the Siting Board, the estimated worst case maximum magnetic fields along the 478 lines would be 63 mG, a 31 percent increase over the 1992 peak load of 48 mG. The Siting Board notes that as the 478 line may be reconducted for the project, there may be an opportunity to reduce magnetic fields through changes in the transmission line design. In previous cases, the Siting Board has asked facility proponents to work with transmission line companies to accomplish reductions in magnetic field levels where cost effective. IDC Bellingham Decision, EFSB 97-5, at 98; Sithe Mystic Decision, EFSB 98-8, at 71; Silver City Decision, 3 DOMSB at 353-354. Accordingly, the Siting Board encourages the Company to work with BECo to try to accomplish magnetic field reductions along the 478 line in conjunction with any necessary work on this line.

In addition, in order to allow the Siting Board to remain informed as to the progress and outcome of transmission upgrade designs related to interconnecting the proposed project, the Siting Board directs Sithe Edgar to provide it with an update on the extent and design of required transmission upgrades, and the measures incorporated into the transmission upgrade designs to minimize magnetic field impacts, at such time as Sithe Edgar reaches final agreement with all transmission providers regarding transmission upgrades.

Accordingly, the Siting Board finds that with the Company's pursuit of cost-effective designs for decreasing magnetic fields along the affected transmission lines that require upgrades, the environmental impacts of the proposed facility would be minimized with respect to EMF impacts.

K. Land Use

This section describes the land use impacts of the proposed facility, including the impacts to wildlife species, public access, and significant cultural resources.

1. Description

Sithe Edgar proposed to construct its facility on a 57 acre site which it describes as an industrial brownfield with a mixture of upland and filled tidelands (Exhs. SED-1, at 4.9-1; EFSB-B-1-R).¹¹⁹ The Company noted that the site has been used for industrial purposes since the 1920's, when BECo built its Edgar Station on the site (Exhs. SED-1, at 4.9-1). The Company indicated that some portions of the site currently are used for electrical transmission, peaking generation, and energy storage while other portions house structures in disuse, such as the former Edgar Station powerhouse and some oil storage tanks (Exhs. SED-1, at 4.9-1; EFSB-B-1-R).¹²⁰ Sithe Edgar stated that it would demolish the powerhouse, switchhouse, two southern oil tanks, and the buildings associated with the northern dock (Exh. EFSB-WG-6-C (att.) at 3-6 to 3-7, 5.11-1)). In addition, as discussed in Section III.H.5. above, the Company has remediated or will remediate a number of REC's on the existing site (Exh. EFSB-WG-6-C (att.) at 5.9-1). The Company indicated that the proposed site consists of limited vegetation, including some small stands of mature trees and scrub, and that most of this vegetation would need to be removed in order to construct the proposed facility and other proposed facilities at the site (Exhs. B-1-R; EFSB-V-8; SED-1 (fig. 4.3-17)).¹²¹ The Company asserted that the proposed use is consistent with the existing land uses on the site, because its proposed facility is also an electric generating station with similar associated equipment (Exh. SED-1, at 4.9-4).

The Company stated that the proposed site is located within an I-2 district under the

¹¹⁹ The proposed site is located primarily in Weymouth; however the northern corner of the site is located in Quincy (Exhs. EFSB-B-1-R; EFSB-WG-6-C (att.) at 2-1).

¹²⁰ Other existing structures include a switchyard, transmissions towers and an oil storage tank (see Section I.A, and Section III.F, above).

¹²¹ See Section III. F, above, for a complete discussion of impacts to existing vegetation.

Town of Weymouth's Zoning Bylaw ("Weymouth Zoning Bylaw") and demonstrated that electrical generation is allowed as of right in an I-2 district which includes other heavy manufacturing uses (*id.* at 4.9-1; Exh. EFSB-L-10 (att. a); EFSB-L-2b (att. a); EFSB-L-11 (att. b, c)). The Company indicated that it had applied for and received a height variance¹²² and a special permit to operate a water freight terminal facility and to construct the proposed facility in a special flood hazard district from the Weymouth Zoning Board of Appeals (Exhs. EFSB-11-S (att. a); EFSB-L-1-S2 (att.)). The Company testified that while it did not need to obtain site plan approval from the Weymouth Planning Board, it would allow the Board of Selectmen to review Sithe's final design plans (Exh. EFSB-RR-82 (att.); Tr. 14, at 1276-1278).

The proposed facility site is surrounded by the Fore River on three sides, and a portion of the fourth side, with about half of the eastern property line abutting a residential neighborhood in Weymouth (Exhs. SED-1, at 4.9-2; EFSB-B-3 (att.); EFSB-RR-2 (att. B)). Sithe Edgar submitted land use maps of the area surrounding the site, and based upon those maps calculated that the land uses within one-half mile of the proposed site are 48.7 percent water, 24.4 percent industrial, 20.5 percent residential, 2.5 percent commercial, and 2.6 percent open space and recreational uses.¹²³ The Company calculated that land uses within one mile of the proposed site are 32.5 percent water, 12.9 percent industrial, 36.5 percent residential, 4.5 percent commercial, and 6.2 percent open space and recreational uses (EFSB-L-2 (att. A); EFSB-RR-2 (atts. a, b)). The Company indicated that, with the exception of the existing Edgar Station, the heavy industrial land uses are located across the river and include a sludge pelletizing facility, an oil storage facility, another electric power plant, a hazardous water management facility, a manufacturing plant, and a shipyard (Exh. SED-1, at 4.9-2(fig. 1-2)).

The Company indicated that land use in the area surrounding the site has not changed

¹²² Sithe requested a variance from Section 120-57 of the Weymouth Zoning Bylaws, which limits the height of structures abutting certain residential districts (Exh. EFSB-L-11-S (att. A); EFSB-L-10 (att. a)).

¹²³ Open space and recreational uses include: forest, spectator recreation, participation recreation, water-based recreation, marinas, open land, wetlands, and urban open/public spaces (Exh. EFSB-RR-2 (att. B)).

significantly over the past twenty years, and that little change is expected in the future because of the built-out nature of the area (Exhs. EFSB-L-5; EFSB-B-11, at 5.14-13 to 5.14-14).¹²⁴ The Company noted that some of industrial areas near the proposed site have been redeveloped into commercial or new industrial uses over the past few years, and that small retail and residential growth might be expected in the area in the future (Exhs. EFSB-B-11, at 5.14; EFSB-L-5).^{125, 126} The Company indicated that 35 sensitive receptors, including playgrounds, schools, hospitals, elderly facilities, and parks, are located within approximately one mile of the proposed facility site (Exh. EFSB-L-1; EFSB-L-14). The Company also noted that a naval museum and commuter facilities are located across the river from the proposed site (Exhs. FRWA-S-5; FRWA-S-6; FRWA-S-7). The Company estimated that a total of 22 marinas, yacht clubs, and boat launching facilities are located within two miles of the proposed facility site and calculated that 405 sail boats passed through the Fore River Drawbridge in 1998 (Exhs. FRWA-S-18 (att.); FRWA-S-4; FRWA-S-5 (att.) FRWA-V-12). The FRWA submitted a document stating that in 1990 over 1800 recreational boats were docked in the Fore River area (Exh. FRWA-10 (att. A), at 16).

¹²⁴ The Company stated that population in the area surrounding the proposed site has remained relatively unchanged over the past twenty years (Exhs. EFSB-L-5; EFSB-L-6; EFSB-B-11, at 5.14-6). Using data from the US Census and the Metropolitan Area Planning Council, the Company provided population counts in 1990 and population projections for the year 2000 and the year 2010; in 1990 Braintree had 33,836 people, Quincy 84,985, and Weymouth 54,063. The Company stated that population is projected to increase by under one percent in Quincy and Weymouth by the year 2000, to decrease slightly in Braintree, and to increase slightly in portions of all three towns near the proposed site (Exhs. B-11, at 5.14-6; EFSB-L-6; EFSB-RR-7).

¹²⁵ The Company stated that the Quincy does not have an updated master plan, and that Braintree had updated its master plan in 1988 (Exhs. EFSB-B-11, at 5.14; EFSB-L-5). Site Edgar asserted that the Braintree master plan does not plan much change, but rather discusses means to accommodate growth, which is expected primarily in the portions of Braintree away from the proposed site. (Exh. EFSB-L-5).

¹²⁶ The Company stated that the Quincy shipyard is currently under renovation, and will be open as a ship building facility in the near future (Exhs. EFSB-B-11, at 5.14-5; EFSB-L-5).

The Company submitted information about zoning in the areas within approximately one mile of the site in Weymouth, Quincy, and Braintree (Exhs. EFSB-L-2 (atts. a, b, c); EFSB-L-18 (att. a); EFSB-RR-6). The Company indicated that the area surrounding the site in Weymouth is predominately zoned low density residential, with smaller amounts of business (which includes commercial uses) and neighborhood center district (mixed use) (Exhs. EFSB-L-18 (att. B); EFSB-RR-5). The Company stated that the area in Braintree near the site is zoned single family residential, mixed family residential, and business (Exhs. EFSB-L-18-S (att. B); EFSB-RR-5).¹²⁷ The Company stated that the area in Quincy near the site is zoned single and multi-family residential, business, open space, and industrial (Exhs. EFSB-L-18a (att. A); EFSB-RR-5).

The Company stated that the proposed site is in a DPA, as designated by the Massachusetts CZM program (Exh. EFSB-B-5). The Company indicated that the DPA designation affects WPA and Chapter 91 filings, in particular restricting the development of non-water dependant industrial facilities (*id.*).¹²⁸ The Company stated the DPA designation was designed to protect and enhance water dependent industrial uses in the coastal zone (*id.*). The Company stated that construction of the proposed facility must be approved under Chapter 91,

¹²⁷ The Company noted that the industrial area of Braintree near the site was rezoned to prohibit any additional industrial uses (Exh. EFSB-RR-5).

¹²⁸ 310 CMR 9.32 (1) provides:

"The Department has determined that in certain situations fill or structures categorically do not meet the statutory tests for approval under M.G.L c. 91 or are otherwise not in keeping with the purposes of 310 CMR 9.00. Accordingly, a project shall be eligible for a license only if it is restricted to fill or structures which accommodate the uses specified below, within the geographic areas specified below. Tidelands Within Designated Port Areas (DPAs) 1. fill or structures for any water-dependant-industrial use, and accessory uses thereto, on previously filled tidelands; 2. fill or structures for water-dependent-industrial use on flowed tidelands, provided that, in the case of the proposed fill, neither pile-supported nor floating structures are a reasonable alternative; 3. structures to accommodate public pedestrian access, provided that such structures are located above the high water mark or within the footprint of existing pile-supported structures or pile fields, wherever feasible".

the waterways regulations program administered by MDEP (Exhs. SED-1, at 4.9-1, fig. 4.3-17; EFSB-B-11 (app. E)).¹²⁹

The Company proposed to provide two public access areas on the proposed site: the Lovell's Grove area, which is adjacent to Route 3A and the Fore River, and the King's Cove area, which stretches from Route 3A north along King's Cove (Exh. EFSB-WG-6 (att. c at 3-26 to 3-28, figs. 3-11, 3-12)). In the Lovell's Grove area, Sithe Edgar proposed a lawn, a low seating wall overlooking the rocky beach, picnic tables, historical elements and plantings (*id.* (fig. 3-11)). In the King's Cove area, the Company proposed a passive recreational pathway that would start adjacent to Route 3A and would run along King's Cove and around the proposed MWRA IPS station (*id.*, (fig. 3-12)). The Company also proposed to make improvement to the rip-rapped shore and add landscaping and lookout/gathering areas (*id.*). The Company stated that both public access areas would be handicapped accessible and would have convenient and safe access from the surrounding neighborhoods (Exh. EFSB-LC-5; EFSB-L-8-S; EFSB-L-8-S-2).

Sithe Edgar stated that it solicited comments from the public concerning the public access areas, and that in particular it obtained input from the North Weymouth Civic Association and WESRRC (Exh. EFSB-WG-6 (att. c, at 3-26)). The Company asserted that the proposed public access would make the project more compatible with existing open space, water-based uses, and residential uses in the area (Exh. EFSB-L-17). The Company argued that both public access areas would be of benefit to historic/cultural, visual, and fishery interests (Exhs. EFSB-LC-3; EFSB-LC-4).

The Company submitted Weymouth's Waterfront Plan, completed in 1988, which discusses means to improve public access along Weymouth's waterfront (Exhs. EFSB-L-5; EFSB-L-16 (att. at 15-16)). The plan states that recreational boating is the fastest growing use of

¹²⁹ The Company explained that Chapter 91 regulates the alteration and filling of the Commonwealth's and private waterways and tidelands, both filled and flowed, in order to protect the public interest in these lands (Exh. EFSB-WW-5-S (att.) at B-11). The Company submitted evidence that a significant portion of the site is filled tidelands, which have been repeatedly filled to accommodate growth ((Exhs. SED-1, at 4.9-1, fig. 4.3-17; EFSB-B-11 (app. E)).

waters in Weymouth and that portions of the Edgar Station site are good for public access and recommends that Weymouth require local public access and boat access as part of energy improvements (Exh. EFSB-L-16 (att. at 9, 16, 36-37)). The Company stated that it considers the Fore River adjacent to the proposed facility site to be a passage for waterborne vessels/transport suited only for industrial purposes, and that it does not believe the Fore River near the site will be a recreational resource suitable for swimming (Tr. 1, at 78-81). The Company asserted that the proposed facility would not conflict with any current or future uses of the river because barge deliveries of oil would be minimal and would occur primarily during the winter when a fuel shortage is likely to occur (Exh. EFSB-L-21). In addition, the Company noted that recreational uses in the area would be enhanced as a result of the proposed public access at the proposed site (Exh. EFSB-L-21).

With respect to historic resources, the Company stated that the Massachusetts Historical Commission ("MHC") has determined that the original Edgar Station was eligible for listing in the National Register of Historic Places and that the American Society of Mechanical Engineers has named the Edgar Station a National Historic Mechanical Engineering Landmark (Exhs. SED-4.10-2; EFSB-B-11 (app. F)). The Company stated that the MHC has determined that the demolition of the existing Edgar Energy Station would have an "adverse effect" on a structure eligible for listing ((Exhs. SED-4.10-2; EFSB-B-11 (App. F))).¹³⁰

The Company asserted that it was not feasible to develop the proposed site without demolishing on-site historic resources because: the existing buildings could not easily accommodate new turbines; there is no other place on the site to locate new turbine buildings; G.L. c. 164, § 1A(b)(2) requires the removal and decommissioning of unused structures at this station; and the higher turbine building would necessitate a higher stack. Under its Section 106 review,¹³¹ the MHC has accepted the demolition as prudent and feasible and has required that

¹³⁰ The Company further indicated that the turbine building is on Weymouth Historical Commission's list of "Historic and Architecturally Significant Buildings" (Exh. EFSB-WG-6(att. c (App. D))).

¹³¹ National Historic Preservation Act of 1966 (36 CRR 800) and G.L., Chapter 9, Sec. 26-
(continued...)

numerous actions to be taken to mitigate the historic impacts of demolition (Exhs. EFSB-WG-6 (att. c (app. E), 5.7-2)).¹³² In addition, Weymouth and the Company entered into a Memorandum of Agreement to allow demolition to proceed, with additional conditions for mitigation of historic impacts (Exh. EFSB-WG-6 (att. c (app. D))).¹³³

The Company stated that the project would have no impact on any rare plants or animals because the Massachusetts Natural Heritage and Endangered Species Program and the U.S. Fish and Wildlife Service have indicated that there are not any federally or state listed species or habitats that would be adversely affected by construction at the Fore River Station site (Exhs. EFSB-B-11-S (att. at 5.6-9); EFSB-WW-11 (att.); EFSB-RR-65-S (att.)). The FERC application submitted by the Company for the gas pipeline interconnect indicates that 25.56 acres of land would be permanently affected by the proposed project, and 54.94 acres during construction, most of which is along or in the existing ROW (Exhs. B-18-S (att. at 1-7 to 1-8); EFSB-L-13).

The Company asserted that land use impacts of the project with OTC would be similar to those with ACC (Tr. 1, at 103-104).

2. Northern Portion

The Company indicated that it did not currently have any plans for the northern portion of

¹³¹ (...continued)
27c (950 CMR 71.00) (Exh. SED-1, at 4.10-5).

¹³² The Company stated that it is required to: (1) provide a historic engineering record documentation to be filed with the Massachusetts Archives and the Weymouth Historical Commission; (2) preserve and reuse the existing gatehouse as a publically accessible facility for display of exhibits and information on the history of the Edgar Station and the site; (3) create a public picnic area in the Lovell's Grove area; and (4) allow continuing review of the project design by the state historic preservation officer (Exhs. EFSB-WG-6-C (att.) App. E at 5.7-2)).

¹³³ Sithe Edgar agreed to: (1) produce of an illustrated brochure on the history of the site, Lovell's Grove and other historic sites in the area; (2) assist in the production of an illustrated booklet which summarizes the Edgar Power Station's building record; and (3) consult with the Weymouth Historical Commission and the Board of Selectmen on final building design (Exh. EFSB-WG-6 (att. c (app. D))).

the site, except potentially to refurbish and reuse the existing 11 million gallon oil tank (Exhs. FRWA-S-12; Tr. 1, at 98-99). The Company noted that it has agreed to repaint the northern oil tank, provide public access along King's Cove, and achieve a mutually agreeable plan for the development or use of the land on the north portion of the site (Company Reply Brief at 6). FRWA argued that the entire northern portion of the site, less the proposed MWRA IPS station, should be preserved as open space for public access (FRWA Brief at 2). The FRWA asserted that the northern portion is not needed for the operation of the proposed facility and contended that the facility is not water dependant, and thus should be subject to higher public access standards than water dependant uses under CZM and WPA regulations (FRWA Brief at 2-3). The FRWA argued that protection of and public access to the northern portion, which is 88 percent filled tidelands, would provide: (1) assurance that all feasible measures have been taken to avoid or minimize detriments to water-related interests, maritime recreation and associated public access; (2) protection and enhancement of public views of the shoreline; (3) access to historic sites; (4) an increase in wildlife habitat; (5) an increase in groundwater recharge; (6) increased protection against non-point pollution to the river; and (7) increased public appreciation and protection of the river (FRWA Brief at 2-4). In addition, the FRWA asserted that opening the northern portion to public access would support many objectives established by the CZM program and Chapter 91 (FRWA Brief at 3, 7).

The Company argued that discussions of public access on the northern portion of the site should occur after future use of that portion was determined and suggested that devoting the entire portion of the site to public access might be "antithetical" to DPA standards (Tr.1, at 91-92). The Company noted that the former Edgar Station has been in full view of recreational boaters for 70 years and that it has limited ability to provide screening of the Station from the river (Company Brief at 65). The Company also argued that the northern oil tank already exists and is not related to the proposed project in any manner, and consequently the Siting Board has no jurisdiction over that existing structure (Company Reply Brief at 4-6).

3. 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 land use requirements, policies, or plans, and assesses the proposed facility's impacts on land use and terrestrial resources.

Here, the record shows that the proposed site is zoned for industrial use and that the proposed facility is allowed under the Weymouth Zoning Bylaw. The Company has received the necessary height variances and special permits to construct the proposed facility. A densely settled residential neighborhood lies immediately to the east of the site, while the land within one mile of the site is zoned for a combination of residential, industrial, commercial, and mixed uses. The record suggests that land uses in the vicinity of the proposed site are likely to remain mixed, although industrial uses may decrease somewhat due to rezoning in Braintree, while recreational use of the Fore River may increase as a result of waterfront plans, Chapter 91 requirements, and improvements in water quality.

The record shows that construction of the proposed facility is consistent both with the past and current use of the site for electric transmission and generation, and with the mixed land use of the area. In addition, the Company's proposal to provide public access to the waterfront at two locations is consistent with the goals of Weymouth's Waterfront Plan, which calls for public and boat access as part of energy improvements at Edgar Station. The Company has provided information concerning impacts to historical and cultural resources, and has entered into formal agreements with the MHC and Weymouth to provide mitigation for the demolition of the historic pumphouse.

The FRWA has argued that, in order to mitigate the proposed facility's impacts on the watershed, the Siting Board should require the Company to convert that portion of its site lying to the north of Route 3A into a public recreation area. In response, the Company notes that it has already agreed with the Town of Weymouth to achieve a mutually agreeable plan for the use of this portion of the site, and argues that any plans for further public access should be considered in conjunction with such development plans.

The record shows that in the vicinity of the proposed site, the Fore River, like the land around it, supports a mixture of industrial, commercial, and recreational activity, with recreational activity increasing in recent years. A number of heavy industrial uses are located on

the opposite shore of the Fore River, and the site is located in a DPA, or area designated for water dependent industrial uses. Thus, with or without construction of the proposed facility, future recreational activity on this portion of the Fore River will take place against an industrial backdrop, and in the company of industrial shipping.

The primary impact of the proposed facility on public use of the Fore River would be a change in the views seen by boaters as they move past the site, and an increase in noise on the river in the vicinity of the proposed facility. In Section III.F, above, the Siting Board has required landscaping and shoreline improvements on the northern portion of the site in order to minimize views of the proposed facility. The Siting Board notes that converting the northern portion of the site to a public recreation area would not serve either to further screen the proposed facility from the river or to reduce noise levels in the vicinity of the proposed facility. Consequently, the Siting Board concludes that FRWA's proposal to dedicate the northern portion of the site to public use would not serve to minimize the land use, noise, or visual impacts of the proposed facility.¹³⁴

The Siting Board notes, however, that additional public access to or use of the northern

¹³⁴ The Siting Board notes that, even if there were a clearer nexus between public use on the 16-acre northern portion of the proposed site and the impacts of the proposed facility, the Siting Board is required to review FRWA's proposal in accordance with its statutory mandate, to minimize the environmental impacts of proposed generation facilities consistent with the minimization of the costs associated with the mitigation, control and reduction of those impacts. G.L. c. 164, §69 J¼. The record lacks details as to FRWA's proposal, both as to the proposed uses of the area and related benefits, and the willingness of any entity to oversee the maintenance of facilities for public use. Dedicating the northern portion of Sithe's property entirely or substantially to public use, as proposed by FRWA, would involve a significant opportunity cost to Sithe. In addition, although public access is considered an appropriate use in a DPA, such use may preclude or substantially reduce the ability to use the area for other industrial or marine-dependent uses that may be considered appropriate and also consistent with the location in a DPA. Thus, the Siting Board cannot assess with any certainty the likely benefits and costs of the FRWA proposal, including whether it would best serve the public interest. Therefore, based on this record, the Siting Board could not conclude that FRWA's proposal would minimize the environmental impacts of the proposed facility consistent with the minimization of the costs associated with the mitigation, control and reduction of those impacts.

portion of the site may be desirable, not to minimize the impacts of the proposed facility, but in order to promote the use and enjoyment of the Fore River watershed. Planning for such access also may affect implementation of required measures for providing visual mitigation on the northern portion of the site, as conditioned in Section III.F.2, above.

The Company has entered into an agreement with the Town of Weymouth to work cooperatively toward a mutually agreeable plan for the future development or use of the northern portion of the site. In addition, such plans are of interest to FRWA and are likely to affect other state agencies. The Siting Board believes that more detailed planning for additional public use of or access to the northern portion of the site would be best undertaken in the context of Sithe's agreement to work with Weymouth, and to the extent possible in cooperation with FRWA and affected state agencies. The Siting Board therefore requires Sithe to work with Weymouth, FRWA and appropriate state agencies to develop and coordinate plans for providing additional public access, if and where appropriate, in the area of the northern portion of the site that Sithe will improve as conditioned in Section III. F. 2. above, and in other parts of the site as may be agreed.

The record indicates that construction of the proposed facility would have no impact on protected wildlife species and habitats. Although the proposed natural gas interconnection is expected to require temporary easements for construction, with associated clearing of vegetation that will be allowed to regrow, the interconnection is proposed primarily within an existing ROW. In addition, the electric interconnection will take place on site. The Siting Board therefore finds that the land use impacts of the interconnections would be minimized.

As discussed in the visual, noise, and traffic sections, the Company has proposed or been required to provide mitigation that minimizes impacts on the abutting residential uses to the east, as well as on neighborhoods across the Fore River and recreational users of the river. Minimization of these impacts helps establish the proposed facility will be compatible with existing land uses. Accordingly, the Siting Board finds that, with the implementation of the above condition, the land use impacts of the proposed facility at the proposed site would be minimized.

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). The Siting Board considers these effects 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 impacts 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, EMF and noise; 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

The Company provided summaries of six reports produced within the last ten years documenting health conditions in the Weymouth/Braintree/Quincy area (Exh. EFSB-H-2). The most recent of these reports was published by the Massachusetts Department of Public Health in 1997 and is titled Cancer Incidence in Massachusetts 1987-1994 (“Cancer Incidence Report”) (id.). 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 Weymouth, the Cancer Incidence Report finds elevated levels of leukemia (significant at $p \leq 0.01$), colon and rectal

cancer, larynx, bronchus and lung cancer, and prostate cancer (significant at $p \leq 0.05$)¹³⁵ (*id.*). In the neighboring towns of Quincy and Braintree, the Cancer Incidence Report found elevated levels of colon/rectum cancer in Braintree and oral cavity cancer in Quincy (both significant at $p \leq 0.01$), and elevated levels of larynx, bronchus and lung cancer in Quincy and prostate cancer in both towns (all significant at $p \leq 0.05$) (*id.*). The Company noted, however, that the Cancer Incidence Report cautioned that statistical significance does not necessarily imply biological or public health significance (*id.*).

The other five reports summarized by the Company date from 1989 or 1990 and focus on the Weymouth/Braintree/Quincy area (Exh. EFSB-H-2.). Two of these studies, titled Health Studies -- Supplemental Baseline Report: Primary Health Study ("Primary Health Study") and Health Draft Baseline Report ("Baseline Report"), compare Weymouth, Braintree and Quincy to a number of comparison communities with respect to the incidence of a broad range of health problems (*id.*). The Company indicated that the Primary Health Study found that the incidence rates of thirteen specific health problems were significantly elevated in the three municipalities as compared to other communities, while incidence of thirteen other health problems were significantly depressed (Exh. EFSB-H-7). The Company also stated that, of sixteen respiratory disease comparisons found in the Primary Health study, nine showed the Town of Weymouth with lower levels of disease than in comparison communities (Exh. W-H-2). The Company noted that the Baseline Report concluded that the "average respiratory disease rank for Weymouth was 11.8", better than the average of 14, and that Weymouth generally shows a lower incidence of respiratory diseases as compared to state averages, but a higher mortality rate (*id.*)

2. Criteria Pollutants

As discussed in Section III. B. 1, above, the MDEP regulates the emissions of six criteria

¹³⁵ The term "statistically significant at $p \leq 0.01$ " means that there is at most one chance in 100 that the excess of observed cancer cases is due to chance alone (Exh. EFSB-H-2, at 5). Similarly, the term "statistically significant at $p \leq 0.05$ " means that there is at most one chance in 20 that the excess of observed cancer cases is due to chance alone (*id.*).

pollutants under NAAQS: SO₂, PM-10,¹³⁶ NO₂, CO, O₃, and Pb. The Company's witness, Dr. Valberg, stated that NO₂, SO₂, and O₃ are respiratory irritants which, if inhaled at high levels, could cause wheezing, coughing, and bronchitis-like conditions, and could increase sensitivity to asthma (Tr. 8, at 845-849). Dr. Valberg further stated that CO binds hemoglobin and could lead to heart malfunction; that Pb is a neurotoxin that could impair the functioning of the nervous system; and that particulate matter is a respiratory irritant which, at very high levels, could compromise respiratory function (*id.* at 846-847). Dr. Valberg stated that criteria pollutants are not generally associated with lung cancer, although he noted that some particulates, such as those created by cigarette smoking, are carcinogenic (*id.* at 847).

The Company provided an overview of how the USEPA determines NAAQS for each criteria pollutant (Exh. EFSB-H-10). The Company indicated that the USEPA assembles separate documents on the health effects of all the criteria pollutants and that during the process of setting standards, public health agencies, university review groups, environmental groups, and medical groups all provide comments (*id.*). The Company stated that the resulting standards are designed to protect the health of the population, including sensitive subgroups (*id.*).¹³⁷ The Company provided data from MDEP monitoring stations in Boston, Chelsea, Lynn, Waltham, Quincy, and Scituate, indicating that (1) maximum concentrations of CO are 52 percent of the 8-hour NAAQS standard and 19 percent of the 1-hour standard; and (2) maximum concentrations of NO₂, Pb, SO₂ and PM-10 are below 50 percent of the NAAQS standard for all averaging periods (Exh. EFSB-A-1-S-2 (att.) at 4-22 to 5-23).

The Company indicated that new sources of criteria pollutants, such as the proposed project, may not cause or contribute to a violation of the health-based NAAQS (*id.* at 3-1). The Company stated that, in order to identify new sources with the potential to significantly affect

¹³⁶ The Siting Board notes that the EPA has promulgated regulations that also would set standards for emissions of PM-2.5 and that would revise the current standard for emissions of PM-10; however, these regulations are not currently in effect (Exh. EFSB-H-18).

¹³⁷ The Company's witness, Dr. Valberg, noted that no public health standard could protect the most sensitive individual (Tr. 8, at 945).

ambient air quality, the USEPA and MDEP have adopted SILs for each criteria pollutant; new sources with emissions above SILs are required to conduct interactive source modeling of their emissions (*id.* at 3-6). The Company showed that the proposed facility's emissions would be below applicable SILs for all criteria pollutants (*id.* at 6-6, 6-8, 6-10).

To assess air impacts of the proposed facility and other existing sources of emissions, the Company conducted cumulative air modeling of the criteria pollutants.¹³⁸ The results show that, at locations where cumulative concentrations are highest, the maximum cumulative concentrations of SO₂, PM-10 and CO are between 20 and 68 percent of the NAAQS, while maximum cumulative concentrations of NO₂ are 96 percent of NAAQS (Exh. EFSB-WG-6-C (att.) at 5.1-12). The proposed facility's contributions at these locations are less than .01 percent of the cumulative pollutant concentrations (*id.*). The Company also calculated cumulative concentrations at the point of maximum impact for the proposed facility (Exh. EFSB-RR-35). In this analysis, the cumulative concentrations ranged from 31 to 45 percent of NAAQS, with the proposed facility's contribution at 1 percent or less of NAAQS in all cases (Exhs. EFSB-RR-35; EFSB-A-1-S-2 (att.) at Table 6.6-2). In addition, the Company conducted a backout analysis and asserted that the operation of the facility would result in net reductions of NO_x, SO₂ and CO₂ in Massachusetts of approximately 8090 tpy, 29,693 tpy and 1,940,600 tpy, respectively (Exhs. EFSB-A-20; EFSB-A-20-S).

The record indicates that the USEPA has set in place ambient air quality standards, called NAAQS, for six criteria pollutants – SO₂, PM-10, NO₂, CO, O₃, and Pb. 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 such as the elderly, children, and asthmatics, 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

¹³⁸ The Company conducted cumulative air modeling to address comments on the Environmental Notification Form for the proposed project, even though its projected emissions are below SILs (Exh. EFSB-A-1-S-2 (att.) at 6-14).

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 above, 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 Company has minimized the health impacts of a proposed facility.

In this case, the record shows that the Weymouth area in Norfolk County presently is (1) unclassified or in attainment for NO₂, SO₂, PM-10, CO and Pb, with regional background levels of less than 52 percent of the ambient standard for all pollutants and averaging periods; and (2) in serious non-attainment for ozone.¹³⁹ Thus, the Weymouth area levels of all criteria pollutants except O₃ are within the standards set to protect human health. In addition, the Company has shown that the proposed project's emissions of all criteria pollutants would be below the SILs. The Siting Board concludes that there is no evidence suggesting that the proposed project's emissions of SO₂, PM-10, NO_x, CO, and Pb would have a discernable impact on public health.

With respect to concerns raised about the health impacts of multiple sources of pollution in the Weymouth area, the Company's cumulative air modeling shows that the cumulative

¹³⁹ The Siting Board notes that the USEPA has promulgated regulations replacing the current 1-hour standard for O₃ with an 8-hour standard; however, these regulations are not currently in effect. (Exh. EFSB-H-18). The new standard is intended to provide increased protection against O₃-induced health impacts (*id.*). As the new standard is intended to be more stringent than the old standard, the Siting Board assumes that Massachusetts would continue to be in serious non-attainment for O₃ under the new standard.

concentrations for NO₂, SO₂, PM-10, and CO were below NAAQS and that the proposed facility's contribution to the cumulative impact at the location of the greatest pollutant concentration was less than one percent of NAAQS. The Company has committed to meeting BACT or LAER, as applicable, and to obtaining offsets for its NO_x emissions as required. 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. Toxics include chemicals such as arsenic, beryllium, lead, mercury, nickel, and formaldehyde (Exh. EFSB-A-1-S-2(att.) at Table 6.5-3).

The Company indicated that MDEP has developed ambient air quality standards for these pollutants designed to protect public health (Exh. EFSB-H-3). The program sets AALs for a broad range of chemicals through a three-stage process (Exh. EFSB-H-15, 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 is 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 Edgar provided an abstract 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") (Exh. EFSB-H-1-S). The HAPs Study assessed the hazards and risks due to inhalation exposure to 67 hazardous air pollutants ("HAPs") from 684 fossil fuel plants nation-wide (*id.*). The HAPs study also included multipathway assessments for the four

highest-priority HAPs – arsenic, mercury, dioxins, and radio nuclides (*id.*). 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.*). 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.

Although Site Edgar proposes to use natural gas as the primary fuel for its Fore River facility, it does intend to seek permits to use oil as a back-up fuel for up to thirty days per year. However, 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, even assuming thirty days of oil burning. In addition, there is no evidence in the record suggesting 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. Discharges 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). With respect to impacts on potable groundwater, the Company presented information demonstrating that no groundwater sources, surface water supply sources, wells, MDEP Zone II recharge areas, or high or medium yield aquifers are located within one mile of the proposed facility (Exh. EFSB-SS-17(att.)). The Company stated that the potential for pollutant releases through stormwater runoff is regulated by MDEP under its Stormwater Management Policy, and indicated that, pursuant to SMP requirements, surface runoff would be collected, treated, and discharged off-site (Exhs. EFSB-H-3, at 2; SED-1, at 4.3-2). The Company indicated that during construction, stormwater management would take place in accordance with an NPDES SPPP

(Exh. EFSB-H-4).

As discussed in Section III.C.2, above, the proposed facility would generate a wastewater stream of between 39,983 and 42,858 gpd, which would be discharged to either the Weymouth or Quincy sewer system (Exh. EFSB-WG-6-C (att.) at 6-6 to 6-10). The Company stated that wastewater entering the sewer system would meet all standards for effluent discharges (*id.* at 6-10).

In Section III.C, above, the Siting Board determined that the Fore River Station is not proximate to any ground or surface sources of potable water, and that the proposed facility therefore would have no impact on local potable water supplies. The Siting Board noted the potential for impacts to public water supplies based on the upgrade of the Algonquin natural gas pipeline to serve the facility, but recognized that the impacts to these supplies could be minimized through FERC and Conservation Commission review. In addition, the Siting Board has found that the wastewater impacts of the project would be minimized if water is discharged to the Weymouth sewer system, and has required a compliance filing if water is to be discharged to the Quincy sewer system. Consequently, the Siting Board finds that the project as proposed poses no health risks related to the contamination of potable groundwater or the disposal of wastewater.

5. Handling and Disposal of Hazardous Materials

As discussed in Section III.H above, the proposed project would use 19 percent aqueous ammonia for NO_x control, and limited amounts of lubricating oils and certain other industrial chemicals for project operation and for treatment of makeup water, boiler feedwater, and cooling water (Exh. EFSB-WG-6-C (att.) at 5.10-3 to 5.10-6). In addition, the Company would store fuel in a 6.3 million gallon tank, with deliveries to be made primarily by barge (*id.* at 5.10-1).

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 the toxic

endpoint at the property boundaries; and that the Company is prepared to respond effectively to an accidental release of hazardous materials. The Siting Board also determined that the Company would employ appropriate measures to ensure the safe transport and delivery of oil, to prevent oil spills and accidents, and to respond quickly and effectively to any spills that occur. 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.

6. EMF

As discussed in Section III. J above, the estimated worst-case magnetic field levels resulting from the operation of the proposed facility at 63 mG along the edge of the 478 line ROW (Exh. SED-1, at 4.11-24). In addition, the record shows that the Company anticipates reconductoring one of the three existing 115 kV lines on that ROW as part of the transmission arrangement for the project, and has agreed to consult with BECo prior to the reconductoring to encourage a new line configuration that would further reduce EMFs.

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. SED-1, at 4.11-5 to 4.11-6). 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 4.11-5). The Company also stated that the American Conference of Governmental Industrial Hygienists had established a Threshold Limit Value (TLV) level to which nearly all workers may be exposed repeatedly without adverse health effects of 10,000 mG (id.). The Company indicated that eight 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 4.11-6).

The Company asserted that available laboratory and human data have not demonstrated what, if any, magnitudes of power line electric and magnetic fields cause human health effects (id. at 4.11-5). In support of this assertion, the Company provided a 1997 report by the National Research Council, 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-E-2 (att.)). 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). 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's witness, Dr. Valberg, also discussed a more recent Canadian study, where field exposure was assessed through monitors in children's backpacks (Tr. 8, at 875-881). Dr. Valberg indicated that this study did not support a relationship between field exposure and

leukemia (id. at 877).

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.

7. Noise

As discussed in Section III. G above, the proposed facility would produce noise that would be noticeable in some surrounding community areas, both during the facility construction period and during operation of the facility. The Company has assessed the noise impacts of the proposed facility in relation to applicable federal and local criteria for acceptable ambient noise, as well as the MDEP standard which limits allowable noise increases from new sources.

With respect to health effects of noise, the Company asserted that the only documented health effect of exposure to excessive noise is damage to ears (Exh. EFSB-H-12). The Company stated that OSHA and USEPA both have established guidelines to prevent hearing loss due to long-term exposure to noise; the OSHA guidelines prohibit average workday exposures exceeding 90 dBA for a 40-hour work week, while the USEPA guidelines recommend that noise exposure not exceed an average of 75 dBA over 8 hours, or 70 dBA over 24 hours (id.). In addition, the Company provided a USEPA document which suggests that an outdoor L_{dn} of 55 dBA likely would result in indoor nighttime noise levels of approximately 32 dBA, which should, in most cases, protect against sleep interference (Exh. EFSB-N-1, at 28).

The record shows that, with the proposed facility in operation, L_{dn} noise levels at the nearest residence on Monatiquot Street would increase by 3 dBA to 56 dBA, with L_{dn} noise at all

other residential receptors remaining unchanged. The resulting noise levels are well below thresholds where hearing loss from long-term noise exposure could occur. The Siting Board has required the Company develop a plan to mitigate construction noise by limiting the noisiest construction practices to daytime hours, and by use as needed of temporary noise barriers and advance community notification procedures. The Siting Board has found that, with the implementation of the above condition, the noise impacts of the proposed facility would be minimized. Consequently, the Siting Board finds that the health effects, if any, of noise from the proposed project would be minimized.

8. Conclusions

In the sections above, the Siting Board has reviewed the proposed project's potential for effects on human health resulting from emissions of criteria pollutants, emissions of air toxics, emissions to ground and surface waters, handling and disposal of hazardous materials, electric and magnetic frequencies, and noise. The Siting Board has found that: (1) the cumulative health impacts of criteria pollutant emissions from the proposed facility would be minimized; (2) the air toxics emissions from the proposed project would have no discernable public health impact; (3) the proposed project poses no health risks related to the contamination of potable groundwater or the disposal of wastewater; (4) the health risks of the proposed project related to the handling and disposal of hazardous materials would be minimized; (5) the health effects, if any, of magnetic fields associated with the proposed project would be minimized; and (6) the health effects, if any, of noise from the proposed project would be minimized.

The Siting Board notes that the only indication of potential pre-existing public health problems in the communities surrounding the proposed project is the existence of statistically elevated levels of a variety of cancers. However, there is no evidence in the record suggesting that the pollutants which the proposed facility would emit are in any way linked to these types of cancer. Moreover, the record shows that the proposed project emits air toxics, including carcinogens, at levels below TELs and AALs, and that, where adequate information is available, AALs for carcinogens are set to correspond to an incremental lifetime risk of developing cancer of one in one million. Consequently, the Siting Board finds that there is no evidence that the

proposed project would exacerbate existing public health problems in the communities surrounding the proposed project.

Accordingly, based on its review of the record, the Siting Board finds that the cumulative health impacts of the proposed project would be minimized.

M. Conclusions

Based on the information in Sections III. B. through III. 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 CO₂ 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, with the implementation of stormwater management on all access roads on the Fore River Station site, 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 the environmental impacts at the proposed facility would be minimized with respect to solid waste.

In Section III.F., the Siting Board has found that, with the implementation of the conditions concerning onsite and offsite mitigation of visual impacts, 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 with the implementation of the conditions regarding noise monitoring and construction noise, the environmental impacts of the proposed facility would be minimized with respect to noise.

In Section III. H, the Siting Board has found that, with the implementation of the condition concerning a construction safety plan, 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 a condition

concerning an updated traffic analysis, the environmental impacts of the proposed facility would be minimized with respect to traffic.

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

In Section III. K, the Siting Board has found that with the implementation of the condition concerning plans for providing additional public access, 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 environmental impacts of the proposed facility would be minimized with respect to cumulative health impacts.

In Section III. C, the Siting Board reviewed the comparable impacts of the use of OTC and ACC and found that the use of ACC with conditions is consistent with the minimization of environmental impacts.

Accordingly, the Siting Board finds that, with the implementation of the above-listed conditions relative to air quality, water, visual, noise, safety, traffic, and land use, the Company's plans for the construction of the proposed generating facility with ACC 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

A. 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.¹⁴⁰

B. Analysis

In Sections II and III, above, the Siting Board has reviewed the process by which Sithe 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 Edgar has demonstrated that it intends to comply with all MDEP standards.

As discussed in Section III.C, above, Sithe Edgar has demonstrated that it will comply with the Massachusetts Stormwater Management Policy, MWRA pretreatment standards for wastewater, Massachusetts's 401 Water Quality Certification, Chapter 91 regulations concerning the alteration of filled or flowed tidelands, and the all of MWRA's guidelines under its Straddle Policy. The Company also has demonstrated that its proposed facility is consistent with the state's Watershed Initiative for the Boston Harbor.

As discussed in Section III.D, above, Sithe Edgar has demonstrated that the wetlands impacts of the proposed project would be minimized. In addition, the Company has indicated

¹⁴⁰ 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.

that it would comply with any conditions imposed by the Weymouth Conservation Commission, as required by the Massachusetts Wetlands Protection Act (Exh. EFSB-W-16).

As discussed in Section III. E. above, Sithe Edgar has demonstrated that it complies with the State's policies concerning toxic use, as administered under the OTA.

As discussed in Section III. G above, Sithe Edgar 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 ambient levels.

As discussed in Sections III. H. above, Sithe Edgar has demonstrated that it has complied with Chapter 21E and other state regulations concerning the safe clean-up of hazardous materials. In addition, the Company has demonstrated that it will comply with all state regulations concerning the safe storage and handling of hazardous materials.

As discussed in Section III. K above, Sithe Edgar has demonstrated that it has complied with state programs protecting historical, landscape, or archeological resource areas and rare or endangered species. In addition, Sithe has demonstrated that it intends to comply the state's laws concerning public rights in waterways (Chapter 91).

In addition to the policies discussed above, because the Edgar 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 (Exh. EFSB-W-16-S-2, at C-1). The Fore River Station site is located within a DPA as defined by the CZM (id.). Water-dependent industrial uses, including public access, 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 a facility which is dependent on marine transportation of oil and uses existing infrastructure in the coastal zone. 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-WW-5-S (att. at B-6 to B-7)). 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 CZM (Exh. SED-1, at 3-16 to 3-17). Sithe Edgar 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 (dependence on existing infrastructure)¹⁴¹; 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) (*id.* at 4-50 to 4-55).

The Siting Board finds that, with the conditions set forth in Sections III. C, D, F and K, above, 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 Initial Brief at 159-161).¹⁴² Executive Order 385 states in pertinent parts that:

¹⁴¹ The Company submitted the Secretary of EOE's Certificate on the Environmental Notification Form, which states that since the proposed facility is on a site previously used for electrical generation, Sithe is not required to conduct analysis of an inland site, as long as it meets criteria established by CZM (Exh. EFSB-WG-6-S). The Company has submitted documentation that it meets these criteria (Exh. EFSB-WG-6-C (att.) at 5.6-1 to 5.6-21).

¹⁴² Sithe also asserts that its proposed project is consistent with environmental policies embodied in the Restructuring Act and Chapter 206 of the Acts of 1998 ("Brownfields Act") (Company Initial Brief at 159-161). The Siting Board accepts Sithe's argument that the Restructuring Act was intended, in part, to promote cleaner air by encouraging the development of new, clean power plants to displace and reduce the emissions of older plants, and that Sithe's plans are consistent with that purpose (*id.* at 160). It is not immediately clear to the Siting Board which provisions of the Brownfields Act, if any, are applicable to the proposed project.

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 Site Edgar's plans to expand operations at its Fore River Station site, a previously-developed area that is currently used for electrical transmission, energy storage, and peaking generation, 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 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.

V. 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 resulted in the selection of a 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, water, visual, noise, safety, traffic and land use, 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. C., III. F., III. G., III. H., III. I., III. K., 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 Edgar Development LLC to construct a 775 MW bulk generating facility in Weymouth, Massachusetts. The Company shall comply with the following conditions during construction and operation of the proposed generating facility:

Prior to the commencement of construction:

A. To minimize noise impacts, the Siting Board requires that the Company develop and provide to the Siting Board a plan for noise mitigation during construction, consistent with the noise protocol developed with Weymouth, that includes provisions to limit noisier construction during evening and weekend hours consistent with safe construction practices, and to use on an as-needed basis measures to further mitigate impacts of noisy activities on the community, such as temporary noise barriers and advance community notification procedures.

B. To minimize safety impacts, the Siting Board directs the Company to complete the construction section of its emergency response plan and file it with Weymouth, Braintree and Quincy before construction begins in order to cover possible contingencies related to construction accidents.

During construction and operation of the proposed facility:

C. In order to minimize CO₂ emissions, the Siting Board requires that Sithe provide, as part of a CO₂ 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 planned Mystic Station AQIP emissions reductions that establishes 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 Mystic Station AQIP curtailment on which the CO₂ offsets for the proposed facility are based; or in the alternative the Company may elect to provide a monetary contribution to a cost-effective program or programs to be selected upon consultation with the staff of the Siting Board in the amount of \$902,842 to be paid in five annual installments during the first five years of facility operation, or a single up-front payment of \$734,868 due by the end of the first year of operation.

D. In order to minimize water impacts, the Siting Board requires the applicant to provide stormwater management on all access roads owned by Sithe at the Fore River Station site as necessary to meet identified stormwater quality and flow standards, consistent with the stormwater management approach and standards used for proposed access road improvements on the southern portion of the proposed facility site.

E. In order to minimize visual impacts, 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 to the east of the proposed site, extending to and including the residential properties on Bluff Road, as requested by individual property owners or appropriate municipal officials.

F. In order to minimize visual impacts, the Siting Board requires the Company to provide landscaping that will provide vegetative screening and shoreline improvements along the northwestern shoreline of the northern portion of the proposed site which would serve as a continuation of the proposed King's Cove area.

G. In order to minimize visual impacts, the Siting Board requires the Company to replant any existing trees in the area bounded approximately by Route 3A, the western edge of the existing 3.4 million gallon oil tank, Monatiquot Street, and the Town of Weymouth Water Tank, that are 16 feet or higher and removed for construction of the proposed facility, with trees that are between 16 and 20 feet high.

H. In order to minimize visual impacts, the Siting Board requires that the Company's tree plantings around the proposed site, especially plantings to the east, include a sufficient number of 20 foot trees to create some immediate screening of the facility after it is constructed.

I. In implementing the conditions regarding visual impacts, the Siting Board requires the Company to submit to the Siting Board prior to commercial operation an updated landscaping plan for the entire site, addressing all the directives and conditions noted above as well as opportunities for wetland restorations as encouraged in Section III. D.

J. In order to minimize noise impacts, the Siting Board directs the Company, in consultation with Weymouth and MDEP, to develop a noise monitoring protocol and baseline noise measurements, taken on a schedule chosen in consultation with MDEP and Weymouth, that allows for the implementation of an ongoing periodic noise monitoring program to begin within six months of the commencement of commercial operation, and a reporting procedure that provides for dissemination of monitoring results to Weymouth and/or the community areas that are affected by L_{90} noise increases from the facility of 3 dBA or more.

K. In order to minimize traffic impacts, the Siting Board directs the Company, at the time of commencement of construction, to file with the Siting Board an updated traffic analysis showing the status of the road improvements at the Washington Street and Baker/South Street intersection and the details of the final shift schedule. The traffic analysis should provide information on the schedule and volume of project-related and non-project-related marine traffic, the need to open the bridge between the hours of 6:00 a.m. and 7:00 a.m., and the extent that this will cause traffic problems. If the Washington Street and Baker/South Street intersection improvements are not complete at that time, or if marine traffic impacts or some other issue creates traffic impacts that are greater than the Company has previously stated, the Company shall submit a traffic plan that shows how it intends to mitigate traffic issues. Such plan should include: (1) a detailed analysis of the costs and benefits of providing shuttle bus service between an appropriate MBTA Station and the site during the peak construction quarter; (2) a discussion of the costs and benefits of subsidizing the MBTA fares of the Company's workers; and (3) comments from the City of Quincy and Town of Weymouth about how to mitigate traffic at this intersection.

L. In order to minimize land use impacts, the Siting Board requires Sithe to work with Weymouth, FRWA and appropriate state agencies to develop and coordinate plans for providing additional public access, if and where appropriate, in the area of the northern portion of the site that Sithe will improve as conditioned in Section III. F. 2., and in other parts of the site as may be agreed.

M. The Siting Board directs the Company to provide the Siting Board an update on the extent and design of required transmission upgrade designs to minimize magnetic field impacts, at such time as Sithe Edgar reaches final agreement with all transmission providers regarding transmission upgrades.

Because the issues addressed in this Decision relative to this facility are subject to change over time, construction of the proposed generating facility must commence 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 11th day of February, 2000

Table 1: Comparison of Fore River Station's Maximum Facility Emissions to Regulations

Pollutant	PSD Threshold Criteria (tpy)	PSD Significant Emission Rate (tpy)	Maximum Potential Emission Rate of Proposed Facility (tpy)	Non-Attainment NSR Threshold	Emissions for BACT and LAER review
NO ₂	100	40	218	25	2 ppmdv gas firing, 6 oil firing
SO ₂	100	40	168	N/A	.0029lb SO ₂ /MMBtu gas firing, .052 lb So ₂ /MMBtu
PM-10	100	15	352	N/A	.011 lb/MMBtu gas firing, .05 lb/MMBtu oil firing
CO	100	100	296	N/A	2 ppmdv gas firing, 7 oil firing
Pb	100	.6	.25	N/A	.000016 lb/MMBtu gas firing, .00006 lbMMBtu oil firing
Ammonia	N/A	N/A	35.52	N/A	2 ppmdv average
Sulfur Acid Mist	100	7	99	N/A	.0016 lb/MMBtu gas firing, .032 lb/MMBtu oil firing
VOC	N/A	40	70	50	1 ppmdv gas firing, 1.7 duct firing,** 7 oil firing

* Source: (Exh. EFSB-A-1-S-2 (att.) tables 3.1-1, 3.3-1, 5.1-2, 6.2-1, 6.3-2, 6.6-2)

**The Company explained that duct firing occurs when the facility uses a burner associated with the HRSG to improve plant efficiency (Tr. 4, at 440-441).

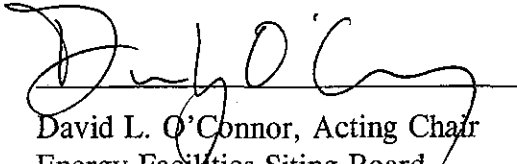
Table 2: Comparison of Modeled Facility Emission Concentrations to NAAQS, Ambient, and Cumulative Concentrations

Pollutant	Averaging Period	NAAQS Standard (most stringent of primary or secondary)	Significant Impact Level	Projected Maximum Concentration of Proposed Facility	Total Modeled Contribution of Other Major Sources	Fore River Contribution at Maximum Impact of Other Sources	Monitored Background	Cumulative Impact
NO ₂	Annual	100 ug/m ³	1	.31 ug	65.9 ug	.0005 ug	30.1 ug	96.0
SO ₂	Annual	80	1	.2	10.02	0	558.1	33.8
	24 Hour	365	5	3.31	121	0	128.4	249.4
	3 Hour	1300	25	11.90	327	0	23.6	885.1
PM-10	Annual	50	1	.5	4.73	.002	22	26.7
	24 Hour	150	5	3.21	28.1	0	42	70.1
CO	1 Hour	40000	2000	4.31	406	0	7656	8062
	8 Hour	10000	500	3.02	162	0	5452	5614
O ₃	1 Hour	235 (.12 ppm)	N/A	N/A	N/A	N/A	.125 ppm	N/A
Pb	3 month	1.5	N/A	N/A	N/A	N/A	.01	N/A

* Source: (Exh. EFSB-A-1-S-2 (att.) at 4-1 to 4-1, 4-12 to 4-19, tables 3.1-1, 3.3-1, 5.1-2, 6.2-1, 6.3-2, 6.6-2)

** All Projected Maximum Concentrations are from SCREEN3 (Intermediate/Complex Terrain) results for comparison sake. However, the Siting Board notes that the Company conducted different models with different assumptions and inputs.

APPROVED by the Energy Facilities Siting Board at its meeting of February 10, 2000, by the members and designees present and voting: W. Robert Keating (Commissioner, DTE); James Connelly (Commissioner, DTE); Paul Vasington (Commissioner, DTE); Joseph Donovan (for Carolyn Boviard, Director of Economic Development); and David O'Connor (Acting Chair, EFSB/Commissioner, Division of Energy Resources)

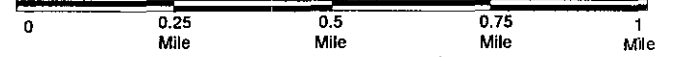


David L. O'Connor, Acting Chair
Energy Facilities Siting Board

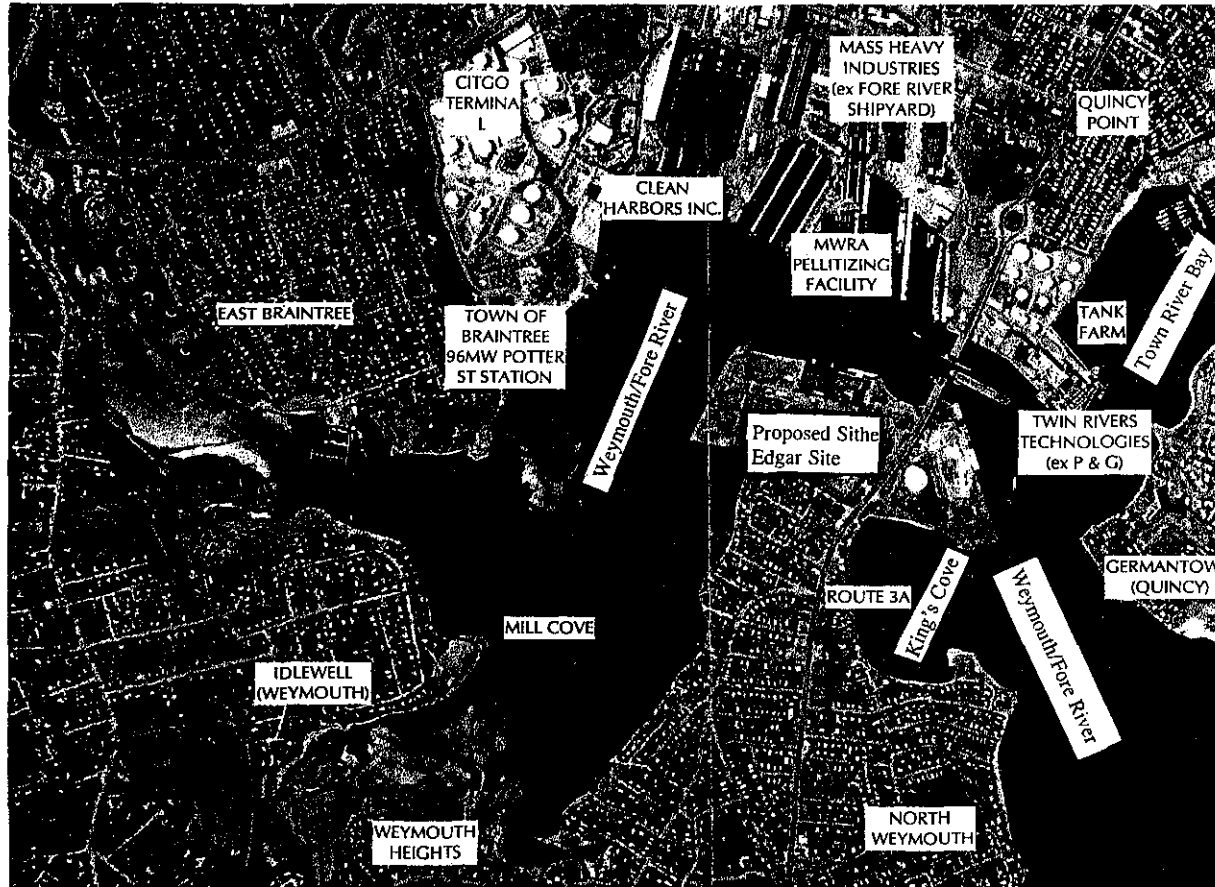
Vote taken on the 10th day of February, 2000.

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

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



scale in miles



Source: Aerial photo taken by COL - East, 1998

Figure 1:
**THE PROJECT SITE AND SURROUNDING
 LAND USES**
 Fore River Station, Weymouth, Massachusetts



COMMONWEALTH OF MASSACHUSETTS
Energy Facilities Siting Board

In the Matter of the Petition of)
Brockton Power, LLC for Approval)
to Construct a Bulk Generating Facility in) EFSB 99-1
in the City of Brockton, Massachusetts)
_____)

FINAL DECISION

Peter M. Palica
Hearing Officer
March 10, 2000

On the Decision:
William S. Febiger
Richard Essex

APPEARANCES: David S. Rosenzweig, Esq.
Keegan, Werlin & Pabian, LLP
21 Custom House Street
Boston, Massachusetts 02110-3525
FOR: Brockton Power, LLC
Petitioner

Michael D. Vhay, Esq.
Hill & Barlow
One International Place
Boston, MA 02110-2607
FOR: Tofias Realty Trust
Interested Person

Edward L. Selgrade, Esq.
200 Wheeler Road, 4th Floor
Burlington, Massachusetts 01803
FOR: American National Power, Inc.
Interested Person

Mr. Mark Landin
Sigma Consultants, Inc.
95 Main Street
Maynard, Massachusetts 01754
FOR: Sithe Energy, New England
Interested Person

Mary Beth Gentleman, Esq.
Eileen M. McGettigan, Esq.
Foley, Hoag & Eliot LLP
One Post Office Square
Boston, Massachusetts 02109
FOR: USGen New England, Inc.
Interested Person

TABLE OF CONTENTS

I.	<u>INTRODUCTION</u>	Page 1
A.	<u>Description of Proposed Project, Site, and Interconnections</u>	Page 1
B.	<u>Procedural History</u>	Page 3
C.	<u>Scope of Review</u>	Page 5
1.	<u>Background</u>	Page 5
2.	<u>Position of the Company</u>	Page 6
3.	<u>Position of Tofias Trust</u>	Page 6
4.	<u>Analysis</u>	Page 7
II.	<u>SITE SELECTION</u>	Page 8
A.	<u>Standard of Review</u>	Page 8
B.	<u>Description</u>	Page 9
C.	<u>Analysis</u>	Page 14
III.	<u>ENVIRONMENTAL IMPACTS</u>	Page 15
A.	<u>Standard of Review</u>	Page 15
B.	<u>Air Quality</u>	Page 16
1.	<u>Applicable Regulations</u>	Page 16
2.	<u>Emissions and Impacts</u>	Page 19
3.	<u>Emission Mitigation and Offsets Proposals</u>	Page 23
4.	<u>Analysis</u>	Page 25
C.	<u>Water Resources</u>	Page 28
1.	<u>Description</u>	Page 28
2.	<u>Potential Impacts</u>	Page 30
3.	<u>Mitigation Alternatives</u>	Page 37
4.	<u>Analysis</u>	Page 37
D.	<u>Wetlands</u>	Page 40
1.	<u>Description</u>	Page 40
2.	<u>Proposed Wetlands Impact Mitigation</u>	Page 42
3.	<u>Analysis</u>	Page 44
E.	<u>Solid Waste</u>	Page 45
1.	<u>Description</u>	Page 45
2.	<u>Analysis</u>	Page 46
F.	<u>Visual Impacts</u>	Page 47
1.	<u>Description</u>	Page 47
2.	<u>Analysis</u>	Page 50
G.	<u>Noise Impacts</u>	Page 52
1.	<u>Description</u>	Page 52
2.	<u>Proposed Mitigation and Mitigation Alternatives</u>	Page 57
3.	<u>Analysis</u>	Page 58
H.	<u>Safety</u>	Page 59
1.	<u>Materials Handling and Storage</u>	Page 60
2.	<u>Fogging and Icing</u>	Page 62

	3.	<u>Emergency Response Plan</u>	Page 64
	4.	<u>Analysis</u>	Page 64
I.		<u>Traffic</u>	Page 66
	1.	<u>Description</u>	Page 66
	2.	<u>Analysis</u>	Page 70
J.		<u>Electric and Magnetic Fields</u>	Page 71
	1.	<u>Discussion</u>	Page 71
	2.	<u>Analysis</u>	Page 77
K.		<u>Land Use</u>	Page 82
	1.	<u>Description</u>	Page 82
	2.	<u>Analysis</u>	Page 84
L.		<u>Cumulative Health Impacts</u>	Page 85
	1.	<u>Baseline Health Conditions</u>	Page 86
	2.	<u>Criteria Pollutants</u>	Page 87
	3.	<u>Air Toxics</u>	Page 89
	4.	<u>Discharges to Ground and Surface Waters</u>	Page 91
	5.	<u>Handling and Disposal of Hazardous Materials</u>	Page 92
	6.	<u>EMF</u>	Page 93
	7.	<u>Noise</u>	Page 96
	8.	<u>Conclusions</u>	Page 97
M.		<u>Conclusions</u>	Page 98
IV.		<u>CONSISTENCY WITH THE POLICIES OF THE COMMONWEALTH</u>	Page 99
	A.	<u>Standard of Review</u>	Page 99
	B.	<u>Analysis</u>	Page 100
V.		<u>DECISION</u>	Page 101

FIGURE 1: SITE LOCUS MAP

LIST OF ABBREVIATIONS

<u>Abbreviation</u>	<u>Explanation</u>
AALs	Allowable Ambient Limits
ABB	Asea Brown Boveri
AGT	Algonquin Gas Transmission Company
Algonquin	Algonquin Gas Transmission Company
ANP	American National Power, Inc.
<u>ANP Blackstone Decision</u>	<u>ANP Blackstone Energy Company, EFSB 97-2/98-2 (1999)</u>
AWRF	City of Brockton's Advanced Water Reclamation Facility
BACT	Best available control technology
BFI	Browning Ferris Industries
BFI disposal facility	BFI East Bridgewater waste disposal facility
BLSF	Bordering Land Subject to Flooding
BMPS	Best management practices
Brockton	City of Brockton
Brockton Power	Brockton Power, LLC
Brockton Power Project	Brockton Power, LLC's proposed 270MW electric generating facility
BVW	Bordering Vegetated Wetlands
C-2	Zoning designation for commercial use
Cancer Incidence Report	1997 Massachusetts Department of Health Report on cancer incidence in 351 cities and towns
C&D	Construction and demolition debris
CFR	Code of Federal Regulations
cfs	Cubic feet per second
cfsm	Cubic feet per second per mile
CMR	Code of Massachusetts Regulations
CO	Carbon monoxide

CO ₂	Carbon dioxide
Company	Brockton Power, LLC
Company Initial Brief	Brockton Power, LLC's initial brief
Company Reply Brief	Brockton Power, LLC's reply brief
dBA	Decibel
DEIR	Draft Environmental Impact Report
E&S	Erosion and sedimentation
EMF	Electric and magnetic fields
EOEA	Executive Office of Environmental Affairs
EPA	The United States Environmental Protection Agency
EPC	Engineering, procurement, and construction
ERP	Emergency Response Plan
EUA	Eastern Utilities Associates
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
GEP	Good Engineering Practice
gpd	Gallons per day
HAPs	Hazardous Air Pollutants
HAPs Study	"Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units- Final Report to Congress" (1998)
HRSsGs	Heat recovery steam generators
I-3	Zoning designation for Heavy Industry
<u>IDC Bellingham Decision</u>	<u>IDC Bellingham LLC, EFSB 97-5 (1999)</u>
I/I	Infiltration and inflow
ISO	Independent Source Operator
kV	Kilovolt
L ₉₀	The level of noise that is exceeded 90 percent of the time
LAER	Lowest Achievable Emission Rate

L _{dn}	A-weighted noise levels averaged over a 24 hour period with a 10 dBA penalty for noise during nighttime hours
L _{eq}	A-weighted noise levels averaged over a specified period
LOS	Level of service -- a measure of the efficiency of traffic operations at a given location
LUW	Land Under Water Bodies and Waterways
MAAQS	Massachusetts ambient air quality standards
MGIS	Massachusetts Geographic Information Systems
MBTA	Massachusetts Bay Transportation Authority
MDEP	Massachusetts Department of Environmental Protection
mG	Milligauss
mgd	Million gallons per day
MW	Megawatt
MWPA	Massachusetts Wetlands Protection Act
MVA	Meg Volt-ampere
NAAQS	National ambient air quality standards
<u>1985 MECo/NEPCo Decision</u>	<u>Massachusetts Electric Company et al., 13 DOMSC 119 (1985)</u>
NO _x	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
OSHA	Occupation Safety and Health Administration
Pb	Lead
PM	Particulate Matter
PM-10	Particulates
ppm	Parts per million

ppmvd	Parts per million volume dry
PSD	Prevention of significant deterioration
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
ROW	Right-of-way
SCR	Selective Catalytic Reduction
Sigma	Sigma Consultants, Inc. (appearing in this proceeding on behalf of Sithe)
SILs	Significant Impact Levels
Sithe	Sithe Energy, New England.
<u>Sithe Edgar Decision</u>	<u>Sithe Edgar Development LLC</u> , EFSB 98-7 (2000)
<u>Sithe Mystic Decision</u>	<u>Sithe Mystic Development LLC</u> , EFSB 98-8 (1999)
Siting Board	Energy Facilities Siting Board
Siting Council	Energy Facilities Siting Council
SO ₂	Sulfur dioxide
SO _x	Sulfur oxides
SPCC	Spill Prevention Control and Countermeasure
SPPP	Stormwater pollution prevention plan
STGs	Steam Turbine Generators
SWPPP	Stormwater Pollution Prevention Program
TEL	Threshold effects exposure limit
TLV	Threshold Limit Value
Tofias Trust	Julius Tofias Realty Trust
Town	Town of West Bridgewater
TPS	Technology Performance Standards
tpy	Tons per year
USCOE	U.S. Army Corps of Engineers
USGen	U.S. Generating Company

USGS

United States Geological Survey

VA

United States Veterans Administration

VOCs

Volatile organic compounds

West Bridgewater

Town of West Bridgewater

The Energy Facilities Siting Board (“Siting Board”) hereby APPROVES subject to conditions the petition of Brockton Power LLC for approval to construct a 270-megawatt natural gas-fired combined cycle generating facility at the proposed site in Brockton, Massachusetts.

I. INTRODUCTION

A. Description of Proposed Project, Site, and Interconnections

Brockton Power, LLC (“Company” or “Brockton Power”) has proposed to construct a nominal 270 megawatt (“MW”), gas-fired, combined-cycle, electric generating facility in the City of Brockton, Massachusetts (“Brockton Power Project”) (Exh. BP-1, at 1-1). The project would be located on a 13.2 acre parcel of land adjacent to the City of Brockton’s Advanced Water Reclamation Facility (“AWRF”) (id.). Both the proposed project site and the AWRF are within the 70 acre Oak Hill Industrial Park in the southeastern corner of the City of Brockton (“Brockton”) (Exh. BP-1, at 1-1). The project site is bounded by the Salisbury Plain River to the west and the AWRF property to the south (id. at 1-11). To the north and east, the site is surrounded by commercially and industrially zoned properties which are currently occupied by warehouses and manufacturing facilities (id. at 1-12, 4.2-1).

The primary components of the proposed project are based on Asea Brown Boveri (“ABB”) GT-24 generation technology and would include a gas combustion turbine, a heat recovery steam generator (“HRSG”), a steam turbine, and a single electrical generator which would be driven by both the combustion turbine and the steam turbine (id. at 1-18). The Company stated that to maintain reliability during potential gas supply contingencies, the proposed project would also have the ability to burn low-sulfur No. 2 distillate fuel oil for up to 720 hours (30 days) per year (id. at 1-1, 1-19). Cooling for the proposed facility would be provided by a six-cell wet mechanical cooling tower (id. at 1-1). The project would use approximately 1.6 million gallons per day (“mgd”) of water for cooling tower makeup and for process water (id.). The Company proposes to use treated effluent obtained from the AWRF to meet the cooling and process water needs of the project (id. at 1-1, 1-18, 1-22). Additional facilities associated with the project include a 115 kilovolt (“kV”) switchyard, water treatment facilities, water storage tanks, and a fully-diked 500,000 gallon fuel oil storage tank, as well as

offsite gas and electrical interconnections (id.).

Natural gas for the project would be transported to the site via a new 1800 foot lateral pipeline from Algonquin Gas Transmission Company's ("AGT") pipeline (id. at 1-24). The lateral pipeline would run north from the project site along Industrial Boulevard to interconnect near the intersection of Oak Hill Way near Sargent's Way (id.). For electrical transmission, the project would interconnect with the Eastern Utilities Associates ("EUA") 115 kV transmission line, which runs to the south of the project site via a new 3500 foot 115 kV line (Exhs. HO-RR-20 (a) and (b) (att.); EFSB-EL-11; Tr. 1 at 126). The preferred interconnection route would run east from the site along Oak Hill Way, continue southward along Oak Hill Way, then eastward along the southern edge of a developed parcel owned by Campanelli et al. Trust, and finally south along the Massachusetts Bay Transit Authority ("MBTA") railroad right-of-way ("ROW") to the EUA transmission lines (id.).¹

The proponent for the Brockton Power Project, Brockton Power, LLC, is a limited liability company that was established specifically for the development of the proposed project (Exh. EFSB-B-1). Although the project is the Company's first, the Company states that its principals and participants have considerable experience in the development of generating facilities in Massachusetts, Connecticut, and New York (Exhs. EFSB-B-1; BP-1, at 1-43).²

¹ Initially, the Company proposed an electrical interconnection route that would run east through a vacant lot and the Ryder Bus Depot and then south within the MBTA right-of-way to the EUA transmission lines (Exh. BP-1, at 1-24). The current proposed route would avoid a portion of the MBTA right-of-way which is adjacent to a residential neighborhood (Exh. EFSB-EL-11; Tr. 1, at 126).

² The primary principals of Brockton Power include Mr. Dennis Barry and Mr. Leo Barry of the Hallamore Corporation construction company, which has provided development-related services for power plants in Massachusetts and Connecticut (Exhs. EFSB-B-1; BP-1, at 1-43). Another primary principal in the Company is Mr. George Baldwin, President of Corporate Realty Associates, which specializes in large development projects (id.). Other participants include Mr. Michael McSharrey as well as Mr. Kevin O'Reilly, who has participated in the development of generating facilities in New York, Connecticut, and Massachusetts (id.).

B. Procedural History

On January 11, 1999, Brockton Power filed with the Siting Board³ a petition to construct and operate a gas-fired, combined-cycle generating facility with a net nominal capacity of approximately 270 MW in Brockton. The Siting Board docketed the petition as EFSB 99-1.

On February 24, 1999, the Siting Board conducted a public hearing in Brockton. At the direction of the Hearing Officer, the Company provided notice of the public hearing and adjudication.⁴

³ 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.

⁴ Arnold B. Tofias Trust, Trustee of the Julius Tofias Realty Trust ("Tofias Trust") argues that, because Brockton Power has modified the proposed route for its electrical interconnection from that specified in the notice of adjudication, and because the Siting Board cannot approve a site, route, or portion of a route that has not been noticed, the Siting Board must re-notice the electrical interconnect route before approving it (Tofias Trust Brief at 19-20). The Siting Board agrees that it would not approve a transmission line over which it has jurisdiction along a route that had not previously been noticed; it could, however, accept without re-notice route variations or changes in alignment that did not change the affected abutters or landowners.

Here, the facility under review by the Siting Board is Brockton Power's proposed generating facility; the interconnect line is only an ancillary part of the proposal, and is not independently subject to Siting Board jurisdiction so that it would require notice and approval. G.L. c. 164, § 69H. We note that the routes of electrical, natural gas, and water interconnections for generating facilities, whether or not subject to our jurisdiction, are of interest to the Siting Board because they have bearing on the overall environmental impacts of the project. In order to fulfill its mandate to minimize the environmental impacts of a facility, the Siting Board must be able to recommend or require changes to the initial facility proposal, including the relocation of interconnections. Such project refinements or improvements arising in the course of Siting Board proceedings generally do not require additional notice under the relevant statutory provisions or Siting Board precedent. See G.L. c. 164 § 69J¼; ANP Blackstone Energy Company, EFSB 97-2/98-2, at 175 (1999) ("ANP Blackstone Decision"). To require re-notice when such changes take place would either create significant unnecessary delay in Siting Board proceedings, or, worse, serve as a deterrent to good faith identification and implementation of changes that

(continued...)

A timely petition to intervene was filed by Tofias Trust. Timely petitions to participate as interested persons were filed by: U.S. Generating Company ("USGen"); American National Power, Inc. ("ANP"); and Sigma Consultants, Inc. on behalf of Sithe Energy, New England ("Sithe"). Brockton Power filed an opposition to the petition to intervene of Tofias Trust. Brockton Power did not oppose the petitions to participate of USGen, ANP or Sithe.

The Hearing Officer denied the petition to intervene filed by Tofias Trust and, in the alternative, allowed Tofias Trust to participate as an interested person. Brockton Power, LLC, EFSB 99-1, Hearing Officer Procedural Ruling, April 8, 1999, at 7.⁵ The Hearing Officer granted the petitions to participate as interested persons of USGen, ANP and Sithe (Id.).

The Siting Board conducted two days of evidentiary hearings, commencing on July 6, 1999 and ending on July 8, 1999. The Company presented the testimony of the following witnesses: Kevin O'Reilly, Communications Director and Project Manager of the Point Group, who testified as to the Company's site selection process; George W. Baldwin, President and Managing Partner of Brockton Power, who testified as to the Company's site selection process; Theodore A. Barton, P.E., Managing Principal of Epsilon Associates, Inc., who testified as to the Company's project description, site selection, technology performance standards, environmental issues and mitigation and environmental policies; Dale T. Raczynski, P.E., Principal of Epsilon Associates, Inc., who testified as to air quality issues; Peter A. Valberg, Ph.D., Senior Scientist at Cambridge Environmental, Inc., who testified as to electrical and magnetic fields ("EMF") and health issues; Andrew D. Magee, Senior Project Manager at Epsilon Associates, Inc., who

⁴ (...continued)
would improve the overall quality of the project.

The Siting Board also notes that Tofias Trust did have actual notice of the proposed relocation of the transmission interconnection in its capacity as an interested party and in fact filed a renewed motion to intervene in this proceeding on that basis; accordingly, its allegations about lack of notice are without merit.

⁵ Subsequently, Tofias Trust filed a motion for reconsideration and a motion for a renewed petition for intervention. The Hearing Officer denied the motions on April 22, 1999 and September 8, 1999, respectively. Brockton Power, LLC, EFSB 99-1, Hearing Officer Procedural Ruling, September 8, 1999, at 8.

testified as to water resources, wetlands and traffic issues; and Douglas L. Sheadel, Principal Scientist of Modeling Specialties; and David N. Keast, P.E., Consultant in Acoustics, who testified as to sound modeling and noise issues.

On July 28, 1999, Brockton Power and Tofias Trust submitted their initial briefs and on August 4, 1999 Brockton Power and Tofias Trust submitted their reply briefs. Tofias Trust submitted corrections to its initial brief on August 5, 1999.⁶ The record consists of 165 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, § 69J¼, 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 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 69J¼: 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).

⁶ The Siting Board notes that, although Tofias Trust's corrections to its brief and reply brief were dated August 2, 1999 and August 4, 1999, respectively, those documents were misfiled by Tofias Trust at the Siting Board's vacated offices at 100 Cambridge Street, Boston, MA and, consequently not received by the Siting Board until August 5, 1999 and August 6, 1999, respectively.

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 July 15, 1999, parties and interested persons in EFSB 99-1 were invited to submit comments on both versions of the standards of review. Brockton Power, LLC, EFSB 99-1, Hearing Officer Memorandum, July 15, 1999.

2. Position of the Company

Brockton Power stated that in its opinion, the Siting Board staff's revised standards of review accurately set forth the changes required by the Restructuring Act (Company Initial Brief at 8, n. 7). The Company also stated that its application, as filed, fulfills the requirements of the Restructuring Act and is wholly consistent with revised standards of review issued by Siting Board staff (*id.*). In response to the argument raised by Tofias Trust that staff's standards of review are flawed because they do not specifically allow for the review of EMF impacts, the Company stated that, in this case, the Siting Board has followed its traditional approach of reviewing EMF impacts and that the record provides an "expansive basis" for the Siting Board to evaluate such impacts (Company Reply Brief at 1, n. 1).

3. Position of Tofias Trust

Tofias Trust stated that the staff's draft standards of review are flawed (Tofias Trust Initial Brief at 1). Specifically, Tofias Trust stated that the draft standards are silent relative to EMF impacts and that, to the extent the standards reject consideration of EMF impacts, the standards are contrary to statute (*id.*). Tofias Trust argued that since the Restructuring Act eliminated the need analysis but retained the mandate that a proponent show minimization of environmental impacts, the legislature intended to ratify the scope of the Siting Board's prior environmental review, which has routinely included a review of EMF impacts (*id.* at 3). Further, Tofias Trust argued that the Siting Board must review EMF impacts because G.L. § 69 J¼ specifically requires the Siting Board to review "radiation" impacts and "transmission lines emit and propagate electric and magnetic fields, and thus produce 'radiation' within the meaning of

§ 69J¼ (id. 4-5).”

4. Analysis

As an initial matter, the Siting Board notes that the purpose of its standards of review is to set forth the statutory requirements that govern its decisions, and to provide broad guidance as to how it interprets those requirements, so that all parties to a proceeding have a clear understanding of the scope of the proceeding.

With respect to EMF impacts, we note that G.L. c. 164, § 69J¼ does not specifically enumerate EMF impacts as a discrete area of review in generating cases.⁷ Because the standard of review is intended to provide broad guidance consistent with the Siting Board’s statute, we will not alter the list of specific environmental impacts which must be reviewed by adding EMF impacts. However, as a matter of practice, the Siting Board examines all relevant environmental impacts, not just those enumerated in its statute, in order to ensure that it fulfills its mandate to minimize environmental impacts consistent with the minimization of costs associated with the mitigation, control, and reduction of the environmental impacts of the proposed generating facility.⁸ Because electric generating facilities frequently have associated electrical transmissions lines, the Siting Board has historically reviewed the EMF impacts of transmission lines when assessing the environmental impacts of generating facilities. In cases that have been issued after the Restructuring Act, the Siting Board has continued to review EMF impacts to determine whether a project proponent has minimized environmental impacts. IDC Bellingham LLC, EFSB 97-5 (1999) (“IDC Bellingham Decision”); Sithe Edgar Development LLC, EFSB 98-7, at 106 (2000) (“Sithe Edgar Decision”); Sithe Mystic Development LLC, EFSB 98-8, at 71 (1999)

⁷ G.L. c. 164, § 69 J¼ includes “radiation impacts” in the list of generating facility impacts to be reviewed by the Siting Board. The Siting Board understands the term “radiation” to include the nuclear radiation which is a property of nuclear power plants; consequently, such impacts are not considered in the Siting Board’s review of gas-fired generating facilities.

⁸ The broad mandate of the Siting Board is to provide a reliable supply of energy for the Commonwealth with a minimum impact on the environment at the lowest possible cost. G.L. c. 164, §69 H.

(“Sithe Mystic Decision”). The Siting Board sees no reason to change its long-standing practice of reviewing EMF impacts in this decision. We note that neither the draft standards nor the revised standards of review issued by Siting Board staff preclude a review of EMF impacts. Consequently, in addition to the environmental impacts enumerated in G.L. c. 164, 69J¼, the Siting Board here reviews the EMF impacts of transmission interconnections associated with the proposed generating facility.

Accordingly, the Siting Board 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.^{9,10}

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, including EMF impacts; 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.¹¹

II. SITE SELECTION

A. Standard of Review

G.L. c. 164, § 69J¼ requires the Siting Board to determine whether an applicant’s

⁹ 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.

¹⁰ The Siting Board also reviews in this decision the environmental impacts of the proposed project, including EMF, traffic and safety.

¹¹ As set forth in Section III.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.

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, § 69J $\frac{1}{4}$ 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.

B. Description

Brockton Power indicated that its site selection process was developed to identify a site with attributes which would allow the proposed project to compete effectively in an electric generation marketplace while resulting in minimum impact on the environment (Exh. BP-1, at 2-2 to 2-3). The Company stated that its siting process was specifically designed to: (1) identify a reasonable universe of site alternatives; (2) apply appropriate evaluation criteria to such sites; and (3) select the site that would result in the minimum environmental impact at the least cost and would maximize opportunities to supply reliable, competitively priced electricity (id.).

Brockton Power stated that it initially limited the search for a suitable project to Massachusetts because the state's energy facility licensing process recognizes the competitive

nature of the electric generating market (Exh. BP-1, at 2-3). The Company indicated that the extensive prior experience of its project team in developing generating facilities within Massachusetts contributed to the Company's decision to focus on the state (id.). The Company also asserted that a competitive market and a solid economy in the region favor development (id.). The Company indicated that it focused its search on sites in southeastern Massachusetts due to the limited number of proposals to develop energy facilities in that area (Tr. 1, at 36). Finally, the Company indicated that the interest expressed by Brockton officials in having a generating facility developed within the city was a factor in further narrowing the search area for a project site (id. at 2-6; EFSB-S-4).

Brockton Power stated that it identified six potential sites in the Southeastern Massachusetts area: Site 1, Site 2, and Site 3 in Brockton, and individual sites in Taunton, New Bedford, and Plymouth (id.). The Company performed an initial examination of the six potential sites to assess site availability and to determine consistency with site evaluation criteria including: (1) proximity to electric transmission; (2) proximity to a gas pipeline; (3) community acceptance; (4) water supply; (5) site size and buffer; (6) waste water discharge; (7) proximity to sensitive receptors; (8) zoning and land use; (9) wetlands; (10) location of a site within one municipality; (11) at least 10 acres of industrial land suitable for building; and (12) manageable road access, such as proximity to a highway (Exhs. EFSB-S-5; BP-1, at 2-4). The Company stated that perhaps the most important consideration for siting a new generating facility was community acceptance (Exh. BP-1, at 2-3). The Company also indicated that proximity to natural gas supplies and electric transmission lines was imperative for developing an economically viable facility with minimum environmental impacts, and that it also considered close proximity to an adequate water supply for cooling to be a priority (id.). The results of Brockton Power's site evaluation are shown in Table 1, below.

The Company's initial analysis indicated that three of the potential sites -- the Taunton, New Bedford, and Plymouth sites -- would require extensive upgrades to existing gas pipelines

(Tr. 1, at 44 - 45; BP-1, at 2-7).¹² The Company's analysis further indicated that Brockton Site 1 posed concerns with respect to the extent of wetlands and proximity to sensitive receptors, while Brockton Site 2 is occupied by extensive wetlands and lacks sufficient suitable upland area for development (Tr. 1, at 21-33; Exh. EFSB-S-5, at 2). Finally, the Company determined that the Taunton and New Bedford sites were not available for development, and stated that the owner of Brockton Site 1 was reluctant to negotiate an agreement with the Company (Tr. 1, at 21-33; BP-1, at 2-7).

Based on its initial analysis, the Company concluded that the lack of favorable access to gas supplies and questionable availability for development were fatal flaws for the New Bedford and Taunton sites (Exhs. BP-1 at 2-7; Tr. 1, at 33-34). The Company also indicated that although the Plymouth site had appropriate zoning, community support, and adequate land, the insufficient capacity of the gas pipeline serving Plymouth constituted a fatal flaw for this site (id.).

¹² The New Bedford site is a 15-20 acre parcel owned by the Polaroid Company in the north end of the city (Tr. 1, at 44; Exh. BP-1, at 2-7). Brockton Power indicated that approximately three miles of pipeline upgrade would be necessary for this site (Tr. 1, at 44). The Taunton site is 25 acres owned by Taunton Municipal Lighting Plant and is located near Somerset Avenue in South Taunton (id.). The Company indicated that, for this site, one and one half miles of gas pipeline would have to be upgraded and a pipeline crossing of the Taunton River would be necessary (id.). The Plymouth site is a 15 acre parcel on Nick's Rock Road in the Plymouth Industrial Park (id.). The Company indicated that the gas pipeline serving the town of Plymouth was not sufficient for a generating facility and that upgrades would be prohibitively expensive (Tr-1, at 33-34).

Table 1.

Criteria	Brockton Site 1	Brockton Site 2	Brockton Site 3	Taunton Site	Plymouth Site	New Bedford Site
1) Proximate to Transmission Lines	Yes	Yes	Yes	Yes	Yes	Yes
2) Proximate to Gas Pipeline	Yes	Yes	Yes	No	No	No
3) Community Acceptance	Yes/No ¹	Yes ⁴	Yes	Unknown	Unknown	Yes
4) Water Supply	Yes	Yes	Yes	Yes	Unknown	Unknown
5) Site Size and Buffers	Yes/No ²	No	Yes	Yes	Yes	Yes
6) Wastewater Discharge	Yes	Yes	Yes	Yes	Unknown	Unknown
7) Proximity to Sensitive Receptors	Yes/No ²	Yes	Yes	Yes	Yes	Yes
8) Zoning/Land Use	Yes	Yes	Yes	Yes	Yes	Yes
9) Wetlands	Yes/No ²	No	Yes	Yes	Unknown	Yes
10) Entire Site Within One Municipality	No ³	Yes	Yes	Yes	Yes	Yes
11) 10 Acres of Buildable Industrial Land	Yes	No	Yes	Yes	Yes	Yes
12) Road Access	Yes	Yes	Yes	Yes	Yes	Yes

1 The site has general community acceptance but the owner showed a reluctance to negotiate a purchase agreement (Exh. EFSB-S-5).

2 The site is large site but there is concern about the amount of wetlands and proximity of sensitive receptors (Exh. EFSB-S-5).

3 The site includes land in both the City of Brockton and the Town of West Bridgewater (Exh. EFSB-S-5).

4 A "Yes/No" designation was inadvertently indicated in Exhibit EFSB-S-5 (Exh. EFSB-S-7).

Table 1 shows the results of the detailed site review performed by Brockton Power (Exh. EFSB-S-5). Yes/No indicates that site satisfied siting criteria in some aspects but not in others.

Brockton Power performed a more detailed evaluation of Brockton Sites 1, 2, and 3, all of which are within the Oak Hill Industrial Park located in the southeastern corner of Brockton (id.; HO-RR-1).¹³ First, to gauge local support for the project, the Company held a community meeting near the Oak Hill Industrial Park (Exh. EFSB-S-4). The Company indicated that it also contacted local elected officials and maintained continuous outreach with Brockton City officials and community activists from the early stages of the development process (id.). Brockton Power determined that Site 3 best met the project selection guidelines, including: (1) proximity to gas and electrical interconnections; (2) strong community support; (3) adequate size to minimize environmental impacts; (4) close proximity to a water supply (AWRF); (5) adequate distance from sensitive receptors; (6) appropriate zoning for a generation facility; and (7) sufficient development area outside of wetlands and protection zones (id. at 2-7 to 2-8).

To support its choice of site, the Company provided the Siting Board with a quantitative comparison of Brockton Sites 1, 2, and 3 (Exh. HO-RR-1). In this analysis, the Company ranked the sites based on location, lot size, price, visibility, accessibility, image, proximity to other businesses, site utility, zoning, water treatment, municipal sewer, environmental issues, and permitting issues (id.). The Company assigned a score between 1 and 10 to each site for each

¹³ Brockton Site 3 is 13.2 acres in size with only minor wetlands at the southern and western margins of the site (Exh. BP-1, at 1-1). The site is adjacent to the AWRF, has existing roadway access on Industrial Avenue, and is 1500 feet from an existing gas pipeline (Tr. 1, at 11, 30). The nearest residential properties are 1100 feet away (Exh. BP-1, at 1-13). All three of the Brockton sites are appropriately zoned for the proposed project (I-3, Heavy Industry) and the Company has established that there is widespread community support for the project in Brockton (Exh. BP-1, at 1-1 (Tables 1-1, 1-2, 1-3, 1-4)). Although the 30 acre Brockton Site 1 is larger than Site 3 and is closer to electric interconnections, Brockton Power indicated that it has outweighing disadvantages including longer gas pipeline and water supply interconnections, a higher proportion of wetlands, closer proximity to residential properties, and location of the site within two municipalities (Tr. 1, at 21-33). Furthermore, the Company indicated that the landowner of Site 1 was reluctant to negotiate a purchase agreement, so the property was unavailable for development (Exhs. BP-1, at 2-7; EFSB-S-5, at 2). The Company indicated that 9.5 acre Brockton Site 2 is comparable to Site 3 in distance to sensitive receptors, proximity to a suitable water supply, and proximity to gas and electric transmission, but the site was deemed unsuitable because extensive wetlands limited the potential area for development (id.).

category, with 10 signifying “Best” and 1 corresponding to “Poor” (*id.*). The Company argued that the site with the highest total scores was, overall, the most suitable site for the proposed project (*id.*). In a one-to-one comparison, the Company indicated that Brockton Site 3 was as good as or superior to each of the other Brockton sites for almost all siting criteria (Tr. 1, at 21-33). The Company supported this finding through the results of its quantitative analysis, in which Site 3 received a score of 128 out of a possible 130, while Site 2 scored only 108 and Site 1 scored 103 (*id.*).¹⁴

C. Analysis

The Company presented a site selection process which led to the choice of Brockton Site 3, located within the City of Brockton’s Oak Hill Industrial Park. The Company indicated that it focused its site selection process in southeastern Massachusetts due to a combination of the favorable regulatory structure for new energy facilities, regional economic factors, and local community interest. Brockton Power described a set of siting goals which included: (1) location in an area of developing competitive electric generation; (2) availability of infrastructure; (3) community acceptance; and (4) the ability to minimize environmental impacts. Using siting criteria that incorporated these siting goals, Brockton Power outlined its method for evaluating the six sites identified in its petition. This analysis included the Company’s description of fatal flaws attributed to the New Bedford, Taunton, and Plymouth sites and an objective ranking and comparison of the three Brockton sites. The Company indicated that the evaluation demonstrates the superiority of Site 3 relative to the other identified sites. The Siting Board finds the applicant’s description of the process used for site selection is accurate.

Some of the specific criteria in the Company’s site selection process were site size and buffer, proximity to sensitive receptors, extent of on-site wetlands, proximity to road access, and land use and zoning. These criteria are directly related to minimization of environmental impacts

¹⁴ The Company conceded that the numerical ranking of the Brockton sites was not the method ultimately used to compare potential facility locations; however, it argued that the ranking provides strong support for the selection of Brockton Site 3 for the proposed project (Exh. HO-RR-1).

including noise, visual, traffic, land use, and water related impacts. The balance of the Company's specific siting criteria included proximity to electric transmission and gas transmission, water supply, and waste water discharge facilities. These criteria minimize the cost associated with the proposed project, but also tend to minimize the environmental impacts of the project by minimizing disturbances associated with construction of ancillary facilities.¹⁵

Application of the siting criteria outlined above led to the Company's identification of a proposed project site that is within an area zoned for heavy industry and is currently surrounded by industrial and commercial land uses which would serve as a buffer between the proposed facility and sensitive receptors. The siting criteria allowed for the identification of a site that has minimal wetlands and is proximate to a gas pipeline, electric transmission lines, water supply, and waste water treatment facilities. Accordingly, the Siting Board finds that the Company's site selection process resulted in the choice of a site that contributes to the minimization of environmental impacts and the costs of mitigating, controlling, and reducing such impacts.

III. ENVIRONMENTAL IMPACTS

A. 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.

¹⁵ The Siting Board notes that, in addition to establishing criteria to minimize the costs and environmental impacts of potential facility sites, Brockton Power included community acceptance as a specific siting criteria. Furthermore, the Company described efforts to gauge and monitor community acceptance for the project at the selected site. The Siting Board encourages such early outreach and careful consideration of local opinion when evaluating locations for an energy facility.

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.

B. Air Quality

This section describes the project's proposed emissions and impacts, compliance with existing regulations, proposals for emissions offsets, and mitigation proposed by the Company.

1. Applicable Regulations

Brockton Power indicated that the air emissions from the proposed project are subject to regulation by the United States Environmental Protection Agency ("EPA") and the Massachusetts Department of Environmental Protection ("MDEP") (Exh. BP-1, at 4.6-1). The applicable regulations include: National Ambient Air Quality Standards ("NAAQS"); Massachusetts Ambient Air Quality Standards¹⁶ ("MAAQS"); Non-Attainment New Source

¹⁶ Massachusetts has adopted the NAAQS as the Massachusetts Ambient Air Quality Standards (Exh. BP-1, at 4.6-2 to 4.6-3). Pollutant concentration limits established as
(continued...)

Review ("NSR") requirements; Prevention of Significant Deterioration¹⁷ ("PSD") requirements; and New Source Performance Standards ("NSPS") (*id.*). All of these regulations apply to six criteria air pollutants: sulfur dioxide ("SO₂"), nitrogen oxides ("NO_x"), particulates¹⁸ ("PM-10"), carbon monoxide ("CO"), ozone ("O₃"), and lead ("Pb") (*id.* at Table 4.6-1). The PSD also covers several additional pollutants (*id.* at Table 4.6-1).¹⁹ The requirements of the air regulations are reviewed and administered through the MDEP's Air Plans Approval Process (*id.* at 4.6-5).

Brockton Power noted that NAAQS and MAAQS specify limits for the atmospheric concentration of criteria pollutants (*id.* at 4.6-3). The Company indicated that the federal and state air pollution regulations are intended to ensure that ambient air quality (which would include background and any new or existing sources) is in compliance with the NAAQS and MAAQS (*id.*). With respect to these air quality standards, EPA has classified each region of the country as "attainment", "non-attainment", or "unclassified" (*id.*). If an area is classified as "attainment" or "unclassified" for a particular pollutant, then a PSD review is required for pollutants with projected emissions rates that exceed a specified PSD threshold (Exh. EFSB-1, at 3.1-2). The PSD review requires that NAAQS and MAAQS standards be met and that Best Available Control Technology ("BACT") be used for any new source of pollutant emissions

¹⁶ (...continued)
 "primary" NAAQS and MAAQS standards are intended to protect human health while the "secondary" standards are intended to protect against any known or anticipated adverse effects that could impact the public welfare, such as damage to vegetation (*id.*).

¹⁷ As part of the PSD review, the MDEP applies acceptable ambient limits for over 100 air toxic pollutants (Exh. HO-RR-4(att.)). The Company indicated that a facility subject to PSD review is evaluated by the MDEP for compliance with Threshold Effect Exposure Limits ("TELS") and average annual Allowable Ambient Limits ("AAL") (*id.*).

¹⁸ The Company stated that the EPA promulgated a new Fine Particulate (PM-2.5) NAAQS in 1997, but that EPA indicated the PM-10 standard should continue to be used while a PM-2.5 monitoring network is being established (BP-1, at 4.6-3).

¹⁹ The Company submitted a list of PSD pollutants which included the criteria pollutants, particulate matter, beryllium, mercury, and several pollutants that, the Company indicates, would not be expected in emissions from the proposed project (Exh. EFSB-E-1, at 3.1-2 (Table 3.1-1)).

projected to exceed specified PSD Significant Emission Rates (id.). If an area is classified as “non-attainment” for a pollutant and a facility would be a major source of that pollutant, then EPA requires a non-attainment NSR (Exh. BP-1, at 4.6-3)

The Company indicated that Plymouth County, which includes Brockton, currently is “unclassified” for all criteria pollutants except O₃ (id.). The Company indicated that the entire Commonwealth of Massachusetts is classified as serious non-attainment for ozone (id. at 4.6-1). Therefore, the Clean Air Act (42 U.S.C. §7511 (f)) requires a NSR for new major sources of volatile organic compounds (“VOCs”) and NO_x emissions, which are chemical precursors to O₃ (id.).

The Company noted that, to identify new pollution sources that may significantly affect air quality, EPA and MDEP have established Significant Impact Levels (“SILs”) for criteria pollutants (id. at 4.6-3). New sources that would result in modeled ground level concentrations which exceed SILs are required to perform air quality modeling that specifically includes measured background levels of pollutants and emissions from both the proposed new source and existing interactive sources (id.). For new combustion sources, the EPA has also established NSPS, which specify fuel quality and/or allowable concentrations of pollutants in exhaust gas for a given combustion process (id. at 4.6-4). The Company indicated that both the exhaust emissions (2.0 ppmvd during gas firing and 6 ppmvd during oil firing) and the fuel sulfur concentrations (0.01 percent for gas, 0.05 percent for oil) of the proposed facility would be well below the NSPS (Exh. HO-RR-4, at 3-6).

In addition to the various EPA and MDEP regulations outlined above, the proposed project must satisfy the requirements of the Siting Board’s Technology Performance Standards (“TPS”) regulations (980 CMR 12.00), either by limiting emissions of six criteria pollutants and 16 non-criteria pollutants to levels stated in the regulations, or by providing an analysis of alternative generating technologies. Brockton Power submitted information demonstrating that emissions from the proposed project would be equal to or less than those stipulated in 980 CMR

12.00 for all criteria pollutants and non-criteria pollutants (Exh. BP-1, at 3-2 to 3-3).²⁰

2. Emissions and Impacts

Brockton Power asserted that the proposed project would have a beneficial effect on regional air quality and that its effect on local air quality would be insignificant (*id.* at 4.6-1).

To evaluate the air quality impacts of potential air emissions, Brockton Power modeled maximum ground level concentrations for criteria pollutants (*id.* at 4.6-12 to 4.6-26; EFSB-E-1 at 3.1-4 to 3.1-9). In its analysis, the Company used the SCREEN3 and ISCST3 air modeling software²¹ and assumed a stack height of 185 feet (*id.*)²². The Company also assumed a full 720 hours of oil firing during one year of continuous facility operation at a worst-case load rate for each pollutant (Exh. EFSB-E-1 (Table 3.1-1)).²³ The Company indicated that although the

²⁰ Brockton Power stated that emissions from the proposed facility were modeled for operating conditions of 100 percent base load at 50 degrees Fahrenheit (Exh. BP-1, at 3-4). The Company indicated that it used the ABB GT-24 reference guide, supplemented with other vendor information, to determine emissions for the criteria pollutants and that it combined this information with the calculated output of the facility for the specified load and temperature conditions in order to determine emission rates in lbs/MW-hr (*id.*). The Company calculated emissions rates for non-criteria pollutants using EPA's Compilation of Air Pollution Emission Factors, 5th Edition, AP-42 Section 3-1 Draft Table 3.1-4 (*id.*).

²¹ The Company indicated that its analysis of air quality impacts was conducted in accordance with EPA and MDEP procedures (Exh. BP-2, at 5.7-19).

²² The Company indicated that the EPA's revised Guidelines for Determination of Good Engineering Practice Stack Height (EPA 1985) present a stack height formula of $H_{GEP} = H_b + 1.5L$, where H_{GEP} is stack height, H_b is height of adjacent or nearby structures and L is either the height or width of the nearby or adjacent building, whichever is less (Exh. BP-1, at 4.6-12). The Company indicated that the Good Engineering Practice ("GEP") stack height for the proposed project would be 200 feet; however, the Company proposed a sub-GEP stack height of 185 feet to address visual impact concerns of the local community and stated that either stack heights would result in minimal air quality impacts (Exhs. BP-1, at 4.6-13; HO-RR-19; Tr. 2, at 348-349).

²³ The Company argued that its air modeling is conservative because the emissions calculations reflect emissions associated with the cooling tower in addition to turbine

(continued...)

proposed generating facility would be natural gas fueled, it would be capable of firing distillate fuel oil for a maximum of 720 hours (30 days) a year (Exh. EFSB-E-1, at 3.1-5).²⁴ The Company stated that during a normal year, it would expect to operate using oil for 24 to 48 hours, and that, based upon operating experiences at other dual-fuel plants, it is not likely the facility would need to operate continuously on oil for more than 48 hours (Exh. EFSB-T-4; Tr. 1, at 66 - 67).

Brockton Power's SCREEN3 modeling results established that air quality effects of the proposed project would be lower than all SILs except for 24-hour average SO₂ and 24-hour average PM-10 (Table 3) (*id.*). The Company indicated that it used the ISCST3 air quality modeling program to more accurately evaluate potential ground level concentrations of SO₂ and PM-10 (Exh. BP-1, at 4.6-24 to 4.6-26; EFSB-E-1, at 3.1-6 to 3.1-9). The Company's results from the ISCST3 modeling demonstrated that the ground level concentrations of 24-hour average SO₂ and 24-hour average PM-10 emissions would be less than SIL's, even under the worst-case load emissions rate (Table 3) (Exh. EFSB-T-4; Tr. 1, at 66-67).

The Company presented a comparison of the calculated emissions with PSD Significant Emission Rates and with Non-attainment NSR threshold criteria (*id.*). The Company's comparison showed that emissions of sulfuric acid mist, CO, NO_x, SO₂, PM, and PM-10 would exceed the PSD Significant Emission Rates (Table 2) and that the project would therefore be

²³ (...continued)
exhaust emissions (Exh. EFSB-E-1 (Table 3.1-1)). The Company also indicated that its air quality modeling is conservative because it used worst case part load scenarios, even though it intends to operate the proposed facility as a base load facility (*i.e.*, 100 percent load except for maintenance) (Exh. BP-1, at 4.6-22).

²⁴ Brockton Power explained that use of oil as a backup fuel is being proposed for this facility to preserve fuel diversity in the event of potential gas supply problems (Tr. 1, at 68 - 69). The Company indicated that the MDEP was in favor of the proposed facility having oil backup because of concerns about the number of proposed generating facilities in the region without an alternative to gas firing (*id.*). The Company specified that fuel oil would be used only during periods of gas supply interruption and would not be used from May 1 to September 30 (ozone season), except in the case of a gas supply emergency (Exh. EFSB-E-1, at 3.1-5; Tr. 1, at 67 - 68).

required to achieve BACT²⁵ for these pollutants (*id.* at 3.1-2). The Company's comparison also showed that annual NO_x emissions exceed the non-attainment NSR threshold criteria (*id.* (Table 3.1-1)). Therefore, the Company stated that a NSR and Lowest Achievable Emission Rate²⁶ ("LAER") technology would be required for NO_x (*id.* at 3.1-2). The Company noted that, because the proposed facility's expected emissions of VOCs would not exceed the 50 ton per year ("tpy") NSR threshold, an NSR and LAER for VOCs would not be required (Exh. BP-1, at 4.6-3).

Table 2.

Pollutant	Maximum Potential Emissions ¹ (tpy)	PSD Significant Emissions Rate (tpy)	Non-attainment NSR Threshold Criteria (tpy)
Carbon Monoxide (CO)	202	100	N/A
Nitrogen Oxides (NO _x)	73	40	50
Particulate Matter	131	25	N/A
PM-10	131	15	N/A
Volatile Organic Compounds (VOCs)	22	40	50
Lead (Pb)	0.05	0.6	N/A
Sulfur Dioxide (SO ₂)	66	40	N/A
Sulfuric Acid Mist	20	7	N/A

¹ Maximum potential emissions using worst case load emission rate of each pollutant for 8,040 hours of natural gas use and 720 hours of oil use as well as any cooling tower emissions.

Table 2. Maximum Potential Emissions of major pollutants for the Brockton Power project with

²⁵ The Company indicated that BACT is based on the maximum degree of reduction of any regulated air contaminant which is achievable taking into account energy, environmental, and economic impacts (Exh. BP-1, at 4.6-5). The Company indicated that the MDEP determines BACT on a case-by-case basis (*id.*).

²⁶ The Company stated that EPA defines LAER as "the most stringent emission limitation contained in the implementation plan for any state for such class or category of source, or the most stringent emissions limitation achieved in practice by such a class or category of source" (Exh. BP-1, at 4.6-6).

PSD Significant Emission Rates and Non-Attainment Threshold Criteria (Exh. HO-RR-4 (Table 3.1-1)).

Table 3.

Pollutant	Averaging Period	Modeled Maximum Concentration ($\mu\text{g}/\text{m}^3$)	Significant Impact Levels ($\mu\text{g}/\text{m}^3$)	Modeling Parameters
NO ₂	Annual	0.43 (SCREEN3)	1	75% Load, Gas 0°F, 8040 hrs 75% Load, Oil 100°F, 720 hrs
SO ₂	3-Hour	24.2 (SCREEN3)	25	75% Load, Oil, 100°F
	24-Hour	4.32 (ISCST3)	5	75% Load, Oil, 100°F
	Annual	0.31 (SCREEN3)	1	75% Load, Gas 0°F, 8040 hrs 75% Load, Oil 100°F, 720 hrs
PM-10	24-Hour	4.15 (ISCST3)	5	75% Load, Oil, 100°F
	Annual	.87 (SCREEN3)	1	50% Load, Gas 100°F, 8040 hrs 75% Load, Oil 100°F, 720 hrs
CO	1-Hour	25.81 (SCREEN3)	2000	50% Load, Gas, 0°F
	8-Hour	18.06 (SCREEN3)	500	50% Load, Gas, 0°F

Table 3. Significant Impact levels and modeled ground level concentrations for criteria pollutants of which the project would be a major source (Exh. HO-RR-4, (Table 6.3-2), (Table 6.5-1)). Listed concentrations were calculated using the SCREEN3 program with Simple Terrain parameters, except 24-hour average SO₂ and 24-hour average PM-10 which were recalculated using the more refined ISCST3 model (id.).

Because the proposed facility's modeled emissions were below SILs for all pollutants, the Company was not required to conduct interactive emissions analysis (Exh. BP-1, at 4.6-3). However, the Company indicated that the three largest existing emitters of air pollutants in Brockton and adjacent municipalities are the Browning Ferris Industries ("BFI") East Bridgewater waste disposal facility, the Veterans Administration ("VA") Medical Center, and Whitman Castings (Exh. EFSB-H-10). The Company indicated that the recently reported major emission of criteria pollutants from these facilities were: 133 tpy of CO, 36 tpy of NO₂, and 14

tpy of VOC from BFI; 119 tpy of SO₂ and 42 tpy of NO₂ from the VA Medical Center; and 72 tpy of CO from Whitman Castings (*id.*). The Company also submitted information indicating that these emitters were from 1.5 to 4.75 miles from the proposed site (*id.*). The Company argued that the potential for interactive effects between nearby major emitters and the proposed facility would be very small due to the distance of the emitters from the proposed project and the relatively limited total quantities of emitted pollutants from these facilities (*id.*; Tr. 1, at 153-154).

Brockton Power indicated that the ISCST3 modeling was also used to predict the ground level concentration limits of air toxic pollutants (Exh. HO-RR-4, at 6-12 to 6-13 (att.)). The Company modeled the 24-hour average concentration for gas and for oil firing as well as an annual average concentrations assuming 720 hours of oil firing and 8040 hours of gas firing (*id.*). The Company indicated that the predicted concentrations would be lower than TELs and AALs established by the MDEP (*id.*).

Due to its proposed use of treated effluent for cooling tower makeup water, Brockton Power also submitted a discussion of potential odors and airborne impurities associated with the wet mechanical cooling towers (Exhs. EFSB-EU-7; EFSB-EU-8). The Company indicated that the effluent used in the cooling towers would be treated and disinfected by the Brockton AWRP and also treated at the proposed facility, so this water would be clean and essentially odor free (*id.*). Furthermore, the Company indicated that the facility would be equipped with drift eliminators which would minimize emission of liquid from the cooling towers (*id.*).

3. Emission Mitigation and Offsets Proposals

As discussed in Section III.A.2 above, the proposed facility would be required to achieve BACT for all of the criteria pollutants and LAER for NO_x. Additionally, the Company indicated that BACT requirements would be applied to other pollutants that exceed the PSD Significant Emissions Rate, specifically PM and sulfuric acid mist (Exh. EFSB-E-1, at 3.1-2).

Brockton Power indicated that it would achieve BACT through: (1) use of efficient and controlled combustion in an advance turbine to reduce or minimize emissions of CO, VOC, PM, and PM-10; (2) use of an oxidation catalyst to reduce CO; and (3) use of natural gas and low

sulfur fuel oil to minimize sulfuric acid mist, SO₂ and PM-10 emissions (Exhs. BP-1, at 4.6-5 to 4.6-11; EFSB-E-1, at 3.1-2 to 3.1-6). To achieve LAER, the Company proposed the use of dry low-NO_x combustion and enhanced Selective Catalytic Reduction (“SCR”) technology²⁷ which would result in an average NO_x emissions rate of 2.0 ppmvd during gas firing (Exh. HO-RR-4, at 3-6). For oil firing, the Company indicated that water injection and SCR would constitute LAER technology and would result in an average NO_x emissions rate of 6 ppmvd (id.).

Brockton Power argued that the proposed project would have regional air quality benefits due to required NO_x offsets (Exh. BP-1, at 4.6-1). Specifically, the Company indicated that it would be required to offset its expected NO_x emissions at a rate of 1.26 to 1.0 (id.). The Company stated that its offsets would amount to 93 tpy and would have to be obtained from within Massachusetts or from a non-attainment area of at least equivalent severity which contributes to ozone non-attainment in Massachusetts (Exh. EFSB-E-1, at 3.1-4). The Company stated that appropriate NO_x offsets would be obtained from brokers prior to finalization of MDEP’s approval of the facility’s air plan (id.).

Brockton Power also indicated that, under 40 CFR Part 72, the proposed project would be designated as a Phase II Acid Rain “New Affected Unit” and that, as such, the proposed facility would be required to obtain allowances to offset potential SO₂ emissions (Exh. BP-1, at 4.6-4). The Company stated that these allowances can be purchased through the Chicago Board of Trade; however, it did not specify any procedures or plans for securing SO₂ allowances.

Brockton Power estimated that the facility’s maximum potential emissions of CO₂ would be 952,209 tpy (Exh. BP-1, at 4.6-12). The Company indicated that it would develop a plan for obtaining offsets, consistent with Siting Board precedent (id.).

Brockton Power also provided an analysis of the potential air quality benefits that would result from the proposed project if generation capacity at currently operating marginal generation facilities were displaced by the proposed project (Exh. EFSB-EA-1). The Company used data

²⁷ SCR technology for controlling NO_x emissions uses a catalyst to facilitate a reaction of injected aqueous ammonia with NO_x to produce water and nitrogen (Exh. BP-1, at 4.6-7). The Company indicated that the control technology proposed for the project would have an ammonia slip rate of 2 parts per million (“ppm”) (Exh. HO-RR-4 (Table 8.3-1)).

from ISO-New England's 1997 Marginal Emission Rate Analysis to calculate the quantity of NO_x, SO₂, and CO₂ emissions that would result from marginal facilities producing 265 MW of electric generation for 92 percent of the year (the estimated availability of the proposed facility) (*id.*). In its analysis, the Company indicated that emissions from a marginal facility would be 2,776 tpy for NO_x, 9931 tpy for SO₂, and 1,584,680 for CO₂ but that the proposed facility, for the same availability and generation capacity, would produce only 67 tpy of NO_x (2.4 percent), 59 tpy of SO₂ (0.6 percent), and 876,032 of CO₂ (55 percent) (*id.*). Therefore, the Company argued that the proposed project would result in a 2709 tpy net decrease in regional NO_x emissions and net reduction in regional SO₂ and CO₂ emissions of 9,872 tpy and of 708,648 tpy respectively (*id.*).

4. Analysis

The record shows that the proposed facility would consist of a combustion turbine primarily fueled with natural gas but permitted to use distillate fuel oil as a backup fuel source for up to 720 hours per year. The record also indicates that the project would include a HRSG and a steam turbine, as well as pollution control measures such as enhanced SCR, dry low NO_x firing of natural gas, an oxidation catalyst, and water injection during oil firing. The record shows that the proposed facility would achieve LAER for NO_x²⁸ and BACT for VOC, CO, PM-

²⁸ With regard to the use of SCR or a zero ammonia technology to achieve BACT, the Siting Board is of the opinion that, due to its primacy of jurisdiction and to its greater expertise in emissions control technologies, MDEP is the agency best suited to determine whether and when to introduce new emissions control technologies into the Commonwealth. See IDC Bellingham Decision, EFSB 97-5, at 35). As a result, the Siting Board will not require use of such technology (*Id.*). The Siting Board also notes that MDEP in a recent gas facility permit effectively has allowed the use of SCR rather than a zero ammonia technology at this time, with a review of the cost-effectiveness of retrofitting a zero ammonia technology to be conducted within five years. ANP Bellingham Energy Company Decision on Compliance, EFSB 97-1, at 6 (1999). The Siting Board therefore concludes that by incorporating the control technology that MDEP determines to be LAER for NO_x, the Company will have minimized its NO_x emissions and ammonia slip consistent with minimizing the cost of mitigating and controlling such technologies.

10, PM, SO₂, and sulfuric acid mist. The Company provided information regarding total facility emissions which demonstrates that the proposed project would meet TPS for criteria and non-criteria pollutants. Consequently, the Siting Board finds that no alternative technologies assessment is required for the proposed facility.

The Company calculated total expected air emissions from the proposed facility and used appropriate and reasonable air modeling techniques to estimate the expected air quality impact of potential emissions. The results of the Company's air quality impact analysis indicate that the maximum concentrations of NO₂, CO₂, PM-10, and CO emitted from the facility, at the location of maximum impact, would be between 0.064 and 2.7 percent of NAAQS. This modeling also demonstrates that the impact of the proposed facility would be less than SILs for all criteria pollutants. The Company determined these results assuming an exhaust stack height of 185 feet, which is 15 feet below GEP stack height and thereby reduces visual impacts (see Section III.F, below). Because the modeled emissions are below SILs, the Siting Board finds that the proposed 185 foot stack height would minimize air quality impacts consistent with the minimization of visual impacts.

Brockton Power proposed to use treated sanitary wastewater in its wet mechanical cooling towers.²⁹ The record indicates that the wastewater would be treated twice before use, and therefore no odors or airborne impurities are likely to be emitted by the cooling towers. Consequently, the Siting Board finds that Brockton Power's proposed use of treated sanitary wastewater would have acceptable air quality impacts.

Brockton Power proposes to use low sulfur distillate oil as a backup fuel for a maximum of 720 hours (30 days) per year but predicted that in a normal year it would use oil for only 24 to 48 hours. The Company has stated that fuel oil would be used in the event of insufficient gas supplies and that during the ozone season (May 1 to September 30), fuel oil would be used only

²⁹ The Siting Board notes that in previous reviews of projects that use sanitary wastewater it found that operation of wet mechanical cooling towers would have acceptable air quality impacts and no other adverse impacts. Altresco Lynn, Inc., 2 DOMSB 1, at 191; Enron Power Enterprise Corporation, 23 DOMSC 1, at 199 (1991) ("Enron Decision"); West Lynn Cogeneration, 22 DOMSC 1, at 96 (1991).

during a gas supply emergency. During a normal year the Company expects to use oil firing for a total 24 to 48 hours but, even under extreme circumstances, does not expect to continuously use oil firing for as long as 48 hours. Although other gas fired generating facilities have chosen not to have oil backup, the Company has proposed oil backup to preserve a fuel mix thereby enhancing the reliability of the proposed facility. The Siting Board recognizes that the ability for some facilities to have fuel options is imperative for the reliability of electric supply in the event of a contingency affecting regional gas supplies. It is also important to note that air emissions from the proposed facility, modeled with a full 30 days of oil firing, have emission levels below SILs.

In the Dighton Power Decision the Siting Board set forth a new approach to the mitigation of CO₂ emissions that required generating facilities to make a monetary contribution, within the early years of facility operation, to one or more cost-effective CO₂ offset programs, with such program(s) to be selected in consultation with the Siting Board Staff. Dighton Power Associates, 5 DOMSB 193, at 3 (1997)(“Dighton Power Decision”).³⁰ In the Dighton Power Decision, the Siting Board expressed an expectation that the contribution of future project developers would reflect the approach set forth in Dighton, which was determined as an offset based on one percent of annual facility CO₂ emissions, at \$1.50 per ton, to be donated in the early years of facility operation. Id. at 43.

Here, consistent with its rulings in recent cases, the Siting Board directs the Company to make a monetary contribution to cost-effective CO₂ mitigation programs of an amount that reflects the proposed facility’s annual CO₂ emissions of 952,209 tpy over 20 years of operation. Based on the projected maximum annual CO₂ emission and assuming distribution in five annual installments, the contribution requirements would total \$303,322, when adjusted for cost

³⁰ Previously the Siting Board required project proponents to commit to a specific program of CO₂ mitigation, such as tree planting or a forestation program designed to offset a percentage of facility CO₂ emissions within the early years of operation. See Berkshire Power Development, Inc., 4 DOMSB 221, 373-374 (1996)(“Berkshire Power Decision”).

increases.³¹ Therefore, the Siting Board requires the Company to provide \$303,322 to be paid in five annual installments during the first five years of facility operation, to a cost effective CO₂ offset program or programs to be selected in consultation with the staff of the Siting Board. Alternatively, the Company may elect to provide a single contribution of \$246,888 by the end of the first year of facility operation.³²

Based on the above, the Siting Board finds that, with the condition set forth above, the environmental impacts of the proposed facility would be minimized with respect to air quality impacts.

C. Water Resources

The following section describes the water resource impacts of the proposed facility, possible alternatives to mitigate impacts, and the cost and benefits of any alternatives.

1. Description

Brockton Power divided its proposed water use into four categories: (1) cooling water; (2) process water; (3) injection water; and (4) potable water (Exh. BP-1 at, 1-22, 1-25). The Company indicated that the cooling water that is necessary to dissipate waste heat from the steam

³¹ The contribution is based on offsetting one percent of facility CO₂ emissions over 20 years, at \$1.50 per ton. To calculate the required offset payment, the 20-year amount of \$285,663 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 three percent. Annual contribution amounts would be distributed as follows: year one \$57,132; year two \$58,846; year three \$60,611; year four \$62,430; year five \$64,303. See ANP-Blackstone Decision, EFSB 97-2/98-2, at 114; Cabot Power Corporation, EFSB 91-101A (1998)(“Cabot Power Decision”); ANP Bellingham Decision, EFSB 97-1, at 104; U.S. Generating Company, EFSB 96-4, at 114, 117-118 (1997)(“Millennium Power Decision”).

³² This figure is calculated by discounting, at ten percent annually, the five annual payments totaling \$303,322. See ANP Blackstone Decision, EFSB 97-2/98-2, at 114; Cabot Power Decision, EFSB 91-101A, at 57-58; ANP Bellingham Decision, EFSB 97-1, at 104; Millennium Power Decision, EFSB 96-4, at 114 117-118. The single up-front payment of \$246,888 would be due by the end of the first year of operation.

turbine and ancillary systems would be, by far, the largest water use at the proposed facility (Exh. BP-1, at 1-21 to 1-22). Specifically, the Company proposed to use an average of 1.6 mgd of treated and disinfected effluent from the Brockton AWWRF as makeup water for the wet mechanical cooling towers (Exh. BP-1, at 1-1). The Company indicated that it would produce a much smaller volume of process water from effluent by filtering, demineralizing, and possibly polishing the effluent with activated carbon (Exh. BP-1, at 1-22, 1-25). The Company explained that the effluent for both cooling and process water would be obtained via a pipeline running directly from the Brockton AWWRF to treatment facilities at the project site (id.).³³ Brockton Power stated that high-purity injection water, which is necessary for NO_x control during emergency oil firing, would be supplied from an on-site tank of previously treated water (id.). According to the Company, the stored injection water would either be treated on-site “over many days” or purchased (id.). Finally, the Company indicated that it would obtain a relatively small volume of potable water for sanitary use from Brockton’s water supply system via an interconnection with a water main on Oak Hill Way (id.).

The Company estimated that under average temperature conditions (59° Fahrenheit) the proposed facility would use 1,564,000 gallons per day (“gpd”) for cooling tower makeup water and would use 15,000 gpd for process water (Exh. BP-1, at 1-22). The Company indicated that 1,368,000 gpd of the makeup water would be evaporated in the cooling towers and 196,000 gpd would be discharged to the AWWRF as blowdown (id.). For higher temperature conditions (90° Fahrenheit) the Company estimated water use at 1,655,000 gpd, with 1,447,000 gpd of evaporative loss and 207,000 gpd of blowdown (id.). The Company stated that during the summer, the proposed facility would use an average of 40,000 gpd of process water and that 17,000 gpd of this amount would be used under high temperature conditions for an air inlet chilling system (id.). The Company estimated that the rate of injection water use for NO_x control

³³ Brockton Power indicated that under normal circumstances, water from the Brockton AWWRF would be diverted from the treatment plant discharge subsequent to tertiary treatment and sand filtration (Exh. EFSB-E-1, at 2-3). Under high flow conditions, the Company indicated that water would probably be obtained immediately downstream of the secondary system (id.). The Company estimated that during at least 90 percent of facility operation, water would be diverted after tertiary treatment (Tr. 2, at 323-324).

indicated that the confluence of Salisbury Brook and Trout Brook in Brockton forms the Salisbury Plain River, which in turn, drains into the Matfield River (id.). The Matfield River then converges with the Town River to form the main stem of the Taunton River (id.). The Company indicated that the Taunton River basin is 562 square miles in area and that the Salisbury Plain River subbasin is only 16.7 square miles in area at the point of the AWRF discharge (id.).

Brockton Power estimated the flow volume of the Salisbury Plain River without discharge from the AWRF or the effects of other major artificial influences (i.e. natural flow) (Exh. BP-1, at 4.4-7 to 4.4-14).³⁵ The Company estimated that the mean annual natural flow of the Salisbury Plain River is 30.2 cfs, and that minimum and maximum mean annual flows are 11.8 cfs and 45.4 cfs, respectively (id. at 4.4-10). The Company also estimated the instantaneous peak flood flow of the river at 1,115 cfs and the minimum mean monthly natural flow at 0.8 cfs (id. at 4.4-10 to 4.4-12). To determine 7Q2 and 7Q10 low flow³⁶, the Company cited USGS (1984) published estimates of low flow for 44 locations in the Taunton River basin (Exh. BP-1, at 4.4-12). By comparing low flow estimates of subbasins similar in area to the Salisbury Plain River basin at the AWRF discharge, the Company estimated that the natural 7Q2 low flow for the Salisbury Plain River is approximately 1.7 cfs and that the natural 7Q10 low flow is approximately 0.6 cfs (id.).

Brockton Power identified several recommended minimum flow thresholds for the

³⁵ Because there is no record of flow rates in the Salisbury Plain River, the Company estimated mean annual flow rates by analyzing measured flow rates from six USGS gauging station in the Taunton River basin that have at least ten years of data, including three gauging station that are operating currently (Exh. BP-1 at 4.4-7 to 4.4-10). By plotting the mean annual flows, minimum mean annual flows, and maximum mean annual flows versus the drainage areas and regressing a line through each set of data, the Company determined a constant for calculating river flow based on drainage area (id.). The Company indicated that a similar method was used to estimate instantaneous peak flood and minimum mean monthly flow of the river (id.).

³⁶ The 7Q2 and 7Q10 low flow rates are the minimum rates of average flow over seven consecutive days that are expected to recur on average once every two years and once every ten years, respectively.

Salisbury Plain River or rivers downstream (Exhs. BP-1, at 4.4-14 to 4.4-23; EFSB-E-1, at 3.2-3 to 3.2-4). The Company presented a general recommendation from the 1991 Draft Taunton River Basin Plan suggesting a minimum flow of 2.5 cfs for the Salisbury Plain River at the AWRF (*id.*).³⁷ The Company also identified several resource-specific recommendations for minimum flow rates, including: (1) a minimum of 0.5 cfsm (8.4 cfs at AWRF) for Resident Fisheries in the Taunton River; (2) a minimum flow rate of 3.5 cfsm (March), 3.0 cfsm (April), and 2.5 cfsm (May) for potential Anadromous and other Marine Fisheries in the Matfield River; (3) a 3.3 to 20 cfs flow rate at the AWRF to maintain Scenic Rivers; and (4) a 1.6 to 2.4 cfs flow need at the AWRF for Municipal Water Supply purposes (*id.*). The Company also cited a 7Q10 based threshold of 0.6 cfs for NPDES Permits (Exh. EFSB-E-1, at 3.2-4).

Brockton Power stated that these stream flow thresholds were not “applicable” to the proposed project because the water consumed would be effluent that is diverted prior to discharge into Salisbury Plain River (Exh. EFSB-E-1, at 3.2-3). Even so, the Company submitted an analysis indicating that the proposed consumptive water use from the Brockton AWRF would not cause flow rates in the Salisbury Plain River to fall below recommended minimum flow thresholds, even under 7Q2 or 7Q10 conditions (Exh. EFSB-E-1, at 3.2-4). Using the minimum waste water flow rate of 19.5 cfs and the 0.6 cfs 7Q10 low flow conditions in the Salisbury Plain River, the Company calculated that under the worst case scenario the combined flow downstream of the AWRF would be 20.1 cfs, which is greater than all of the recommended minimum flow thresholds listed above (Exh. BP-1 at 4.4-19). The Company also emphasized that the flow of effluent from the AWRF would fluctuate far less than the natural river flow and that for five months of the year treated effluent from the AWRF would create an

³⁷ The 1991 Draft Taunton River Basin Plan was prepared by MDEP for the Massachusetts Water Resources Authority (Exhs. BP-1, at 4.4-14; EFSB-EU-2). This document recommends a minimum threshold flow rate of 0.22 cubic feet per second per square mile (“cfsm”) for the Taunton River basin as a whole (*id.*). The Basin Plan also indicates that due to local hydrogeologic factors, 10 subbasins within the Taunton River basin, including the Matfield River basin (which includes the Salisbury Plain River) should have a minimum flow threshold of 0.15 cfsm (*id.*). Given the 16.7 square mile area of the drainage basin at the AWRF and the 0.15 cfsm threshold, the minimum flow at the AWRF should be 2.5 cfs.

artificial base flow in excess of the naturally occurring flow (id.).

The Company evaluated the potential effect of its proposed water use on downstream resources, including: (1) Resident Fisheries, (2) Anadromous and other Marine Fisheries, (3) Receiving Treated Effluent, (4) Scenic Rivers, (5) Municipal Water Supplies, and (6) Effect on Proposed Downstream Withdrawals (Exhs. BP-1, at 4.4-19 to 4.4-23; EFSB-EU-5). Brockton Power asserted that its project would not affect the ability of the other water resources to receive treated effluent because the proposed project would be using treated effluent (Exh. BP-1, at 4.4-19 to 4.4-23). With regard to recently proposed downstream withdrawals, the Company indicated that the proposed facility's water use would have insignificant effects on the two proposed major withdrawals (City of Brockton, Taunton River Water Supply project, EOE #8788 and Bluestone Energy Services, Regional Water Supply project, EOE #10185) because both projects are a considerable distance downstream of the proposed facility and because the AWRP produces a higher than normal flow rate for the Salisbury Plain River basin even with the proposed water use (id.). In summary, Brockton Power asserted that the limited quantities of treated effluent used by the facility would not result in a reduction of river flow volumes of sufficient magnitude to have any adverse impact on the water resources downstream of the AWRP (id.). The Company also indicated that the proposed facility could even have a slight positive impact on water resources because, during periods of high flow, some of the wastewater that would not receive tertiary treatment would be intercepted by the project prior to discharge (id.).

The Company analyzed the potential impact of its proposed consumptive water use on the physical characteristics of rivers downstream of the Salisbury Plain River, including the Matfield River between the Satucket and Taunton Rivers, the Taunton River downstream of the Matfield River, and stretches of the Taunton River that may be particularly affected by low flow conditions (Exhs. EFSB-EU-5; EFSB-EU-11). The Company presented an evaluation from the 1997 City of Brockton Taunton River Water Supply Supplemental Draft Environmental Impact Report (EOEA No. 8788) which showed that a 15 cfs decrease in flow rate at the Mill Street

Bridge on the Taunton River would result in a 1.4 inch change in river depth (Exh. EFSB-3).³⁸ By comparison, the Company indicated that the proposed facility would consume effluent at an average rate of only 2.2 cfs (Exh. BP-1, at 1-21). The Company also argued that the dimensions of rivers downstream from the AWRF would be minimally affected by the proposed consumptive water use because both the width and the depth of the Matfield and Taunton Rivers are primarily controlled by topographic factors (Exhs. EFSB-EU-5; EFSB-EU-11).

The Company estimated a 7Q10 low flow rate of 6.6 cfs for the Matfield River between the Satucket and Taunton rivers, and cited a 7Q10 low flow of 13.3 cfs in the Taunton River at the Mill Street Bridge, just downstream of Matfield River (*id.*). The Company's data indicate that the combined AWRF discharge and 7Q10 low flow of the Salisbury Plain River, after the proposed withdrawals, would be greater than the low flow rates cited for the Matfield or Taunton Rivers downstream from the AWRF and therefore would not lead to these rivers falling below predicted 7Q10 low flows (*id.*). Similarly, the Company argued that the proposed water use would not have significant effects on the flow rate, water temperature, or water quality of the Matfield and Taunton Rivers because the maximum consumptive use represents only 10.6 percent of the effluent discharge from the AWRF during low flow periods and an even lower percentage of flow in the rivers downstream of the AWRF (*id.*; Exh. HO-RR-16).

Brockton Power discussed water shortages in the Taunton River drainage basin (Exhs. EFSB-E-1; EFSB-EU-3; EFSB-EU-4). The Company asserted that while the Taunton River basin as a whole does not have a water supply problem, Brockton and some neighboring towns do have water supply problems as a result of their location at the headwaters of adjacent drainage basins (*id.*). In support of this contention, the Company cited the 1991 Draft Taunton River Basin Plan, which states that "the Taunton River basin is hydrologically strong in some areas and stressed in others" but further concludes that "[t]he overall river basin and many tributaries are

³⁸ The 1997 City of Brockton Taunton River Water Supply Supplemental Draft Environmental Impact Report indicated that at the Mill Street Bridge the river depth is 4.09 feet when the flow rate is 28 cfs (7Q2 low flow) but when the flow rate is decreased to 13 cfs (7Q10 low flow) the river depth is 3.97 feet (Exh. EFSB-3 (Tables J-4, J-5)). This corresponds to a 0.12 foot decrease in stream depth for a 53 percent change in flow rate.

projected to sustain high general environmental quality even during drought conditions” (Exh. EFSB-EU-2, at 5, 6). The Company emphasized that the proposed project is not in one of six stressed subbasins in the Taunton River basin and that although there is a stressed subbasin upstream of the AWRF (Trout Brook) there are no stressed subbasins downstream (Exhs. EFSB-E-1; EFSB-EU-3; EFSB-EU-4). The Company also cited a report entitled Strategy for Meeting the Water Supply Needs of Brockton and Other Taunton River Basin Communities Through the Year 2020, indicating that although Brockton and several surrounding towns have water supply problems, “the basin as a whole currently has adequate developed supply to meet projected demands through 2020” (*id.*). Although it is unclear whether the proposed consumptive water loss would reduce the water balance in the Taunton River drainage basin, Brockton Power indicated that the City of Brockton receives much of its water from Silver Lake, located in the adjacent South Coastal drainage basin (Exh. EFSB-E-1, at 3.2-2). The Company explained that, on average, Brockton receives 10 mgd from Silver Lake and speculated that if 60 percent of this water reaches the AWRF, then 6 mgd of effluent from the treatment facility represents a net basin transfer into the Taunton River basin (*id.*).

The Company characterized the hydrogeology of the site as dominated by well-drained stratified glacial outwash deposits which tend to readily allow water infiltration and transmission, and indicated that shallow ground water would flow westward to the Salisbury Plain River (Exhs. BP-1, at 5.8-4; 5.10-2; EFSB-EG-1). Brockton Power submitted information showing that the proposed facility would be within an interim Zone II Wellhead Protection Area in Brockton -- the Hubbard Well -- and that 2500 feet downstream from the AWRF, the Salisbury Plain River flows into interim and delineated Zone II Wellhead Protection Areas for the Town of West Bridgewater (Exh. BP-1 (fig. 4.4-3), (fig. 1-5); BP-2 (app. B)). The Company indicated that, although the Hubbard Well is only 1300 feet from the site and is a City of Brockton municipal water supply well, it is currently inactive and used only for emergency water supply purposes (Exh. HO-RR-12). The Company also indicated that within half a mile of the proposed facility there are 13 private water supply wells which are probably used to supply potable water, with the closest well being approximately 1100 feet from the site (Exh. HO-RR-12). Brockton Power stated that it is not proposing to monitor ground water at the proposed facility site (Exh.

EFSB-EG-2).

In the Order of Conditions for the proposed facility, the Brockton Conservation Commission indicated that wetlands associated with the proposed facility represent a significant resource for ground water supply, and stipulated conditions to protect ground water supplies (Exh. EFSB-E-3 (f) (att.)). These conditions include: (1) operation and maintenance of a storm water management system in accordance with MDEP policy; (2) lining of storm water retention basins to avoid ground water recharge; and (3) incorporation of features into the design of the storm water basins that will allow shutdown and containment of spills (*id.*). The Company also asserted that the requirements of the Order of Conditions will ensure that groundwater is protected and that the use of effluent from the AWRF would not result in loss of groundwater recharge (Exh. EFSB-E-1, at B-10).

The Company indicated that potable water would be used by approximately 20 full time employees for sanitary purposes (Exh. EFSB-EU-1). The Company estimated potable water use at 1000 gpd but also presented a calculation, based on a formula established in Title 5 of the State Environmental Code, which suggested that average daily water use could be as low as 300 gpd (*id.*).

The Company indicated that the limited sanitary waste water from the facility would be discharged to the existing sanitary sewer system (Exh. BP-1, at 1-25). Brockton Power indicated that the facility would return 11,000 to 17,000 gpd of neutralized process water to the AWRF, after being treated to meet all of the City of Brockton industrial pre-treatment requirements (Exh. BP-1, at 1-22 to 1-23). To accommodate the volume of process water it returns to the AWRF, the Company has indicated that it would work with the City of Brockton's sewer infiltration and inflow ("I/I") reduction program (Exh. BP-1, at 1-22 to 1-23). The Company indicated that the approximately 200,000 gpd of blowdown from the facility's cooling towers would be returned to the AWRF downstream of the secondary treatment (Exh. EFSB-E-1, at B-20). The Company acknowledged that the cooling towers could concentrate water contaminants not removed during pretreatment; however, the Company stated that water returned to the AWRF would be in compliance with Brockton's pre-treatment standards and that the AWRF discharge permit would not be compromised by the facility blowdown (*id.*).

3. Mitigation Alternatives

Brockton Power provided information on an alternative cooling technology – an air cooled condenser system – which would effectively eliminate the consumptive water use necessary for the proposed wet mechanical cooling technology (Exhs. BP-1, at 4.4-23 to 4.4-26; EFSB-EU-10). The Company acknowledged that air cooling is a proven technology, but argued that air cooling would have environmental and cost disadvantages which would outweigh any benefits of reducing water use (id.). The Company stated that the environmental disadvantages of air cooling include: (1) an average facility performance penalty of 3.67 MW due to efficiency loss and power consumed driving cooling fans (under hot summer conditions the penalty would be 7.37 MW); (2) noise increases at the nearest residences that would exceed noise from the proposed cooling system by 3 to 4 dBA (8 to 9 dBA increases total); and (3) large increases in the facility footprint (14,000 square feet) and height (id.). The Company also indicated that the additional capital costs of installing an air cooling system would be approximately \$8,200,000, which represents a 5 percent increase in the plant cost before considering increased costs associated with maintenance and lost capacity (id.).

4. Analysis

Brockton Power proposes a wet mechanical cooling technology for its proposed facility. The record indicates that the cooling towers would use treated effluent from the Brockton AWRP for make-up water and that treated effluent would also be used to supply the process water for the proposed facility. In addition, the proposed facility would use as much as 325,000 gpd of injection water for NO_x control during oil firing. This water would either be purchased or generated over a period of several days by on-site treatment of available water.³⁹ The proposed facility would use less than 1000 gpd of the City of Brockton's municipal water supply.

Based on the Company's estimate of 1.4 mgd of predicted evaporation, the proposed facility would consume approximately 5185 gpd per MW of electricity generated. This rate of

³⁹ Because Brockton Power has indicated that oil firing will not occur between May 1 and September 30, water injection is unlikely to occur during periods of either low flow from the AWRP or high cooling and process water use.

water consumption compares favorably with the per MW use of water-cooled facilities previously reviewed by the Siting Board.⁴⁰ However, it is significantly higher than the water requirements of recently reviewed air-cooled generating facilities. The Siting Board therefore reviews the impacts of this water use to determine whether it minimizes the environmental impacts of the proposed facility consistent with minimizing costs and other environmental impacts.

The Company evaluated the impact of the proposed consumptive water use on the Salisbury Plain River. The record demonstrates that the proposed water use would not result in flow rates for the Salisbury Plain River below any guidelines suggested to maintain resources downstream of the proposed facility, even during 7Q10 conditions.⁴¹ Furthermore, the record indicates that the facility is neither within nor downstream of any stressed subbasins of the Taunton River drainage basin and that the proposed use would not negatively affect any downstream water resources. Although the record indicates that the City of Brockton and some surrounding towns have experienced water supply problems, this appears to be due to the location of these municipalities at the headwaters of adjacent drainage basins rather than water supply issues within the Taunton River basin which could be affected by the proposed use of AWRP effluent.

The Company analyzed the use of air-cooled condensers to mitigate water use. The record indicates, however, that the use of air-cooled condensers would result in a considerable

⁴⁰ Comparable usage rates for other facilities using wet mechanical cooling are 5740 gpd per MW for the 252 MW Berkshire Power facility, 6986 gpd per MW for the 146 MW Enron facility, and 8,333 gpd per MW for the 240 MW Masspower facility. See Berkshire Power Decision, 4 DOMSB 221, at 374 (1996); Enron Decision, 23 DOMSC at 134 (1991); Masspower, Inc., 20 DOMSC 301, at 301 (1990).

⁴¹ In response to a Draft Environmental Impact Report ("DEIR") comment letter, Brockton Power indicated that another generating facility that may be proposed for a site adjacent to the Brockton Power site is proposing to use 1.1 mgd of treated effluent from the Brockton AWRP (Exh. EFSB-E-1, at B-9 to B-10). The Company indicated that even this additional use would not result in the Salisbury Plain River having flow thresholds, even during low flow periods, below any of the suggested thresholds cited in Section II.B.2 above (id.).

additional capital outlay by the Company and would result in noise impacts and efficiency losses that could largely offset the benefits of decreased water consumption. Moreover, because the 1.4 mgd of water consumed on average by the proposed facility would be obtained from the Brockton AWWF, this water use would not decrease available municipal water supplies nor would it entail environmental impacts associated with water withdrawal from ground or surface water sources.

The record indicates that the proposed project will have minimal impacts on water quality in the Salisbury Plain River. The record shows that the consumptive water use by the proposed facility is approximately seven percent of average effluent from the AWWF, therefore increases in the concentration of dissolved solid in the effluent will be minimal. The Company indicated in the record that the small amounts of process water discharged from the facility will be equalized and neutralized and that all discharges will comply with pretreatment limits. Furthermore, the record shows that the volumes of sanitary wastewater from the proposed facility would be minimal and, additionally, that the Brockton Power would work with the City of Brockton to reduce I/I to accommodate process waste water returned to the AWWF.

The record demonstrates that the proposed facility site is within and upstream from existing ground water resource areas for municipal ground water supplies and is relatively near private wells. The record also indicates that although the site area is underlain by sediments that readily transmit water, the Company has no plans to monitor ground water. The Company has stated that the proposed project would not negatively affect ground water resources and that it would comply with conditions to protect ground water that were attached to the Order of Conditions for the proposed project. The Siting Board notes that the proposed project will require on-site storage of oil and other bulk chemicals that could pose a threat to ground water resources (see Section III. H.1, below). The Board also notes that the Company is proposing to store these chemicals within diked containment systems but it is not clear whether the Company would design these systems to protect groundwater. Therefore the Board directs the Company to incorporate ground water protection measures such as impermeable bases into the design of its bulk chemical storage containment systems.

Based on a review of the evidence presented, the Siting Board concludes that the

Company's plan to reuse waste water from the AWRF would minimize the water resource impacts of the proposed facility consistent with minimizing other potential environmental impacts and cost. With regard to ground water, the Siting Board concludes that with implementation of the condition described above, the proposed facility would minimize environmental impacts to ground water impacts consistent with minimization of cost. Accordingly, the Siting Board finds that, with implementation of the above condition, the environmental impact of the proposed facility would be minimized with respect to water resources.

D. Wetlands

This section describes wetland impacts which would result from construction of the proposed facility, possible impacts from operation of the facility, and the proposed mitigation of potential impacts.

1. Description

Brockton Power indicated that the Brockton Conservation Commission, the MDEP, and the United States Army Corps of Engineers ("USCOE") would regulate wetland impacts from construction and operation of the proposed facility (Exh. BP-1, at 4.5-1 to 4.5-18). The Company indicated that most of the wetlands or wetland resource areas at the site are regulated by the MDEP under the Massachusetts Wetlands Protection Act and its implementing regulations ("MWPA")(G.L. c. 131, § 40; 310 CMR 10.00), which are administered in Brockton by the Brockton Conservation Commission (Exhs. BP-1, at 4.5-1 to 4.5-18; EFSB-E-3(a)). The specific wetland resources regulated under the MWPA include Land Under Water Bodies and Waterways, Bank, Riverfront Area, Bordering Land Subject to Flooding, and Bordering Vegetated Wetlands (Exh. BP-1, at 4.5-1 to 4.5-18). The Company stated that the MDEP also administers Section 401 of the Water Quality Certification Program (314 CMR 9.00) but that the USCOE regulates isolated wetlands under Section 404 of the Clean Water Act (33 U.S.C. 1344) (*id.*). The Company identified additional regulations related to wetland impacts including the EPA's National Pollution Discharge Elimination System ("NPDES") General Permits for Storm

Water Discharges from Construction Activities and NPDES Permits for Industrial Discharge of Storm Water (40 CFR Part 122) (Exh. BP-2, at 2-10).

Brockton Power indicated that it conducted a wetland survey of the project site to identify wetland resource areas on-site and in areas directly adjacent to the site (Exh. EFSB-E-3(a)). Specifically, the Company identified an Isolated Wetland along the southern boundary of the site and Land Under Water Bodies and Waterways ("LUW"), Bank, Riverfront Area, Bordering Land Subject to Flooding (BLSF"), and Bordering Vegetated Wetland ("BVW") along the western and southwestern edges of the site in proximity to the Salisbury Plain River (Exh. BP-1, at 4.5-4 to 4.5-13).⁴²

Brockton Power indicated that the proposed project would require the filling of 21,300 square feet of the BLSF (31,950 cubic feet of flood storage) in the southwest corner of the site (Exh. BP-1, at 4.5-13). In addition, the Company stated that it would temporarily alter 150 square feet of BVW and approximately 550 square feet of BLSF in order to construct a waste water supply/return line (Exh. BP-1, at 4.5-13). The Company submitted information showing that a small portion of the filled BLSF on the site and most of the temporarily altered BLSF would also be within the 100-foot wetlands buffer zone (Exh. BP-2 (fig. 5.9-1)). The Company submitted information indicating that LUW, Bank, and Riverfront Area at the western boundary of the site would not be affected by the proposed project (Exh. EFSB-E-2(a)).

⁴² The Company indicated that the land under the Salisbury Plain River at the western boundary of the site constitutes LUW and that the eastern bank of the river qualifies as regulated Bank (Exh. BP-1, at 4.5-4 to 4.5-13). The Company has also indicated that because the proposed facility is within an urban area (City of Brockton), the Riverfront Area extends for only 25 feet from the river rather than the 200 feet designated for many areas (*id.*). The BLSF was determined by Brockton Power using the flood elevation of the Salisbury Plain River associated with the 100-year frequency storm (72.5 feet, NGVD) as indicated on the Federal Emergency Management Agency ("FEMA") Flood Insurance Rate Map for the area (Community-Panel Numbers 250261-0005 C) (*id.*). At the northwest boundary of the site, along the Salisbury Plain River, the Company identified BVW in a narrow strip (25 feet) which is contiguous with a more extensive area (approximately 1.4 acres) in the southwest corner of the site (Exhs. BP-1, at 4.5-4 to 4.5-13; BP-2 (fig. 5.9-1)). Finally, the Company identified approximately 0.2 acres of isolated wetland near the center of the southern site boundary (*id.*).

Brockton Power also evaluated the wetland impacts that would result from construction of the facility's gas pipeline and electric transmission interconnections (Exh. BP-1, at 4.5-3; 4.5-14). The Company submitted information showing that wetlands impacts from the construction of the transmission interconnection would be limited to construction of the interconnect within the 100 foot buffer zone to wetlands adjacent to Oak Hill Way and the Old Colony Rail ROW (id.; Exhs. HO-RR-2 (att.); HO-RR-20 (a) (att.)). The Company determined that there would be no wetlands impacts associated with construction of the gas pipeline because the interconnect would be within the existing ROW for Industrial Boulevard (id.).

Brockton Power stated that the proposed project has been designed to prevent indirect wetlands impacts associated with erosion and sedimentation that could result from the project (id.). The Company also indicated that it would treat stormwater in four state-of-the-art stormwater detention basins, which would minimize indirect impacts from run-off discharged into wetlands (id.).

2. Proposed Wetlands Impact Mitigation

Brockton Power stated that the proposed project would incorporate structural designs and best management practices ("BMPs") to avoid and minimize direct and indirect wetland impacts to the maximum extent practicable (Exh. BP-1, at 4.5-14). Specifically the proposed project would include compensatory flood storage, restoration of BLSF and BVW, erosion and sedimentation ("E&S") control, and stormwater management (id. at 4.5-15 to 4.5-17).⁴³ The Company also indicated that, by lowering the elevation of upland areas adjacent to BVW, it would restore an area of wetlands that was previously filled (Exh. EFSB-E-3(d)). Furthermore, the Company indicated that an existing 30 inch concrete drain pipe that is currently discharging into BVW will be pulled back out of wetland resource areas and that the new discharge point will be provided with a rip-rap channel to dissipate run-off velocity, thus mitigating erosion (id.).

To compensate for BLSF that would be filled, Brockton Power indicated that it would

⁴³ The Company provided a copy of the Brockton Conservation Commission's Order of Conditions for the proposed project (Exh. EFSB-E-3(f)).

create 22,470 square feet of new BLSF with a flood storage volume of 40,446 cubic feet (Exhs. BP-1, at 4.5-15; EFSB-E-3(e)(4)). The Company indicated that the compensatory BLSF: (1) would be located adjacent to the Salisbury Plain River, just west of the proposed facility; (2) would be planted with appropriate vegetation to compensate for lost fauna habitat; (3) would have unrestricted hydraulic connection with the river; and (4) would avoid potential increase in flood-stage stream velocities by not creating any restriction to flow (*id.*).

Brockton Power indicated that the proposed water supply/return easement (10 feet wide) through the BLSF and the 150 square feet of BVW would be restored, in kind, following installation of the water lines (Exh. BP-1, at 4.5-15 to 4.5-16). The Company outlined the restoration, which would include regrading disturbed land to previous elevations and seeding with an appropriate plant mix (*id.*). For the BLSF, the Company indicated that the seed mix would include rapidly colonizing upland plants and grasses (*id.*). For BVW the Company proposed plantings similar to previously existing flora, which may include shrubs and saplings (*id.*).

Brockton Power outlined its proposed E&S control program and its stormwater management plan, which are designed to mitigate potential indirect impacts to wetlands (Exh. BP-1, at 4-16 to 4-18). The Company indicated that the proposed E&S control program would incorporate BMP guidelines of the MDEP and EPA, including: (1) erosion control barriers (staked haybales/silt fences) down gradient from the limit of work and around soil stockpiles; (2) stabilized construction exits with anti-tracking pads; (3) temporary sedimentation basins and diversion swales; (4) protection of catch basins with silt sacks or staked hay bales; and (5) project phasing, temporary mulching and seeding, and maintenance of sediment controls (*id.*).⁴⁴

Brockton Power described its proposed stormwater management program as the diversion and piping of on-site stormwater to designated catch basins which would be designed to intercept

⁴⁴ The MDEP and EPA guidelines cited by the Company are: (1) MDEP, 1993, Massachusetts Nonpoint Source Management Manual: A Guidance Document for Municipal Officials and (2) EPA, 1992, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices (Exh. BP-1, at 4.5-15 to 4.5-16).

floating contaminants and to allow suspended solids to settle (id.). The Company also indicated that it would regularly sweep the streets and limit use of salt and sand on site to mitigate potential water quality impacts from stormwater run-off (id.). The Company stated that its proposed E&S controls and stormwater management plans would comply with NPDES and Massachusetts Stormwater Management policy (id.).

3. Analysis

The record shows that the proposed project would result in three types of impacts to regulated wetland resource areas: (1) the temporary disturbance of 150 square feet of BVW; (2) the filling of 21,300 square feet of BLSF; and (3) construction of the generating facility, the electrical interconnect⁴⁵ and the wastewater interconnect within the 100 foot buffer zone to BVW. However, the record also indicates that the Company has received an Order of Conditions from the Brockton Conservation Commission, that the disturbed BVW and additional BVW would be restored, and that a compensatory area would be created to mitigate filled BLSF at a ratio greater than 1:1.

The record documents that potential indirect wetland impacts from stormwater and from erosion and sedimentation would be mitigated by stormwater management and E&S control programs. The record also indicates that the proponent has committed to implement E&S and stormwater control programs designed to comply with the requirements of the NPDES General Permit for Storm Water Discharges from Construction Activities and with the Massachusetts Stormwater Management Policy.

Accordingly, the Siting Board finds that, with implementation of mitigation proposed by

⁴⁵ In the project interconnect study, provided after the close of hearings, Eastern Utilities Associates (“EUA”) recommends that Brockton Power install two new interconnect lines on double circuit poles along the proposed route, rather than a single interconnect line as proposed by Brockton Power in this review (Exh. HO-RR-7S (att. at 3, 10-12, 15)). If there is a significant change in the Company’s proposed interconnect line, including the possible change of using a double-circuit interconnect line configuration as recommended in EUA’s interconnect study, Brockton Power must inform the Siting Board of such change in order that the Siting Board may determine whether to inquire further into the matter (see Section III.J, below).

Brockton Power, the environmental impacts of the proposed facility would be minimized with respect to wetlands.

E. Solid Waste

This section describes the solid waste impacts of the proposed facility and the mitigation proposed by the Company.

1. Description

Brockton Power indicated that solid and hazardous waste would be generated during construction, operation, and maintenance of the proposed facility (Exhs. BP-1, at 4.7-1 to 4.7-2; EFSB-SW-2). The Company stated that all solid and hazardous waste at the proposed facility would be properly stored and removed by appropriately licensed haulers (Exhs. EFSB-SW-1; EFSB-SW-2). Furthermore, the Company stated that it would meet all federal, state, and local requirements governing the handling, storage, and disposal of hazardous waste (id.).

Brockton Power indicated that construction-related solid waste would include excess fill, waste lumber (from pallets and packing boxes), packaging material, and scrap material (wire, pipe, insulation, and siding) (Exh. BP-1, at 4.7-1 to 4.7-2). The Company also indicated that construction workers would generate household-type sanitary solid waste and that hazardous wastes such as cleaning solvents, oils, and solvent based coatings would be generated prior to facility start-up (id.; EFSB-SW-2). The Company proposed to collect construction debris in large roll-off containers which would be hauled to an appropriate construction and demolition debris ("C&D") landfill by a licensed contractor (id.). The Company indicated that sanitary and hazardous waste generated during construction would be collected in appropriate containers and removed for disposal by licensed solid and hazardous waste contractors (id.).

Brockton Power indicated that solid waste generated during facility operation would include mixed office waste, water treatment solids, and miscellaneous broken or damaged machine parts and electrical materials (Exhs. BP-1 at 4.7-1 to 4.7-2; EFSB-SW-1). The Company projected that one 12-foot roll-off container per week would be sufficient to handle operational solid waste (Exh. EFSB-SW-1). The Company stated that potential hazardous waste

generated during facility operation would include spent lubrication filters, empty hazardous material containers, water treatment filter media, sludge (from sand filters), cooling tower muck, and spent SCR catalysts (Exh. EFSB-SW-2). With regard to handling procedures for hazardous wastes, the Company indicated that waste would be: (1) collected in an appropriately designed hazardous waste storage area; (2) removed by an authorized hazardous waste hauler; and (3) disposed of at an authorized hazardous waste management facility (Exh. EFSB-SW-2).

Brockton Power discussed practices or procedures it would use to minimize solid waste impacts (Exh. BP-1, at 4.7-1 to 4.7-2). With regard to construction waste, the Company indicated that it would endeavor to minimize or eliminate the amount of fill that would be removed from the site and that garbage containers would be placed throughout the site to minimize litter (*id.*). The Company also indicated that, during operation, office paper and metal machine parts would be recycled, as appropriate (*id.*; EFSB-E-1, at B-18).

2. Analysis

The record demonstrates that Brockton Power or its licensed contractor would dispose of all un-recycled solid waste generated during construction and operation of the proposed facility at appropriate disposal sites in a manner consistent with applicable government regulations. The record also shows that the Company would minimize off-site disposal of fill and recycle office paper.

The record does not, however, include any procedures for segregating or recycling construction waste. The Company has stated that construction related debris, including lumber waste and scrap cable, wire, pipe, and siding would be removed to a C&D landfill for disposal. The Siting Board notes that many of these materials may be recyclable, and that in recent proceedings before the Siting Board other developers of generating facilities have committed to segregating and recycling construction debris.⁴⁶ Therefore, the Siting Board directs Brockton Power to develop and implement a plan for segregating and recycling wood, metal, and other

⁴⁶ See IDC Bellingham Decision, EFSB 97-5, at 56; Sithe Edgar Decision, EFSB 98-7, at 58; Sithe Mystic Decision, EFSB 98-8, at 39.

recyclable debris during the construction phase of the proposed project. In the event that the Company determines that recycling of selected construction debris is impractical or burdensome, the Siting Board directs the Company to submit a detailed evaluation of the factors that contributed to this determination, including an analysis of the waste stream, an analysis of costs associated with disposal and recycling, and a comparison of recycling costs to potential environmental benefits of recycling at the proposed facility.⁴⁷

Accordingly, the Siting Board finds that, with implementation of the above condition, the solid waste impacts of the proposed facility would be minimized.

F. Visual Impacts

This section describes the visual impacts of the proposed facility on nearby sections of the Town of West Bridgewater and the City of Brockton, and describes proposed mitigation of the impacts.

1. Description

Brockton Power performed a viewshed analysis to assess the visual impact of the proposed generating facility and electrical interconnection on nearby residential and public areas (Exhs. BP-1, at 4.10-1 to 4.10-7; EFSB-V-1). The Company asserted that the visual impacts of the proposed facility at sensitive locations would be minimal due to variable screening provided by existing foliage and commercial buildings (Exh. BP-1, at 4.10-1). The Company also claimed that the facility would not be visible from most locations within surrounding neighborhoods and that even where visible, the facility's appearance would be consistent with surrounding industrial

⁴⁷ In the Sithe Edgar Decision (EFSB 98-7, at 58-59) the Siting Board concluded that further review of measures to minimize solid waste impacts for gas and oil fired facilities is now warranted. The Siting Board stated that future applicants for proposed generating facilities would be required to demonstrate that they would minimize solid waste impacts by characterizing the waste stream from the proposed facility, describing solid waste minimization and recycling strategies proposed for the facility, and, as applicable, providing a comparison with statewide policy initiatives and/or governmental or industry guidelines or averages.

uses (Exh. BP-1, at 4.10-2; 4-10-7).

Brockton Power indicated that the most prominent structures associated with the proposed facility would be the 185 foot exhaust stack, the 80 foot HRSG building, and the 65 foot turbine building (Exh. BP-1, at 4.10-1). To assess the visual impact of these structures and the 79 foot utility poles for the electrical interconnect, the Company used USGS topographic maps to identify areas where the facility -- specifically the exhaust stack -- could be visible, and then performed a drive-through survey to identify representative viewsheds (Exhs. BP-1, at 4.10-7 to 4.10-7; EFSB-V-1; EFSB-V-4).⁴⁸ The Company then performed a visual assessment of potential viewshed locations by using photographic techniques and survey instrumentation to evaluate the direction and elevation of potentially visible facility structures (*id.*).

The Company analyzed views of the proposed facility from ten locations (Exhs. BP-1, at 4.10-2 to 4-10-7; EFSB-V-1; EFSB-V-2). The Company indicated that four of these analysis locations are near residential areas along Route 28, including one location in West Bridgewater (Viewshed #1) and locations in Brockton that are southwest, west, and northwest of the facility (Viewsheds #6, #2, and #3, respectively) (*id.*). The Company identified another analysis location due north of the site along Plain Street (Viewshed #4) and three additional analysis locations northeast, east, and southeast of the facility (Viewsheds #7, A, and #5, respectively) (*id.*). The Company also performed viewshed analyses for the facility and originally proposed electric interconnect route at two locations along Appleby Street (Viewsheds A and B) and a third location along the existing 115 kV transmission corridor east of the site (Viewshed C) (*id.*). The Company submitted a map showing that there were no potential sensitive viewing areas immediately south or southeast of the site (Exh. BP-1 (fig. 4.10-1)).

⁴⁸ The Company indicated that the viewsheds shown in the analysis were primarily taken from roadways to provide an adequate clearing to see the projected location of the facility and to provide a representative analysis of public viewing (Exh. BP-1, at 4.10-1 to 4.10-2). The Company indicated that initial viewshed analysis for locations 1-7 were performed during foliate conditions, but stated that the potential visual impacts under defoliate conditions were considered (*id.*). The Company concluded that, during defoliate conditions, only Viewshed #5 would be substantially affected but that the visual impact would still be minimal (*id.*). The Company indicated that viewshed analyses at location A, B, and C were performed during defoliate conditions (Exh. EFSB-V-1).

Brockton Power's visual impact analyses indicated that, from most locations, only the top of the exhaust stack would be visible, due to partial screening provided by existing trees and intervening commercial buildings (Exhs. BP-1, at 4.10-1 (figs. 4.10-3 to 4.10-8)). The Company stated that from locations with a view of the stack top (Viewsheds #1, #2, #3, and #6), an observer would see the stack within a cluster of existing commercial buildings, poles, and signs that make up the skyline from these viewing locations (Exh. BP-1, at 4.10-7). A notable exception is due east of the site, at Viewshed A, where the Company's analysis shows that much of the exhaust stack would be visible (Exh. EFSB-V-3 (att. 3A and 3B)). Another exception is the view from northeast of the site, at the 4 story Crown Point Condominium building where the Company speculated that there would be a view of the facility from residences above the groundfloor (Exh. BP-1, at 4.10-6).⁴⁹ The Company argued, however, that the current view from the condominiums toward the proposed site already has an industrial character (*id.*). In support of this contention, the Company submitted an areal photo of the site and surrounding area which shows that the current view from the Crown Point Condominiums toward the site would include commercial buildings and the AWRF (Exh. BP-1, at (fig. 4.10-2)).

Brockton Power indicated that it would maintain existing local screening and provide plantings and landscaping at the facility entrance and along the north and east side of the facility, in order to minimize the visual impact of the proposed facility (Exhs. BP-1, at 4.10-2; EFSB-V-2). The Company indicated that the facility color scheme would use monochromatic neutral colors, chosen in consultation with the City of Brockton (*id.*). The Company also stated that the proposed sub-GEP stack height of 185 feet would minimize visual impacts of the stack and would avoid impacts from lighting that the FAA may require for structures over 200 feet tall (Tr. 2, at 348-349).

With regard to visual impacts of the proposed utility interconnect, the Company submitted documentation showing that utility poles along the original interconnect route would be visible from residences along Appleby Street (Exh. EFSB-V-1 (fig. EFSB-V-1b)). During

⁴⁹ The Company indicated that it was unable to obtain a representative viewshed photograph due to a lack of public access (Exh. BP-1, at 4.10-6).

the proceeding, the Company revised its proposed interconnect route so as to avoid a portion of the MBTA ROW that abuts a residential neighborhood (Exhs. EFSB-V-1 (fig. EFSB-V-1a); HO-RR-20 (a) (att.); Tr. 1, at 126). The Company stated that the revised interconnect route would mitigate the visual impacts of the interconnect line, with the exception of impacts of a corner pole proposed for the preferred interconnect route which the Company has indicated would be near the southernmost residence along Appleby Street (Exh. EFSB-EL-11; Tr. 1, at 126).⁵⁰

Brockton Power stated that it would work with homeowners in close proximity to the proposed facility to develop and implement reasonable mitigation measures, as appropriate (Exh. EFSB-V-2). The Company indicated that it would be willing to work within the framework of a Siting Board condition that requires screening for affected residents who make reasonable requests for mitigation of visual impacts (Tr. 2, at 345).

2. Analysis

The record demonstrates that, from most directions, the proposed facility would be largely screened from view by existing trees and commercial buildings and that views of the facility from most residential areas would be limited to variable portions of the exhaust stack. From the upper floors of the Crown Point Condominium building, a substantial portion of the proposed facility likely would be visible. However, the existing view from Crown Point Condominiums is already characterized by industrial development and the appearance of the proposed facility would be consistent with surrounding industrial uses.

The Company has indicated that in order to minimize the visual impacts of the proposed facility it would choose a color scheme in consultation with the City of Brockton and maintain plantings and landscaping along the north and east sides of the site. In addition, the Company has proposed a change to the electrical interconnect route which would reduce visual impacts on

⁵⁰ The Company provided information indicating that the corner pole would include two sets of insulators and require a larger foundation than the in-line poles (Exh. EFSB-V-4).

the residential neighborhood along Appleby Street in Brockton.⁵¹

The record shows that the Company is willing to work with homeowners to mitigate visual impacts of the proposed facility in areas where views are possible. In recent decisions, the Siting Board has required proponents of generating facilities to provide selective tree plantings and other reasonable mitigation in residential areas up to one mile from the proposed stack location to mitigate the visibility of the facility and the associated stack. ANP Blackstone Decision; EFSB 97-2, at 143-144; ANP Bellingham Decision, EFSB 97-1, at 128; Berkshire Power Decision, 4 DOMSB at 395. Consistent with this precedent, the Siting Board directs the Company to provide reasonable off-site mitigation of visual impacts at affected residential properties and at roadways and other locations within one mile of the proposed facility, as requested by individual property owners or appropriate municipal officials. For this decision, reasonable offsite mitigation could include shrubs, trees, or other mutually-agreeable measures, such as window awnings, that would screen views of the proposed generating facility and related facilities including the proposed electrical interconnect line.

In implementing this requirement, the Company: (1) shall provide shrub and tree plantings, or other reasonable mitigation such as window awnings 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 and to all potentially affected property owners, 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 facility; (4) shall complete all agreed-upon mitigation measures within one year after

⁵¹ In the project interconnect study, provided after the close of hearings, EUA recommends that Brockton Power install two new interconnect lines on double circuit poles along the proposed route, rather than a single interconnect line as proposed by Brockton Power in this review (Exh. HO-RR-7S (att. at 3, 10-12, 15)). If there is a significant change in the Company's proposed interconnect line, including the possible change of using a double-circuit interconnect line configuration as recommended in EUA's interconnect study, Brockton Power must inform the Siting Board of such change in order that the Siting Board may determine whether to inquire further into the matter (see Section III.J, below).

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 foregoing condition, the environmental impacts of the proposed facility would be minimized with respect to visual impacts.

G. Noise Impacts

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.

1. Description

Brockton Power stated that, with proposed noise mitigation measures, noise generated by operation of the proposed facility would result in levels at residential receptors that are well below the MDEP noise policy, which limits noise increases at the project property boundary to a maximum of 10 dBA (L_{90})⁵² above ambient noise levels and prohibits the introduction of pure tone conditions (Exh. BP-1, at 4.11-4; 4.11-22).⁵³ Although the Company indicated that the proposed facility would not be a source of pure tone conditions at community locations, it indicated that the proposed facility would result in noise level increases at the project property

⁵² The designation “dBA” indicates sound measured in decibels using an “A-weighting” network, which emphasizes the middle range of sound frequencies that are within the human hearing range and de-emphasizes lower and higher frequencies (Exh. BP-1, at 4.11-1 to 4.11-3). Noise levels reported as “ L_{dn} ” are A-weighted sound levels averaged over a 24 hour period but with a 10 dBA penalty added to noise during nighttime hours. Noise levels reported as “ L_{eq} ” are sound levels averaged over a specified period of time (Exh. EFSB-N-3 (att.) at 3). The term “ L_{90} ” refers to an exceedence level, which is the sound level exceeded 90 percent of the time during a measurement interval (Exh. BP-1, at 4.11-3). Unless otherwise indicated, noise levels described in this section will be reported in dBA at L_{90} .

⁵³ Pure tone conditions are defined as any sound where an octave band level exceeds adjacent octave bands by 3 dB or more (Exh. BP-1, at 4.11-4; 4.11-22).

boundaries that are greater than 10 dBA (id.). The Company indicated that the City of Brockton does not have quantitative noise level standards or a local noise control ordinance (id.; Exh. HO-RR-4 (att. at 7-26)).

Brockton Power calculated expected noise levels by measuring ambient levels in the area around the proposed facility site and adding these values to the modeled noise levels expected to be produced by the operation of the proposed facility (Exh. HO-RR-4 (att. at 7-4 to 7-25)). To determine ambient noise levels, the Company performed a noise level survey at five sound monitoring locations ("SML") surrounding the site and at one location on the facility property boundary (Exh. HO-RR-4 (att. at 7-4 to 7-15)).⁵⁴ The Company's survey indicated that ambient noise levels in the surrounding community ranged from 40 to 45 dBA during the quietest part of the night and from 46 to 53 dBA during the daytime (Table 4) (id.). The Company indicated that the noise level measurements were dominated by roadway noises from Route 28 and various sources associated with activities at the Oak Hill Industrial Park (id.).

Brockton Power used daytime and nighttime ambient L_{eq} measurements to calculate L_{dn} values for the sound level measurement points (Exh. EFSB-N-4). The Company's data indicate that L_{dn} measurements for the surrounding community are primarily between 54 dBA and 57 dBA, but that one monitoring location, a Cumberland Farms at the corner of Route 28 and Hayward Avenue, had an L_{dn} measurement of 64 dBA (id.). Thus, most of these levels are above the EPA's recommendation that an equivalent sound level ≤ 55 dBA (L_{dn}) would be requisite to protect public health and welfare with an adequate margin of safety (Exhs. BP-1, at 4.11-4;

⁵⁴ Brockton Power indicated that the noise level survey was performed during the summer of 1998 during daytime and nighttime periods of both weekdays and weekends (Exh. HO-RR-4 (att.) at 7-4 to 7-11). The Company specified that sound level measurements were taken between midnight and 5:00 a.m. for nighttime measurements and during off-peak traffic periods for daytime measurements (id.). Conditions during the measuring intervals were described by the Company as periods with dry roadways and low wind conditions (id.). The Company stated that the measurements were for twenty minute intervals and were made using a calibrated Rion NA-29 sound level meter (id.).

EFSB-N-3, (att. at 3)).⁵⁵**Table 4.**

Monitoring Station	Relative Location (from proposed stack)	Daytime dBA (L ₉₀)	Nighttime dBA (L ₉₀)	Calculated dBa (L _{dn})	Location Description
SML-1	2,200 ft (south)	49	40	54	Beacon Mobile Home Park
SML-2	1,100 ft (west)	53	44	64	Cumberland Farms
SML-3	1,800 ft (northeast)	50	42	56	Crown Place Condominiums
SML-4	1,600 ft (east)	46	42	55	Appelby & Geralynn Streets
SML-5	550 ft (east)	47	45	57	Facility Property Boundary
SML-6	3,200 ft (north)	47	43	57	Housing Authority Towers

Table 4. Measured ambient noise levels for the area surrounding the proposed facility (Exhs. HO-RR-4 (att.) (Table 7.1-8); EFSB-N-4).

Brockton Power indicated that operational noise levels for the proposed facility were modeled using standard sound propagation principles and sound level input values from measured ambient levels, acoustics literature, and field measurements (Exh. HO-RR-4 (att. at 7-19 to 7-24; app. B)). The Company also indicated that the noise level model incorporates a base-case noise attenuation package for the facility but does not apply attenuation associated with soft ground absorption, foliage, or tree cover (id.). The Company indicated that the noise modeling points were chosen to represent actual locations of sensitive receptors rather than

⁵⁵ The EPA published a document entitled "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (1974) (Exh. EFSB-N-3, (att.)). This document identifies maximum sound levels, that are requisite to protect public health and welfare from hearing loss (70 dBA, L_{eq(24)}), interference with outdoor activity (55 dBA, L_{dn}), and interference with indoor activity (45 dBA, L_{dn}) (id., at 2-3).

ambient measurement locations (id.).⁵⁶

The results of the Company's modeling indicate that the L_{90} noise levels at the nearest residential receptor would increase by 5 dBA at night to 49 dBA and increase by as much as 2 dBA during the day to 54 dBA (Table 2) (id.). The Company indicated that approximately 25 residences could have nighttime L_{90} increases of between 4 and 5 dBA and daytime increases of between 1 and 2 dBA (id.). In regard to the potential effect of noise increases, the Company asserted that noise level increases of 3 dBA are the smallest increases which are noticed in a typical community (id.). The Company indicated that model L_{dn} noise levels increase of 0 to 1 dBA would be expected at residential receptors (Exh. EFSB-N-4).

Table 5.

Model Station	Expected Plant Noise L_{90} , dBA	Nighttime Total L_{90} , dBA	Nighttime Increase L_{90} , dBA	Daytime Total L_{90} , dBA	Daytime Increase L_{90} , dBA	Day/Night Total L_{dn} , dBA	Day/Night Increase L_{dn} , dBA
R-1	38	42	2	49	0	57	0
R-2	47	49	5	54	1	64	0
R-3	42	45	3	51	1	57	1
R-4	44	46	4	48	2	58	1
R-5	40	45	2	48	1	56	0
PL-1	64	64	19	64	17	64	7
PL-2	61	61	16	61	14	---	---
C-2	54	55	10	55	8	---	---

Table 5. Model noise levels for operation of the proposed facility and resulting noise levels from a combination of facility noise and ambient noise levels (Exhs. HO-RR-4 (att.) (Table 7.1-8); EFSB-N-4). See Table 4 for measured ambient noise levels.

⁵⁶ The Company's analysis shows that model locations R-4 and R-5 are closer than ambient measurement points used in the modeling and that model points PL-1, PL-2, and C-2 use a single ambient measure from a monitoring point (SML-5) which does not correspond to any model point location (Exh. HO-RR-4 (att. at 7-19 to 7-24)).

The Company's data indicated that the nighttime L_{90} increases over ambient would be 19 and 16 dBA at the southern and northern property boundaries, respectively, and that daytime increases would be 17 and 14 dBA (Exh. HO-RR-4 (att. at 7-19 to 7-25)). The Company indicated that L_{90} noise increases of 10 dBA would not extend beyond areas zoned as I-3 during the daytime or nighttime and that properties adjacent to the site on the north and south (most affected areas) are low sensitivity industrial areas (including an ash landfill to the south) (*id.*). The Company also indicated that the non-industrially zoned area which is closest to the proposed facility is zoned for commercial use (C-2) and that neither C-2 nor I-3 zoned areas could be developed for residential uses without a variance from the City of Brockton (Exhs. EFSB-N-1R; EFSB-EL-3). At the property boundary (PL-1) Brockton Power's modeling predicted a 7 dBA increase in the L_{dn} (Exh. EFSB N-4).

Brockton Power indicated that construction activity at the site would last for approximately 18 months and that various phases of the construction activity would likely overlap (Exh. EFSB-N-2). The Company evaluated potential construction-related noise using the EPA document "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances", which includes a model for calculating equivalent noise levels based on the quantity of machinery and type of construction activity being performed (Exh. HO-RR-4 (att. 7-15 to 7-18)). The Company reported modeled construction noise levels at the nearest residence (1,100 feet) ranging from 51 dBA (L_{eq}) for foundation construction to 73 dBA (L_{eq}) for possible pile driving (*id.*). The Company also reported that steam blows would be necessary during the final stages of plant construction, and noted that steam blows although loud, would be short in duration and would occur over a limited period of time (*id.*). The Company also indicated that construction would occur only between the hours of 7:00 a.m. to 3:00 p.m. Monday through Friday, except for unusual circumstances (Tr. 2, at 183-184).⁵⁷

⁵⁷ The Company cited concrete pours as a circumstance that could require work hours beyond 3:00 p.m. (Exh. Tr. Volume 2, at 184-185).

2. Proposed Mitigation and Mitigation Alternatives

Brockton Power presented a base-case noise mitigation package, which was incorporated into the noise modeling discussed above, and an alternative “no impact” mitigation package that would attenuate potential noise impacts to a less than 3 dBA increase at all residential receptors (Exh. HO-RR-4 (att. at 7-26 to 7-29)). The base-case mitigation package included: (1) housing of major generating components in acoustically treated buildings; (2) ventilation fans with a low noise level design and possibly acoustical louvers; (3) duct silencers for turbine intake and exhaust; (4) low-speed aerodynamic fans and splash protection material for cooling towers; (5) housing the gas compressor in an acoustically treated building; (6) lagging and wrapping exposed natural gas pipes and valves; and (7) installing low noise transformers with barrier walls (id. at 7-19 to 7-22). The Company stated that the facility might incorporate noise mitigation treatments different from those proposed in the base case, but that the final design would meet the same performance goals (id.).

Brockton Power indicated that the base-case mitigation package would mitigate most of the noise sources to a level far below the noise produced by the cooling towers; therefore in considering additional noise mitigation measures the Company focused on the cooling towers but included some additional mitigation for the combustion turbine intake and the main transformer (id.). The Company estimated that it would cost \$746,000 more than the “several million dollars” of cost associated with the base case mitigation package to limit nighttime noise increases to 3 dBA at the most affected residence (id.). The Company argued that, given the 2 dBA maximum reduction which would result from this expenditure, the cost of additional mitigation would be prohibitive (id.). The Company therefore concluded that its base-case mitigation package represents best available noise control technology (id.).

With regard to construction noise, Brockton Power indicated that noise from steam blows would be mitigated, to some extent, by portable attenuators (Exh. HO-RR-4 (att. at 7-15 to 7-18)). To mitigate potential noise from pile driving (the loudest construction activity) the Company proposed to use vibration pile driving, but indicated that subsurface conditions would ultimately dictate the driving method used (id.).

3. 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; Millennium 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).

An analysis of potential noise impacts from operation of the proposed facility indicates that L₉₀ noise levels at the nearest sensitive receptor would be 49 dBA during the night and 54 dBA during the day. These levels represent increases above background of 4 to 5 dBA at night and 1 to 2 dBA during the day. Nighttime and daytime increases at other sensitive receptors are predicted to be less than 3 dBA and, according to the Company, would not be noticeable in a typical community.

The noise analysis indicated that L₉₀ noise increases at the boundary of the proposed facility would be 14 to 17 dBA during the day and 16 to 19 dBA at night. The record shows, however, that noise increases due to facility operation are less than 10 dBA beyond areas zoned for industrial use (I-3). The record also shows that residential development in industrially zoned areas as well as adjacent commercially zoned areas (C-2) could only occur with a variance from the City of Brockton.⁵⁸

The Company presented an analysis of more extensive noise mitigation which indicated that for an additional cost of \$746,000 it may be possible to limit potential noise increases to a 3

⁵⁸ The Siting Board notes that the noise increases at the property boundaries would be greater than the 10 dBA increase allowed by the MDEP. In past Siting Board reviews of facilities with similar noise conditions at property boundaries, petitioners have indicated that based on zoning and land use conditions at proposed sites MDEP may relax the limit of 10 dBA increase at property lines. Berkshire Power Decision, 4 DOMSB 221, at 159-160; Dighton Power Associates Decision, 5 DOSMB 193, at 247. The Siting Board assumes that Brockton Power would also seek similar consideration from MDEP.

dBA maximum for all residential receptors. The record indicates that although this additional noise mitigation package would decrease maximum noise levels at the property boundary from 64 dBA to 60 dBA, maximum noise increases would be 15 dBA over ambient.

In past decisions, the Siting Board has allowed noise increases at residential receptors of up to 8 dBA. Berkshire Power Decision, 4 DOMSB 221, at 205-206; ANP Bellingham Decision, EFSB 97-1, at 141-142; ANP Blackstone Decision, EFSB 97-2/98-2, at 156-158. The maximum predicted noise increases of 4 to 5 dBA, which could affect approximately 25 homes, would be well below these limits. Relatively high daytime and nighttime ambient noise appears to result in measured L_{dn} noise levels at the nearest sensitive receptors that are greater than the 55 dBA L_{dn} level which EPA has indicated is requisite to protect public health and welfare with an adequate margin of safety. However, the L_{dn} increases at sensitive receptors modeled for operation of the proposed facility are 0 to 1 dBA. Therefore, the Siting Board does not anticipate that the proposed facility would exacerbate an already marginal noise situation in the community surrounding the proposed facility. Accordingly the Siting Board finds that, with the Company's base-case noise mitigation package, the environmental impacts of the proposed facility with regard to operational noise would be minimized.

With respect to construction noise impacts, the Siting Board agrees that adherence to the Company's proposed hours of construction, noise mitigation for steam blows, and use of vibration pile driving (if possible), would minimize construction noise impacts. Therefore, the Siting Board finds that the environmental impact 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 with regard to materials

handling and storage, fogging and icing, and proposed emergency response plans.⁵⁹

Brockton Power indicated that safety issues would be given careful consideration in the selection of contractors for construction and operation of the proposed facility (Exh. BP-1, at 4.8-1). The Company indicated that all Occupational Safety and Health Administration (“OSHA”) regulations would be followed during construction of the facility and that the contractor would have an on-site safety engineer throughout construction (*id.*). The Company stated that it would maintain a safe facility through well-trained operating personnel, well thought out operating and emergency response procedures, regular safety training and drills, and an aggressive preventative maintenance program (*id.*).⁶⁰ The Company also stated that it would include exacting safety standards in contract requirements for the operation of the facility (*id.*).

1. Materials Handling and Storage

Brockton Power reviewed safety issues related to the storage and handling of distillate fuel oil at the proposed facility (Exh. BP-1, at 4.8-1 to 4.8-2). The Company stated that fuel oil would be stored in a 20 foot high, 60 foot diameter welded steel tank with a 500,000 gallon nominal capacity (*id.*). The Company indicated that the storage tank would be surrounded by a

⁵⁹ Tofias Trust argues that the Company has not demonstrated that the proposed electrical interconnect ROWs “are sufficiently wide” for the proposed interconnect and suggests that the placement of the transmission poles within the ROW may not be prudent (Tofias Trust Brief at 10). In response, Brockton Power states that the proposed ROW is adequate for the interconnect and that the project will conform fully with all applicable codes and safety requirements (Brockton Power Reply Brief at 11). The Siting Board notes that Tofias Trust has raised only a general concern about the width of the ROW; it has not suggested that the location of this line raises unusual safety issues which require review by the Siting Board, or alleged any likely harm to any person or class of persons. In the absence of any specific concern which would require further analysis, the Siting Board concludes that compliance with existing codes and safety requirements applicable to transmission lines and with any safety requirements imposed by the MBTA should ensure the overall safety of the interconnect line. Additionally, we note that the relocation of the interconnect away from residences tends to decrease safety concerns.

⁶⁰ The Company did not describe fencing, gates, or other security measures for preventing unauthorized access or activity during construction and operation of the proposed facility.

dike capable of holding 110 percent of the tank volume, would be leak tested prior to filling, and would be periodically inspected thereafter (*id.*). The Company stated that it would construct the tank, dike, and related structures in accordance with 527 CMR 9.00 and other applicable standards (Exh. EFSB-E-1, at B-6). Finally, the Company indicated that it would consult with the Brockton Fire Department and make the appropriate applications for the proposed storage tank to the Department of Fire Services (*id.*).

Brockton Power also outlined safety procedures and precautions for the delivery of fuel oil (Exh. HO-RR-4 (att. 4.8-1 to 4.8-2)). The Company indicated that it would transfer fuel oil from standard tank trucks in a bermed area at a permanent unloading station equipped with fast-action shutoff valves, closure valves, an approved drip collection mechanism, and an automatic shutoff for the pump system (*id.*). The Company stated that during oil delivery it would: (1) require the delivery driver and a facility operator to monitor the entire unloading process; (2) chock the truck wheels before connecting hoses; and (3) check the tank level before fuel unloading (*id.*). The Company also indicated that it would store appropriate cleanup and containment equipment on-site, in accordance with the Massachusetts State Fire Marshal regulations.

Brockton Power indicated that aqueous ammonia (17.5 to 19.5 percent concentration) would be stored in a 20,000 gallon welded steel tank that would either be double walled or contained in a 110 percent capacity dike (Exh. BP-1, at 4.8-2 to 4.8-3). The Company indicated that the ammonia storage and containment structure would be housed within a building (Tr. 1, at 60 - 61). The Company's proposed containment safety plans included: (1) periodic inspection of storage structures; (2) use of buoyant spherical baffles to minimize aqueous ammonia surface area within the containment dike, in the event of a spill; (3) control room monitoring of tank level with alarms for rapid level reduction; and (4) specific emergency response procedures (Exh. BP-1, at 4.8-2 to 4.8-3). The Company also indicated that ammonia would be unloaded in a bermed area constructed for delivery of bulk chemicals and that the unloading procedures would be similar to those outlined above for fuel oil delivery (*id.*).

Brockton Power performed modeling of an accidental release from the aqueous ammonia storage tank (Exh. HO-RR-4, at 6-30 to 6-32). The Company explained that it used the

HGSYSTEM accidental release algorithm to calculate an ammonia emission rate from the containment building and the SCREEN3 model to determine the maximum hourly ground level concentrations of the ammonia (id.). The Company's modeling indicated that a catastrophic release of ammonia from the storage tank would result in maximum hourly ground level ammonia concentrations of 0.61 ppm (id.). The Company noted that this level is far below the ammonia toxic endpoint of 200 ppm and the odor threshold of 50 ppm (id.).⁶¹

Brockton Power indicated that other chemicals and oils stored on-site would include: (1) sulfuric acid (93 percent) and sodium hydroxide (50 percent) for regeneration of the water demineralizers; (2) sodium hypochlorite⁶² (10-15 percent) as a biocide to prevent growth of organics in the cooling towers; (3) sodium bisulfite (40 percent) to treat cooling water blowdown; (4) various water treatment chemicals for the HRSG water system; and (5) various oils and maintenance chemicals (Exh. BP-1, at 4.8-3 to 4.8-4). The Company indicated that most of these chemicals would be stored in permanent bulk storage tanks within containment dikes sized to hold 110 percent of the tank contents (id.). The Company indicated that chemicals in portable tanks and drums would be stored in a properly bermed and enclosed area when not in use (id.). Similarly, the Company indicated that maintenance chemicals would be properly stored in an appropriately designed area (id.).

2. Fogging and Icing

Brockton Power used the Electric Power Research Institute's modeling program, entitled

⁶¹ Major variables in the Company's modeling were: (1) surface area for ammonia evaporation; (2) air volume within the building housing the ammonia tank; (3) air exchange rate of the building ventilation system; (4) vent size; and (5) building and vent dimensions (Exh. HO-RR-4, at 6-30 to 6-32).

⁶² Brockton Power stated that aqueous ammonia and water treatment chemicals for the facility would be unloaded in the same location (Exh. BP-1, at 4.8-3). Due to the potential incompatibility of sodium hypochlorite and ammonia, the Siting Board recommends that these chemicals be delivered to different areas or that specific measures be incorporated into the chemical delivery area to protect against the potential interaction of these chemicals.

the Seasonal and Annual Cooling Tower Impacts (“SACTI”), to analyze the potential for icing and fogging related to the operation of the proposed wet mechanical draft cooling towers (Exh. HO-RR-4 at 6-18 to 6-29).⁶³ The Company indicated that, for each of 16 wind directions, the SACTI model calculates the number of hours of fogging and rime icing that would be expected over the five years of meteorological data used as model input (*id.*, at 6-21 to 6-22).⁶⁴

Brockton Power’s modeling results indicate that a 3500 foot stretch of Route 28, located west and southwest of the proposed site, would experience ground level fogging between 2 and 15 hours a year (*id.* (fig. 6.6-1)). In addition the Company’s data showed that residential and commercial areas on both sides of Route 28 in Brockton and in adjacent portions of West Bridgewater would be affected, but that Oak Hill Way and other areas west and north of the facility would experience fogging less than 1 hour per year (*id.*). The Company’s model results for rime icing indicated that an area stretching 2000 feet south of the facility could have an annual average duration of rime icing events from 1.2 to 0.4 hours (*id.* (fig. 6.6-2, at 6-22)). The Company submitted data showing that rime icing would mainly affect the Brockton AWRF but that the southern end of Oak Hill Way and possibly the trailer park area in West Bridgewater could be affected for less than half an hour a year (*id.*).

Brockton Power asserted that its fogging analysis was conservative because the SACTI model does not consider plume mixing which would result from the plume drifting over other

⁶³ The Company indicated that input parameters for the SACTI model included: (1) proposed cooling tower dimensions; (2) air flow and water flow rates in cooling towers; (3) cooling tower operation parameters; (4) meteorological data from Logan Airport (1991-1995); (5) air mixing heights from the upper air station at Portland Maine; and (6) clearness indices and solar insolation values from Blue Hill Observatory (Exh. HO-RR-4, at 6-20 to 6-21).

⁶⁴ The Company indicated that icing can occur in two ways: (1) glaze icing occurs when the cooling tower drift droplets fall out of the plume and deposit as ice upon the surface; and (2) rime icing occurs when the saturated plume contacts the ground and forms a frost layer on the surface (Exh. HO-RR-4, at 6-19). The Company stated that it expects glaze icing will be limited to locations in close proximity to the cooling tower and will not cause impacts in off-site locations (*id.*).

facility structures and because it includes nighttime hours, periods of rain and snow, and natural fogging conditions (*id.* at 6-22). The Company also argued that offsite icing would be likely to occur during periods of “background icing” and would not significantly contribute to additional icing (Exh. EFSB-E-1, at B-18).

3. Emergency Response Plan

Brockton Power stated that, prior to facility operation, it would develop a Spill Prevention, Control and Countermeasure (“SPCC”) Plan and an Emergency Response Plan (“ERP”) in close coordination with the Brockton Emergency Planning Council and Brockton’s Fire and Police Departments (Exhs. EFSB-E-1, at B-16; HO-RR-17). The Company indicated that the SPCC plan would focus on the 500,000 gallon fuel oil storage tank and that the ERP would cover other site contingencies including accidental releases of ammonia or bulk water treatment chemicals (Exh. HO-RR-17). The Company submitted an outline for the SPCC plan and stated that the plan would be certified by a Massachusetts certified professional engineer (Exhs. HO-RR-17; EFSB-E-1, at 4-7). The Company indicated that the SPCC plan would include site maps, tank locations and specifications, operating procedures, contact information for emergency coordinators, and an ERP for ammonia spills (*id.*).

4. Analysis

Brockton Power has stated that all OSHA regulations would be adhered to during construction and operation of the proposed facility and that rigorous safety requirements would be a precondition of contracts for construction and operation of the proposed facility. The record, however, does not explicitly indicate that the Company would provide site security or take steps to limit unauthorized personnel from accessing the site. The Siting Board therefore directs Brockton Power to provide for facility security and to limit access to the proposed site during construction and operation of the proposed facility.

With respect to chemical storage and handling, the record demonstrates that the Company has designed facilities to avert and minimize spills of hazardous materials. The record indicates that storage tanks for fuel oil, ammonia, and other bulk chemicals would be within diked

containment structures and that the ammonia containment system would be enclosed within a building. The record indicates that bulk chemicals would be delivered to bermed areas dedicated for that purpose and that appropriate facilities and procedures would be used to minimize potential spills. Other necessary chemicals would be stored in designated areas using appropriate containers.

The Company has provided modeling results indicating that maximum hourly ground level ammonia concentrations resulting from a catastrophic failure of the ammonia storage tank would be 0.61 ppm, which is well below the toxic endpoint limit of 200 ppm or the odor detection limit of 50 ppm. Thus, even a worst-case release would not result in a ground level ammonia concentration which would be likely to affect the safety of any person beyond the site boundaries or within the site at ground level. Therefore, the Siting Board concludes that Brockton Power has taken all steps feasible at this time to minimize safety risk from ammonia storage.⁶⁵

The record indicates that the Company intends to develop a SPCC plan and an ERP similar to those found acceptable in previous Siting Board decisions. These plans, however, have not yet been developed. The Siting Board notes that the proposed facility is located within 2100 feet of the Town of West Bridgewater, and that this Town may have a considerable interest in the contents of the SPCC, the ERP, and other safety plans. Therefore, the Siting Board directs Brockton Power to prepare the SPCC plan and the ERP in consultation with both the City of Brockton and the Town of West Bridgewater

Brockton Power presented modeling results indicating that fogging and rime icing associated with the cooling towers at the proposed facility could be expected to affect offsite areas. Specifically, roadways in Brockton and West Bridgewater near the proposed site could be affected by fog between 2 and 15 hours a year, and cooling tower icing could occur as much as one half hour a year in nearby public areas and 1.2 hours a year adjacent to the site at the

⁶⁵ As discussed in Section III.A.4, above, the Siting Board recognizes that in the event that zero ammonia technologies become commercially available for a facility of this size it is possible that MDEP may require that technology as part of its air permitting process. In that case, bulk ammonia storage would not be necessary.

Brockton AWRP property. Although the Company claimed that cooling tower icing would occur in conjunction with “background icing”, it did not elaborate on this contention nor did the Company propose any mitigation plan for potential icing.⁶⁶ Therefore, the Siting Board directs Brockton Power to develop and implement a plan for mitigating hazardous roadway and walkway conditions that could result from icing associated with the cooling towers. The icing mitigation plan should be prepared in consultation with the City of Brockton, the Town of West Bridgewater, and potentially affected property owners or occupants and should, at a minimum: (1) identify areas potentially affected by cooling tower icing; (2) characterize meteorological conditions when icing may occur and under what circumstances mitigation measures would be employed; and (3) describe measures the Company would use to minimize potential icing hazards, including roadway sanding and motorist alerts.

The Siting Board finds that, with implementation of the proposed mitigation and the above conditions, the environmental impacts of the proposed facility would be minimized with respect to safety.

I. Traffic

This Section describes the impact of the construction and operation of the proposed facility on local traffic conditions and outlines proposed mitigation of traffic impacts.

1. Description

Brockton Power indicated that traffic associated with the construction and operation of the proposed facility would use existing roads to enter and exit the site (Exh. BP-1, at 4.12-1). The Company stated that facility operation would have little impact on the traffic conditions in the local area because only 20 workers per day would be traveling to the site (Exh. BP-1, at 4.12-1). The Company estimated truck traffic associated with facility operation at: two to three

⁶⁶ The Siting Board notes that unlike fogging, icing is not transient, so a short period of icing could have impacts that last longer than the period of actual ice formation. However, we note that the Company anticipates that only rime or frost-like icing, and not glaze icing, will occur off-site.

collection trips per week for waste disposal; approximately one trip per week for ammonia delivery; and, under extreme circumstances, ten oil deliveries a day or 50 deliveries during a week to refill the oil tank (Exhs. EFSB-T-4; EFSB-SW-4; BP-1, at 4.8-2 to 4.8-3).

Brockton Power stated that the only significant traffic associated with the project would be construction traffic and that most of this traffic would travel to the site along Route 24 to the Route 106 exit (Exh. BP-1, at 4.12-1; Tr. 2, at 337-338). The Company indicated that from Route 106 east, the construction traffic would travel north on Route 28, head east onto Sargents Way, and then south to the project site on Industrial Boulevard or Oak Hill Way (*id.*). The Company asserted that it expects most construction traffic would leave the site by retracing the access route (*id.*). The Company stated that traffic originating from the City of Brockton would travel to the site on Route 28 southbound, but predicted that this would only be a small proportion of construction traffic associated with the facility (*id.*). Finally, the Company acknowledged that the site could also be accessed from Plain Street, at the eastern end of Sargents Way, but noted that this would be a direct route only for workers who reside in South Brockton (Exh. EFSB-T-2).

Brockton Power predicted that during the peak construction phase there would be as many as 300 workers traveling to the site by 7:00 a.m. and leaving around 3:30 p.m. (Exh. BP-1, at 4.12-1 to 4.12-2).⁶⁷ Additionally, the Company indicated that trucks would be delivering supplies throughout the day during the construction phase of the project (*id.*). The Company determined that existing peak traffic volumes at the Route 28-Sargents Way intersection occur between 7:00 and 8:00 a.m. and between 3:30 and 4:30 p.m. (*id.*). The Company stated that a morning peak for construction traffic, occurring between 6:00 to 7:00 a.m., would precede the currently observed morning rush hour (*id.*). However, the Company indicated that peak construction traffic would overlap with the current afternoon peak traffic period (*id.*).

⁶⁷ Brockton Power indicated that there is limited space on site for worker parking and construction material laydown but stated that the Company has been discussing possible off site parking and laydown areas with other tenants of the Oak Hill Industrial Park (Exh. EFSB-T-3).

As part its of traffic analysis, Brockton Power determined Level of Service⁶⁸ (LOS) ratings for the intersection where Sargents Way terminates at the east side of Route 28 under existing conditions, peak construction traffic conditions, and peak construction traffic conditions with mitigation (See Table 6 for all ratings and delay times) (id. (Table 4-12-2)).⁶⁹ The Company indicated that under existing traffic conditions, the intersection has an overall LOS rating of F for morning and afternoon traffic peaks (id.). The Company attributed the F rating to long delays (829 to over 1000 seconds under existing conditions) for vehicles turning left from Sargents Way onto Route 28 (id.). The Company also determined that, without mitigation, traffic conditions at this intersection would result in even longer delays for this turning direction (id.). The Company determined that the current rating of the other turning directions at the intersection⁷⁰ are LOS B and that the addition of construction traffic would result in a worse LOS rating (LOS C) only for the southbound left turn during the morning traffic peak due to an increase in turning delays from 6.1 to 10.3 seconds (id.).

Brockton Power proposed several measures for minimizing the impact of the construction traffic in the vicinity of the proposed facility site (Exh. BP-1, at 4.12-4; Tr. 2, at 340). Specifically, the Company indicated that it would: (1) augment existing traffic control, which consists of a flashing red light facing Sargents Way, by providing a police officer to control traffic at the intersection of Sargents Way and Route 28 during the morning and afternoon peak

⁶⁸ The Company described LOS as a qualitative assessment of a roadway's condition at various traffic volumes (Exh. BP-1, at 4.12-2). The Company indicated that this rating system considers roadway geometry, speed, travel delays, freedom to maneuver, and safety (id.). Based on these factors, the Company states that grades of A (for preferable conditions) through F are given to a roadway (id.). As an example, the Company indicated that a LOS C is a condition of stable flow and is considered desirable for design traffic in rural areas (id.).

⁶⁹ For the traffic analysis, the Company made the conservative assumption that all 300 workers would drive to the site in separate vehicles (Tr. 2, at 337).

⁷⁰ Other traffic turning directions analyzed are the left turn from Route 28 southbound onto Sargent's Way and the right turn from Sargent's Way onto Route 28 northbound (id.). Turning onto Sargents Way from Route 28 northbound was not assessed.

construction traffic periods;⁷¹ (2) contractually require all construction vehicles to approach the

Table 6.

Intersection Travel Direction	Peak a.m. Traffic LOS/Delay (seconds)	Peak p.m. Traffic LOS/Delay (seconds)
<i>Existing Conditions</i>		
Westbound Left	F/829	F/(greater than 1000)
Westbound Right	B/6.3	B/6.2
Southbound Left	B/6.1	B/6.3
Overall Intersection	F/94	F/293
<i>Construction Period (no mitigation)</i>		
Westbound Left	F/(greater than 1000)	F/(greater than 1000)
Westbound Right	B/7.7	B/6.9
Southbound Left	C/10.3	B/6.4
Overall Intersection	F/347	F/(greater than 1000)
<i>Construction Period (with mitigation)</i>		
Westbound Left	C/23.9	D/25.3
Westbound Right	C/20.6	B/12.9
Southbound Left	A/4.3	B/12.2
Overall Intersection	C/16.7	B/15.0

Table 6. Shows the LOS ratings and delay times that the Company determined for various turning directions at the Route 28-Sargent's Way intersection (Exh. BP-1 (Table 4.12-2)).

site from Route 28; and (3) encourage use of mass transportation by providing a shuttle to the Campello MBTA station and nearby bus stops (*id.*). The Company claimed that, with the proposed mitigation, the construction traffic to and from the facility would not result in a negative impact on local traffic conditions and that the LOS at the Sargents Way-Route 28

⁷¹ The Company indicated that it would not provide a traffic control officer on non-work days or on days when fewer than 30 workers would be on site (Exh. BP-1, at 4.12-4).

intersection would improve from F to C and B for morning and evening peak traffic, respectively (id.). The current F-rated LOS for the westbound left turn would become a LOS C for the morning peak traffic and LOS D for the evening traffic peak (id.). The Company testified that the City of Brockton has considered signalization of the Route 28-Sargents Way intersection but, to its knowledge, the possibility of a traffic light is still at the discussion stage (Tr. 2, at 342-343).

Brockton Power also described traffic impacts that would be associated with special circumstances (Exh. EFSB-T-4; Tr. 2, at 340 - 342). The Company acknowledged that during construction there would be approximately a half dozen deliveries of oversized loads requiring special trucks and delivery procedures (Tr. 2, at 340-342). The Company indicated that such deliveries would be scheduled for off peak traffic hours and accompanied by a police detail (id.).

2. Analysis

The record shows that the primary traffic routes to the proposed site would be along major roadways, and that no residential roads would be directly affected by traffic for the proposed facility. The Company's traffic analysis demonstrates that LOS F conditions are already present at the closest major intersection to the site (Route 28 and Sargents Way) and that, without mitigation, construction traffic traveling to and from the proposed site would increase the delay times at this intersection.

The Company has proposed traffic mitigation during construction which would improve conditions at the Route 28-Sargents Way intersection to LOS C and LOS D for the morning and afternoon peak periods, respectively. This mitigation includes: (1) an officer directing traffic at the Route 28-Sargents Way intersection during peak periods of construction traffic; (2) encouraging the use of mass transportation by providing a shuttle from nearby train and bus stops; and (3) requirements for commercial vehicles to access the site from Route 28. In addition, the Company has committed to scheduling deliveries of oversized equipment during off-peak traffic hours and would arrange for a police detail to facilitate delivery. Accordingly the Siting Board finds that the environmental impacts of the proposed facility would be minimized with regard to construction traffic impacts.

The Siting Board notes that the Company has proposed traffic mitigation only during the construction period, arguing that facility operation would result in minimal impacts on traffic due to the small number of on-site employees. However, the Siting Board is concerned about the potential impacts on traffic conditions of commercial truck traffic associated with the proposed facility, which could include as many as 10 fuel oil deliveries a day and 50 fuel oil deliveries per week. Given the potential for commercial delivery traffic, the Siting Board is concerned that operation of the proposed facility could exacerbate conditions at the Route 28-Sargents Way intersection, which is already rated at LOS F.

While the record shows that the City of Brockton has discussed the possibility of signalizing the Route 28-Sargents Way intersection, there is no indication of any firm plans for improvements to this intersection. Therefore, the Siting Board directs Brockton Power to work with the City of Brockton Department of Public Works and with the management of other commercial or industrial facilities within the Oak Hill Industrial Park to identify and, if appropriate, promote implementation of plans to improve the Route 28-Sargents Way intersection. A description of an alternative exit route and a narrative outlining the current status of any plans to improve the intersection should be submitted to the Siting Board prior to the start of commercial operation. Until such time as the intersection is improved, the Siting Board also directs the Company to limit oil deliveries and other commercial delivery traffic to off-peak hours except where emergency conditions exist.

Accordingly, the Siting Board finds that, with implementation of proposed mitigation and the above conditions, the environmental impacts of the proposed facility would be minimized with regard to traffic.

J. Electric and Magnetic Fields⁷²

1. Discussion

Brockton Power indicated that operation of the proposed facility: (1) would produce

⁷² Electric and magnetic fields are produced by the operation of electric facilities, with electric fields being proportional to voltage and magnetic fields being proportional to the flow of electric current. Both fields are collectively known as EMF.

electric and magnetic fields associated with the proposed new 115 kV lines which would interconnect the proposed project with transmission lines owned by EUA; and (2) would produce magnetic fields associated with increased power flows on certain existing transmission lines (Exhs. BP-1, at 4.9-1; EFSB-EM-1).⁷³ The Company indicated that the proposed interconnection would extend via a route traversing part of the Industrial Park and continuing to the southeast along the MBTA ROW, where it would join existing EUA 115 kV lines located in an EUA ROW which extends from Bridgewater substation in Bridgewater into and through portions of West Bridgewater and Brockton and to Auburn Street substation in Whitman (Exhs. EFSB-EL-11 (att); HO-RR-5; HO-RR-20 (atts.)).

The Company initially proposed to construct and operate a single 115 kV transmission line to interconnect the proposed project to EUA's transmission lines, noting that the final interconnection configuration had not been determined (Exh. EFSB-EM-1S (att. at 1-1, 5-1 to 6-3)). According to the recommended interconnect plan presented in the EUA interconnect study, however, the proposed project would be interconnected by bisecting the EUA F-19 line into northern and southern sections, and constructing two new interconnect lines as extensions of the two F-19 line sections to the proposed site (Exh. HO-RR-7S (att. at 3, 10-12)).⁷⁴

The Company indicated that the proposed interconnect line route would include: (1) a segment along the side of Oak Hill Way opposite from existing commercial uses in the Industrial Park; (2) a segment traversing an occupied commercial property between Oak Hill Way and the MBTA ROW, following an alignment 50 feet from the boundary with property of

⁷³ The Siting Board notes that EUA'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 Site Fore River Decision, EFSB 98-7, at 102; IDC Bellingham Decision, EFSB 97-5, at 91-93; 1993 BECo Decision, 1 DOMSB 1, at 148, 192.

⁷⁴ As described in the interconnect study, Brockton Power would install the new interconnect lines on double circuit poles along its proposed route, and install a ring bus at the plant site to provide the points of connection between the plant and the northern and southern sections of the F-19 line (Exh. HO-RR-7S (att. at 10-11, 15)).

Tofias Trust; and (3) a segment along the northeast side of the MBTA ROW abutting one residential property and undeveloped wooded land, and opposite from property of Tofias Trust (Exhs. HO-RR-20 (atts.); EFSB-EL-11 (att.); Tr. 1, at 89, 126). The Company estimated that the maximum magnetic field levels from the interconnect line would be 65 milligauss (“mG”) and 30 mG at the northeast and southwest edges, respectively, of the MBTA ROW, and would decline to 3-4 mG at a distance of 175 feet from the edges of the ROW (Exh. EFSB-EM-1S (att. at 6-1, fig. 6.1)). The Company estimated that the maximum magnetic field level at the nearest residence, located 70 feet from the edge of the MBTA ROW near the northwesterly end of the route segment along the MBTA ROW, would be 20 mG (Exh. HO-RR-6).⁷⁵

The Company asserted that, in the course of developing siting plans for the interconnect line, it relocated the proposed route away from the neighborhood of approximately 20 residences along 1100 feet of Appleby Street adjacent to the MBTA ROW, and thereby determined a route that minimizes residential EMF concerns (Company Brief at 66, citing, Tr. 1, at 92-94). The Company stated that it also considered the option of siting the interconnect line underground in response to a Siting Board staff request, but concluded that an underground alignment would cost \$3 million, or five times the \$600,000 cost of the proposed overhead alignment, and that therefore the Company did not further consider an underground alignment (Company Brief at 70, citing, Exhs. EFSB-EL-5, EFSB-EL-10).

With respect to EMF impacts along existing transmission lines, the Company stated that the EUA ROW passing the proposed interconnect point is 125 feet wide and is occupied by three 115 kV circuits, including: (1) two lines on a set of double circuit poles along the west side of the ROW, the F-19 and G-18 lines; and (2) one line on a set of H-frame transmission structures

⁷⁵ The Company estimated that the maximum electric field levels from the interconnect line would be 0.5 kV per meter and 0.05 kV per meter at the northeast and southwest edges, respectively, of the MBTA ROW (Exh. EFSB-EM-1S (att. at 6-2, fig. 6.2)). The Company indicated that the maximum magnetic field level would decline to 0.02 kV per meter at the nearest residence, located 70 feet from the edge of the MBTA ROW (id.).

along the east side of the ROW, the E-20 line (Exhs. EFSB-EM-1S (att. at 6-1, fig. 5.2)).⁷⁶ To assess EMF changes resulting from the operation of the proposed facility, the Company provided: (1) measurements of existing magnetic fields taken in February 1999 at two nearby street crossings of the EUA ROW, north and south of the interconnect point, under load conditions in which the aggregate power flow on the E-20, F-19 and G-18 lines was 80 to 82 megavolt-amperes ("MVA"); and (2) calculations of future magnetic fields along the EUA ROW for an assumed transmission scenario in which the aggregate power flow on the E-20, F-19 and G-18 lines just equaled the proposed project's output (*id.* at 4-4, 4-5, 5-1 to 5-2).

The Company indicated that the maximum measured magnetic field levels along the EUA ROW were 20 mG directly under the double circuit lines, declining to 18 mG and 4 mG at the west and east edges of the ROW, respectively (Exh. EFSB-EM-1S (att. at 4-4 to 4-5, figs. 4.2, 4.3)). The Company also identified the nearest residential locations along each side of the ROW, including a residence directly adjacent to the east edge at Vital Street in West Bridgewater, and a residence 15 feet from the west edge at Litchfield Terrace in Brockton (Exh. HO-RR-6).⁷⁷

With operation of the proposed project, the Company indicated that the maximum magnetic field at the edge of the ROW would be 51 mG, assuming a power flow of 270 MW distributed in equal shares to the E-20, F-19 and G-18 lines (*id.*; Exh. EFSB-EM-1S (att. at 5-2, 6-2)). The Company noted that the F-19 and G-18 lines, which occupy the double-circuit poles along the west side of the EUA ROW, are presently designed with phase

⁷⁶ The Company indicated that the G-18 and F-19 lines (lowest conductor) are aligned 23.5 feet and 41.5 feet, respectively, from the west edge of the ROW, and that the E-20 line (center conductor) is aligned 37.5 feet from the east edge of the ROW (Exh. EFSB-EM-1S (att. at fig. 5-2)).

⁷⁷ The Company indicated that the measured magnetic field was 3 mG at the east edge of the ROW along Vital Street, the location of the nearest residence (Exh. EFSB-EM-1S (att. at fig. 4.3)). The Company did not provide EMF measurements for the nearest residence to the west, located 15 feet from the ROW on Litchfield Terrace; however, the Company's measurements along Edson Street and Vital Street show that existing magnetic fields decline to approximately 10 mG and 13 mG, respectively, at a distance of 15 feet from the west edge of the ROW (*id.* at figs. 4.2 and 4.3).

configurations that minimize magnetic field levels (Exh. HO-RR-8; Tr. 1, at 121). However, the Company did not provide separate magnetic field estimates for the east and west edges of the EUA ROW. In addition, the Company did not provide updated magnetic field estimates based on the interconnect plan in the EUA interconnect study, under which the Brockton Power plant would be interconnected only to the F-19 line.⁷⁸

Tofias Trust argued that Brockton Power failed to provide accurate and complete evidence as part of its EMF analysis, and in particular that it failed: (1) to demonstrate that its EMF modeling for the proposed facility, using the FIELDS model, is state-of-the-art and accurate; and (2) to submit accurate and complete evidence concerning power flows along existing transmission lines and the details of its proposed interconnection (Tofias Trust Brief at 7-10). With respect to use of the FIELDS model, Tofias Trust argued Dr. Valberg did not evaluate the model's ability, relative to other available software, to predict EMF impacts under real-life conditions (*id.* at 7-8).⁷⁹ With respect to evidence concerning power flows and interconnection details, Tofias Trust argued that Dr. Valberg developed his analysis of EMF levels without knowing the actual interconnect configuration, and therefore made faulty assumptions, specifically that: (1) future power flow would be evenly distributed over the E-20, F-19 and G-18 lines; and (2) future current would be balanced on the proposed interconnect line (*id.* at 8-10). Tofias Trust also argued that the Company's EMF analysis was flawed because: (1) the Company measured EMF levels at an ambient temperature of 40 degrees Fahrenheit, a condition not likely to yield a peak field level; and (2) Dr. Valberg modeled EMF impacts of the proposed interconnect line assuming a transmission structure height of 79 feet, rather than the

⁷⁸ Under the regional load, regional dispatch, and regional transmission scenarios analyzed in the interconnect study, the 278 MW output of the plant would be split, flowing in part along the northern section and in part along the southern section of the F-19 line (Exh. HO-RR-7S (att. at Appendix A)). The power flow on the northern segment of the F-19 line between the plant and Auburn Street substation would constitute the larger share of plant output, ranging from 144 MVA to 276 MVA under the analyzed scenarios (*id.*)

⁷⁹ Tofias Trust noted Dr. Valberg's statement that the FIELDS model and other available software were checked to ensure correct implementation of the laws of physics (Tofias Trust Brief, *citing*, Exh. EFSB-EM-1S (att. at 5-1)).

height of 74 feet set forth in the Petition (*id.* at 14).

With respect to evaluation of EMF impacts, Tofias Trust argued that Brockton Power both failed to show that its modeled EMF levels are acceptable, and inappropriately urged the Siting Board to “retreat to its conclusions about EMF” in Massachusetts Electric Company et al., 13 DOMSC 119 (1985) (“1985 MECo/NEPCo Decision”), rather than evaluate EMF impacts based on current research (*id.* at 12-14). Tofias Trust also argued that Brockton Power failed to produce sufficient evidence concerning mitigation of EMF impacts, and further that siting the proposed interconnect line underground would be a superior, cost-effective means of mitigating EMF impacts (*id.* at 15-19). Citing discrepancies with cost estimates from two previous Siting Board reviews of transmission lines, Tofias Trust argued that Brockton Power’s estimated cost for underground construction is highly suspect (*id.* at 18-19).⁸⁰

The Company argued that it has properly calculated EMF levels, and has proposed use of cost-effective measures to ensure EMF impacts are minimized (Company Reply Brief at 4-7). The Company argued that: (1) the FIELDS model is widely accepted, and Tofias Trust did not explain how the model could accurately implement the laws of physics and still be inaccurate; (2) the Company made appropriate power flow assumptions given its discussions with EUA; (3) the results of the Company’s EMF analysis were not significantly affected by its use of EMF measurements taken at 40 degrees Fahrenheit or its assumption that the interconnect line structures would be 79 feet high; (4) it is unnecessary for the Siting Board in this case to reevaluate its precedent on EMF established in the 1985 MECo/NEPCo Decision, or establish a new EMF standard; (5) there is no basis for Tofias Trust’s comparison of the Company’s estimated cost for underground construction to unadjusted 1991 costs for similar construction in a previous Siting Board review; and (6) the Company has adequately considered and committed

⁸⁰ Tofias Trust cited (1) a cost of \$3.4 million for Boston Edison Company to construct two 1.3-mile long underground 115 kV lines along a common route in Milford and Hopkinton, and (2) an additional cost of \$1 million per mile for NEPCo to substitute underground construction for overhead construction along part of a 115 kV transmission line route in Lawrence (Tofias Trust Brief at 18-19, citing, Boston Edison Company, EFSB 96-1, at 103 (1997) (“1997 BECo Decision”); New England Power Company, 21 DOMSC, 325, 395 (1991) (“1991 NEPCo Decision”)).

to implement measures to mitigate EMF, and demonstrated that siting the proposed interconnect line underground would not be a cost-effective means of mitigation in this case (id. at 7-11, 13-20).

2. Analysis

In a previous review of proposed 345 kV 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. 1985 MECo/NEPCo Decision, 13 DOMSC 119, at 228-242. In later reviews of proposed electric facilities, the Siting Board has compared estimates of EMF impacts to the edge-of-ROW levels accepted in the 1985 MECo/NEPCo Decision. Sithe Edgar Decision, EFSB 98-7, at 104; IDC Bellingham Decision, EFSB 97-5, at 97; Hingham Municipal Lighting Plant, 14 DOMSC at 7, at 28 (1986).

Tofias Trust argues that the Siting Board should evaluate EMF impacts based on current research, and not rely on a comparison to conclusions in the 1985 MECo/NEPCo Decision to determine if EMF impacts are acceptable. As an initial matter, the Siting Board stated in a recent review that its reference to the edge-of-ROW magnetic field level of 85 mG in the 1985 MECo/NEPCo Decision serves as a benchmark of a previously accepted impact along a 345 kV transmission line in Massachusetts, not as a limit of acceptable impact. Sithe Mystic Decision, EFSB 98-8, at 71. In addition, as part of its review of cumulative health impacts in accordance with recent statutory requirements, the Siting Board does inquire into current research regarding possible health impacts of EMF in electric facility cases. We note that, in its reviews of possible health impacts of EMF in this and other recent cases, the Siting Board has not found that evidence based on current research significantly brings into question the conclusions the Siting Board reached in the 1985 MECo/NEPCo Decision regarding EMF impacts relating to health.

The Siting Board thus affirms that its comparison of EMF levels in electric facility reviews to levels accepted in the 1985 MECo/NEPCo Decision provides a useful benchmark, representative of transmission ROWs in Massachusetts developed to provide 345 kV transmission. At the same time, we point out that those previously accepted EMF levels are not

a standard limiting acceptable impacts, and do not provide the sole or principal basis for our evaluation of EMF impacts in current reviews.

Here, the record shows that off-site electric and magnetic fields would remain below the levels found acceptable in the 1985 MECo/NEPCo Decision. Although consistent with edge-of-ROW levels previously accepted by the Siting Board, the estimated maximum magnetic field levels with operation of the proposed project would be 65 mG along the edge of the MBTA ROW, where occupied by the interconnect line, and 51 mG along the edge of the EUA ROW. The estimated magnetic field levels appear to represent significant increases for both the interconnect line corridor, along which transmission lines do not presently run, and the EUA ROW, along which the maximum existing edge-of-ROW level measured by the Company was 18 mG.

As argued by Tofias Trust, given that the record does not indicate that Brockton Power and EUA have determined and agreed to a final interconnection plan, the interconnection configuration assumed in the Company's EMF analysis may differ from that which is implemented, consistent with a final interconnection agreement. With respect to the interconnect line, the Company has proposed to construct a single transmission line between the site and the EUA ROW; however, in the project interconnect study completed after the close of hearings, EUA recommended installation of a double circuit transmission line and on-site ring bus to interconnect the project. With respect to the point of interconnection to EUA's lines, the Company has assumed a configuration allowing for equal allocation of resulting power flow over the E-20, F-19 and G-18 lines, but EUA recommended in the project interconnect study that the project be interconnected to only the F-19 line.

The record shows that the maximum magnetic field from the proposed interconnect line would be 20 mG at the nearest residence, up to 30 mG on property of Tofias Trust abutting the southwest side of the MBTA ROW, and up to 65 mG in other areas of undeveloped land along the northeast side of the MBTA ROW. Maximum electric field from the proposed interconnect line would be 0.02 kV per meter at the nearest residence, up to 0.05 kV per meter on property of Tofias Trust abutting the MBTA ROW, and up to 0.5 kV per meter in other areas along the northeast side of the MBTA ROW. As discussed above, the interconnect configuration has not

been finally determined, and therefore the EMF impacts may differ from those estimated by the Company. The Siting Board notes that, based on the design and alignment of the proposed single-circuit interconnect line as set forth in the record, it appears EMF impacts on abutting property with construction of a double-circuit line could be either higher or lower than the Company's estimates for a single-circuit line, depending on design considerations and on the particular location of abutting property in relation to the line.⁸¹

The record shows that the Company initially proposed an interconnect line route that would have exited the industrial park directly to the MBTA ROW at a point northeast of the plant site, but modified its routing to make maximum use of the Oak Hill Way in the Industrial Park, and thereby reduce possible impacts on residences along Appleby Street abutting the MBTA ROW. The proposed route as revised still would abut one of the residences on Appleby Street, at the northwestern end of the segment along the MBTA ROW, but otherwise would not be proximate to residences or other sensitive uses. The Siting Board finds that the currently proposed interconnect line route would best limit residential exposure to EMF impacts, and that therefore EMF impacts would be minimized with use of the Company's currently proposed route for the project interconnect line.

With respect to the alternative of siting the interconnect line underground, Tofias Trust argued that the Company had overstated the cost of underground lines and that burying the lines would avoid the estimated EMF impacts. The Company did not dispute that such siting would substantially avoid increases in EMF levels along the interconnect route, but argued that concerns about health impacts of EMF are not substantiated and that the estimated \$3 million cost would not be warranted.

⁸¹ For example, construction of a double-circuit transmission line along the same alignment of transmission structures as proposed for the single-circuit line would require placing the second set of conductors on the side of the transmission structures away from the tracks. Where lines are located closer to abutting property, power flow may be redistributed such as to increase EMF in that direction. At the same time, redistribution of power flow may reduce EMF levels in other directions. Additionally, operation of a double-circuit line could provide opportunities for using conductor phase configurations that reduce magnetic fields.

Regarding Tofias Trust's argument that the Company's estimated cost for underground construction is suspect, the Siting Board agrees with the Company that unadjusted cost estimates from previous Siting Board reviews are not directly comparable to the Company's cost estimate in this review. Although Tofias Trust cites a cost differential of \$1 million per mile for underground construction, compared to overhead construction, this figure was taken from an analysis in a past review based on 1988 cost levels. 1991 NEPCo Decision, 21 DOMSC at 394. Although clearly less than the fivefold increase of \$3.6 million per mile used by Brockton Power in its 1999 analysis, the 11-year old cost differential still represents more than a twofold increase over Brockton Power's assumed cost of \$0.9 million per mile for overhead construction before any adjustment for cost escalation, and if adjusted for cost escalation of at least 3 percent per year would indicate a cost for underground construction of at least 2.5 times that assumed by Brockton Power for overhead construction. In addition, in another previous Siting Board review of proposed 115 kV transmission construction from a comparably earlier period, a significantly larger cost differential for underground construction of \$1.4 million per mile is identified as part of a cost analysis based on 1987 cost levels. Commonwealth Electric Company, 17 DOMSC 249, 297, 303-304 (1988) ("1988 Commonwealth Decision").⁸² Thus, a fair reading of cost data from previous Siting Board reviews suggests that there is a significant cost multiple associated with placing 115 kV transmission lines underground. Regarding the merits of underground siting in this case, it is not disputed that such siting would reduce EMF levels. However, as discussed in Section III.L.6 below, available research studies do not establish that there is a cause-and-effect relationship between EMF from power lines and adverse health effects. In addition, the Siting Board has found, above, that the Company chose an interconnect line route that would best limit residential exposure to EMF impacts from the line, and thereby minimize EMF impacts. Given that the currently proposed route is primarily in industrial areas, we conclude that the significant additional cost of underground siting is not justified based on

⁸² The analysis showed a cost increase of \$7.04 million to substitute 5.1 miles of underground construction for overhead construction between two substations. 1988 Commonwealth Decision, 17 DOMSC 249, at 297, 304.

our analysis of EMF impacts. Accordingly, the Siting Board finds that the alternative of siting the interconnect line underground would not be consistent with achieving minimum environmental impacts, consistent with the minimization of costs of mitigating, controlling and reducing such impacts.

The Siting Board notes that its findings regarding the proposed interconnect line are based on the Company's analysis, which assumed construction of a single 115 kV line. If there is a significant change in the Company's proposed interconnect line, including the possible change of using a double-circuit interconnect line configuration as recommended in EUA's interconnect study, Brockton Power must inform the Siting Board of such change in order that the Siting Board may determine whether to inquire further into the matter.⁸³

With respect to EMF impacts along existing transmission lines, the record shows that EUA's F-19 and G-18 lines are carried on double-circuit transmission structures using a conductor phase configuration that minimizes magnetic fields. Although the Company provided magnetic field estimates for an assumed transmission scenario, the Siting Board notes that there is the potential for circuit-specific power flows and related magnetic field levels to differ significantly from those that the Company assumed. First, as argued by Tofias Trust, there is little basis for the Company's assumption that power flows would be balanced among the circuits on the EUA ROW. Second, there appear to be significant differences between future transmission scenarios that would be likely, consistent with recommendations in the EUA interconnection study, and the transmission scenario that the Company assumed for purposes of its EMF analysis.

Given the uncertainty regarding the interconnection configuration to be used, and potential changes in magnetic field levels that could result, the Siting Board wishes to remain informed as to the progress and outcome of plans to interconnect the proposed project. Therefore, the Siting Board directs Brockton Power to provide the Siting Board with an update

⁸³ As applicable based on any such change, the Company should provide additional, updated analysis of the associated EMF impacts, as well as the associated environmental impacts with respect to visual impacts, tree clearing, wetlands, or other affected concerns, and provide a description of any measures to mitigate added environmental impacts.

on: (1) the extent and design of required transmission upgrades; (2) the measures incorporated into the transmission upgrade designs to minimize magnetic field impacts; and (3) the resulting magnetic field levels at the edge of the EUA ROW based on the transmission upgrade design and most likely load flow scenario. Brockton Power shall provide such information to the Siting Board when it reaches final agreement with all transmission providers regarding transmission upgrades.

Accordingly, the Siting Board finds that with the Company's pursuit of cost-effective designs for decreasing magnetic fields along the affected transmission lines that require upgrades, the environmental impacts of the proposed facility would be minimized with respect to EMF impacts.

K. Land Use

This section describes the land use impacts of the proposed facility, including the impacts to significant cultural resources and wildlife species and habitats.

1. Description

Brockton Power asserted that the proposed facility would be consistent with zoning, existing land uses, and planned land uses (Exh. BP-1, at 4.2-6). The Company indicated that the proposed facility would be constructed on a 13.2 acre parcel within the 70 acre Oak Hill Way Industrial Park (Exh. BP-1, at 4.2-1). The Company described the land uses bounding the site as warehouse and manufacturing facilities to the north and east,⁸⁴ the Salisbury Plain River to the west, and the Brockton AWRF to the south (id.). The Company indicated that the gas pipeline interconnect would extend for 1500 feet within the ROW for Industrial Boulevard, while the electrical interconnect would be approximately 3500 feet in length and would extend along

⁸⁴ The facilities and businesses currently occupying properties adjacent to the proposed site are (starting from the south and going clockwise): Brockton AWRF; various commercial establishments along Route 28; ARM (commercial/industrial building); F. W. Webb industrial supply operation; Mullare News Agency, Inc. distribution and offices; Mihos realty and a truck repair facility, and a building housing several manufacturing facilities (Exh. BP-1 (fig. 1-4)).

existing roadways, across an industrial property to the MBTA ROW, and then along the MBTA ROW to the EUA 115 kV line (Exhs. BP-1, at 1-24; HO-RR-20 (a) (att.)).

Brockton Power stated that the zoning of the site, Heavy Industry (I-3), is appropriate for the proposed facility (Exh. BP-1, at 1-11). In support of this statement, the Company submitted a copy of the City of Brockton's zoning ordinances, which showed that an electric power generating facility is a permitted use in areas zoned for Heavy Industry I-2 and I-3 (Exh. EFSB-S-2). The Company noted, however, that because the proposed facility's exhaust stack, HRSG building, and air intake system would be taller than 60 feet, the Company needed a height variance from the Brockton Zoning Board of Appeals in order to build these structures (Exh. BP-1, at 4.2-1). Brockton Power stated that on February 19, 1999, it received the necessary height variance from the Brockton Zoning Board of Appeals (Exh. EFSB-S-2).

Brockton Power indicated that the properties bordering the facility to the south and east also are zoned I-3, while the properties to the north and across the Salisbury Plain River to the west are zoned General Commercial (C-2) (*id.* at 4.2-1 to 4.2-3). The Company stated that the nearest existing residential areas are 1500 feet to the east and 1100 feet to the west of the proposed site and are separated from the site by existing commercial or industrial development (Exh. BP-1, at 1-12 to 1-13). The Company stated that the nearest undeveloped residentially zoned property is 880 feet to the east of the proposed facility site and is likewise separated from the site by existing industrial and commercial facilities (Exh. EFSB-EL-3).

Brockton Power stated that the proposed site was previously graded and filled, so that the site has been essentially stripped of vegetation except in some wetland resource areas (Exh. BP-1, at 4.2-1, 4.2-7). The Company determined that, prior to development of the industrial park, the site was mined for sand and gravel and has been largely devoid of trees since the mid-1970's (Exh. EFSB-S-1). An aerial photograph submitted by the Company shows that the preferred electrical interconnection route could require minimal tree trimming along Oak Hill Way and the MBTA ROW (*id.*, EFSB-EL-11 (att.)). From a review of site aerial photograph, it appears that the Company's proposed route for the wastewater supply and return line could also require minor tree clearing (Exhs. EFSB-E-3 (att. (e)(5)); BP-1 (fig. 1-4)).

Brockton Power submitted a Massachusetts Geographic Information System ("MGIS")

map showing land uses surrounding the proposed site (Exh. BP-1 (fig. 4.2-1)). Major land uses within one-half mile of the site are shown as forest, open land, commercial, and industrial land uses, with lesser areas of residential, waste disposal, and transportation land uses (*id.*). Within an area one mile from the proposed site, the land uses surrounding the facility are shown as a majority forest, residential, and commercial with industrial and open land concentrated within one-half mile of the facility (*id.* (fig. 4.2-1)). On the MGIS map, the Oak Hill Industrial Park is shown as forest, but the Company indicated that the majority of this land was previously cleared for the industrial park (*id.* at 4.2-3). The Company did not report any other discrepancies with the GIS mapping.

To assess the potential impacts of the proposed facility on cultural resources, Brockton Power reviewed the files of the Massachusetts Historical Commission ("MHC") and determined that the nearest site listed on the National Historic Register is over one-half mile from the proposed site (Exh. BP-1, at 5.2-1). The Company also submitted verification from the MHC stating that the proposed project is unlikely to affect significant historic or archeological resources (*id.*).

For its Notice of Intent to the Brockton Conservation Commission, the Company reviewed the 1997-1998 Massachusetts Natural Heritage Estimated Habitat Map (Brockton Quadrangle) and determined that the proposed site was not within the estimated habitat of any rare or endangered species (Exh. EFSB-E-3 (a) (att.) at 3-3)).

2. Analysis

As part of its review of land use impacts, the Siting Board considers the extent to which a proposed facility would be consistent with existing land uses, state and local requirements, and policies or plans relating to land use. The Siting Board also considers the potential impacts of the project on terrestrial resources including vegetative cover and habitat.

Here, the record indicates that the proposed site is located within a designated industrial park, is zoned for heavy industry, and the proposed facility is an allowed use for this site. The Company has received the height variance necessary to construct the proposed facility.

The record further indicates that the area within a one-half mile radius of the proposed

site includes forest, open, commercial, and industrial land with lesser amounts of residential and other land uses. The record demonstrates that the proposed site is surrounded on all sides by existing industrial and commercial facilities and that these existing facilities separate the proposed site from the nearest residential areas or areas potentially available for residential development. Accordingly, the Siting Board concludes that the proposed facility is consistent with surrounding land uses and zoning.

The Company has adequately considered the impacts of the proposed facility with respect to vegetative cover, wildlife species and habitats, and historic and archeological resources. Based on its review of the information submitted by the Company, the Siting Board concludes that, with the exception of the minimal tree trimming or clearing associated with the electrical interconnect⁸⁵ and the wastewater interconnect, no land resource impacts are likely to occur as a result of construction or operation of the proposed facility.

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

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 chemical pollutants (e.g., EMF or noise effects). The Siting Board considers these effects in the context of existing background conditions, existing baseline health conditions, and, when appropriate, likely

⁸⁵ In the project interconnect study, provided after the close of hearings, EUA recommends that Brockton Power install two new interconnect lines on double circuit poles along the proposed route, rather than a single interconnect line as proposed by Brockton Power in this review (Exh. HO-RR-7S (att. at 3, 10-12, 15)). If there is a significant change in the Company’s proposed interconnect line, including the possible change of using a double-circuit interconnect line configuration as recommended in EUA’s interconnect study, Brockton Power must inform the Siting Board of such change in order that the Siting Board may determine whether to inquire further into the matter (see Section III.J, above).

changes in the contributions of other major emissions sources.

The analysis of the health impacts 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, EMF and noise; 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

Brockton Power stated that it was aware of one study published in the last ten years that addressed health concerns for the City of Brockton or the Plymouth County region (Exh. EFSB-H-2).⁸⁶ The Company provided a summary of this report, which was published by the Massachusetts Department of Public Health in 1997 and is titled Cancer Incidence in Massachusetts 1987-1994 ("Cancer Incidence Report") (*id.*). 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 Brockton, the Cancer Incidence Report finds elevated levels (significant at $p \leq 0.001$) of cervical cancer in women as well as excesses in oral cancer, bladder cancer, and lung cancer (significant at $p \leq 0.05$) (*id.*).⁸⁷ The Company noted that overall cancer rates in Brockton are identical to the statewide average, and emphasized that the

⁸⁶ Brockton Power stated that it contacted Massachusetts Department of Public Health and the Brockton Department of Health and determined that no public health studies of the Brockton area are currently being performed (Exh. BP-1, at 4.3-2).

⁸⁷ The term statistically significant at $p \leq 0.001$ means that there is at most one chance in 1000 that the excess of observed cancer cases is due to chance alone (Exh. EFSB-H-2, at 5). Similarly, the term statistically significant at $p \leq 0.05$ means that there is at most one chance in 20 that the excess of observed cancer cases is due to chance alone (*id.*). No statistical excesses at the $p \leq 0.01$ were observed for Brockton (*id.*).

Cancer Incidence Report included a cautionary statement that statistical significance does not necessarily imply biological or public health significance (id.).

2. Criteria Pollutants

As discussed in Section III. B. 1, above, the MDEP regulates the emissions of six criteria pollutants under NAAQS: SO₂, PM-10,⁸⁸ NO₂, CO, O₃, and Pb. The Company's witness, Dr. Valberg, stated that the criteria pollutants are associated with respiratory diseases (Tr. 1, at 155-158). Dr. Valberg further stated that SO₂ primarily affects asthmatics and can aggravate pre-existing conditions; that high concentration of NO₂ can damage lung tissue; that Pb can have neurological effects; and that particulate matter is a respiratory irritant which, at high levels may be related to respiratory tumors (id.).

Brockton Power indicated that the EPA's NAAQS standards for each criteria pollutant are health based (Tr. 1, at 137-139). The Company stated that the resulting standards are designed to protect the health and welfare of the public from the adverse effects of air pollution and protect the public from an anticipated adverse effects associated with the presence of air pollutants (Exh. HO-RR-4 (att. at 3-3 to 3-4)). The Company provided data from MDEP monitoring stations in Boston, Chelsea, Easton, Waltham, Quincy, and Scituate (Exh. HO-RR-4 (att. at 5-17 to 5-18)). This data indicated that: (1) the maximum recorded concentrations of CO in the area were 52 percent of the 8-hour NAAQS standard and 19 percent of the 1-hour standard; (2) the maximum annual average concentration for NO₂ was 58 percent of NAAQS in Boston, but during 1997 and 1998, NO₂ was 17 percent of NAAQS in Easton, which is the monitoring station closest to the site; and (3) maximum concentrations of Pb, SO₂, and PM-10 were below 50 percent of the NAAQS standard for all averaging periods (id.).

The Company indicated that new sources of criteria pollutants, such as the proposed project, may not cause or contribute to a violation of the health-based NAAQS (Exh. HO-RR-4 (att. at 3-1)). The Company stated that, in order to identify new sources with the potential to

⁸⁸ As noted above the EPA has promulgated regulations that also would set standards for emissions of PM-2.5 and that would revise the current standard for emissions of PM-10; however, these regulations are not currently in effect (Exh. HO-RR-4 (att. at 3-3)).

significantly affect ambient air quality, the EPA and MDEP have adopted SILs for each criteria pollutant; new sources with emissions above SILs are required to conduct interactive source modeling of their emissions (*id.* at 3-5). The Company submitted modeling results which indicate that the proposed facility's emissions would be below applicable SILs for all criteria pollutants (*id.* at 6-8 to 6-12).

Although interactive modeling was not required for this project, the Company identified other nearby significant sources of air pollutant emissions (Exh. EFSB-H-10). The Company indicated that the other significant sources were relatively distant and minor so that any interactive impacts resulting from the proposed and existing pollution sources would be very small (Tr. 1, at 153-154). In addition, the Company conducted a backout analysis and asserted that the operation of the facility would result in net reductions of NO_x, SO₂ and CO₂ in Massachusetts of approximately 2,709 tpy, 9,872 tpy and 708,548 tpy, respectively (Exh. EFSB-EA-1).

The record indicates that the EPA has established ambient air quality standards, called NAAQS, for six criteria pollutants – SO₂, PM-10, NO₂, CO, O₃, and Pb. These standards are designed to be protective of human health, including the health of sensitive subgroups such as the elderly, children, and asthmatics, 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 defined 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, above, 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-attainment 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 greater than 100 percent, 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 Company has minimized the health impacts of a proposed facility.

In this case, the record shows that the Brockton area in Plymouth County presently is: (1) unclassified or in attainment for NO₂, SO₂, PM-10, CO and Pb, with regional background levels of less than 52 percent of the ambient standard for all pollutants and averaging periods; and (2) in serious non-attainment for ozone. Thus, levels of all criteria pollutants in the Brockton area, except O₃, are within the standards set to protect human health. In addition, the Company has shown that the proposed project's emissions of all criteria pollutants would be below the SILs. The Siting Board concludes that there is no evidence suggesting that the proposed project's emissions of SO₂, PM-10, NO_x, CO, and Pb would have a discernable impact on public health.

With respect to concerns raised about the health impacts of multiple sources of pollution in the Brockton area, the Company's assessment is that the cumulative impact of the proposed and existing facilities would be minimal. The Company has committed to meeting BACT or LAER, as applicable, and to obtaining offsets for its NO_x and SO₂ emissions as required. 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. Toxics include chemicals such as arsenic, beryllium, lead, mercury, nickel, and formaldehyde (Exh. HO-RR-4 (att. at Table 6.5-3)).

The Company indicated that, for air toxics, the MDEP has developed ambient air quality standards which are intended to protect public health (Exh. EFSB-H-3). The program sets AALs for a broad range of chemicals through a three-stage process (Exh. HO-RR-10 (att. 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 is 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).

Brockton Power provided an abstract of a 1998 study by the EPA entitled “Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units – Final Report to Congress” (“HAPs Study”) (Exh. EFSB-H-1). The HAPs Study assessed the hazards and risks due to inhalation exposure to 67 hazardous air pollutants (“HAPs”) from 684 fossil fuel plants nation-wide (*id.*). The HAPs study also included multipathway assessments for the four highest-priority HAPs – arsenic, mercury, dioxins, and radio nuclides (*id.*). 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.*). Based on the EPA’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.

Although Brockton Power proposes to use natural gas as the primary fuel for its proposed facility, it does intend to seek permits to use oil as a back-up fuel for up to 720 hours per year. As noted in Section III.B, above, even with the assumption that the facility operates for 720 hours with oil burning, the proposed project’s emissions of all and regulated air toxics would be below TELs and AALs, which are designed to be protective of public health. In addition, there is no evidence in the record suggesting 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.

The proposed project would use treated effluent for cooling water; therefore Brockton Power has assessed potential impacts associated with odor and airborne impurities from the wet

mechanical cooling towers (Exhs. EFSB-EU-7; EFSB-EU-8). The Company indicated that the cooling towers would not emit airborne impurities because the water used in the cooling towers would be disinfected and treated at the AWRF and/or at the proposed facility (*id.*). In Section III. B, above, the Siting Board notes that in previous reviews of facilities using sanitary waste water for cooling, it has found that the facilities would have acceptable air impacts and no other adverse impacts. Accordingly, the Siting Board finds that air emissions associated with use of sanitary waste water for cooling water would have no discernable public health impacts.

4. Discharges 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 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; EFSB-H-6; Tr. 1, at 164 -165). Although the Company presented information indicating that the proposed site is within a wellhead protection area for an emergency well and is within 1100 feet of private wells, it also indicated that there is no active municipal well within one half mile of the site (Exhs. BP-1 (fig. 4.4-3); HO-RR-12). The Company stated that the potential for pollutant releases through stormwater runoff is regulated by MDEP under its Stormwater Management Policy, and indicated that it would design the stormwater management system in compliance with the MDEP's best management practices (Exh. EFSB-H-3). The Company indicated that during construction, storm water management would take place in accordance with an NPDES storm water protection plan and that requirements of the Brockton Conservation Commissions Order of Conditions would adequately protect ground water (Exhs. EFSB-H-4; EFSB-E-1, at B-10).

As discussed in Section III. C. 1, above, the proposed facility would generate a wastewater stream of between 208,000 and 225,000 gpd, which would be discharged to the Brockton AWRF (Exh. BP-1, at 1-22 to 1-23). The Company stated that wastewater entering the sewer system would meet all pretreatment standards for discharges to the AWRF (Exh. EFSB-E-1, at B-20).

In Sections III. C and III. D, above, the Siting Board determined that although the

Brockton Power facility was within a potential water supply area, the Company had demonstrated that with compliance with stormwater management standards, wastewater management standards, the Brockton Conservation Commission Order of Conditions, and with the implementation of a condition regarding groundwater protection, the proposed facility's impacts to the ground and surface waters would be minimized. In addition, the Siting Board has found that the wastewater impacts of the project would be minimized due to pretreatment standards and limited quantities of facility discharge. Consequently, the Siting Board finds that the project, as proposed, poses no health risks related to the contamination of potable groundwater or the disposal of wastewater.

5. Handling and Disposal of Hazardous Materials

As discussed in Section III.H, above, the proposed project would use 19 percent aqueous ammonia for NO_x control, and limited amounts of lubricating oils and certain other industrial chemicals for project operation and for treatment of makeup water, HRSG feedwater, and cooling water (Exh. BP-1, at 4.8-3 to 4.8-4). In addition, the Company would store fuel in an on-site 500,000 gallon tank, with deliveries to be made primarily by tank truck (*id.*).

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 the toxic endpoint at the property boundaries; and that the Company is prepared to respond effectively to an accidental release of hazardous materials. The Siting Board also determined that the Company would employ appropriate measures to ensure the safe transport and delivery of oil, to prevent oil spills and accidents, and to respond quickly and effectively to any spills that occur.

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 facility. 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 from the proposed project related to the handling and disposal of hazardous materials would be minimized.

6. EMF

As discussed in Section III. J, above, Brockton Power estimated that worst-case magnetic field levels resulting from the transmission interconnection would be 65 mG at the northeast edge of the MBTA ROW, declining to 20 mG at the nearest residence (Exhs. EFSB-EM-1 (att. 6-1, fig. 6.1); HO-RR-6). The Company estimated that magnetic field levels along existing transmission lines would increase from the maximum measured level of 18 mG to 51 mG at the edge of the ROW (Exh. EFSB-EM-1 (att. at 4-4 to 4-5, 5-2, 6-2, figs. 4.2, 4.3)).

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. 1985 MECO/NEPCO Decision, 13 DOMSC 119, at 240. 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. BP-1, at 4.9-4 to 4.9-5; (Table-4.9-2)). 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 4.9-4). The Company also stated that the American Conference of Governmental Industrial Hygienists had established a Threshold Limit Value ("TLV") level of 10,000 mG to which nearly all workers may be exposed repeatedly without adverse health effects (id.). The Company indicated that eight 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 (Table 4.9-2)).

The Company's witness, Dr. Valberg, asserted that, although the issue remains controversial, the weight of the evidence from recent studies casts doubt on the hypothesis that power line electric and magnetic fields cause human health effects (Exh. EFSB-1, at 1074). In support of this assertion, Dr. Valberg provided or summarized a number of recent reports and studies in the area (Exhs. EFSB-1; HO-RR-21). First, Dr. Valberg described a 1997 report by the National Research Council ("NRC Report"), 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-1, at 1075-1078).⁸⁹ He noted that the report concludes that the current body of evidence does not show that exposure to such fields presents a human health hazard (*id.* at 1077). He stated that the report concluded that existing epidemiological studies did not provide sufficient evidence to link magnetic field exposure any human health effect, with the possible exception of childhood cancers (*id.* at 1078). He also indicated that the report reviewed laboratory studies, some of which found physiological effects from magnetic field exposure; however, many of these studies could not be replicated by other researchers (*id.* at 1077-1078).

Dr. Valberg also provided an update on research published since the NRC Report (*id.* at 1078 to 1090). He discussed a recent study, conducted by the National Cancer Institute ("NCI"), which 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

⁸⁹ In a recent case, the Siting Board has independently reviewed the NRC Report and briefly summarized its findings with regard to epidemiological studies, *in vitro* studies, and animal studies. Site the Mystic Decision, EFSB 98-8, at 87-88. The report concludes that the current body of evidence does not show that exposure to power frequency electric and magnetic fields presents a human health hazard. *Id.* at 87. The report also concludes that the aggregate epidemiological 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 87-88.

could not conclude that there was a consistent pattern that would support a dose response effect (id. at 1083-1085). 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).

In addition, the Company provided a copy of a recent Canadian study, where field exposure was assessed through monitors in children's backpacks, which finds "little support for the hypothesis of an increased risk of childhood leukemia either from magnetic or electric fields or from residential power line configurations" (Exh. HO-RR-11(att.)). The Company also provided summaries of three other recent publications resulting from two studies dealing with the risk of childhood cancer resulting from EMF exposure (Exh. HO-RR-21). The first two publications, taken together, find that residential proximity was not associated with increased risk of childhood leukemia, while exposures to electric fields as measured through monitoring devices attached to the child were associated with a decreased leukemia risk (Exh. HO-RR-21, at 2-3). The third publication, which focused on maternal exposure to EMF during pregnancy, found no evidence that such exposure is a risk factor for childhood leukemia, childhood brain cancer, or childhood cancer generally (id. at 3).

Tofias Trust argues that the Company has not provided all EMF studies published since the NRC Report, and states that, had it been permitted to intervene, it would have presented a contrary review of the scientific literature (Tofias Initial Brief at 10-11).

In this and several other recent cases, the Siting Board has reviewed the scientific literature with respect to the effect of power line frequency EMF on human health. Sithe Mystic Decision, EFSB 98-8 at 86-89; IDC Bellingham Decision, EFSB 97-5, at 118-119; Sithe Edgar Decision, EFSB 98-7, at 126-128. 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.

Tofias Trust has argued that the record in this case may be incomplete, and that additional studies may be available which would support the hypothesis of a link between power-

frequency electric field exposure and human health. The Siting Board agrees that such studies may be available, and that we cannot conclusively reject such a hypothesis, particularly with respect to childhood leukemia. Because of the scientific uncertainty surrounding this issue, the Siting Board's policy is to encourage transmission providers to take cost-effective steps to minimize magnetic fields. Consistent with this policy, the Company has agreed to route its interconnect line in a manner that would minimize residential exposure to EMF. In addition, in order to ensure that the EMF levels are as projected in this record, the Siting Board has required the Company to inform it of any significant change in the Company's proposed interconnect line, and to provide it with an update on the extent and design of required upgrades to existing transmission lines. Accordingly, the Siting Board finds that the health effects, if any, of magnetic fields associated with the proposed project would be minimized.

7. Noise

As discussed in Section III. G above, the proposed facility would produce noise that would be noticeable in some surrounding community areas, both during the facility construction period and during operation of the facility. The Company has assessed the noise impacts of the proposed facility in relation to applicable federal and local criteria for acceptable ambient noise, as well as the MDEP standard which limits allowable noise increases from new sources.

The Company provided information indicating that OSHA and EPA both have established guidelines to prevent hearing loss due to long-term exposure to noise; the OSHA guidelines (29 CFR § 1910.95) prohibit an 8-hour workday exposures exceeding average of 90 dBA, while the EPA guidelines recommend that noise exposure not exceed an average of 75 dBA (L_{eq}) over 8 hours, or 70 dBA (L_{eq}) over 24 hours (Exhs. BP-1, at 4.11-4; EFSB-N-3, at 4). In addition, the EPA guidelines suggests that an outdoor L_{dn} of 55 dBA likely would result in indoor nighttime noise levels of approximately 32 dBA, which should, in most cases, protect against sleep interference (*id.*).

The record shows that, with the proposed facility in operation, outdoor L_{dn} noise levels could increase by 1 dBA at the Crown Place Condominiums to 61 dBA and increase by 1 dBA to 57 dBA for residences on Appleby Street. The outdoor L_{dn} noise at all other residential receptors

was predicted to remain unchanged. Although these levels are clearly above the 55 dBA(L_{dn}) level recommended by the EPA, the Siting Board notes that the predicted 1 dBA increases at the nearest receptors are not likely to be noticed in a normal community. Furthermore, the resulting noise levels are well below thresholds where hearing loss from long-term noise exposure could occur. Consequently, the Siting Board finds that the health effects, if any, of noise from the proposed project would be minimized.

8. Conclusions

In the sections above, the Siting Board has reviewed the proposed project's potential for effects on human health resulting from emissions of criteria pollutants, emissions of air toxics, emissions of waste water impurities, emissions to ground and surface waters, handling and disposal of hazardous materials, electric and magnetic frequencies, and noise. The Siting Board has found that: (1) the cumulative health impacts of criteria pollutant emissions from the proposed facility would be minimized; (2) the air toxics emissions from the proposed project would have no discernable public health impact; (3) the use of treated effluent in the cooling towers would not lead to health risks associated with airborne impurities; (4) the proposed project poses no health risks related to the contamination of potable groundwater or the disposal of wastewater; (5) the health risks of the proposed project related to the handling and disposal of hazardous materials would be minimized; (6) the health effects, if any, of magnetic fields associated with the proposed project would be minimized; and (7) the health effects, if any, of noise from the proposed project would be minimized.

The Siting Board notes that the only indication of potential pre-existing public health problems in the communities surrounding the proposed project is the existence of statistically elevated levels of a variety of cancers. However, there is no evidence in the record suggesting that the levels of pollutants emitted by the proposed facility would in any way increase these types of cancer. Moreover, the record shows that the proposed project emits air toxics, including carcinogens, at levels below TELs and AALs, and that, where adequate information is available, AALs for carcinogens are set to correspond to an incremental lifetime risk of developing cancer of one in one million. Consequently, the Siting Board finds that there is no evidence that the

proposed project would exacerbate existing public health problems in the communities surrounding the proposed project.

Accordingly, based on its review of the record, the Siting Board finds that the cumulative health impacts of the proposed project would be minimized.

M. Conclusions

Based on the information in Sections III. B through III. 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 CO₂ 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, with implementation of a condition requiring ground water protection measures such as impermeable bases for bulk chemical storage systems, 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, with implementation of a condition requiring the recycling of construction waste as appropriate, 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 a condition requiring off-site mitigation of visual impacts, 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, with the implementation of conditions requiring facility security measures, the completion of its SPCC and ERP plans in consultation with the City of Brockton and the Town of West Bridgewater, and the development of an icing-

hazard mitigation plan, 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 conditions requiring the Company to identify and if possible implement an alternative exit route for commercial traffic leaving the facility and to contact the City of Brockton and other nearby property owners or occupants to evaluate the possibility of improving traffic conditions at the Route 28-Sargents Way intersections, 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 pursuit of cost-effective designs for decreasing magnetic fields along affected transmission lines that require upgrades, 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, water resources, solid waste, visual, safety, and traffic impacts, 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.

IV. CONSISTENCY WITH THE POLICIES OF THE COMMONWEALTH

A. 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.⁹⁰

B. Analysis

In Sections II and III, above, the Siting Board has reviewed the process by which Brockton Power 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. Brockton Power has demonstrated that it expects to comply with all MDEP standards.⁹¹

As discussed in Section III.C, above, Brockton Power has demonstrated that it will comply with state and local requirements related to wastewater treatment and stormwater.

As discussed in Section III.D, above, Brockton Power has demonstrated that the wetlands

⁹⁰ The Siting Board notes that its Technology Performance Standards 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 and III. B, 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.

⁹¹ Brockton Power correctly notes that many of the Commonwealth's environmental policies, including its policies promoting clear air and water, have health-related implications, and that in complying with these policies it also complies with health policies of the Commonwealth (Company Brief at 84).

impacts of the proposed project would be minimized. In addition, Brockton Power has received an Order of Conditions for the proposed project from the Brockton Conservation Commission, as required by the Massachusetts Wetlands Protection Act.

As discussed in Section III.G, above, Brockton Power has demonstrated that it will limit L_{90} noise increases at the nearest residence to 5 dBA, consistent with MDEP Policy 90-001. The proposed facility likely will require a waiver from MDEP for its property line noise increases, which exceed the 10 dBA limit set in MDEP Policy 90-001.

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

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.

V. 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 J $\frac{1}{4}$ 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 resulted in the selection of a 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, water resources, solid waste, visual impacts, safety, traffic and EMF impacts, 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. C., III. E., III. F., III. H., III. I., 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 Brockton Power LLC to construct a 270 MW gas-fired combined cycle electric generating facility in the City of Brockton, Massachusetts. The Company shall comply with the following conditions during construction and operation of the proposed generating facility:

- A. In order to minimize air quality impacts, the Siting Board directs the Company to make a monetary contribution to cost effective CO₂ mitigation programs of an amount that reflects the proposed facility's annual CO₂ emissions of 952,209 tpy over 20 years of operation.
- B. In order to minimize water resources impacts, the Siting Board directs the Company to incorporate ground water protection measures such as impermeable bases into the design of bulk chemical storage containment systems to the containment system.
- C. To minimize solid waste impacts, the Siting Board directs the Company to

develop and implement a plan for segregating and recycling wood, metal, and other recyclable debris during the construction phase of the proposed project. In the event that the Company determines that recycling of selected construction debris is impractical or burdensome, the Siting Board directs the Company to submit a detailed evaluation of the factors that contributed to the determination, including an analysis of the waste stream, an analysis of costs associated with disposal and recycling, and a comparison of recycling costs to potential environmental benefits of recycling at the proposed facility.

- D. In order to minimize visual impacts, the Siting Board directs the Company to provide reasonable off-site mitigation of visual impacts at affected residential properties and at roadways and other locations within one mile of the proposed facility, as requested by individual property owners or appropriate municipal officials. For this decision, reasonable offsite mitigation could include shrubs, trees, or other mutually-agreeable measures, such as window awnings, that would screen views of the proposed generating facility and including the proposed electrical interconnection line.
- E. In order to minimize safety impacts, the Siting Board directs the Company to provide for facility security and to limit access to the proposed site during construction and operation of the proposed facility.
- F. In order to minimize safety impacts, the Siting Board directs the Company to prepare the SPCC plan and the ERP in consultation with both the City of Brockton and the Town of West Bridgewater.
- G. In order to minimize safety impacts, the Siting Board directs the Company to develop and implement a plan for mitigating hazardous roadway and walkway conditions that could result from icing associated with the cooling towers.

- H. In order to minimize traffic impacts, until such time as the Route 28-Sargents Way intersection is improved, the Siting Board directs the Company to limit oil deliveries and other commercial delivery traffic to off-peak hours except where emergency conditions exist.

- I. In order to minimize traffic impacts, the Siting Board directs the Company to work with the City of Brockton Department of Public Works and with the management of other commercial or industrial facilities within the Oak Hill Industrial Park to identify and if appropriate promote implementation of plans to improve the Route 28-Sargents Way intersection.

- J. In order to minimize EMF impacts, the Siting Board directs the Company to provide the Siting Board with an update on: (1) the extent and design of required transmission upgrades; (2) the measures incorporated into the transmission upgrade designs to minimize magnetic field impacts; and (3) the resulting magnetic field levels at the edge of the EUA ROW based upon the transmission upgrade design and most likely load flow scenario.

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

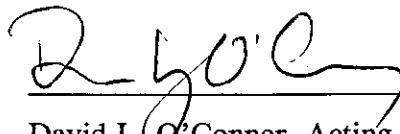
In addition, the Siting Board notes that the findings in this decision are based upon the record in this case. A project proponent has an absolute obligation to construct and operate its facility in conformance with all aspects of its proposal as presented to the Siting Board. Therefore, the Siting Board 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.



Peter M. Palica
Hearing Officer

Dated this 13th day of March, 2000

APPROVED by the Energy Facilities Siting Board at its meeting of March 9, 2000, by the members and designees present and voting: David L. O'Connor (Acting Chair, EFSB/Commissioner, Division of Energy Resources); W. Robert Keating (Commissioner, DTE); James Connelly (Commissioner, DTE); Paul Vasington (Commissioner, DTE); Joseph Donovan (for Carolyn Boviard, Director of Economic Development); Sonia Hamel (for Robert Durand, Secretary of Environmental Affairs); and Louis A. Mandarin, Jr. (Public Member).



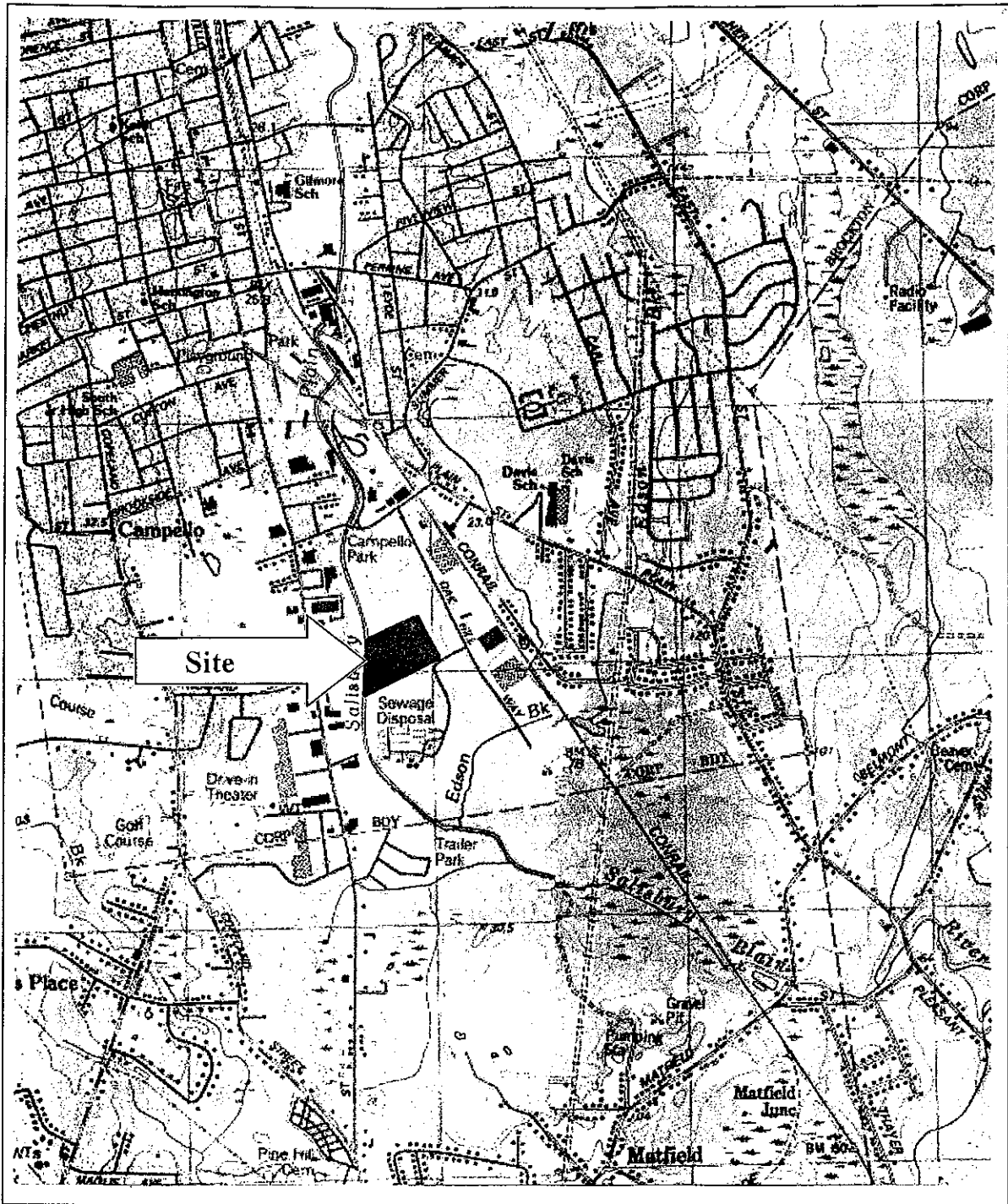
David L. O'Connor, Acting Chair
Energy Facilities Siting Board

Vote taken on the 9th day of March, 2000.

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

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

FIGURE 1



Site Vicinity Map

COMMONWEALTH OF MASSACHUSETTS
Energy Facilities Siting Board

In the Matter of the Petition of)
Site West Medway Development LLC)
for Approval to Construct a Bulk Generating) EFSB 98-10
Facility in the Town of Medway, Massachusetts)
_____)

FINAL DECISION

Denise L. Desautels
Hearing Officer
April 13, 2000

On the Decision:
William S. Febiger
Jeffrey Brandt
Barbara Shapiro
John Young

APPEARANCES: David S. Rosenzweig, Esq.
Keegan, Werlin & Pabian, LLP
21 Custom House Street
Boston, Massachusetts 02110-3525
FOR: Sithe West Medway Development LLC
Petitioner

Representative Barbara Gardner
114 Jennings Road
Holliston, Massachusetts 01746
Intervenor

William S. Stowe, Esq.
Boston Edison Company
800 Boylston Street
Boston, Massachusetts 02199
FOR: Boston Edison Company
Intervenor

Raphaella Rozanski, Chair
Board of Selectmen
Town of Medway
155 Village Street
Medway, Massachusetts 02053
FOR: Medway Board of Selectmen
Intervenor

Stephen Pritchard
Donald DiCristofaro
IDC Bellingham, LLC
350 Lincoln Place
Hingham, Massachusetts 02043
FOR: IDC Bellingham, LLC
Interested Person

Mary Beth Gentleman, Esq.
Eileen M. McGettigan, Esq.
Foley, Hoag & Eliot, LLP
One Post Office Square
Boston, Massachusetts 02109
FOR: U.S. Generating Company
Interested Person

Kathryn J. Reid, Esq.
New England Power Company
25 Research Drive
Westborough, Massachusetts 01582

FOR: New England Power Company and Massachusetts Electric
Company
Interested Person

Robert Knoerk
13 Granite Street
Medway, Massachusetts 02053
Interested Person

TABLE OF CONTENTS

I.	<u>INTRODUCTION</u>	Page 1
A.	<u>Description of Proposed Facility, Site, and Interconnections</u>	Page 1
B.	<u>Procedural History</u>	Page 3
C.	<u>Scope of Review</u>	Page 4
1.	<u>Background</u>	Page 4
2.	<u>Position of Site West Medway</u>	Page 5
3.	<u>Analysis</u>	Page 5
II.	<u>SITE SELECTION</u>	Page 6
A.	<u>Standard of Review</u>	Page 6
B.	<u>Description</u>	Page 7
C.	<u>Analysis</u>	Page 13
III.	<u>ENVIRONMENTAL IMPACTS</u>	Page 14
A.	<u>Standard of Review</u>	Page 14
B.	<u>Air Quality</u>	Page 15
1.	<u>Applicable Regulations</u>	Page 15
2.	<u>Baseline Air Quality</u>	Page 17
3.	<u>Proposed Restrictions on the Existing Facility</u>	Page 18
4.	<u>New Facility Emissions, Impacts, and Compliance</u>	Page 18
5.	<u>Offset Proposals and Marketable Allowances</u>	Page 23
6.	<u>Analysis</u>	Page 24
C.	<u>Water Resources</u>	Page 27
1.	<u>Water Supply</u>	Page 27
2.	<u>Discharge Impacts</u>	Page 29
3.	<u>Analysis</u>	Page 31
D.	<u>Wetlands</u>	Page 32
1.	<u>Description</u>	Page 32
2.	<u>Analysis</u>	Page 33
E.	<u>Solid Waste</u>	Page 34
1.	<u>Description</u>	Page 34
2.	<u>Analysis</u>	Page 35
F.	<u>Visual Impacts</u>	Page 35
1.	<u>Description</u>	Page 36
2.	<u>Analysis</u>	Page 37
G.	<u>Noise Impacts</u>	Page 39
1.	<u>Description</u>	Page 39
2.	<u>Analysis</u>	Page 44
H.	<u>Safety</u>	Page 48
1.	<u>Materials Handling and Storage</u>	Page 49
2.	<u>Fogging and Icing</u>	Page 49
3.	<u>Emergency Response Plans</u>	Page 50
4.	<u>Analysis</u>	Page 50

I.	<u>Traffic</u>	Page 51
	1. <u>Description</u>	Page 51
	2. <u>Analysis</u>	Page 54
J.	<u>Electric and Magnetic Fields</u>	Page 56
	1. <u>Description</u>	Page 56
	2. <u>Analysis</u>	Page 59
K.	<u>Land Use</u>	Page 60
	1. <u>Description</u>	Page 60
	2. <u>Analysis</u>	Page 63
L.	<u>Cumulative Health Impacts</u>	Page 64
	1. <u>Baseline Health Conditions</u>	Page 65
	2. <u>Criteria Pollutants</u>	Page 66
	3. <u>Air Toxics</u>	Page 69
	4. <u>Discharges to Ground and Surface Waters</u>	Page 69
	5. <u>Handling and Disposal of Hazardous Materials</u>	Page 70
	6. <u>EMF</u>	Page 71
	7. <u>Noise</u>	Page 73
	8. <u>Summary</u>	Page 74
M.	<u>Conclusions</u>	Page 75
IV.	<u>COMPLIANCE WITH REQUIREMENTS UNDER THE TECHNOLOGY</u> <u>PERFORMANCE STANDARDS</u>	Page 77
	A. <u>Standard of Review</u>	Page 77
	B. <u>Description</u>	Page 78
	1. <u>Reliability</u>	Page 79
	2. <u>Cost</u>	Page 80
	3. <u>Diversity</u>	Page 80
	4. <u>Environmental Impacts</u>	Page 81
	C. <u>Analysis</u>	Page 82
V.	<u>CONSISTENCY WITH THE POLICIES OF THE COMMONWEALTH</u>	Page 84
	A. <u>Standard of Review</u>	Page 84
	B. <u>Analysis</u>	Page 85
VI.	<u>DECISION</u>	Page 86

LIST OF ABBREVIATIONS

<u>Abbreviation</u>	<u>Explanation</u>
AALs	Allowable Ambient Limits
ACEC	Area of Critical Environmental Concern
Algonquin	Algonquin Gas Transmission Company
<u>ANP Blackstone Decision</u>	<u>ANP Blackstone Energy Company, 8 DOMSB (1999)</u>
<u>ANP Bellingham Decision</u>	<u>ANP Bellingham Energy Company, 7 DOMSB (1998)</u>
AQIP	Air Quality Improvement Plan
background	Ambient air concentrations as measured at nearby monitoring stations
BACT	Best available control technology
BECo	Boston Edison Company
Board of Selectmen	Town of Medway Board of Selectmen
<u>Brockton Decision</u>	<u>Brockton Power LLC, EFSB 99-1 (2000)</u>
BVW	Bordering vegetated wetland
CO	Carbon monoxide
CO ₂	Carbon dioxide
Company	Sithe West Medway Development LLC
CTGs	Combustion Turbine Generators
dBA	Decibel (A-weighted)
<u>Dighton Power Decision</u>	<u>Dighton Power Associates, 5 DOMSB (1997)</u>
DOMSB	Decisions and Orders of Massachusetts Energy Facilities Siting Board

Earth Tech	Earth Tech, Inc.
EMF	Electric and magnetic fields
EPA	United States Environmental Protection Agency
EPC	Engineering, procurement, and construction
EUA	Eastern Utilities Associates
FEMA	Federal Emergency Management Agency
GE	General Electric
GEP	Good engineering practice
gpd	Gallons per day
HAPs Study	“Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units-Final Report to Congress” (1998)
Hz	Hertz
I-495	Interstate Highway Route 495
IDC	IDC Bellingham, LLC
<u>IDC Bellingham Decision</u>	<u>IDC Bellingham, LLC, 9 DOMSB (1999)</u>
ISCST3	Industrial Source Complex Short-term [air dispersion model]
kV	Kilovolt
kV/m	Kilovolt per meter
L ₉₀	The level of noise that is exceeded 90 percent of the time
L _{dn}	EPA’s recommendation of a maximum day-night noise levels incorporating a 10 dBA penalty for noise at night
L _{eq}	Equivalent sound level

LAER	Lowest Achievable Emission Rate
lbs	Pounds
LOS	Levels of service – a measure of the efficiency of traffic operations at a given location
m	Meter
MAAQS	Massachusetts Ambient Air Quality Standards
MADDEM	Massachusetts Department of Environmental Management
MADEP	Massachusetts Department of Environmental Protection
MADFA	Massachusetts Department of Food and Agriculture
MADPH	Massachusetts Department of Public Health
MassGIS	Massachusetts Geographic Information System
MEPA	Massachusetts Environmental Policy Act Unit
mG	Milligauss
mgd	Million gallons per day
<u>Millennium Power Decision</u>	<u>U.S. Generating Company, 6 DOMSB (1997)</u>
MW	Megawatt
MWH	Megawatt-hour
NAAQS	National Ambient Air Quality Standards
NEES	New England Electric System
NEPCo	New England Power Company
NEPOOL	New England Power Pool
NHESP	Natural Heritage and Endangered Species Program

<u>1985 MECo/NEPCo Decision</u>	<u>Massachusetts Electric Company, et al., 13 DOMSC (1985)</u>
NML	Noise measurement locations
NO ₂	Nitrogen dioxide
NO _x	Nitrogen oxides
NPDES	National Pollution Discharge Elimination System
NRC	National Research Council
NSPS	New source performance standards
NSR	New source review
O ₂	Oxygen
PCB	Polychlorinated biphenyl
PM ₁₀	Particulates
ppm	Parts per million
PSD	Prevention of significant deterioration
PTE	Potential to emit
Request for Comments	Requests for Comments issued by Energy Facilities Siting Board on March 14, 1999, on proposed standards of review
Restructuring Act	Chapter 164 of the Acts of 1997
ROW	Right-of-way
seven-acre site	site of proposed facility
SILs	Significant impact levels
<u>Silver City Decision</u>	<u>Silver City Energy Limited Partnership, 3 DOMSB (1994)</u>
Siting Board	Energy Facilities Siting Board

SO ₂	Sulfur dioxide
Sithe	Sithe West Medway Development LLC
Sithe Edgar	Sithe Edgar Development LLC
<u>Sithe Edgar Decision</u>	<u>Sithe Edgar Development LLC, EFSB 98-7 (2000)</u>
Sithe Energies	Sithe Energies, Inc.
<u>Sithe Mystic Decision</u>	<u>Sithe Mystic Development LLC, 9 DOMSB (1999)</u>
SPCC Plan	Spill Prevention, Control, and Countermeasure Plan
STGs	Steam Turbine Generators
TELs	Threshold Effects Exposure Limits
Tennessee	Tennessee Gas Pipeline
Town	Town of Medway
TPS	Technology Performance Standards
tpy	Tons per year
TSP	Total suspended particulates
UK	United Kingdom
USGS	United States Geological Survey
VOC	Volatile organic compounds

The Energy Facilities Siting Board (“Siting Board”) hereby APPROVES subject to conditions the petition of Sithe West Medway Development LLC to construct a net nominal 540 megawatt simple-cycle electric generating facility at the proposed site in Medway, Massachusetts.

I. INTRODUCTION

A. Description of Proposed Facility, Site, and Interconnections

Sithe West Medway Development LLC (“Sithe” or “Company”) has proposed to construct a natural gas-fired, simple-cycle peaking electric generating facility with a net nominal electrical output of 540 megawatts (“MW”) in Medway, Massachusetts (“peaking facility” or “proposed facility”) (Exh. SWM-1, at 1-1). Sithe proposes to locate the peaking facility on approximately seven acres (“seven-acre site”) within the 94-acre parcel that is the existing West Medway Station, south of the existing Sithe units (*id.* at 1-1, 1-6). In May 1998, Sithe New England LLC, of which Sithe was an affiliate, purchased the West Medway Station from Boston Edison Company (“BECo”) (*id.* at 1-1). Sithe currently operates a 180 MW peaking facility, consisting of three dual-fueled, simple-cycle combustion turbines, at the West Medway Station (*id.*)¹ BECo reserved an easement on approximately 54 acres of the 94-acre parcel for the ownership, operation, and maintenance of the existing 345 kilovolt (“kV”) and 115 kV substations and transmission lines (*id.* at 1-1, 1-4).²

The seven-acre site for the proposed facility will be located on land zoned industrial in Medway and is generally bordered on the north by land abutting Route 109 (Milford Street), on the east by Route 126 (Summer Street), on the south and west by West Street, consisting predominately of forest, residential uses, and limited commercial uses (Exh. SWM-1, at 1-4, 1-6,

¹ Sithe proposes to voluntarily restrict the operating hours of both the existing and new units to no more than 2,500 hours annually (Exh. SWM-1, at 1-2). Although the existing Sithe facility is permitted to operate year-round, historically, this facility operates no more than 100 hours per year (*id.* at 1-1).

² The Petition reads, in pertinent part, that “[BECo] maintains a long-term lease” on 50 acres of the 94-acre parcel (Exh. SWM-1, at 1-1). The record indicates BECo retained an easement on 54 acres of the 94-acre parcel (Exhs. EFSB-44-28(a) Att.; EFSB-RR-28(b) Att.; EFSB-RR-28(c) Att.).

4-33, 34 (fig. 4.7-1). Directly east of and abutting the proposed seven-acre site is a day care center (Exh. EFSB-RR-2-S Att., at sheet 7). The seven-acre site upon which the three new units are proposed is currently vegetated, primarily with grass, with an access road extending through the seven-acre site (Exh. SWM-1, at 1-6)(figs. 1.4-1, 1.4-2). A small portion of the seven-acre site is surfaced with concrete; the storage buildings currently located there would be removed (*id.*). Sithe proposes to deliver natural gas to the generating facility via the existing Algonquin Gas Transmission Company (“Algonquin”) pipeline to the facility absent any upgrade (Exh. EFSB-L-11). BECo would deliver electric power generated by the proposed facility through its existing switchyards located immediately adjacent to the seven-acre site and into its transmission system (Exh. SWM-1, at 1-9, 1-15). The electrical interconnection will take place within the 94-acre parcel (*id.*, at 1-15).

The peaking facility would include the following major components and structures: three General Electric (“GE”) F-class combustion turbine generators (“CTGs”), each with an exhaust housing and 65-foot stack, and buildings to house the administration, warehouse, and ancillary systems (*id.* at 1-6). Structures associated with the existing units include: three dual-fueled combustion turbines, each comprised of four jet engines, two stacks, and one generator; two fuel oil storage tanks with containment areas, two power transformers, miscellaneous buildings, and a detention basin (*id.* at 1-4).

Sithe New England Holdings LLC is a wholly-owned subsidiary of Sithe Northeast Generating Company, Inc., which in turn is a wholly-owned subsidiary of Sithe Northeast Holdings, Inc., which is a wholly-owned subsidiary of Sithe Energies, Inc. (“Sithe Energies”). Sithe Letter of January 4, 2000; Sithe Edgar Development LLC, EFSB 98-7, at 3 (2000) (“Sithe Edgar Decision”).³ Sithe Energies owns and operates electric power generation and cogeneration

³ Sithe Pennsylvania Holdings LLC, Sithe New Jersey Holdings LLC, and Sithe Maryland Holding LLC acquired certain of the generating assets of General Public Utilities, Inc., which resulted in a corporate reorganization undertaken among certain affiliates of Sithe New England LLC. Prior to the above referenced acquisition, Sithe was a wholly-owned subsidiary of Sithe New England Development LLC, which was a wholly-owned subsidiary of Sithe New England, Inc., which was a wholly-owned subsidiary of Sithe

(continued...)

facilities throughout the world and is one of the largest independent electric power generating companies in the United States (Exh. SWM-1, at 1-3).

B. Procedural History

On December 17, 1998, Sithe filed with the Siting Board a petition to construct and operate a net nominal 540 MW natural gas-fired, single-cycle generating facility in Medway, Massachusetts. The Siting Board docketed the petition as EFSB 98-10.

On February 10, 1999, the Siting Board conducted a public hearing in Medway. In accordance with the direction of the Hearing Officer, Sithe provided notice of the public hearing and adjudication.

Representative Barbara Gardner, BECo, Mr. Robert Knoerk, Concerned Citizens of Bellingham, Inc., and Selectman Raphaela Rozanski of the Town of Medway filed timely petitions to intervene. The Board of Selectmen of the Town of Medway ("Board of Selectmen") filed an untimely petition to intervene.⁴ IDC Bellingham, LLC, and U.S. Generating Company filed timely petitions to participate as interested persons; in addition, New England Power Company and Massachusetts Electric Company jointly filed a timely petition to participate as interested persons. Sithe filed an opposition to the petitions of the Concerned Citizens of Bellingham, Inc. and Mr. Robert Knoerk.

The Hearing Officer granted the petitions to intervene filed by Representative Barbara Gardner, BECo, and the Board of Selectmen. Sithe West Medway Development LLC, EFSB 98-10, Hearing Officer Procedural Order, March 15, 1999, at 6-7. The Hearing Officer denied the petitions to intervene of the Concerned Citizens of Bellingham, Inc., and Mr. Robert Knoerk, but admitted Mr. Knoerk as an interested person. The Hearing Officer also denied Ms. Rozanski's

³ (...continued)

Energies. As a result of the reorganization, Sithe is now a wholly-owned subsidiary of Sithe New England Holdings LLC (Sithe Letter of January 4, 2000).

⁴ The Hearing Officer subsequently ruled that the Board of Selectmen had shown good cause for its late filing. Sithe West Medway Development LLC, EFSB 98-10, Hearing Officer Procedural Order, March 15, 1999, at 7.

petition to intervene, but designated her as spokesperson for the Board of Selectmen for the Town of Medway (id.). The Hearing Officer granted the petition to participate as interested persons of IDC Bellingham, LLC, U.S. Generating Company, and New England Power Company/Massachusetts Electric Company (id. at 7). Mr. Knoerk and the Concerned Citizens of Bellingham, Inc. filed motions for reconsideration which were denied. Sithe West Medway Development LLC, EFSB 98-10, Hearing Officer Procedural Order, March 26, 1999, at 3-4.

The Siting Board conducted six days of evidentiary hearings, commencing on July 27, 1999, and ending on August 24, 1999. Sithe presented the testimony of the following witnesses: James P. McGowan, Vice President of Development, Sithe Energies, who testified as to the Company's site selection process and general facility matters; Ann F. Hueston, Project Manager for the Medway Project, Sithe Energies, who testified as to facility description, noise, hazardous waste, water resources, solid waste, and land use impacts; Susan F. Tierney, Ph.D., partner at Lexecon Inc., who testified as to site selection, technology performance standards, and alternative technology comparison; Frederick M. Sellars, Vice President of Environmental Science and Planning, Earth Tech, Inc. ("Earth Tech"), who testified as to air impacts, site selection, and alternative technology comparison; Lynn Gresock, Senior Program Director, Earth Tech, who testified as to water, wetlands, traffic, noise, land use, solid waste, safety, visual, and health impacts; Wayne E. Bradley, Senior Engineering Specialist, Stone & Webster, who testified as to noise impacts, and Peter A. Valberg, Ph.D., Senior Scientist, Cambridge Environmental, Inc., who testified as to electric and magnetic fields ("EMF") and health impacts.

On September 14, 1999, Sithe submitted its brief. The record includes 333 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"). 1997 Mass. Acts 164. 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, § 69J¼, 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, §§ 69H 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 the Siting Board would apply in their specific case (Request for Comments at 2). On June 14, 1999, Siting Board staff issued revised standards of review. On August 24, 1999, parties and interested persons in EFSB 98-10 were invited to submit comments on both versions of the standards of review. Sithe West Medway Development LLC, EFSB 98-10, Hearing Officer Memorandum, August 24, 1999, at 1.

2. Position of Sithe West Medway

Sithe supports the Siting Board's staff revised proposed standards of review for generating facility petitions filed pursuant to G. L. c. 164, § 69J¼ (Company Brief, at 5, n.2).

3. Analysis

The Siting Board 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 69J¼ and will govern the scope of the review in this proceeding.^{5,6}

⁵ Parties and interested persons in generating facilities cases pending before the Siting
(continued...)

In Section II, below, the Siting Board considers Sithe's site selection process; in Section III, below, the Siting Board considers the environmental impacts of the proposed facility; in Section IV, below, the Siting Board reviews alternative generating technology for the proposed facility; and, in Section V, below, the Siting Board addresses whether the plans for construction of the proposed facility are consistent with the 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 decision of the Siting Board.

II. SITE SELECTION

A. 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 an applicant'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, § 69J¼ 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." G. L. c. 164, § 69J¼. Site selection, together with project design and mitigation, is an integral part of the

⁵ (...continued)

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.

⁶ The Siting Board also reviews in this decision the traffic, safety, and EMF impacts of the proposed facility.

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.

B. Description

Sithe is an affiliate of Sithe Energies (Exh. SWM-1, at 1-2). Sithe Energies is involved in the development, financing, construction, operation, and ownership of generating facilities worldwide (id. at 1-2 to 1-3). Decisions regarding the development of the entire portfolio of the BECo properties, including the West Medway Station site, were made by Sithe Energies. Sithe Edgar Decision at 6.

The Company indicated that Sithe Energies initially narrowed its area of investment to New England and then to Massachusetts in order to meet its development objectives (Exh. SWM-1, at 2-6). 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 solicitations 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 2-6 to 2-7).

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, BECo, and Eastern Utilities Associates ("EUA") (id. at 2-7; Exh. EFSB-SS-3). The BECo assets for which Sithe Energies bid included five sites: (1) West Medway Station in Medway; (2) Mystic Station in Everett; (3) Edgar Station in Weymouth; (4) New Boston Station

in South Boston; and (5) Framingham Station in Framingham (Exh. SWM-1, at 2-9).^{7,8} 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 infrastructure, ability to share infrastructure and operations personnel with existing units, and consistency with the Commonwealth's policy of encouraging brownfield development (id. at 2-7).

The Company stated 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 and weaknesses, Sithe Energies identified base and alternative development configurations and potential development risks for each site (id.).⁹ Sithe Energies stated that the strengths of the West Medway Station site included: its location at a transmission hub with interconnecting 345 kV, 230 kV, and 115 kV transmission lines; availability of land for a medium to large project that is buffered from residential areas; and gas supply present on site via Bay State Gas Company and proximity to an Algonquin pipeline less than one mile from the site (id.). Sithe Energies noted that the potential development risks for

⁷ Three combustion turbine units totaling 126 MW (summer rating) currently are located at the West Medway Station (Exh. SWM-1, at 3-8). Two combustion turbine units totaling 24 MW currently are located at Edgar Station (id.). Five generating units currently are located at Mystic Station: three oil-fired units totaling 388 MW, one 592 MW dual-fueled unit and a 10-MW oil-fired combustion turbine (id.). Two dual-fueled steam turbine units totaling 760 MW and an 18 MW combustion turbine currently are located at the New Boston Station (id.). Three combustion turbine units totaling 33 MW currently are located at Framingham Station (id.).

⁸ In addition to the five generation sites listed above, the purchased BECo assets include an ownership interest in 36 MW of Wyman 4 in Yarmouth, Maine (Exh. SWM-1, at 2-8).

⁹ Sithe stated that although a combined-cycle facility was identified for both base case and alternative configurations for four of the five sites, it was always understood that a simple-cycle configuration could be an option at any of the sites (Tr. 2, at 85). The New Boston Station initial site review identified a simple-cycle facility as an alternative case (id.; Exh. EFSB-SS-7).

West Medway Station included the cost of transmission upgrades, environmental liability, and possible negative community reaction to visual, noise, and water impacts (id.).¹⁰

Sithe Energies indicated that it based its bid for the BECo assets on a target development figure of 2,800 MW (Exhs. SWM-1, at 3-8; EFSB-SS-5). Sithe Energies indicated that this figure represented the combined 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).¹¹ The Company stated that the figure reflected a dynamic analysis of how much capacity it could add to the sites, and what revenues it could expect under a range of scenarios (Exh. EFSB-SS-35, at 454).

On December 10, 1997, BECo announced that it had selected Sithe Energies to purchase its generating assets (Exhs. SWM-1, at 2-7; EFSB-SS-3). Sithe Energies then conducted the second phase of its site review, which built upon the initial pre-bid analyses (Exh. SWM-1, at 2-9). 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 2-9). Consistency with development objectives encompassed the

¹⁰ Sithe Energies noted that the potential development risks for the remaining four sites included: Mystic Station - (1) permitting once-through cooling; and (2) renegotiating property taxes; Edgar Station - (1) permitting and construction of a gas pipeline; (2) cost of transmission upgrades; (3) environmental liability; and (4) negative community reaction to possible visual, noise, and water issues; New Boston Station - (1) negative community reaction; (2) lack of on-site or reasonably accessible transmission; (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).

¹¹ 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; Tr. 2, at 80). Sithe Energies explained that originally it was looking for base load capacity; however, based on its analysis of the site-specific opportunities and constraints, the Company considered different options (Exh. SWM-1, at 2-9).

following sub-criteria: (1) availability of land; (2) proximity to electric load; (3) availability of natural gas; (4) electric transmission;¹² (5) availability of water for cooling purposes; and (6) compatibility with planned and existing uses (id. at 2-9 to 2-10). Environmental impacts encompassed the following sub-criteria: (1) air quality impacts; (2) water consumption;¹³ (3) wastewater impacts; (4) wetlands; (5) noise;¹⁴ (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 2-10 to 2-11; 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. SWM-1, at 2-11; 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

¹² The Company stated that the Framingham site was the most constrained with regard to transmission interconnection, and therefore would have the greatest costs associated with interconnection (Tr. 2, at 92). The Company further indicated that although BECo has not yet completed the system interconnection studies, it would be feasible to interconnect new generation at Mystic Station, Edgar Station, and the West Medway Station in an economical manner (Exh. EFSB-SS-35, at 466).

¹³ Site Energies stated that it initially identified the Mystic, Edgar, and New Boston Stations as having the potential for once-through cooling (Exh. EFSB-SS-15; Tr. 2, at 76). The Company explained that the opportunity for once-through cooling at both Medway and Framingham did not exist due to their lack of proximity to a large water body (Tr. 2, at 77). Further, the Company noted that the lack of a sufficient municipal water source in Medway and Framingham would make it difficult to support a combined-cycle facility in those locations even if it were to be air-cooled (id. at 78; Exh. SWM-SS-36, at 247).

¹⁴ The Company reported that it classified the Mystic Station site as the site raising the fewest noise concerns with Edgar Station and New Boston Station ranked second, and West Medway and Framingham ranked third (Exh. EFSB-SS-35, at 470 to 471). The Company explained that it made these classifications based on the industrial nature of the Mystic, Edgar, and New Boston sites and on the extent of demolition necessary at each site (id.).

on a case-by-case basis (Tr. 2, at 107). Sithe Energies indicated that it relied heavily on judgment in reviewing the criteria (Exh. EFSB-SS-36, at 271 to 272). The Company stated that all of the criteria were important, and explained that the application of any one criterion could have identified a fatal flaw for development at any of the five sites (Tr. 2, at 107 to 108). The Company defined a fatal flaw as an aspect of the project that could not be mitigated due either to prohibitive cost or technical difficulties, as opposed to a negative feature that lends itself to the required mitigation (*id.* at 108; Exh. EFSB-SS-36, at 273 to 274).¹⁵ Sithe Energies provided information which tracked the general application of its environmental and community issues criteria (Exhs. EFSB-SS-38; EFSB-SS-39).

The Company noted that while Mystic Station and Edgar Station are excellent sites for combined-cycle units, the West Medway Station site had deficiencies in infrastructure and water supply that rendered combined-cycle development uneconomic (Exhs. EFSB-SS-6; EFSB-SS-35, at 527). In addition, the Company stated that the West Medway site would be an appropriate site for a peaking facility due to its proximity to the West Medway substation (Tr. 2, at 90). Sithe Energies explained that building a relatively limited amount of peaking capacity, relative to baseload capacity, is practical and meets its business objectives (Exh. EFSB-SS-34). The Company stated that the peaking capacity proposed for the West Medway Station, together with the Company's existing peaking capacity, would provide adequate peaking capacity for a diverse generating portfolio (Exh. EFSB-SS-35, at 527).

Sithe Energies explained that 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. SWM-1, at 2-15; Tr. 2, at 112-113). For the simple-cycle facility at West Medway, Sithe selected the GE 7FA combustion turbine, which is available in simple-cycle mode in blocks of 180 MW (Tr. 2, at 101). The Company

¹⁵ Sithe noted that all three of the sites it proposed for development -- West Medway Station, Edgar Station, and Mystic Station -- have a relatively negative feature (Tr. 2, at 108). However, the Company explained that all of the sites are attractive for development since each site has the opportunity for mitigation to counter the relatively negative feature (*id.*).

explained that it selected the 540 MW configuration for the West Medway proposed facility in order to approximate the size of its Mystic 7 unit, which is approximately 580 MW, and the use of the 180 MW block configuration (Tr. 2, at 102). 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 (Exh. EFSB-SS-35, at 524).

The Company argued 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 12). Sithe Energies described 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. SWM-1, at 2-3). The Company argued 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 West Medway, Mystic, and Edgar Stations for initial development (Company Brief at 19). 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-20). 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 mitigate the noise impacts of the existing generating units at West Medway Station; reduce visual impacts and remediate hazardous waste problems at Edgar Station; and reduce air quality impacts at Mystic (Exhs. EFSB-SS-19; EFSB-SS-20).

In regard to costs for mitigation and development, the Company discussed the offsetting costs of brownfield and greenfield sites (Tr. 2, at 109). Sithe Energies explained that sites where electric transmission or generation previously have been located generally have lower costs for interconnection, site clearing, and construction, or enhancement of the road system (*id.*; Exh. EFSB-SS-20). However, the Company indicated that such sites may require additional expenditures for site remediation or demolition (Tr. 2, at 109-110).

C. Analysis

Sithe Energies has presented a site selection process which resulted in a decision to develop generating facilities on three separate sites: West Medway Station, Mystic Station, and Edgar Station. The Company described its development process and the 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 its development objectives, environmental impacts, and community impacts. The Siting Board notes that the Company provided information that it developed based on site visits, engineering, and environmental analyses specific to each site, and economic and reliability analyses. The Siting Board finds that the Company's description of the site selection process used is accurate.

Sithe Energies asserted that its proposal minimizes environmental impacts in part through the use of a "brownfield approach" to development. 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 Siting 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.

In this case, the Company has identified the advantages to brownfield development at the West Medway Station site including existing infrastructure, on-site transmission capacity, and on-site gas supply. The West Medway facility is proposed as a peaking facility, which is consistent with the current use of the site for peaking generation facilities. The Company's decision to propose a single-cycle peaking facility, rather than a combined-cycle facility, also

appropriately responds to the constraints of the site, particularly the identified deficiency in water supply. However, because the proposed facility likely will operate more frequently than the existing unit, and because it is located in close proximity to a residential area, there is a potential for increased noise and visual impacts.

The record reflects the advantages and disadvantages of brownfield redevelopment at the West Medway Station site. On balance, the advantages contribute to the minimization of environmental impacts; however, the disadvantages create the potential for environmental impacts which the Company will need to minimize, through design or mitigation. These issues are discussed in Sections III.F and III.G. below. 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

A. 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.

B. Air Quality

This section describes emissions and impacts of the proposed facility, compliance with existing regulations, and emission offsets proposed by the Company.

1. Applicable Regulations

The Company indicated that regulations governing the air impacts of the proposed facility include National Ambient Air Quality Standards ("NAAQS") and Massachusetts Ambient Air Quality Standards ("MAAQS");¹⁶ New Source Review ("NSR") requirements; Prevention of Significant Deterioration ("PSD") requirements; and New Source Performance Standards ("NSPS") for criteria pollutants (Exh. SWM-2, at 6-3). The Company indicated that all areas of the country are classified as "attainment," "non-attainment," or "unclassified" with respect to NAAQS for six criteria pollutants: sulfur dioxide ("SO₂"), particulates ("PM₁₀"), nitrogen dioxide ("NO₂"), carbon monoxide ("CO"), ground level ozone, and lead (Exh. EFSB-A-2-S Att. at 1-2). According to the Company, NSR applies to non-attainment criteria pollutants exceeding certain emission thresholds (*id.* at 1-3; *see* Table 1, below); PSD applies to attainment (and unclassified) pollutants exceeding certain emission thresholds

¹⁶ The Massachusetts Department of Environmental Protection ("MADEP") has adopted the NAAQS limits as MAAQS (Exh. EFSB-A-2-S Att. at 1-2).

(id. at 1-4; see table below); and NSPS apply to pollutants on the basis of process or source category (id. at 3-2).

The Company stated that Massachusetts regulations for Air Plans Approval require Best Available Control Technology (“BACT”)¹⁷ for each regulated pollutant (id. at 1-4). The Company stated that volatile organic compounds (“VOC”) and nitrogen oxides (“NO_x”) emissions are regulated as precursors to ozone by MADEP (id. at 1-3 and 3-1). As described in Section III.B.4, below, the Company stated that MADEP requires the facility to have Lowest Achievable Emissions Rate (“LAER”)¹⁸ technology for NO_x. The Company stated that the Technology Performance Standards (“TPS”) established by the Siting Board require new facilities either to demonstrate that emissions comply within the TPS emissions criteria or to provide data showing that the proposed facility will contribute to a reliable, low-cost, diverse, regional energy supply with minimal environmental impacts (Exh. SWM-1, at 3-1). The Company stated that, under the Acid Rain Program, the EPA requires owners of new plants to hold or acquire SO₂ emission allowances to offset their actual annual SO₂ emissions (Exh. EFSB-A-2-S Att. at 3-3).

The Company described several other air quality requirements including: a MADEP prohibition on dust or odor-causing emissions from construction or operation of a fossil-fuel plant; an additional limitation on particulate matter emissions from new fossil-fuel facilities in

¹⁷ The Company stated that the U.S. Environmental Protection Agency (“EPA”) defines BACT as “an emissions limitation . . . based on the maximum degree of reduction for each pollutant subject to regulation . . . which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental and economic impacts and other costs, determines is achievable . . . through application of production processes or available methods, systems and techniques . . . for control of such pollutant.” (Exh. EFSB-A-2-S Att. at 4-10).

¹⁸ The Company stated that EPA defines LAER as “the most stringent emission limitation contained in the implementation plan of any state for such category of source, unless the owner or operator of the proposed source demonstrates that such limitations are not achievable, or the most stringent limitation achieved in practice by such class or category of source” (Exh. EFSB-A-2-S Att. at 4-1).

Massachusetts; and the MADEP air toxics policy (*id.* at 3-4 and 3-5).¹⁹ The Company also discussed the Siting Board's policy relative to offsetting carbon dioxide ("CO₂") emissions (Exh. EFSB-A-5).

2. Baseline Air Quality

The Company indicated that the closest MADEP air quality monitoring stations to the West Medway Station are 16 to 21 miles from the site, in Worcester, Sudbury, Waltham, and Easton (Exh. EFSB-A-2-S Att. at 5-5 and 5-7). The Company indicated that the air data from these locations represent a conservative estimate of regional air quality because urban locations were selected for most monitoring locations (*id.* at 5-5). The Company presented data from these air monitoring stations for 1995, 1996, and 1997 (*id.* at 5-8).²⁰ The Company indicated that the regional air quality measurements were below NAAQS concentrations for all criteria pollutants each year except 1995, when the ozone levels exceeded NAAQS (*id.*).²¹ From a regulatory standpoint, the Company indicated that the Medway area was "unclassified" (treated as attainment) for SO₂, NO₂, CO, and lead, and estimated to be in attainment for PM₁₀, but that the entire Commonwealth of Massachusetts was classified as a "serious" non-attainment zone for ozone (*id.* at 1-3, 1-4).

The Company stated that the three existing turbines at West Medway Station are capable

¹⁹ The Company also described the MADEP short-term ambient NO₂ policy applicable to sources emitting over 250 tons per year ("tpy") of NO₂; however, the Company stated that the proposed facility would not be subject to the policy because the NO₂ emissions would be less than this emissions threshold (Exh. EFSB-A-2-S Att. at 3-5).

²⁰ Observed concentrations were presented for SO₂, NO₂, CO, PM₁₀, and ozone (Exh. EFSB-A-2-S Att. at 5-8).

²¹ The Company provided air quality data from MADEP monitoring stations in Worcester, Sudbury, Waltham, and Easton that indicate that: (1) the maximum concentration of ozone observed at Easton in 1995 was 104 percent of the 1-hour NAAQS; (2) concentrations of CO (at Worcester in 1996) were 59 percent of the 8-hour NAAQS and less than 50 percent of the annual standard; (3) concentrations of NO₂, SO₂, and PM₁₀ (at Worcester, Sudbury, and/or Waltham) were 50 percent or less of the respective standards (Exh. EFSB-A-2-S Att. at 5-7 to 5-8).

of running on No. 2 fuel oil or natural gas (*id.* at 1-1). According to the Company, MADEP has indicated that visible emissions have been observed from the existing units during start-up; however, the Company stated that it has not been able to confirm that visible emissions occur during start-up (Exh. SWM-2, at 6-20). The Company stated that the existing turbines are considered a “major source” for NO_x and VOC, based on volumes that would be emitted if the facility were to operate full-time, year-round (8,760 hours per year) as permitted (*id.* at 6-4). However, the Company stated that the existing turbines operate as peaking units, and actual operations have typically been in the range of 80 hours per year (Exh. EFSB-A-2-S Att. at 1-1; Tr. 1, at 54).

3. Proposed Restrictions on the Existing Facility

The Company stated that it proposes to incorporate into West Medway Station’s permit an enforceable restriction limiting use of the existing turbines to 2,500 hours per year (Exh. EFSB-A-2-S Att. at 4-16). The Company stated that with this restriction, potential VOC emissions would be reduced to below 50 tpy and the existing facility would be reclassified as a minor source for VOC (*id.* at 1-4). In addition, the Company proposes: (1) to switch the existing units to a lower sulfur distillate fuel than is currently used; and (2) to use only natural gas as fuel during the “ozone season,” as long as natural gas is available (*id.* at 1-1).

4. New Facility Emissions, Impacts, and Compliance

The Company stated that the proposed facility would emit CO₂, particulate matter, SO₂, CO, NO_x, VOC, sulfuric acid mist, and lead (Exhs. EFSB-A-5; EFSB-A-2-S Att. at 4-3). The Company indicated that it plans to seek a permit to operate the proposed facility a maximum of 2,500 hours per year (Exh. EFSB-A-2-S Att. at 6-10). The Company tabulated maximum potential annual emissions for the proposed facility, based on worst-case load conditions and operating at 2,500 hours per year, and compared these maximum emissions against NSR and PSD significant emission rates (Exh. EFSB-A-2-S Att. at 3-2). Maximum annual emissions which the new equipment would have the potential to emit (“PTE”), as calculated by the Company, are as follows:

Table 1

Emission Parameter ^a	PTE Maximum Annual Emissions (tpy) ^{b,c}	Significant Emission Rates (tpy)	
		NSR ^d	PSD ^e
Carbon dioxide (CO ₂)	750,000 ^f	N/A	N/A
Nitrogen oxides (NO _x /NO ₂)	<u>232</u>	25 ^g	40
Carbon monoxide (CO)	<u>109.6</u>	N/A	100
Volatile organic compounds (VOC)	14.8	25 ^g /50 ^h	40
Particulates (PM ₁₀)	<u>73.9</u>	N/A	15
Sulfur dioxide (SO ₂)	19.4	N/A	40
Sulfuric acid mist (H ₂ SO ₄)	2.7	N/A	7
Lead (Pb)	0.1	N/A	0.6

Values that exceed applicable thresholds are underlined.

N/A Not applicable

- a. No emissions are expected for these additional PSD pollutants: vinyl chloride, asbestos, fluorides, hydrogen sulfide, total reduced sulfur, and reduced sulfur compounds (Exh. EFSB-A-2-S Att. at 3-2).
- b. Annual potential to emit from new units at 2,500 hours per year (Exhs. EFSB-A-2-S Att. at 3-2; EFSB-A-5-1 Att.). The Company stated that actual operation of the facility is anticipated to be significantly less than 2,500 hours per year (Exh. SWM-2, at 6-16).
- c. See Exh. EFSB-A-2-S Att. at 3-2 for additional notes.
- d. Non-attainment New Source Review thresholds apply to VOC and NO_x as ozone precursors (Exh. SWM-2, at 6-4).
- e. Prevention of Significant Deterioration thresholds for a major source (Exh. EFSB-A-2-S Att. at 3-1).
- f. Carbon dioxide emissions data are from Exh. EFSB-A-5-1 Att.
- g. NSR threshold for a modification to a major source (Exh. EFSB-A-2-S Att. at 3-1).
- h. NSR threshold for a modification to a minor source (Exh. EFSB-A-2-S Att. at 3-1).

The Company stated that BACT would be demonstrated: (1) by use of natural gas as the only fuel for the new units, thus reducing SO₂, PM₁₀, VOC, sulfuric acid mist, and lead emissions compared to other fuels; and (2) by the particular model of turbine selected, which the Company asserted minimizes incomplete combustion, thus reducing emissions of VOC and CO (id. at 1-4 and 4-11). The Company stated that compliance with LAER meets BACT for NO_x emissions (id. at 4-10). The Company stated that the only practical means of controlling SO₂ emissions from combustion turbine projects is to limit the sulfur content of the fuel and that the very low

emission rate from the use of natural gas represents the top level of SO₂ control for a combustion turbine (*id.* at 4-11). On this basis, the Company asserted that the use of natural gas as the facility fuel meets or exceeds BACT for SO₂ (*id.*).

The Company stated that non-attainment NSR review for NO_x, an ozone precursor, is required because the new units would have the potential to emit NO_x above the NSR threshold of 25 tpy applicable to a modification to a major source of NO_x (*id.* at 1-3). The Company stated that NSR for NO_x requires application of LAER technology and acquisition of emissions offsets (*id.* at 3-1). Further, the Company stated that LAER for NO_x for a simple-cycle peaking facility would be demonstrated by the use of "dry low-NO_x combustion," limiting emissions to 9 parts per million ("ppm") (*id.* at 1-4). The Company stated that NSR review for VOC is not required because the projected emissions would be below the NSR threshold for a modification to a minor source (*id.* at 1-3).

Relative to NSPS, the Company presented limits for new electric utility gas turbine emissions of NO_x and SO₂ (*id.* at 3-2 to 3-3). The Company stated that emissions of NO_x would be limited to 9.0 ppm²² and thus would be well below the nominal 75 ppm²³ NSPS for NO_x from gas turbines (*id.* at 3-3). The Company also stated that fuel sulfur fractions and flue gas SO₂ concentrations would be below NSPS standards for sulfur (*id.*).²⁴

As noted above, proponents of new facilities must either demonstrate that the TPS are met or provide data comparing the proposal to other fossil-fuel generating technologies. The Company presented tables comparing TPS against expected facility emission rates, expressed in pounds ("lbs") per megawatt hour ("MWH") at 100 percent load (Exh. SWM-1, at 3-4 and 3-5).

²² The stated limit is 9.0 ppm dry volume, corrected to 15 percent oxygen ("O₂") (Exh. EFSB-A-2-S Att. at 3-3)

²³ The Company stated that the NSPS is a nominal value of 75 ppm NO_x, corrected to 15 percent O₂, with allowance for a heat rate correction for efficient turbines and a correction for fuel-bound nitrogen (Exh. EFSB-A-2-S Att. at 3-2).

²⁴ The Company stated that NSPS limits fuel sulfur content to 0.8 percent by weight and SO₂ emissions to 150 ppm (dry volume, corrected to 15 percent O₂) (Exh. EFSB-A-2-S Att. at 3-3).

The Company presented the following data for criteria pollutants:

Table 2

Pollutant	Performance Standard (lbs/MWH)	Project Emission Rate (lbs/MWH)
SO ₂	0.021	0.030
NO _x	0.120	0.344
TSP ^a /PM ₁₀	0.081	0.104
CO	0.077	0.210
VOC	0.035	0.016

Source: Exh. SWM-1, at 3-4

a. TSP is total suspended particulates.

The Company indicated that the facility's emissions meet TPS thresholds for non-criteria pollutants but exceed TPS thresholds for most criteria pollutants (*id.* at 3-4). The Company asserted that the exceedances exist because TPS thresholds are based on combined-cycle technology appropriate for base-loading facilities, as distinguished from a peaking plant (*id.*). Since TPS thresholds would not be met, the Company presented a comparison of costs, emissions, and other factors for natural gas-fired combustion turbine technology and alternative technologies, including base load combined-cycle technology and selected alternative peaking technologies, which is described in Section IV, below. The Company asserted that natural gas-fired combustion turbine technology would be an appropriate choice over combined-cycle technology and would have lower emissions and otherwise be the appropriate choice over alternative peaking technologies (*id.* at 3-17 to 3-19).

The Company described its atmospheric dispersion modeling that predicts ground-level ambient pollutant concentrations at receptor locations within a radius of 16 kilometers (10 miles) of the proposed facility, based on projected facility emissions and on the proposed 65-foot stack

height (Exh. EFSB-A-2-S Att. at 1-6 and 5-9).²⁵ The Company then compared modeled concentrations to significant impact levels (“SILs”)²⁶ defined by EPA and MADEP for criteria pollutants, and MADEP Allowable Ambient Levels (“AALs”) and Threshold Effects Exposure Limits (“TELS”) for air toxics²⁷ (*id.* at 5-9). Based on this comparison, the Company predicted that facility-related ambient pollutant concentrations would not exceed SILs, AALs, or TELs (*id.* at 5-9 to 5-10).²⁸

The Company used atmospheric dispersion modeling of criteria pollutants to compare the air quality impacts of the proposed facility at two different stack heights: with three 65-foot stacks, as proposed, and with three 100-foot stacks, the height which is considered good engineering practice (“GEP”) for the facility (*id.* at 5-12). The concentrations presented for the 65-foot stacks are 16 to 77 percent higher than concentrations presented for the 100-foot stacks, but in either case the modeled impact of the facility would be less than SILs (*id.*).

The Company also presented results of cumulative impact modeling for SO₂, NO₂, PM₁₀, and CO, which are the sum of ambient concentrations measured at nearby MADEP monitoring

²⁵ The Company indicated that the EPA-approved Industrial Source Complex Short-Term (“ISCST3”) model was used to predict ambient concentrations of four criteria pollutants (NO₂, SO₂, CO, and PM₁₀), sulfuric acid, formaldehyde, and five trace metals (arsenic, cadmium, hexavalent chromium, lead, and mercury) (Exh. EFSB-A-2-S Att. at 5-9 and 5-10).

²⁶ EPA and MADEP established SILs as an additional set of criteria for NO₂, SO₂, CO, and PM₁₀ at a level of emissions from a new source or a modification to an existing source low enough so that emissions below SILs would not significantly affect modeled air quality; a detailed evaluation of compliance with the NAAQS is not required if SILs are not exceeded (Exh. EFSB-A-2-S Att. at 1-5).

²⁷ Massachusetts regulates non-criteria toxic air pollutants by assessing compliance with short-term exposure guidelines (maximum 24-hour impact) known as TELs and by assessing compliance with long-term exposure guidelines (averaged over one year) known as AALs. IDC Bellingham, LLC, 9 DOMSB, 260, at 26 (1999).

²⁸ Projected maximum concentrations from the facility range from 0.024 percent to 12 percent of the SILs, TELs, and AALs (as calculated from Exh. EFSB-A-2-S Att. at 5-10).

locations (“background”) and concentrations modeled for the subject facility along with 20 existing and proposed sources in the area including the IDC Bellingham, ANP Blackstone, and ANP Bellingham facilities (id. at 5-12 to 5-16). The results indicate that the proposed facility would increase cumulative concentrations by no more than one quarter of one percent (≤ 0.25 percent) at the locations of maximum impacts from the combined sources of SO₂, NO₂, PM₁₀, and CO (id. at 5-16).²⁹ The Company concluded that maximum combined concentrations from the proposed facility, interactive sources, and background are all below the NAAQS and MAAQS for the modeled criteria pollutants (id. at 5-16).³⁰

The Company stated that the new facility would meet MADEP requirements for limiting dust and odor, as well as particulate matter limits for new fossil-fuel facilities (id. at 3-4). In addition, the Company stated that good engineering and good construction practices will be used to minimize air contamination from construction vehicles and dust (Exh. EFSB-H-10).

The Company provided a displacement analysis based on 2,500 hours of operation per year replacing marginal units in the New England Power Pool (“NEPOOL”), and asserted that the proposed facility could result in emissions reductions of 1,523 tpy of NO_x, 6,259 tpy of SO₂, and 252,000 tpy of CO₂ (Exh. EFSB-RR-10).

5. Offset Proposals and Marketable Allowances

As noted in Section III.B.4, above, NO_x offsets are required for NO_x emissions, under NSR requirements. The Company stated that Massachusetts regulations require NO_x offsets at a ratio of 1.26 to 1 (Exh. EFSB-A-2-S Att. at 4-14). The Company stated that the Air Quality Improvement Plan (“AQIP”) for the Mystic Station in Everett includes a plant-wide reduction in NO_x emissions of 1,762 tpy, and that it will petition MADEP to credit approximately 292 tpy of that total reduction as an offset for NO_x emissions from the proposed facility in Medway

²⁹ Percentage is based on Siting Board staff calculation from cited exhibit.

³⁰ The maximum combined concentrations range from 30 percent to 65 percent of the NAAQS for SO₂, NO₂, PM₁₀, and CO (as calculated by Siting Board staff from Exh. EFSB-A-2-S Att. at 5-16).

(Exh. EFSB-A-4). The Company stated that SO₂ emission allowances are “available” and would be secured in the amount required (Exh. EFSB-A-2-S Att. at 3-3).

With respect to the Siting Board requirement that a generator offset one percent of CO₂ emissions from a project, the Company proposes to offset one percent of the CO₂ to be emitted by the proposed facility by reducing operations at existing Units 4, 5, and 6 at Mystic Station (Exh. EFSB-A-5).³¹

6. Analysis

The record shows that the proposed facility would have the potential to emit a maximum of 750,000 tpy of CO₂. The facility would release lesser amounts of NO_x, particulates, and CO, along with small quantities of other pollutants. The record indicates that these emissions would not cause local or regional air quality to significantly worsen, as compared to established air quality standards. To the extent that the facility produces electric power that meets new demand for power, these emissions would represent an incremental increase in regional air pollution. However, the Company has shown through a displacement analysis that the proposed facility also has the potential to reduce regional emissions of CO₂, NO_x, and SO₂ by substituting for power from existing plants. Locally, the record indicates that the facility is not expected to have a significant deleterious effect on air quality, as modeled ambient impacts are below SILs, TELs, and AALs.

The modeled ambient impacts were calculated assuming a sub-GEP stack height of 65 feet, thereby reducing visual impacts. Because the modeled emissions are below SILs, the Siting Board finds that the proposed 65-foot stack height would minimize air quality impacts consistent with the minimization of visual impacts. (See Section III.F, below).

The record shows that the proposed facility would increase cumulative concentrations of SO₂, NO₂, PM₁₀, and CO by less than one percent at the locations of maximum impacts from the

³¹ The Company stated that its AQIP at Mystic Station in Everett will result in a reduction of CO₂ emissions equivalent to about 970,000 tpy; that new units at Mystic Station will emit 5,400,000 tpy; and that the Medway Station expansion would emit 750,000 tpy (Exh. EFSB-A-5-1).

combination of the subject facility, measured background concentrations, and existing and proposed sources in the region. These maximum combined concentrations are all projected to be below the NAAQS.

The record indicates that lower sulfur oil will be used at the existing facility when oil is used, that natural gas will be preferentially selected over oil during specified conditions, and that the operation of the existing facility will be formally limited. While actual hours of operation may not be affected by the formal limitation on hours, the commitments on fuel substitution may reduce emissions of air pollutants at the existing facility. Fuel substitution could have the effect of counteracting or mitigating the additional emissions from the proposed facility.

The record shows that the proposed facility is expected to meet air quality standards, including ambient air standards, new source standards, performance standards, and design standards. The MADEP Air Plans Approval process will evaluate compliance with LAER and BACT, and overall compliance with air regulations. Projected emissions are greater than the levels set in the TPS; consequently, in Section IV, below, the Siting Board reviews the facility's overall compliance with the TPS.

The record shows that the Company would meet NO_x offset requirements for the proposed facility by instituting a plant-wide NO_x emissions cap that is lower than recent historical emissions of NO_x as part of its AQIP for Mystic Station in Everett. The record indicates that the Company intends to purchase SO₂ emission allowances to meet the SO₂ offset requirements.

Sithe also proposes to use emissions reductions from the Mystic Station AQIP to comply with the Siting Board's CO₂ mitigation requirement. The Siting Board recently considered a similar proposal in its review of the Sithe Edgar Station project. In that review, the Siting Board considered the consistency of the proposal by Sithe Edgar Development LLC ("Sithe Edgar"), with its recent precedent regarding CO₂ mitigation, and concluded that, if Sithe Edgar established that it would make no collateral use of that portion of the AQIP curtailment on which the CO₂ offsets for the Sithe Edgar Station facility were based, Sithe Edgar's proposal would conform with the Siting Board's requirement for CO₂ mitigation. Sithe Edgar Decision, EFSB 98-7, at 28-32. The Siting Board therefore directed Sithe Edgar, prior to or within the first year of

operation, to provide it with evidence establishing that Sithe Edgar would make no collateral use of the portion of the AQIP curtailment on which the CO₂ offsets for the Sithe Edgar Station facility were based. Id. at 31.

Consistent with its analysis in the Sithe Edgar Decision, the Siting Board finds that, if Sithe establishes that it will make no collateral use of that portion of the AQIP curtailment on which the CO₂ offsets for the proposed facility are based, Sithe's proposal would conform with the Siting Board's requirement for CO₂ mitigation.³² Consequently, the Siting Board directs Sithe, prior to or within the first year of the proposed facility's operation, to provide it with evidence of agreements or arrangements relating to the proposed AQIP emissions reductions that establish that Sithe 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 CO₂ offsets for the proposed facility are based.

Alternatively, consistent with the precedent established in the Dighton Power Decision, Sithe may elect to offset one percent of its twenty-year CO₂ emissions through a monetary contribution to one or more cost-effective CO₂ offset programs to be selected in consultation with Siting Board staff. This contribution may be made as five annual installments during the first five years of facility operation totaling \$238,911³³ or as a single first-year contribution of

³² As in the Sithe Edgar Decision, the Siting Board has considered the consistency of Sithe's proposed CO₂ mitigation with the requirements set forth in Dighton Power Associates, 5 DOMSB (1997) ("Dighton Power Decision"), which provided for a monetary contribution for CO₂ mitigation based on a offset level of one percent of facility emissions and an assumed mitigation cost of \$1.50 per ton. In a recent case, the Siting Board reviewed evidence of recent transaction prices and has held that the assumed value of \$1.50 per ton is reasonably consistent with the current cost range for acquiring CO₂ offsets. Sithe Mystic Development LLC, 9 DOMSB, at 139 (1999) ("Sithe Mystic Decision").

³³ The contribution is based on offsetting one percent of facility CO₂ 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 three percent. See Brockton Power LLC, EFSB 99-1 at 28 (2000) ("Brockton Decision"); ANP Blackstone Energy Company, 8 DOMSB, at 128 (1998);
(continued...)

\$194,461.³⁴

Accordingly, the Siting Board finds that, with implementation of the foregoing CO₂ mitigation, the air quality impacts of the proposed facility would be minimized.

C. Water Resources

In this section, the Siting Board addresses the water-related impacts of the proposed facility including: (1) the water supply requirements and related impacts on water supply systems, on surface and subsurface water levels and flow, and on wetlands; and (2) the water-related discharges from the facility, including wastewater and stormwater discharges, and their related impacts on wastewater systems, on wetland hydrology, and on other water resources.

1. Water Supply

The Company stated that the proposed facility would use an average of 324,921 gallons of water per year, or an average of 890 gallons per day (“gpd”), with a maximum daily use of 7,350 gpd during major maintenance overhauls (Exhs. SWM-2, at 3-8 and 10-1; EFSB-WR-1-1(R) Att.). The Company indicated that the facility’s water requirements would include 400 gpd of demineralized water under normal operations, which it may obtain from an off-site source (Exhs. EFSB-WR-1-1(R) Att.; SWM-2, at 3-9; EFSB-WR-6). The Company considered water for firefighting as an additional water use, but did not estimate the quantity of water that might be used in the event of a firefighting emergency (Exh. SWM-1, at 1-11).

The Company indicated that it would use the existing Medway municipal water system to meet the water needs of the proposed facility and stated that the Town of Medway (“Town”)

³³ (...continued)
U.S. Generating Company, 6 DOMSB 128-129, at 117-118 (1997) (“Millennium Power Decision”).

³⁴ The single first-year contribution for CO₂ offsets is based on the net present value of the five annual payments totaling \$238,911, discounted at 10 percent per year. See Brockton Decision, EFSB 99-1, at 28; ANP Blackstone Energy Company, 8 DOMSB, at 128; Millennium Power Decision, 6 DOMSB, at 128-129. The single up-front payment would be due by the end of the first year of operation.

indicated that Medway could accommodate the additional demand (Exhs. SWM-2, at 10-1; SWM-11, at 2-12; EFSB-WR-5). The Company provided information regarding current demands on the Medway municipal water system. Specifically, the Company stated that in 1998 the Town was registered with MADEP for withdrawal of an average of 0.72 million gpd (Exh. EFSB-WR-15). Actual average daily water demand in 1998 for the Town was reported as 1.115 million gpd (Exh. EFSB-WR-14). The Company presented information obtained from the Town, indicating that mandatory water bans were in effect for four months in 1998 and six months in 1999 (Exh. EFSB-WR-4-1 Att.). The Company determined that additions to Medway water supplies are not expected for several years (Exh. EFSB-WR-11). The Company asserted that water consumption at the West Medway Station on a typical day would be equivalent to the water demand associated with two four-bedroom homes (Exh. SWM-2, at 10-1). Compared to consumption at the existing West Medway Station, the Company anticipated no increase in demand for domestic water uses including drinking fountains, showers, toilets, and sinks (Exh. SWM-1, at 1-11).

The Company indicated that it would construct an extension of the existing water main on its property (Exh. EFSB-WR-17). The Company stated that it would use a 7,500-gallon water storage tank to store demineralized water that may be delivered to the site by tanker truck (Exh. EFSB-WR-6). The Company also identified delivery of water by truck as a backup means of obtaining water for general use (Exh. SWM-1, at 1-11).

Citing United States Geological Survey ("USGS") data, the Company stated that a low yielding aquifer is located south and west of the site (*id.* at 4-21). The Company stated that the site does not overlie a high yield aquifer nor is it located within a MADEP approved Zone II Protection Area where it would affect recharge to a public drinking water well (*id.*). The Company also stated that it knows of no private wells in the same hydrologic area (Tr. 3, at 225). Furthermore, the Company contended that only low yields would be expected from any on-site wells and stated it has no plans to use on-site groundwater sources (Exh. SWM-1, at 4-23).³⁵

³⁵ The Company indicated that the site is primarily mapped as till, which is normally
(continued...)

2. Discharge Impacts

The Company stated that, when operating under normal conditions, the proposed facility would generate a wastewater stream of 450 gpd, of which 150 gpd would be sanitary waste that would discharge to an on-site septic system (*id.* at 1-14). The Company stated that there would be no increase in the flow of sanitary waste associated with the operation of the proposed facility, but added that a new leaching field would be created due to site layout constraints (Exhs. SWM-1, at 1-14 and 4-25; SWM-11, at 2-12). The Company indicated that a wastewater holding tank of approximately 7,500 gallons would be used for wastewater other than sanitary wastes (Exh. EFSB-WR-7). The Company indicated that during normal operations, 300 gpd of wastewater would be generated from equipment washdown activities (Exh. SWM-1, at 1-12). The Company also indicated that up to 7,350 gpd of wastewater consisting of turbine wash water, equipment washdown water, and external flushing of the closed loop cooling system would be discharged to the wastewater collection tank during periodic plant maintenance overhauls, with subsequent off-site disposal at an approved disposal facility (*id.* at 1-13 and 4-25; Exhs. SWM-2, at 10-2; EFSB-WR-7; Tr. 2, at 235). The Company stated that there would be no wastewater residual from on-line washes of the combustion turbines (Exh. SWM-1, at 1-14).

The Company indicated that motor oil, waste oil, various solvents, insecticides, aerosol cans, paint, gasoline, diesel fuel, and a drying agent would be used at the site during construction and that oxygen, carbon dioxide, hydrogen, propane, acetylene, turbine cleaning solution, and various oils contained within operating equipment would be used during operation of the proposed facility (Exh. EFSB-HZ-1; Tr. 3, at 230). The Company indicated that refueling of construction equipment may occur on-site (Exh. EFSB-RR-24). The Company indicated that it would need to make only minor modifications to the Spill Prevention, Control, and Countermeasure Plan ("SPCC Plan") for the existing facility in order to accommodate the proposed facility (Exh. EFSB-SF-1). However, the Company stated that controlling spillage

³⁵ (...continued)
unsuitable for water supply wells, with a margin of sand and gravel which the Company suggests is both narrow and thin (Exh. SWM-1, at 4-23).

during construction would be the responsibility of its engineering, procurement, and construction (“EPC”) contractor (Tr. 3, at 227). The Company has stated that lubricating oils and chemicals required for facility operation would be stored in covered containment areas, with chemicals stored indoors on a paved surface with curbs and/or dikes to contain any spills (Exh. SWM-2, at 9-26).

The Company indicated that stormwater flows would be modified by the facility, principally by adding impervious surfaces such as roofs and pavement, and slightly by changing the areas of small drainages (*id.* at 9-21 and 9-25). The Company stated that facility engineering design would identify the existing peak stormwater runoff volume, which would be used as a design target maximum limit for peak post-development runoff conditions (Exh. SWM-1, at 4-27). The Company indicated that it would construct a stormwater detention basin to allow sediments in runoff to settle and to limit peak runoff rates (Exh. SWM-2, at 9-25). All potentially contaminated stormwater from the outdoor catchbasins, secondary containment under CTG/turbine lube oil coolers, transformer containment, and general site areas would be directed through an oil/water separator prior to discharge to a detention basin, according to the Company (Exh. SWM-1, at 1-14 and 4-30). The Company indicated that it would provide for periodic maintenance of this detention basin, including removal of accumulated sediments (Exh. EFSB-RR-26). The Company stated that oil collected in the oil/water separator would be disposed of off-site at an approved disposal facility (Exh. SWM-1, at 1-14). The Company stated that sediment and erosion controls would be employed to “prevent sediment-laden runoff from affecting nearby wetlands” (*id.*).

With regard to existing contamination of soils or groundwater, the Company indicated that some contaminants had been detected in association with the existing facility but stated that there is no known condition at West Medway Station that would be of concern (Exh. EFSB-HZ-2 Att. at 5-1; Tr. 3, at 223-225).³⁶

³⁶ The Company provided a copy of a 1997 Environmental Site Assessment report prepared for the previous site owner, BECo (Exh. EFSB-HZ-2 Att.). This site assessment work followed known releases of fuel oil and oil contaminated with polychlorinated biphenyls
(continued...)

3. Analysis

The record shows that the proposed facility would use modest volumes of water which would be obtained from off-site sources. Municipal water supplies are limited; in fact, the Town regularly withdraws more groundwater than it is registered for by MADEP. However, with its minimal average water use (estimated to be only 890 gpd, compared to an average system delivery of 1.115 million gpd of water in 1998), the facility would not significantly increase the demand on the municipal system. The record shows that any water obtained from the municipal system and not returned to the local watershed (i.e., due to trucking of wastewater off-site and/or evaporation) would be small in volume and would not represent a significant loss to the watershed. Accordingly, the Siting Board finds that the water supply impacts of the proposed facility would be minimized.

The record shows that the proposed facility would discharge modest volumes of wastewater. The record shows that on-site discharge would be limited to sanitary wastewater and handling of stormwater runoff. While there is evidence that subsurface contaminants are present at the existing facility, the record shows no evidence of contamination at the site of the proposed facility. No evidence was presented that would indicate that changes in stormwater flow associated with facility development would affect or mobilize contaminants previously detected at the West Medway Station. The record shows that provisions have been made for the prevention and control of spills to minimize contamination of groundwater and surface water. Accordingly, the Siting Board finds that the water resources impacts of the proposed facility would be minimized.

³⁶

(...continued)

("PCBs") and detection of petroleum hydrocarbons and PCBs at the site of the existing facility (Exh. EFSB-HZ-2 Att. at 5-1). Sampling and analysis conducted in 1997 found detectable concentrations of petroleum hydrocarbons in soil and groundwater in the vicinity of the existing facility (id. at 5-2). The Company stated that the area investigated in the 1997 study did not extend to the footprint of the proposed facility (Tr. 3, at 223).

D. Wetlands

This section describes the wetland impacts of the proposed facility and its interconnections and the mitigation proposed by the Company.

1. Description

The Company stated that two intermittent streams are located in the vicinity of the project (Exh. SWM-2, at 9-5). The Company identified bordering vegetated wetland (“BVW”) and banks along these streams which are regulated as wetland resource areas in accordance with the Massachusetts Wetland Protection Act (Exhs. SWM-2, at 9-5 to 9-6; SWM-11, at 2-12). The Company stated that there is no mapped habitat of special status wetland wildlife species at the site (Exh. SWM-2, at 9-3).

The Company provided a copy of a 1997 Environmental Site Assessment report prepared for the previous site owners (Exh. EFSB-HZ-2 Att.). The 1997 report stated that there was a 1988 report of a release of oil contaminated with PCBs into an intermittent stream southwest of the property and surrounding wetlands, but the 1997 report did not specify residual concentrations of hydrocarbons and PCBs in on-site or off-site wetlands (*id.* at 5-1).

The Company indicated that the proposed facility would be located outside of any wetlands and also outside of the 100-foot wetland buffer zone (Exh. SWM-11, at 2-7). The Company stated that there would be no construction or clearing in the wetlands, but that there may be some clearing of vegetation in the buffer zone (Tr. 3, at 257).

The Company stated that a temporary roadway for delivery of heavy equipment would extend into the buffer zone (Exh. EFSB-W-1). The Company anticipated that, as part of the 345 kV interconnect to the BECo substation, directly west of the facility, three support structures for overhead wires would be constructed within a 100-foot wetland buffer zone (*id.*). The Company stated that a small part of the permanently relocated perimeter driveway would extend into the buffer zone and that a water supply line extension may extend into the buffer zone as well (*id.*). The Company stated that no upgrades to the gas pipeline interconnect would be required (Exh. EFSB-L-11). The Company stated that it filed a Notice of Intent under the Massachusetts Wetlands Protection Act with the Medway Conservation Commission

(Exh. EFSB-W-2-S). The Company indicated that the Medway Conservation Commission had approved the project, subject to an Order of Conditions (Exh. EFSB-RR-26-S).

The Company stated that site hydrology would be modified, principally by adding impervious surfaces, thereby increasing surface runoff, and stated furthermore that to minimize effects from changes in runoff, potentially contaminated runoff would be directed through an oil/water separator and a detention basin would be constructed to allow sediments in runoff to settle and to limit peak runoff rates (see Section III.B, above) (Exh. SWM-2, at 9-21 and 9-25). The Company stated that chemicals required for facility operation would be stored indoors on a paved surface with curbs and/or dikes to contain any spills (id. at 9-26). The Company also stated that sediment and erosion controls would be employed during construction to prevent sediment-laden runoff from affecting nearby wetlands (Exh. SWM-1, at 1-14).

2. Analysis

The Siting Board notes that wetlands are considered to be potentially sensitive to direct construction impacts, changes in site hydrology, surface water contamination, and groundwater contamination. The record shows that the Company has designed the facility layout so that only a small portion of roadways, plus three transmission support structure bases, and a water line would be within 100 feet of wetlands and no work would be conducted within wetland areas. While it might be possible to move the footprint of the facility further away from the buffer zone, this would effectively widen the area affected by power facilities because it would move the new units further from the existing units. The record demonstrates no significant anticipated change to site hydrology that would affect wetlands. Finally, the record shows that measures would be taken to prevent spillage of potentially damaging chemicals into the environment at the site.

The record shows that the quantity and quality of water flowing into on-site and off-site wetlands is not expected to change appreciably as a result of the proposed facility. Any residual hydrocarbon or PCB contamination in the wetlands southwest of the facility is not expected to be affected by the proposed facility and its interconnections. The record indicates that project work in wetland buffer zones would be conducted so as to minimize effects on nearby wetlands. Accordingly, the Siting Board finds that the wetlands impacts of the proposed facility would be

minimized.

E. Solid Waste

This section describes the solid waste impacts of the proposed facility on the site and the mitigation proposed by the Company.

1. Description

Site asserted that it would implement a program to minimize solid waste and encourage recycling (Exh. SWM-1, at 1-16). The Company indicated that the program could include: (1) the disposal of clearing and grubbing waste at local composting facilities; (2) the segregation of metal and scrap wood for salvage on a regular basis; (3) the use of excess excavation material as fill in the final grading plan; (4) the minimization of spills during transfer of fluids and refueling of vehicles; and (5) the evaluation of reuse and recycling capabilities as one of the criteria used to select and purchase construction materials and aids (id.; Exh. SWM-2, at 3-14).

The Company stated that the amounts of solid waste generated during construction and during operation would be similar (Exhs. EFSB-SW-1; EFSB-SW-2). The Company indicated that, over a ten-week period of operation, the proposed facility would generate approximately: (1) eight containers of garbage; (2) nine containers of recyclable metals and wood; (3) two containers of paper; and (4) one container of controlled waste including used oils, chemical/oily rags, and other cleaning agents (Exh. EFSB-SW-1).

The Company explained that, during both construction and operation, solid waste that cannot be recycled, reused, or salvaged would be collected in a dumpster on-site and removed by a licensed contractor, as is currently the case (Exhs. EFSB-SW-2; SWM-1, at 1-17). The Company stated that it would develop processes to ensure that potentially hazardous wastes are separated from non-hazardous waste, including the proper segregation and labeling of all non-hazardous and hazardous solid waste at the source (Exhs. SWM-1, at 1-17; SWM-2, at 1-17).

2. Analysis

The record indicates that the proposed facility would produce approximately 20 containers of solid waste, including one container of hazardous wastes, every ten weeks. The Company has stated that it would reduce, reuse, and recycle solid waste to the maximum extent possible during construction and operation, and would encourage recycling through the separation of solid waste and the development of processes to facilitate solid and hazardous waste plans and management. The record shows that all remaining waste would be removed by licensed waste contractors and disposed of at appropriate disposal sites for hazardous and non-hazardous waste.

The Siting Board notes that the proposed facility is a gas-fired peaking facility, and that the Company's choice of fuel contributes considerably to the minimization of solid waste impacts, when compared to a coal fired plant. See, e.g., Silver City Energy, 3 DOMSB at 173-174. The Company's commitment to recycle both construction and operational waste, where possible, contributes to minimizing the solid waste impacts of the proposed facility. Accordingly, the Siting Board finds that the solid waste impacts of the proposed facility would be minimized.

In making this finding we note that although natural gas-fired generating facilities produce significantly less solid waste than facilities which are fueled by coal, the levels of solid waste produced from natural gas-fired facilities are not necessarily insubstantial or minimal. Consequently, the Siting Board concludes that further review of measures to minimize solid waste impacts of gas or oil-fired facilities is warranted. The Siting Board, therefore, will require future applicants of proposed generating facilities, regardless of fuel type or size, to demonstrate that they have minimized solid waste impacts by characterizing the estimated waste stream from the proposed facility, describing the solid waste minimization and recycling strategies proposed for the facility, and as applicable, providing comparisons with statewide policy initiatives and/or governmental or industry guidelines or averages.

F. Visual Impacts

This section describes the visual impacts of the proposed facility on nearby areas and

describes proposed mitigation of the impacts.

1. Description

According to the Company's viewshed analysis demonstrated that the facility stacks would be partially visible through the trees from along Summer Street to the east, near the intersection of Summer Street and Main Street to the south, and along West Street to the west (Exh. SWM-2, at 5-7 to 5-17). One of the facility's stacks would also be visible from near the intersection of Hartford Avenue and Beech Street to the south (id.). However, the Company asserted that the existing trees and vegetation would screen the proposed facility from view in most directions and that, at those locations where the facility would be visible, its effect generally would be limited by the existing vegetation and other industrial structures in the area (Exh. SWM-2, at 5-10). In addition, the Company asserted that because the height of the proposed sub-GEP stacks would be equal to or lower than the existing 65 to 68 foot stacks, the proposed project would not cause significant visual impacts (id. at 5-2; SWM-2, at 6-17 to 6-18; Tr. 2, at 198).

The Company indicated that, to avoid visual impacts, it would preserve the hedgerows to the east of the access road and to the south of the proposed facility footprint (Exhs. EFSB-V-6; EFSB-RR-25). The Company stated that it would also preserve the hedgerow further to the south along a portion of the property line and in the area partially separating the site from the BECo 115 kV substation (Exh. EFSB-V-6).³⁷ In addition, the Company has proposed to plant a new hedgerow that would run along the southern property line, turn northward, and run parallel to the eastern property line along the back side of the abutting day care center (Exh. SWM-EFSB-V-2). The Company stated that this new hedgerow would buffer views from the southeast (id.). To document the extent of its proposed tree plantings, the Company submitted a detailed landscape plan (Exh. RR-EFSB-27-S, Landscape Site Plan - Sheet 11). In addition to the

³⁷ The Company noted that its construction work may affect the hedgerows immediately to the south of the project footprint and further to the south near the property line, but that the Company would work to preserve mature trees and would replant trees in the hedgerows as necessary (Exh. EFSB-V-6).

hedgerow proposed, the landscape plan indicated that the Company would add plantings around the facility parking area, along the side of the administration building/warehouse, and on the northern side of the access road at the point where the access roadway curves (id.). Finally, the Company stated that it would consider requests for off-site mitigation on a case-by-case basis from owners of properties within 1,500 feet of the site that would have unobstructed views of the new facility (Tr. 2, at 240 to 242; Tr. 5, at 394 to 395; Exh. RR-Medway-3).

The Company asserted that because of the high temperature of the exhaust gases, there would not be a visual plume from the facility (Tr. 5, at 376). In addition, the Company indicated that it reviewed the Massachusetts Landscape Inventory, and determined that no “distinctive” or “noteworthy” landscapes are in the vicinity of the project (Exh. EFSB-RR-40). The Company therefore concluded that the project would not affect such areas (id.). The Company stated that it would paint the facility structures a neutral color selected in consultation with the Town to minimize visual impact (Tr. 5, at 378).

With respect to exterior lighting, the Company stated that while it would light the facility at night, it does not anticipate any visual impacts or glowing in the sky caused by facility lighting (id.). The Company stated it would direct lighting downward to illuminate only the facility grounds and asserted that existing vegetation on the site would block views of the illuminated areas from nearby residences (id.).

2. Analysis

The record demonstrates that while existing trees and vegetation would screen the proposed facility from view in some areas, the proposed facility may be visible from the east along sections of Summer Street, from the south near the intersection of Summer Street and Main Street, and near the intersection of Hartford Avenue and Beech Street, and from the west along West Street. The Company's analysis indicates that views of the facility from these areas would be at least partially screened by existing on-site vegetation. The record shows that the Company would: (1) preserve the entire hedgerows to the east and south of the proposed facility footprint; (2) plant a new hedgerow running along the southern property, and extending northward parallel to the eastern property line along the back side of the existing day care center;

and (3) place plantings around the facility parking area, along the side of the administration building/warehouse, and on the northern side of the access road at the point where the access roadway curves. The record shows that the existing and new hedgerows would help buffer views of the facility from the south and east.

With regard to the general appearance of the facility and related structures, the Company has agreed to paint the facility a neutral color to be selected in coordination with the Town. In addition, the record indicates that the facility emissions would not create a visible plume, and that the project would not affect viewing of landscapes identified in the Massachusetts Landscape Inventory.

In past 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. IDC Bellingham Decision, 9 DOMSB, at 298 to 300; ANP Blackstone Decision, DOMSB 8, at 142 to 143; Berkshire Power Decision, 4 DOMSB at 395. Here, the Company has expressed a willingness to consider mitigation of visual impacts at locations within 1,500 feet of the proposed site that have unobstructed views of the facility. The proposed mitigation would include provision of shrubs, trees, or other reasonable forms of screening, if local residents request them.

The Siting Board notes that the 65-foot stacks proposed for this facility are significantly lower (and consequently less visible) than the stacks required for the combined-cycle plants typically reviewed by the Siting Board. Based on this lower stack height and our review of the Company's viewshed analysis, we see no reason to require the Company to provide off-site mitigation to residents within one mile of the proposed facility. However, we also conclude that off-site visual mitigation should extend beyond the 1,500 foot radius proposed by the Company to include residences to the east, south, and west that would have views of the facility. Consequently, 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 facility at properties within one-half mile of the proposed facility, as requested by residents or appropriate municipal officials. We note that reasonable requests are not necessarily limited to those which would block clear views of the

stacks, but could also include requests for plantings that would obscure partial views of a stack or another component of the plant.

In implementing this off-site mitigation, 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 municipal officials and to all potentially affected property owners, 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 foregoing condition, the visual impacts of the proposed facility would be minimized.

G. Noise Impacts

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.

1. Description

The Company asserted that the projected noise impacts of the proposed facility would not adversely affect neighboring residences or properties and would be minimized in accordance with Siting Board requirements (Exhs. SWM-1, at 4-55; SWM-2, at 7-11 to 7-13). The Company asserted that noise impacts from the operation of the proposed facility would: (1) comply with the MADEP 10-decibel (“dBA”) limit on noise increases at all residential receptors;

(2) cause no pure tone condition as defined by MADEP;³⁸ (3) comply with Medway's noise standards of 50 dBA daytime and 45 dBA nighttime; and (4) comply with EPA's 55 dBA noise guideline for residential areas (Exh. SWM-1, at 4-50 and 4-55). The Company stated that it proposes to provide additional noise mitigation for the existing facility, as well as mitigation for noise from the proposed facility (Exh. SWM-2, at 7-1; Tr. 1, at 11). The Company asserted that following construction, the combined noise of the proposed and existing facilities would be less than the current noise level of the existing facility (Exh. SWM-2, at 7-1; Tr. 1, at 11). The Company asserted that construction noise would be intermittent, temporary in nature, and that while traffic during the construction phase would increase, the noise from this traffic would likely not be significant compared to that from the 2,500 vehicles per day that currently use the road near the facility (Exh. SWM-1, at 4-53).

The Company indicated that the MADEP limits allowable noise increases at residences and property lines to 10 dBA above the ambient L_{90} noise level, where L_{90} is a measure of noise that is essentially equal to background conditions that are observed in the absence of louder transient noises (Exh. SWM-2, at 7-1).³⁹ To define the environmental impacts of the proposed project with respect to noise, the Company provided analyses of existing noise levels in the vicinity of the proposed site and the expected changes in noise levels resulting from both construction and operation of the proposed facility (*id.* at 7-4 to 7-13).⁴⁰ To establish existing background noise levels, the Company conducted surveys at six distinct noise monitoring locations ("NML") at various distances and directions from the proposed site (*id.* at 7-6). The Company selected NMLs that represent the nearest noise-sensitive locations in several directions.

³⁸ The Company indicated that MADEP defines a pure tone condition as a noise level for any octave band level which exceeds levels in adjacent octave bands by 3 dBA or more (Exh. SWM-1, at 4-49).

³⁹ The Company stated that the identified background level is defined as that level of noise that is exceeded 90 percent of the time during the measurement period (Exh. SWM-2, at 7-2).

⁴⁰ The Company indicated that generally an increase of 3 dBA is the minimum increase that is noticeable in a typical residential community environment (Tr. 1, at 29).

The monitoring locations included: (1) along Sithe's northeastern property line at One Burrill Road; (2) the intersection of Old Summer Street and Ardmore Circle; (3) behind the day care center at the site's entrance road; (4) along the southern property line behind the residence located at Two West Street; (5) on the western property line across from the residence at 37 West Street; and (6) on Milford Street at Nelson Tire (*id.* at 7-4 to 7-7). For each NML, the Company provided a set of L_{90} noise measurements taken during daytime and nighttime hours when the existing units were not in operation (*id.* at 7-6). Nighttime measurements ranged from 31 to 44 dBA and daytime measurements ranged from 40 to 46 dBA (*id.*).

To analyze the noise impacts of facility operation at residential and property line receptors, the Company provided estimates of facility noise, and combined facility noise and background noise, by receptor, for nighttime periods (Exh. SWM-2, at 7-12). Based on its analysis, the Company stated that the new facility operating alone would result in L_{90} increases ranging from 0 to 9 dBA over nighttime ambient at the receptor locations (Exh. SWM-1, at 4-54). The Company stated that, with simultaneous operation of the new facility and the modified existing units, nighttime L_{90} noise levels would range from 35 to 46 dBA, resulting in cumulative increases of from 2 to 10 dBA over ambient nighttime conditions at the receptors (Exh. SWM-2, at 7-12).⁴¹ The Company noted that currently, the noise from operation of the existing units results in increases of 7 to 21 dBA over ambient nighttime L_{90} conditions (Exh. EFSB-RR-1).

The Company also provided an analysis of the noise impacts of operating the peaking facility during the day (Exh. EFSB-N-3). The Company stated that operation of the proposed facility would result in an increase over current daytime L_{90} levels of from 1 to 4 dBA at the three closest receptors (R2, R3, and R4) and that the combined operation of both the proposed facility and existing facility would result in an increase over current daytime L_{90} levels of 3 to 5 dBA at

⁴¹ The Company stated that since the proposed and existing facilities, operating together, would have a maximum increase of 10 dBA over L_{90} , the project would comply with MADEP's 10 dBA noise guideline (Exh. SWM-2, at 7-12 to 7-13). The Company noted that the existing facility only operates 60 to 80 hours a year, and thus the new facility would operate at the same time as the existing facility only for a limited period (Exh. EFSB-RR-6, at 4; Tr. 1, at 54).

the three closest receptors (*id.*). The Company stated that it expects to operate the existing and proposed facility primarily during the daytime, with nighttime operation accounting for 20 percent of operating hours, taking place primarily between 6 p.m. and 8 p.m. before the demand for electricity drops back in the early evening (Exhs. SWM-2, at 7-4 to 7-7; EFSB-N-4; Tr. 1, at 53).⁴² The Company stated that the facility would be permitted to operate for a maximum of 2,500 hours per year but that it was more likely to operate for 1,200 to 1,500 hours per year (Exh. EFSB-A-2-S at 6-10; Tr. 2, at 142 to 148).

The Company also provided existing day-night sound levels (“L_{dn}”) at all receptors and L_{dn} noise level produced by the facility at the closest receptor (Exhs. EFSB-N-1, at 2; SWM-1, at 4-55). The Company determined that the existing L_{dn} at the six receptors ranged from 49 to 65 dBA.^{43,44} The Company noted that at receptor R-1 on Burrill Road, the location where facility noise would be the loudest, the L_{dn} of the facility noise would be 51 dBA, and asserted that this would be consistent with the 55 dBA noise guideline (Exh. SWM-1, at 4-55).

The Company stated that its acoustical design for the proposed facility includes the application of the following noise mitigation strategies: (1) construction of a secondary turbine and skid enclosure and transition shroud using heavy duty acoustical panels; (2) installation of acoustical insulation at the air intake duct; (3) use of a low frequency resonator and exhaust silencer at the turbine exhaust; (4) design of the transformers and fin fan cooler for lower noise levels; and (5) an increase in the size of the silencer in the combustion air intake (Exh. SWM-2, at D-7). The Company stated that its acoustical re-design for the existing facility would include:

⁴² The Company stated it would be extremely unlikely for it to operate the facility after about 10:00 p.m. (Tr. 4, at 338).

⁴³ The Company’s measurements showed that the ambient L_{dn} was below EPA’s 55 dBA noise guideline at receptors R-1, R-3, R-4, and slightly above that guideline (by 1 to 2 dBA) at receptors R-2, and R-5 (Exh. EFSB-N-1, at 2). At receptor R-6, the ambient L_{dn} was 65 dBA (*id.*). The Company noted that the 55 dBA guideline was recommended by EPA as “requisite to protect public health and welfare with an adequate margin of safety” at residential locations (Exh. SWM-1, at 4-55).

⁴⁴ The Company’s noise monitoring locations (NML 1 to 6) correspond to the Company’s receptor locations (R-1 to R-6) (Exh. SWM-1, at 4-47 to 4-49).

(1) installation of silencers on the generator air intakes, turbine air coolers, generator air exhaust, lube oil coolers, servo coolers, combustion air intakes, roof vents, and possibly in the exhaust stacks; and (2) installation of double wall construction in the building walls and roof (*id.*). The Company stated that its proposed noise mitigation plan would cost \$12.6 million above the normal facility cost (approximately 10 percent of the project's cost) and that this level of mitigation would be necessary to comply with MADEP's 10 dBA criteria (Exhs. SWM-2, at D-2; EFSB-RR-6, at 4).

The Company investigated the cost of additional noise mitigation to limit noise from both facilities to a 7 dBA increase and a 3 dBA increase over ambient nighttime L_{90} conditions and found that these options would cost an additional \$5,158,000 and \$11,856,000, respectively (Exh. SWM-1, at D-2).^{45,46} The Company stated that these additional costs were significant for the amount of noise reduction that they would provide, and argued that further mitigation would not be cost effective or necessary given that the proposed facility would achieve compliance with MADEP's noise policy (Exh. SWM-2, at D-8).

With respect to construction noise, the Company provided estimates of maximum levels of construction noise on site, and equivalent levels of such noise at the closest residence, located at the intersection of Summer Street and Old Summer Street (*id.* at 7-10). The Company estimated that the maximum level of construction noise would be an equivalent sound level (" L_{eq} ")⁴⁷ of 68 dBA at the closest residence and that such level likely would occur during both

⁴⁵ The Company provided a detailed breakdown of the cost of its proposed noise mitigation as well as the +7 dBA and +3 dBA noise mitigation alternatives (Exh. EFSB-RR-60). In addition, the Company provided detailed information from vendors to document the noise equipment required to achieve the Company's targeted noise levels (*id.*).

⁴⁶ The Company stated that to limit noise to a 7 dBA increase it would have to make the following changes to the proposed facility: (1) increase the length of the exhaust silencers; (2) add a wrap-around noise barrier over the combustion air inlet; and (3) make design improvements to reduce the transformer and fin fan cooler noise levels (Exh. EFSB-RR-60).

⁴⁷ The equivalent level is the level of continuous sound which has the same energy as the
(continued...)

the excavation and finishing stages of the project (*id.* at 7-10). The Company asserted that during the ground clearing, foundation and steel erection phases, L_{eq} noise levels at the nearest residence generally would range from 57 to 64 dBA (*id.*).⁴⁸

The Company stated that it would take the following measures to minimize construction noise: (1) concentrate construction activity in a limited on-site area; (2) perform noise-intensive construction work during daylight hours to the extent possible; (3) comply with Federal regulations regarding truck noise; and (4) use and maintain sound muffling devices on construction equipment (*id.* at 7-11).

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 MADEP's 10 dBA standard. Brockton Decision, EFSB 99-1, at 52; Sithe Edgar Decision, EFSB 98-7; Altresco-Pittsfield Decision, 17 DOMSC at 401. 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. IDC Bellingham Decision, 9 DOMSB, at 311-315; Millennium Power Decision, 6 DOMSB, at 163; NEA Decision, 16 DOMSC at 402-403. In general, the Siting Board considers noise increases at an already noisy location more

⁴⁷ (...continued)
measured fluctuating sound observed. The equivalent level represents the time average of the fluctuating sound and is strongly influenced by occasional loud intrusive noises (Exh. SWM-2, at 7-4).

⁴⁸ The Company asserted that its estimated construction noise levels were conservative because they were calculated using EPA's standard noise levels for industrial projects, which provided results that would be more appropriate for a combined-cycle facility than a peaking unit (Tr. 1, at 21). The Company asserted that: (1) excavation noise would be of a shorter duration than for other types of power plant facilities and industrial facilities because of the small size of the structures; and (2) noise from erection and finishing would likely be less than the estimates because the facility is largely prefabricated (*id.*).

significant than noise increases in areas with a low ambient noise level.⁴⁹ IDC Bellingham Decision, 9 DOMSB, at 311; ANP Bellingham Decision, 7 DOMSB at 190, NEA Decision, 16 DOMSC at 402-403. In addition, the Siting Board has previously recognized that a large facility can in general support larger expenditures for mitigation of environmental impacts, where such expenditures are cost effective. IDC Bellingham Decision, 9 DOMSB, at 315; ANP Blackstone Decision, 8 DOMSB, at 171.

The Company's noise modelling indicates that at the six receptors, operation of the proposed facility would result in nighttime L_{90} increases ranging from 0 to 9 dBA, and operation of the proposed and modified existing facility together would result in nighttime L_{90} increases ranging from 2 to 10 dBA. Thus, the proposed facility meets the MADEP Standard. Furthermore, the record shows that the Company's estimates of noise impacts are conservative because: (1) nighttime operation is expected to account for only about 20 percent of the proposed and existing facility's operation (even though the Company used a nighttime L_{90} for its noise analysis); (2) when the proposed and existing facility do operate at night, they are expected to operate in the early evening hours from 6 p.m. to 8 p.m. to capture the limited peaking demand

⁴⁹ In several of its recent reviews, the Siting Board has included the level of existing background noise as a factor in assessing whether expected noise increases from a proposed generating facility would be acceptable. Most commonly, in cases where background and calculated facility L_{dn} noise at the most affected residential receptors has not significantly exceeded the EPA's 55-dBA guideline, the Siting Board has accepted or required mitigation which was sufficient to hold residential L_{90} increases to maximums of 5 to 8 dBA. IDC Bellingham Decision, 9 DOMSB, at 311; ANP Bellingham Decision, 7 DOMSB at 190, Berkshire Power Decision, 4 DOMSB at 404; Silver City Decision, 3 DOMSB, at 331, 367-368, 413. NEA Decision, 16 DOMSC at 402-403. In cases where existing background levels were high at the most affected residential receptors, as evidenced by L_{dn} levels significantly exceeding the EPA's 55-dBA guideline, the Siting Board has accepted or required mitigation to hold residential L_{90} increases to maximums of 2 to 7.5 dBA. Sithe Mystic Decision, 9 DOMSB, at 164-166; Millennium Power Decision, 6 DOMSB, at 163; BECo Decision, 1 DOMSB, at 213; Enron Decision, 23 DOMSC, at 200. Conversely, in two cases where background noise was quiet and, in particular, L_{90} levels at the most affected residential receptors were very low, the Siting Board has accepted residential L_{90} increases of up to 10 dBA. ANP Blackstone Decision, 8 DOMSB, at 171, Dighton Power Decision, 5 DOMSB, at 48-58.

at nighttime; (3) the new facility would operate at the same time as the existing facility for limited periods only, and thus the combined increase of 10 dBA above L_{90} would seldom occur; and (4) the highest increase in noise resulting from the new facility (9 dBA above nighttime L_{90}) would occur at the day care facility which would be unlikely to operate during the nighttime hours (the next highest increase would be 8 dBA above L_{90} at two different receptors).

The record shows that operation of the proposed facility would result in an L_{90} noise increase of 1 to 4 dBA above daytime levels at the three closest receptors (R2, R3, R4) and that the combined L_{90} noise impact of both the proposed and existing facilities operating at once would range from 3 to 5 dBA above daytime levels at the three closest receptors. The record shows that as a result of its noise mitigation efforts, the combined noise levels from both the proposed and modified existing facilities would be less than those from the existing facility operating in its current condition. The record shows the Company expects to operate its proposed facility between 1,200 to 1,500 hours in most years, and has stated it would limit its hours of operation to at most 2,500 hours per year in the event it needs to operate more than expected.

The record shows that the ambient L_{dn} is within or slightly above EPA's 55 dBA noise guideline for five of the six monitoring locations. At the remaining location, on Route 109, the L_{dn} is currently 65 dBA, but as a result of the high background noise and the distance from the project, the modeled increase over nighttime L_{90} at this location is only 3 dBA.⁵⁰ Conversely, at receptor R-1 on Burrill Road, the location where facility noise would be the loudest, L_{dn} noise level with facility operations would be 51 dBA or less and would be consistent with EPA's 55 dBA noise guideline. The Siting Board notes that the 51 L_{dn} estimate is based on the assumption that the plant would operate 24 hours a day.

With respect to cost, the record shows that the Company already has committed to an extensive noise mitigation package totaling \$12.6 million and that the cost to reduce estimated facility noise at residences by another 3 dBA would be \$5,158,000. This amount is much higher

⁵⁰ The project would likely have no effect on daytime L_{90} at location No. 6 as the noise from the proposed facility (28 dBA) is small in relation to the daytime ambient L_{90} (46 dBA).

than previous cases involving more costly combined-cycle facilities where the Siting Board required further mitigation. IDC Bellingham Decision, 9 DOMSB, at 311. Millennium Power Decision, 6 DOMSB, at 167, Silver City Decision, 3 DOMSB at 367.⁵¹ Given the significant cost associated with reducing the nighttime noise impacts of the proposed facility to 7 dBA, and the limited benefit of such reductions in light of the fact that the peaking facility will operate primarily during the day, the Siting Board finds that no further noise mitigation is warranted in this case. Consequently, the Siting Board finds that the operational noise impacts of the proposed facility would be minimized, consistent with minimizing cost.

The Siting Board notes that although the Company has estimated it would operate its proposed facility between 1,200 to 1,500 hours per year, with nighttime operation only about 20 percent of the time (during the hours of approximately 6 p.m. to 8 p.m.) the Company is uncertain as to the actual hours the new and existing facility may operate. Given this uncertainty, and that longer than expected hours of nighttime operation would have greater noise impacts, we request that the Company keep the Town and the Siting Board informed as to the actual hours of operation. This information may also help the Siting Board in review proposals for other peaking facilities. Accordingly, the Siting Board directs the Company to provide the following information to the Medway Board of Selectmen, Medway Board of Health, and the Siting Board, for the first three years of operation, with the first such submittal to be provided after the end of the first full operating year: (1) the total number of hours the proposed facility operated that year; (2) the number of hours that year the proposed facility operated past: 6 p.m., 7 p.m., 8 p.m., 9 p.m., and 10 p.m; (3) the number of hours per year the existing facility operated before and

⁵¹ In the Millennium Power Decision, the Siting Board required additional mitigation to reduce the L₉₀ increase at the most affected residences from 10 dBA to 7.5 dBA, at an additional cost of approximately \$1.0 million. Millennium Power Decision, 6 DOMSB, at 167. In the Berkshire Power Decision, the Siting Board directed the proponent to hold L₉₀ increases to within the MADEP standard on abutting vacant lands that would be suitable for nighttime occupancy, at a cost of approximately \$156,000. Berkshire Power Decision, 4 DOMSB at 443. In the Silver City Decision, the Siting Board required the proponent to reduce L₉₀ impacts at specified residential locations by 2 dBA at a cost of approximately \$500,000. Silver City Decision, 3 DOMSB at 367.

after 6 p.m.; and (4) the number of hours per year the existing and proposed facility operated at the same time, before and after 6 p.m.

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, would minimize construction-related noise impacts. The Siting Board notes that the proposed steps 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 construction noise impacts of the proposed facility would be minimized.

Accordingly, the Siting Board finds that the noise impacts of the proposed facility would be minimized, consistent with minimizing cost.

H. Safety

This section describes the safety impacts of the proposed facility with regard to materials handling and storage, fogging, and icing, and the Emergency Response Plan.

Sithe stated that to help ensure safety at the proposed facility it would: (1) adhere to GEP (except GEP for stack height as discussed in Section III.B, above) and comply with federal, state, and local regulations in its design, construction, and operation activities; (2) incorporate into its construction contracts provisions that require contractors to adhere to safety and health requirements; and (3) monitor operations on a regular basis (Exhs. SWM-1, at 1-18; SWM-2, at 3-16). In addition, the Company stated that, at a minimum, the proposed facility design would include the following safety features: (1) storage areas with containment basins or dikes; (2) equipment and building layouts that incorporate provisions for safe access to and egress from the facility, as well as adequate access for fire-fighting vehicles and equipment;⁵² (3) emergency lighting with a backup power supply; (4) automatic shutdown systems with a backup power supply for turbines, fuel supplies, and chemical systems; and (5) a self-sufficient fire protection

⁵² The Company stated that it did not anticipate that any high-voltage lines located at the site entrance would need to be moved to allow for to the delivery of construction equipment (Tr. 5, at 366).

system and the use of fire retardant building materials (Exhs. SWM-1, at 1-18 to 1-19; SWM-2, at 3-16 to 3-17). Further, the Company stated that the proposed facility would be enclosed by a security fence (Exh. SWM-1, at 1-19).

1. Materials Handling and Storage

The Company stated that operation of the proposed facility would require limited amounts of lubricating oils and other industrial chemicals (Exh. SWM-1, at 1-17). Sithe stated that any on-site chemical storage areas would be located indoors with appropriate containment consisting of curbs and drains (Exh. SWM-2, at 3-16).

The Company stated that employees would be trained to manage hazardous materials and respond to emergencies as appropriate (Exh. SWM-1, at 4-75). Sithe noted that Medway has a volunteer fire department (Exh. EFSB-SF-5). The Company indicated that each volunteer firefighter undergoes a state-mandated three-hour hazardous materials recognition and identification course, and has some training specific to occurrences at industrial sites (*id.*). The Company also noted that a Mutual Aid Agreement exists between the Town of Medway and the neighboring towns of Holliston, Bellingham, Milford, Franklin, and Millis to provide support for fire and police emergencies (Exh. EFSB-SF-4). The Company explained that emergency responses to major chemical and hazardous materials spills, and certain industrial fires would be undertaken by a team of firefighters who have undergone advanced training, that is certified and dispatched by the State Office of Fire Services (Exh. EFSB-SF-6).⁵³

2. Fogging and Icing

The Company stated that the proposed facility would not produce on-site or off-site

⁵³ Based on conversations with the Medway Fire Chief, the Company indicated that four Milford firefighters are members of the state certified team (one firefighter has 160-hour training and three firefighters have 40-hour training), all of Holliston's firefighters have received 12-hour training, categorized as the "operation level" of training, and the remaining firefighters from towns within the Mutual Aid Agreement have been trained to the mandated three-hour level (Exh. EFSB-SF-6).

fogging or icing because it is a simple-cycle facility and does not use wet cooling technology (Exh. EFSB-SF-7; Tr. 5, at 375).

3. Emergency Response Plans

The Company provided a copy of the existing Sithe West Medway Station SPCC Plan, which it indicated would guide emergency response at the proposed facility (Exh. EFSB-RR-23(a) Att.). The Company stated that it would need to make minor modifications to the existing SPCC Plan to reflect the addition of new equipment associated with the proposed project, such as transformers and lube oil coolers (Exh. EFSB-SF-1). The Company also stated that the existing plans would be revised in coordination with local emergency services to ensure that appropriate safety measures would be in place to address the needs of the expanded facility (Exh. SWM-2, at 3-21).

The Company noted that its existing SPCC Plan covers only those areas and activities for which Sithe employees are responsible, and therefore does not cover construction activities (Exh. EFSB-RR-23). The Company stated that its EPC contractor would be responsible for addressing on-site safety issues during construction, and explained that it would develop a written safety and accident prevention plan for the construction period after the contractor was hired (Exh. EFSB-RR-23; Tr. 5, at 373-376). However, the Company noted that in general, a separate SPCC Plan for the proposed facility may not be necessary, because SPCC plans are usually associated with on-site oil use (Tr. 5, at 373-376).

4. Analysis

The record demonstrates that chemicals associated with the proposed facility would be properly managed and stored in accordance with applicable public and occupational safety and health standards. The record demonstrates that there would be no ground level fogging or icing resulting from operation of the proposed facility.

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 the operation of the proposed facility would be incorporated into

existing emergency management protocols for the existing West Medway Station. The Siting Board notes that construction of the proposed facility will considerably increase both the on-site generating capacity and the number of operating hours, which may result in an increased volume of hazardous chemicals stored on site and an increased potential for hazardous material spills and fires. The Medway volunteer fire department has undergone the state-mandated minimum training for handling hazardous material spills and other industrial-related occurrences. However, while the record shows that the State Office of Fire Services is responsible for dispatching trained teams to major chemical spills and industrial fires, it may be appropriate for members of the volunteer fire department to receive additional training in responding to minor chemical spills and fires. Therefore, the Siting Board directs the Company to consult with the Medway volunteer fire department and appropriate officials, to determine if additional training of Medway or other fire personnel is necessary to ensure that adequately trained personnel are available to respond to reasonable contingencies, and if so to provide funding for such training.

The Siting Board notes that the Company intends to develop emergency procedures and response plans similar to those found acceptable in previous Siting Board decisions. The Company's proposal for emergency management plans includes measures for construction-related contingencies to be developed by the EPC contractor. However, the Company has not yet developed such plans. The Siting Board directs the Company to complete the construction section of its emergency response plan and file it with the Town of Medway before construction begins in order to address possible contingencies related to construction accidents.

Accordingly, the Siting Board finds that with the implementation of the foregoing conditions, the safety impacts of the proposed facility would be minimized.

I. Traffic

1. Description

The Company asserted that it would minimize traffic impacts from the construction and operation of the proposed facility consistent with Siting Board standards (Exh. SWM-2, at 4-10). The Company stated that since a natural gas pipeline would deliver fuel to the site and since the Company would not require additional workers to operate the new facility beyond those who

operate the existing facility, the operation of the proposed plant would not affect traffic (id. at 4-3). The Company stated that there would be an increase in traffic flow during construction and performed an analysis to quantify the expected increase in traffic (id. at 4-2).

The Company indicated that the majority of construction activity would occur in the daytime hours and that the normal construction shift would be from 6:00 a.m. to 3:30 p.m. to avoid non project-related peak traffic times (id.). The Company estimated that the project construction would generate as many as 91 employee round-trips per day and as many as 15 truck delivery round trips per day, but that most of the time a maximum of only 30 workers would be employed on site (id. at 4-3; Tr. 3, at 274).

The Company provided a timetable for construction of the proposed facility, and indicated that the most intensive construction activity would occur during the fifth and sixth months when equipment is brought to the site for installation (Exh. SWM-2, at 4-4 to 4-5). The Company stated that during this time, it may require more than 70 craft workers at the site, but that after the peak construction period ends, it would require only approximately 30 construction workers on site (Exhs. SWM-2, at 4-5; SWM-11, at 2-10). In addition, the Company stated that during the pouring of each of the three turbine building foundations, it would deliver concrete at a rate of one truck every six minutes over a ten-hour work day (Exh. SWM-2, at 4-4). The Company stated that since the effect of construction traffic would be of limited duration, with traffic demands rapidly decreasing after the peak construction period ends, traffic impacts from construction would be minor (id.).

In order to reduce the project's impact on traffic, the Company stated it would: (1) have a person responsible for coordinating with the Medway Department of Public Works and Police Department to notify them of initiation of construction, and to keep them informed of progress throughout the effort; (2) time construction work shifts to avoid peak commuter periods and to avoid school bus travel times; (3) avoid peak commuter periods and notify Town officials when delivering major equipment; (4) post signs along Route 126, both north and south of the project access drive, to warn motorists approaching the work area; and (5) provide for uniformed officers to control traffic at the intersection of Interstate Highway Route 495 ("I-495") and Route 109 during peak commuter periods to ensure that construction work and truck trips do not adversely

affect traffic flow or safety (Exh. SWM-2, at 4-9 to 4-10; Tr. 5, at 364).

With respect to construction vehicle routing, the Company said it would work to encourage drivers of construction vehicles exiting from I-495 to travel to the project site using Route 109 rather than West Street (Exh. SWM-2, at 4-9). The Company stated that this would avoid the more residential areas along West Street,⁵⁴ and also would help contain construction traffic within Medway (*id.*). The Company stated that it would be willing to insert language in its EPC Contract requiring its EPC contractor to use specific routes (*e.g.*, Route 109) for delivering materials to the site and restricting the contractor from using other routes (*e.g.*, West Street) (Exh. EFSB-RR-36). The Company stated that heavy equipment such as the generators and step-up transformers would arrive by train at Framingham and then would be routed along Route 126 to the site (Exh. SWM-2, at 4-9).

With respect to site access, the Company proposed that construction traffic would enter the site via the driveway to the existing facility off Summer Street, except for deliveries of heavy equipment which would use the construction access road near BECo's substation off West Street (*id.* at 4-1). The Company stated that the existing driveway off Summer Street is located within three feet of an outdoor playground area of a day care center (Tr. 5, at 350). The Company stated that the playground area is fenced and separated from the access road by a metal guardrail (Exh. EFSB-RR-35). The Company stated that it would be willing to install 42-inch high Jersey barriers to ensure the day care center playground is adequately protected from construction vehicles (Tr. 6, at 439 to 440).⁵⁵ The Company explained that it would prefer not to use the site entrance off West Street for all construction traffic because: (1) it would require the use of BECo

⁵⁴ Ms. Rosanski, Chair, Medway Board of Selectmen stated that the areas along West Street include bus stops and are residential in nature. Ms. Rosanski questioned how the Company could avoid problems from construction traffic in this area (Tr. 3, at 273).

⁵⁵ The Company provided data from Roadside Design Guide stating that in one case a 42-inch high Jersey barrier was able to successfully redirect an 80,000 pound tractor trailer truck colliding with the barrier at an angle of 15 degrees and at a speed of 53 miles per hour (Exh. EFSB-RR-35).

personnel to man the entrance gate;⁵⁶ (2) vehicles would have to travel further to the site and thus it would be less safe; (3) at that location, three roadways come together within a very short distance and roadway lines of sight would make it difficult for vehicles on West Street to see vehicles exiting from the construction site; (4) due to the busy traffic along West Street, there would be fewer gaps available for pulling out into traffic; and (5) the location of the construction site entrance at West Street may encourage workers to travel from Route I-495 to the site via West Street (instead of Summer Street, the preferred route) (Exh. EFSB-RR-41; Trs. 2, at 255 to 256; 355).

2. Analysis

The record indicates that construction of the proposed facility would generate approximately 91 employee trips per day and as many as 15 trucks per day during the two peak months of construction, but that most of the time the Company would require a maximum of 30 workers on site. In addition, the record shows that during the pouring of each of the three turbine building foundations, trucks would deliver concrete at a rate of one truck load every six minutes over a 10-hour work day.

To mitigate traffic concerns, the Company has committed to: (1) coordinating with the Medway Department of Public Works and Police Department to notify them of initiation of construction, and to keep them informed of progress throughout the effort; (2) timing construction work shifts to avoid peak commuter periods and to avoid school bus travel times; (3) avoiding peak commuter periods and notifying Town officials when delivering major equipment; (4) posting signs along Route 126, both north and south of the project access drive, to warn motorists approaching the work area; and (5) providing uniformed officers to control traffic at the intersection of Route I-495 and Route 109 during commuter peak periods to ensure that construction work or truck trips do not adversely affect traffic flow or safety.

⁵⁶ The Company stated that the access road off West Street is located on a BECo easement adjacent to the BECo substation (Tr. 5, at 352). The Company stated that BECo owns and operates a security gate that crosses the access road (id.).

In addition, the Company stated it would be willing to insert language in its contract with its EPC contractor requiring the EPC contractor to use Route 109 and restricting the contractor from using West Street for deliveries of materials and equipment (with the exception of deliveries of heavy equipment such as the generators and step-up transformers). Therefore, in order to prevent traffic delays and keep trucks out of residential areas, the Siting Board directs the Company to include this truck delivery route requirement in its EPC contract.

With respect to the Company's plan for truck and vehicle access onto the site, the Siting Board is concerned that the existing metal guardrail and fence may not adequately protect children playing at the day care center playground from construction traffic. However, the Siting Board believes that use of the access road off Summer Street both would help to keep construction traffic off West Street (a residential road with school bus stops) and would avoid the line of sight problems that could occur if construction vehicles were to try to enter and exit the site at the access road off West Street. The record provides evidence that Jersey barriers are capable of stopping large trucks and that the Company is willing to install them to help provide further protection to drivers and children in the fenced playground. Accordingly, the Siting Board directs the Company to install, prior to construction, 42-inch high concrete Jersey barriers along the south shoulder of the access road at sufficient length to prevent a vehicle traveling on the access road from crashing into the playground area that surrounds the north and west sides of the day care center.

The Siting Board also is concerned about the project's affect on traffic during concrete deliveries. Accordingly, the Siting Board, therefore, directs the Company to coordinate with the appropriate authorities to place a uniformed traffic officer at the entrance to the property on Summer Street during the pouring of concrete and as needed.

With respect to traffic impacts during facility operation, the Company has demonstrated that no adverse traffic conditions would result from operation of the proposed facility.

Accordingly, the Siting Board finds that, with implementation of the foregoing conditions, the traffic impacts of the proposed facility would be minimized.

J. Electric and Magnetic Fields⁵⁷

This Section describes the electric and magnetic field impacts of the proposed facility and potential mitigation.

1. Description

The Company stated that the proposed project would be located immediately adjacent to BECo's West Medway 115 kV and 345 kV substations (Stations 65 and 446, respectively) and that there are five transmission line corridors that intersect at BECo's West Medway Station facilities including transmission line rights-of-way ("ROW") 4, 4A, 7, 13, and a New England Electric System ("NEES") ROW (Exh. SWM-1, at 4-65). The Company stated that ROW No. 4 includes transmission line Nos. 389, 325, and 344; ROW no. 4A includes transmission line Nos. 357 and 323; ROW No. 13 includes transmission line No. 336; ROW No. 7 includes transmission line Nos. 601 and 602, and the NEES ROW includes transmission line No. 303 (Exh. SWM-1, at 4-71).

With respect to the two substations located adjacent to the project site, the Company stated that Station 65 includes four 115 kV circuits (65-502, 65-508, 201-501, and 274-509) and one 13.8 kV circuit (65-H3) (id.). The Company stated that Station 446 includes seven 345 kV circuits (303, 323, 325, 336, 344, 357, and 389) and two 230 kV circuits (240-601 and 282-602) (id.). The Company stated that the two substations are not electrically interconnected and that one 115 kV circuit (201-502) passes through the property but does not connect into either substation (id.). The Company stated that electric power generated at the project would interconnect with the adjacent 345 kV Station 446 (id.).

With respect to the electric field strength, the Company stated that future electric field strength should remain unchanged because BECo does not intend to alter voltage on the transmission lines extending from the West Medway Substation (SWM-2, at 8-10). The

⁵⁷ Electric and magnetic fields are produced by the flow of electricity, with electric fields being proportional to voltage and magnetic fields being proportional to current. Both fields are collectively known as EMF.

Company noted that the existing maximum electric field strength at three feet above grade at the edge of the ROW is 1.2 kilovolts per meter (“kV/m”), below the 1.8 kV/m value previously accepted by the Siting Board (id.).

With respect to magnetic field strength, the Company measured existing EMF strength under the transmission lines entering and leaving the West Medway Substation that are immediately adjacent to the project site (id. at 8-2). The Company stated that because the analysis of the project showed that only ROW 4 would experience a significant increase in EMF due to loads from the proposed facility, it assessed existing EMF levels only for ROW 4 (id.). Here, the Company found that the existing magnetic fields ranged from a peak of 25 milligauss (“mG”) to a low of 5 mG (id.).

The Company used a “Fields” computer program to calculate field strength associated with the proposed project (id. at 8-3).⁵⁸ The Company stated that 80 percent of the project’s current would displace the incoming electric current, and hence, 80 percent of the project power would result in a reduction in magnetic field strength on the interconnecting lines to the West Medway Substation (id. at 8-6).⁵⁹ The Company explained that when the proposed facility operates, it would displace the need for electricity traveling from the south and west toward the substation on lines 336, 323, 357, and 303 and hence those lines would have less current and lower associated magnetic fields (id. at 8-6 to 8-7; Tr. 6, at 417).

However, the Company’s modeling results show that on ROW 4 (extending out of the West Medway Substation toward the east) the 389, 325, and 344 lines would experience EMF increases above the base case of 14 percent, 13 percent, and 33 percent, respectively (Exh. SWM-2, at 8-7). The Company’s modeling results also show that there would be a small

⁵⁸ The Company stated that it obtained base case current flow information prior to the Project operating from NEPOOL’s 715 FERC filing and then inserted projected current flows with the project on line during a summer peak condition in the year 2003 (Exh. SWM-2, at 8-3).

⁵⁹ The Company acknowledged that because the proposed project would add power to the system, there would be an overall increase in magnetic fields if one were able to assess magnetic field changes across the entire NEPOOL system (Tr. 6, at 425).

magnetic field increase of three percent on ROW 7 (lines 601/602) (*id.*). The Company stated that the proposed project would result in maximum magnetic field strength at the edge of the ROW 4 of 10.9 mG with the project on line and 8.7 mG with the project off-line (an increase of 2.2 mG) (*id.* at 8-6).^{60,61} The Company noted that this field strength would be less than the 85 mG magnetic field strength found acceptable by the Siting Board in Massachusetts Electric Company et al.,¹³ DOMSC at 228-242 (1985) ("1985 MECo Decision") (*id.*). The Company emphasized the peaking facility would only operate a limited number of hours per year and thus the project would result in minimal exposure to increased magnetic fields (*id.* at 8-10).

The Company assessed a future worst-case scenario⁶² for magnetic field strength (Exh. EFSB-RR-47). Under this scenario, the maximum calculated magnetic field strength on the edge of ROW 4 (lines 389, 325, 344) was 21.7 mG with the proposed Sithe West Medway facility on, and the maximum calculated magnetic field strength on the edge of ROW 7 (lines 601 and 602) was 13.0 mG with the proposed facility on (*id.*).

The Company provided a summary of the preliminary results of the system impact study for the project that determined BECo would not need to upgrade or reconfigure the transmission lines extending out of the proposed facility and substation in order to interconnect the proposed facility (Exh. RR-EFSB-47).

⁶⁰ The Company stated that it did not quantify the magnetic field strength at ROW 7 if the project were on line (Tr. 6, at 426). The Company stated that there would be only a three percent increase over existing magnetic field levels and that this increase would be smaller than the increase at ROW 4 (*id.*).

⁶¹ The Company stated that magnetic field strength would decrease rapidly with distance from the edge of the ROW and that it expected few homes to be located directly on the edge of the ROW (Tr. 6, at 436).

⁶² The Company stated that operation of Sithe's West Medway facility would displace current that would otherwise flow toward the West Medway Substation on the 336 line from the proposed IDC Bellingham and ANP Blackstone facilities (Exh. EFSB-RR-47). The Company noted that the worst-case scenario would occur when Pilgrim is offline and West Medway supplies its load (*id.*). This would result in only six percent of the proposed project's output leading to a reduction in electric currents and the remaining 94 percent leading to a net increase of current flows of 788 amps (*id.*).

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. 1985 MECo/NEPCo Decision. Here, off-site electric and magnetic fields would remain well below the levels found acceptable in the 1985 MECo/NEPCo Decision. The proposed project would result in no change in electric fields and a maximum magnetic field increase of 2.2 mG to a level of 10.9 mG at the edge of ROW 4. Under the worst-case scenario, the maximum magnetic field at the edge of ROW 4 would be 21.7 mG, which is still well below the 85 mG level previously approved by the Siting Board. The record shows that the peaking facility would only operate a limited number of hours per year and thus the project would result in minimal exposure to increases in magnetic fields associated with output from the project.

The record also shows that while the project would increase power flow on some lines, it also would displace the need for power traveling on transmission lines from the south and west toward the West Medway Substation, and hence those lines would have less current and lower associated magnetic fields. The Company estimated that 80 percent of the project's power would result in a reduction in magnetic fields in this way.

The Company acknowledged that if one were to assess magnetic field changes across the entire NEPOOL system, the proposed project would represent an added source of power to the system and over time likely would result in an increase in magnetic fields for the system as a whole. However, due to the limited operating hours of the proposed facility, the Siting Board notes that potential impacts from magnetic fields on these more distant lines would be minimal.

Accordingly, the Siting Board finds the environmental impacts of the proposed facility would be minimized with respect to EMF impacts.⁶³

⁶³ In previous cases, the Siting Board has asked facility proponents to work with transmission line companies to accomplish reduction in magnetic field levels where cost-effective. Sithe Mystic Decision, 9 DOMSB, at 181; ANP Blackstone Decision, 8 DOMSB, at 188; Silver City Decision, 3 DOMSB at 353-354. Here, based on the preliminary results of the system impact study for the project, BECo would not need to upgrade or reconfigure the transmission lines extending out from the proposed facility or
(continued...)

K. Land Use

This section describes the land use impacts of the proposed facility, including the impacts to wildlife species and habitat, and significant cultural resources.

1. Description

Sithe has proposed to construct its facility on approximately seven acres of a 94-acre industrial site, on a location south of the existing peaking units (Exhs. SWM-1, at 1-1; SWM-2, at 3-4). The Company explained that of the 94 acres, approximately 50 acres are used by BECo for its switchyard, and six acres are occupied by the existing 180-MW peaking facility (Exh. SWM-1, at 1-1). Sithe stated that the area controlled by BECo is located primarily to the west of the proposed new facility and consists of a substantial configuration of 345 kV and 115 kV transmission lines and substations (*id.*). The Company described the area where the proposed facility would be located as primarily open fields, previously developed areas, and hedgerows, noting that construction would require limited tree removal and limited relocation of existing structures (*id.* at 1-1 and 4-30). Sithe asserted that it has designed the layout of the proposed facility to avoid impact to wetlands, and to minimize impacts to wetland buffer zones and existing mature vegetation (Exh. EFSB-RR-27-S Att. at 2). The Company indicated that it would use approximately 7.7 acres of additional land during the construction period for construction laydown and parking (Exh. SWM-1, at 4-30).

The Company asserted that the proposed use is compatible with both existing land uses on the site, and planned land uses surrounding the site (*id.* at 4-36). Sithe stated that: (1) the site has been used as a utility transmission and generating facility for almost three decades; (2) there is sufficient buffering between the site and surrounding residential uses in the form of berms, vegetation, roadways and the existing BECo facilities; and (3) the Town has designated the property for industrial use (Exhs. EFSB-L-8; EFSB-RR-27-S Att. at 2).

⁶³

(...continued)

substation, and thus there would not be an opportunity to reduce magnetic fields through changes in the transmission line design.

The Company stated that the proposed site is located within an Industrial II district⁶⁴ under Medway's zoning by-laws and noted that a public utility is a permitted use in an Industrial II district (Exh. SWM-1, at 4-36).⁶⁵ The Company stated, based on correspondence with the Medway Building Inspector, that it anticipates that the proposed facility would not require a zoning variance for the stack height, as the Town does not consider the stack a structure under the zoning by-laws and it therefore is not subject to a maximum height requirement (Exh. EFSB-RR-27; Tr. 3, at 267).⁶⁶ The Company submitted a revised site plan to Medway in January 2000 which included a 30-foot green belt located along the south and southeast boundaries of the site (Exh. EFSB-RR-27-S2 Att.).⁶⁷

Sithe stated that West Medway Station is generally bordered by roadways -- Route 109 to the north, West Street to the west and south, and Summer Street to the east (Exh. SWM-1, at 1-1, 4-33). The Company asserted that the area immediately proximate to the station is less densely developed than the station itself, and consists predominantly of residential uses and limited commercial uses (*id.* at 4-35). The zoning map indicated that the abutting areas are designated Agricultural and Residential (Exh. EFSB-L-6). The MassGIS map provided by Company shows that within both a one-half mile and one mile radius, industrial use is less than five percent of the

⁶⁴ The Siting Board notes that according to the site plan submission by Sithe, a small portion of the entire 94-acre parcel, along the northern border, is zoned Agricultural and Residential District II (Exh. EFSB-RR-27-S2 Att.).

⁶⁵ The Town of Medway zoning by-laws also allow the following uses as of right in an Industrial II district: (1) municipal, federal, or state use; (2) church or other religious institutions; (3) schools, colleges, and dormitories; (4) wholesale offices or showrooms, including indoor warehouses; and (5) general industrial uses including manufacturing, storage, processing, fabrication, etc. (Exh. EFSB-L-6-1, at 23).

⁶⁶ The Company indicated that it would prepare a submittal to the Medway Zoning Board of Appeals to confirm this interpretation (Tr. 3, at 267-268).

⁶⁷ The Medway zoning by-laws require that in an Industrial II district "a green belt not less than 30-feet wide shall be provided adjacent to residential district boundary lines . . . , [a] green belt is defined as a protective screen which shall be planted and maintained with evergreen trees or shrubs, not more than 15 feet apart or less than 6 feet high at the time of planting" (Exh. EFSB-L-6-1, at 23).

total land use (Exh. SWM-1, at 4-34).

The Company indicated that the closest residence to the existing facility is located off Burrill Street, on land adjacent to the site to the northeast, and the nearest residence to the proposed facility would be located to the east, between Summer and Old Summer Streets (*id.* at 4-34, 4-47). The Company stated that a day care center is located to the south of the site, with the day care center property boundary directly adjacent to the project access road (Exh. EFSB-L-5). Specifically, the Company explained that at the closest point, the chain link fence that surrounds the day care center and the metal guardrail associated with the access road are three feet apart (Tr. 5, at 350). The day care center consists of the center itself, a number of outside play areas, and off-street parking (*id.* at 351; Exh. EFSB-RR-27-S2 Att.). The site plans for the proposed facility indicate that the day care center property line is approximately 300 feet from the closest facility component -- the administration building/warehouse -- and approximately 20 feet away from the area to be used as construction parking (Exh. EFSB-RR-27-S2 Att.).⁶⁸

Site stated that the existing 12-inch Algonquin lateral is capable of providing expanded gas service to the proposed facility, and therefore no upgrades would be required (Exhs. EFSB-A-1-S at 2-2; EFSB-L-11). The Company indicated that all electric interconnections would be on-site, and that the close proximity to the existing switchyard and transmission lines would result in minimal impacts (Exh. SWM-1, at 1-15).

Site explained that it would use a seven-acre hay field located in the south of the site for construction laydown and parking (Exh. EFSB-L-4). The Company stated that the field would be restored, with soils tilled, seeded, and returned to the current use as a hay field (*id.*). The Company indicated that it would continue to make the field available to the farmer who presently

⁶⁸ The Siting Board notes that the site plan submitted by the Company to the Town of Medway shows the 30-foot vegetative buffer situated to the south and along a small portion to the southeast of the facility; however, due to the limited available land between the day care center fence and the construction parking, the 30-foot buffer becomes more narrow along the boundary of the day care center property near the access drive (Exh. EFSB-RR-27-S2 Att.).

uses the area, consistent with its current use (Exh. SWM-11, at 3-10). In accordance with its no-net-loss-of-farmland policy, the Massachusetts Department of Food and Agriculture ("MADFA") requested permanent protection of the south field through an agricultural preservation restriction (id. at 3-9). The Company indicated it would determine the feasibility of the request during the local and state review process (id. at 3-10; Exh. EFSB-A-1-S-3).

With respect to impacts on wildlife species and habitats at the proposed site, the Company stated that, based on initial consultation and written confirmation from the Massachusetts Natural Heritage and Endangered Species Program ("NHESP"), there are no known rare plants or animals, or exemplary communities in the vicinity of the proposed site or its interconnects (Exh. EFSB-L-3-1 Att.). In addition, the Company stated, based on confirmation from the Massachusetts Historical Commission, that the proposed facility would not have an adverse impact on historical or archeological resources (Exh. EFSB-L-9, at 6.6-3).

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 is zoned for industrial use and that the proposed facility is allowed under the Medway zoning by-laws. The Siting Board notes that the areas immediately surrounding the proposed site are predominantly residential, and are residentially/agriculturally zoned. However, construction of the proposed facility is consistent with the present use of the West Medway Station site, and operation of the proposed facility would not result in an additional incursion of industrial use beyond the existing West Medway Station property line.

As discussed in Section III.F. above, the stack heights are significantly lower than for facilities typically reviewed by the Siting Board, and there is existing vegetation on site as well as a planned vegetative buffer to the south. However, the day care center play areas are located in very close proximity to the construction parking area as well as the access road. The Siting Board notes that although the current landscape plan shows limited plantings proposed close to the access road on the west side of the day care center, it would help obscure the view and

mitigate land use impacts to continue the full 30-foot wide buffer along the border of the day care center property to the intersection with the access road. Further, solid wood fencing would provide effective screening, and could supplement the vegetative buffer thereby minimizing impacts on the play areas, such as airborne dust and debris, that may arise from the construction and operation of the proposed facility. Therefore, the Siting Board directs the Company to provide, in consultation with the owner of the day care center, effective screening such as solid wooden fencing and an expanded vegetative border, with the wooden fence to be installed prior to construction and the additional vegetation after construction has ended.

Consistent with the request by the MADFA for an agricultural preservation restriction on the south field as part of its no-net-loss-of-farmland policy,⁶⁹ the Company is discussing with the Town of Medway the possible steps to implement the request. The Siting Board directs Sithe to keep the Siting Board informed of the outcome of these discussions.

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 the construction or operation of the proposed facility.

As discussed in the Sections III. F, G and I, above, the Company has proposed or been required to provide mitigation that minimizes impacts on the surrounding residential areas. Minimization of these impacts helps establish that the proposed facility will be compatible with existing land uses. Accordingly, with the implementation of the above conditions, the Siting Board finds that the land use impacts of the proposed facility would be minimized.

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

⁶⁹ Although the no-net-loss-of-farmland policy of the MADFA was raised, the policy applies to state-owned land and projects using state funds and federal grants. See MADFA Agricultural Land Mitigation Policy, October 5, 1999 (Draft). It appears that no state funds are to be used in the proposed project (Exh. SWM-11, at 3-10).

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., health effects of noise). Cumulative health 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, discharges to ground and surface waters, the handling and disposal of hazardous materials, EMF, and noise. In addition, this section describes any existing health-based regulatory programs governing these impacts and considers the impacts of the proposed facility in light of such programs.

1. Baseline Health Conditions

The Company provided information from a report published by the Massachusetts Department of Public Health ("MADPH") entitled Cancer Incidence in Massachusetts 1987-1994 (Exh. EFSB-H-2). The MADPH report compares the incidence rate of 22 types of cancer for each of the 351 Massachusetts cities and towns against state-wide average incidence rates, with separate comparisons for males, females, and total population, and noting statistically significant deviations (*id.*). Comparing cancer incidence in Medway to state-wide averages, the Company stated that the MADPH report found elevated incidence rates for cancers of the colon and rectum in males (statistically significant at $p \leq 0.01$),⁷⁰ stomach cancer in males (statistically significant at

⁷⁰ The p-value is the probability that the observed difference or a greater difference between the observed number of cases and the expected number of cases would be obtained if, actually, the town-wide risk were equal to the state-wide risk. For " $p \leq 0.05$," the probability is at most one in twenty. For " $p \leq 0.01$," the probability is at most one in a hundred. The smaller the p-value is, the more evidence there is that the observed disparity is not due to chance alone.

$p \leq 0.05$), bladder cancer in males (statistically significant at $p \leq 0.05$), and “total” cancer in males (statistically significant at $p \leq 0.05$) (*id.*). The Company also noted that, as indicated in the MADPH report, a finding of statistical significance does not necessarily indicate biological or public health significance (*id.*).

In addition, the Company provided data on asthma hospitalization rates in Massachusetts from the Massachusetts Division of Health Care Finance and Policy that show hospitalization rates for asthma in Medway were below the statewide average in 1997 (Exh. EFSB-H-8).

2. Criteria Pollutants

As discussed in Section III.B.1, above, EPA and MADEP regulate the emissions of six criteria pollutants under NAAQS: SO₂, PM₁₀, NO₂, CO, ozone, and lead (Exh. EFSB-A-2-S Att. at 1-2). The Company stated that the NAAQS include standards which are intended to protect public health, referred to as primary standards (Exh. SWM-2, at 6-3). The Company indicated that EPA and MADEP established SILs as ambient concentration criteria low enough to allow a conclusion that emissions below SILs would not significantly affect modeled air quality, without a detailed evaluation of compliance with the NAAQS (Exh. EFSB-A-2-S Att. at 1-5). The Company reported that its dispersion modeling indicated that the proposed facility would produce concentrations below SILs (*id.* at 5-10).

The Company indicated that regional air quality measurements, from Worcester, Sudbury, Waltham, and Easton, were below NAAQS concentrations in 1995, 1996, and 1997 for all criteria pollutants each year except 1995, when the ozone level exceeded NAAQS at Easton (*id.* at 5-8).⁷¹ To assess air impacts of the proposed facility and other existing sources of emissions, the Company conducted cumulative air modeling of the criteria pollutants (*id.* at 5-12

⁷¹ The Company provided air quality data from MADEP monitoring stations in Worcester, Sudbury, Waltham, and Easton that indicate that (1) the maximum concentration of ozone observed at Easton in 1995 was 104 percent of the one-hour NAAQS; (2) concentrations of CO (at Worcester in 1996) were 59 percent of the eight-hour NAAQS and less than 50 percent of the annual standard; (3) concentrations of NO₂, SO₂, and PM₁₀ (at Worcester, Sudbury, and/or Waltham) were 50 percent or less of the respective standards (Exh. EFSB-A-2-S Att. at 5-7 to 5-8).

to 5-16). The maximum cumulative concentrations presented for the locations of maximum impact for NO₂, SO₂, PM₁₀, and CO are between 30 and 65 percent of the NAAQS (*id.* at 5-16). In addition, the modeling shows that the proposed Medway facility would contribute no more than one quarter of one percent (≤ 0.25 percent) of the cumulative pollutant concentration at any of the points of maximum cumulative impact (*id.*).⁷² The Company asserted that, insofar as the predicted sum of the facility impact and the ambient concentration for any particular chemical is below the applicable NAAQS, no health effects would be expected (Exh. EFSB-H-1).

The record indicates that EPA has set in place ambient air quality standards, called NAAQS, for six criteria pollutants – SO₂, PM₁₀, NO₂, CO, ozone, 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.⁷³ Sithe Mystic Decision, 9 DOMSB, at 192. 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. *Id.*; Brockton Decision, EFSB 99-1, at 88.

The record also shows that MADEP has set in place standards for reviewing the compliance of proposed new sources of criteria pollutants, such as the proposed facility, with NAAQS. New sources may not cause or contribute significantly to a violation of NAAQS. Sithe Mystic Decision, 9 DOMSB, at 192. In addition, as discussed in Section III.B above, MADEP requires major new sources to meet BACT (when the area is in attainment or is unclassified for a particular pollutant), or LAER (when the area is in non-compliance for a particular pollutant), and to obtain offsets for 100 percent or more of emissions when the area is in non-compliance for a particular pollutant. MADEP's new source program balances environmental impacts and costs when an area is in compliance with NAAQS, and requires stronger measures, including emissions offsets, when an area is in non-attainment. *Id.*; Brockton

⁷² Percentage is based on Siting Board staff calculation from cited exhibit.

⁷³ The record does not identify specific health effects of criteria pollutants or the specific health concerns which led to establishment of the NAAQS.

Decision, EFSB 99-1, at 88. 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. Sithe Mystic Decision, 9 DOMSB, at 192; Brockton Decision, EFSB 99-1, at 88. The Siting Board therefore gives great weight to compliance with MADEP air quality programs as an indicator of whether the Company has minimized the health impacts of the proposed facility. Sithe Mystic Decision, 9 DOMSB, at 192; Brockton Decision, EFSB 99-1, at 89.

In this case, the Company's air analysis showed that the Medway area in Norfolk County was unclassified or in attainment for SO₂, PM₁₀, NO₂, CO, and lead, but in serious non-attainment for ozone. In addition, the record indicates that regional background levels are less than 60 percent of the ambient standards for all criteria pollutants and averaging periods, except ozone, which was not in compliance with the standard. Thus, the Medway area levels of all criteria pollutants except ozone are well within the standards set for purposes of protecting public health. Also, the Company stated that the proposed facility's emissions of all criteria pollutants would be below the SILs. The Siting Board concludes that there is no evidence suggesting that the proposed facility's emissions of SO₂, PM₁₀, NO₂, CO, and lead would have a discernable impact on public health.

With respect to health impacts of multiple power plants in the Medway area, the cumulative air modeling of the proposed facility together with existing Sithe West Medway Station sources, two existing facilities in Bellingham, two in Milford, one in Framingham, plus the proposed IDC Bellingham, ANP Bellingham, and ANP Blackstone facilities, shows that the cumulative concentrations modeled for each criteria pollutant were well below NAAQS and that the proposed facility's contribution to the cumulative impact at the locations of the greatest modeled pollutant concentration would be well below one percent for SO₂, PM₁₀, NO₂, and CO. The Company has committed to meeting BACT or LAER, as applicable, and to obtaining offsets or allowances for its NO_x and SO₂ emissions as required. Based on the stated compliance with MADEP 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

The Company indicated that, for air toxics, MADEP has developed ambient air quality criteria which are intended to protect public health (Exh. EFSB-H-3). These criteria are presented as 24-hour TELs and annual average AALs (id.). The Company stated that these ambient air quality criteria were developed to ensure that contributions from any single emissions source would have an insignificant impact on public health (id.). As discussed in more detail in Section III.B, above, the Company reported that its dispersion modeling indicated that the proposed facility would not produce concentrations that exceed AALs or TELs (Exh. EFSB-A-2-S Att. at 5-9). In addition, the Company referenced a 1998 report by EPA entitled "Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units – Final Report to Congress" ("HAPs Study"), which assessed emissions from 684 utility plants, including coal-fired, oil-fired, and natural gas-fired generators (Exh. EFSB-H-1). The Company stated that the HAPs Study concluded that the cancer risks for all gas-fired plants were well below one chance in one million, and that no noncancer hazards were identified (id.).

The record indicates in the general case that air emissions from gas-fired power plants do not pose substantial health risks and in this specific case that the proposed facility would not exceed applicable ambient limits for air toxics. Based on EPA's findings, the Siting Board concludes that, in the absence of project-specific evidence to the contrary, the emissions of non-criteria pollutants from a gas-fired generating facility should be considered to have no discernable public health impacts. Based on the stated compliance with MADEP AALs and TELs, the Siting Board finds that the cumulative health impacts of non-criteria pollutant emissions from the proposed facility would be minimized.

4. Discharges to Ground and Surface Waters

The Company stated that impacts related to water would be limited to indirect effects associated with stormwater runoff (Exh. EFSB-H-3).

As stated in Section III.C, above, the Company indicated that once the facility is constructed, there would be stormwater discharges from non-process-related areas (id.). The Company stated that the stormwater runoff would comply with MADEP stormwater

management guidelines and National Pollutant Discharge Elimination System (“NPDES”) Construction General Permit Requirements (id.). The record does not identify any potential for humans to be exposed to any contaminants that might be discharged from the proposed facility to ground and surface waters. As stated in Section III.C, above, the Company indicated that the site is not located on a high yield aquifer and no wells were located in the immediate area (Exh. SWM-1, at 4-21; Tr. 3, at 225).

As stated in Section III.C, above, the facility would generate approximately 450 gpd of wastewater during normal operations (Exh. SWM-1, at 1-14). Of this amount, 150 gpd would be sanitary waste that would continue to be discharged to an on-site septic system (id.). The remaining 300 gpd, and also up to 7,350 gpd during periodic plant maintenance overhauls, would be discharged to a wastewater collection tank, with subsequent off-site disposal at an approved disposal facility facility (Exhs. SWM-1, at 1-13 and 4-25; SWM-2, at 10-2; EFSB-WR-7; and Tr. 2, at 235) (see Section III.C).

In Section III.C, above, the Siting Board found that the environmental impacts of the proposed facility would be minimized with respect to water resources. Consequently, the Siting Board finds that the health risks of the proposed facility, related to discharges to ground and surface waters, would be minimized.

5. Handling and Disposal of Hazardous Materials

As discussed in Section III.C, above, the Company has indicated that motor oil, waste oil, various solvents, insecticides, aerosol cans, paint, gasoline, diesel fuel, and a drying agent would be used at the site during construction and that oxygen, carbon dioxide, hydrogen, propane, acetylene, turbine cleaning solution, and various oils contained within operating equipment would be used during operation (Exhs. SWM-1, at 1-17 to 1-18; EFSB-HZ-1). The Company indicated that refueling of construction equipment may occur on site (Exh. EFSB-RR-24).

In Sections III.E and III.H, above, the Siting Board reviewed the Company’s plans for minimizing and handling hazardous materials. As described in Section III.C, above, the Company stated it would direct stormwater flow through an oil/water separator, with subsequent off-site disposal of the oil (Exh. SWM-1, at 1-14). The Company indicated that only minor

modifications to the SPCC Plan for the existing facility would be needed (Exh. EFSB-SF-1), but that controlling spillage during construction would be the responsibility of the EPC contractor (Tr. 3, at 227). Further, the Company stated that chemicals would be stored inside enclosures or buildings in appropriate tanks or vessels, and that curbs and drains would be installed in all chemical treatment and storage areas (Exh. SWM-1, at 4-24).

In Section III.H, above, the Siting Board found that the Company has demonstrated that it has developed adequate procedures for the handling, storage, and disposal of hazardous materials during construction and operation of the proposed facility. Consequently, the Siting Board finds that the health risks of the proposed facility related to the handling and disposal of hazardous materials would be minimized.

6. EMF

As discussed in Section III.J, above, the Company predicted that magnetic field strengths would increase along two of the ROWs (ROW 4 and ROW 7) connecting to the West Medway Substation, with the higher magnetic field strength along ROW 4. The Company predicted that magnetic field strengths would decrease along the other ROWs; and that electric field strengths along the ROWs would not change. The Company estimated that, when the facility is in operation, worst-case magnetic field strengths along the edge of the ROW 4 could increase to 21.7 mG.

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. 1985 MECo/NECo Decision, at 240. In this case, the Company summarized some existing guidance regarding exposure to EMF, noting that there are no regulatory standards for such exposure (Exh. EFSB-H-3-S). The Company stated that the International Commission on Non-Ionizing Radiation Protection recommends that occupational exposure be limited to magnetic fields below 4,200 mG for electrical workers and 830 mG for the general public (id.).

The Company asserted that available laboratory and human data have not demonstrated what, if any, magnitudes of power line electric and magnetic fields cause human health effects (*id.*). In support of this assertion, the Company provided a 1997 report by the National Research Council, 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, animal studies, and epidemiological studies (Exh. EFSB-H-3(d)). 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). With respect to *in vitro* studies, the report finds that exposure to 50-60 Hertz (“Hz”) fields induces changes in cultured cells only at field strengths 1,000 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 when animals are exposed to fields that are considerably stronger than fields encountered in a residential environment; however, there was no demonstration of adverse neurological impacts (*id.*).

The Company also provided journal articles reporting on three recent case-control studies⁷⁴ that were conducted to assess the relationship between the risk of childhood leukemia and/or all cancers and residential exposure to magnetic and/or electric fields (Exhs. EFSB-H-3(a) Att.; EFSB-H-3(b) Att.; EFSB-H-3(c) Att.). Two separate articles describing Ontario study

⁷⁴ The articles provided were: (1) Green, L.M., A.B. Miller, *et al.*, 1999, “A case-control study of childhood leukemia in Southern Ontario, Canada, and exposure to magnetic fields in residences;” (2) Green, L.M., A.B. Miller, *et al.*, 1999, “Childhood leukemia and personal monitoring of residential exposures to electric and magnetic fields in Ontario, Canada;” (3) Linet, M.S., E.E. Hatch, *et al.*, 1997, “Residential exposure to magnetic fields and acute lymphoblastic leukemia in children;” and (4) UK Childhood Cancer Study Investigators, 1999, “Exposure to power-frequency magnetic fields and the risk of childhood cancer.”

findings appear to suggest a relationship between leukemia risk and measured EMF but not between leukemia risk and proximity to power lines with a high current configuration (Exh. EFSB-H-3(a) Att.). The 1997 study conducted in several American states found “little evidence” of a relationship between acute lymphoblastic leukemia and either magnetic field levels or wire codes (Exh. EFSB-H-3(b) Att.). The British study of a large number of cases and controls found no evidence of a relationship between either childhood leukemia or other childhood cancer and power-frequency magnetic fields (Exh. EFSB-H-3(c) Att.).

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 clear 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 any increases or decreases in EMF levels anticipated as a result of the proposed facility would pose a public health concern. In Section III.J, above, the Siting Board found that the EMF impacts of the proposed facility would be minimized. Accordingly, the Siting Board finds that the health effects, if any, of magnetic fields associated with the proposed facility would be minimized.

7. Noise

As discussed in Section III.G, above, the proposed facility would produce noise that would be noticeable in some surrounding areas during facility construction, and may also produce audible noise during operation of the facility. The record shows that as a result of its noise mitigation efforts, the combined noise levels from both the proposed and modified existing facilities would be less than the existing facility operating in its current condition.

The Company indicated that EPA has identified an L_{dn} sound level of 55 dBA as a level that would “protect the public health and welfare with an adequate margin of safety” at residential locations (Exh. SWM-1, at 4-55). The Company stated that the expected L_{dn} sound level from both power plants, combined, would be 51 dBA at the point along the property line

where the sound impact would be greatest (*id.*).⁷⁵ As discussed in Section III.G, above, the project also conforms to MADEP requirements that limit the increase above background sound levels in residential areas.

The Company's witness, Peter Valberg, PhD, stated that noise can disturb sleep or other physiological functions, but there is high variability in the characteristics of noise that are disturbing to different people, so there are no real health guidelines for such disturbances (Tr. 4, at 289). Dr. Valberg also noted that it would be extremely unlikely for these peaking facilities to operate after about 10 p.m., due to patterns in electricity demand (*id.*, at 338).

The record indicates that noise levels from the proposed facility would be less than levels identified by EPA as protective of public health and welfare.⁷⁶ In addition, the record indicates that the facility is not expected to operate frequently at night, the time period when people tend to be more disturbed by noise and when sleep disruption would be most likely. The record shows that the Company has committed to decreasing the overall noise level by limiting noise from the proposed facility and reducing noise from the existing facility. Consequently, the Siting Board finds that health impacts, if any, of noise from the proposed facility would be minimized.

8. Summary

The record includes information about the health status of the population of Medway. The Siting Board has noted that the incidence of some specific types of cancer was statistically elevated, compared to statewide averages, within a recent eight-year period. The Siting Board has also noted that hospitalization rates for asthma were below statewide averages in 1997 in

⁷⁵ The calculated 51 dBA sound level at the property line would occur if both the new and the existing facilities operated for a 24-hour period, and as a day-night sound level it incorporates a 10 dBA penalty to sounds occurring at night (Exh. SWM-1, at 4-44 and 4-55). The calculated 51 dBA sound level is a conservative estimate because the facilities are expected to operate considerably less than 24 hours a day.

⁷⁶ The Siting Board notes that measured ambient sound levels are within or close to the 55 dBA level at five of six monitoring locations (Exh. EFSB-N-1). The Siting Board notes that the higher sound level at the sixth monitoring location may represent a situation wherein typical noise levels from traffic disrupt conversation outdoors.

Medway. In the subsections above, the Siting Board has reviewed the proposed facility's potential for effects on human health resulting from emissions of criteria pollutants, emissions of air toxics, emissions to ground and surface waters, handling and disposal of hazardous materials, electric and magnetic frequencies, and noise. The Siting Board has found that: (1) the cumulative health impacts of criteria pollutant emissions from the proposed facility would be minimized; (2) the cumulative health impacts of non-criteria pollutant emissions from the proposed facility would be minimized; (3) the health risks of the proposed facility, related to discharges to ground and surface waters, would be minimized; (4) the health risks of the proposed facility related to the handling and disposal of hazardous materials would be minimized; (5) the health effects, if any, of magnetic fields associated with the proposed facility would be minimized; and (6) the health effects, if any, of noise from the proposed facility would be minimized.

The record provides no indication that health effects from the different types of potential exposures, however minimal, would combine to create an overall effect greater than the sum of the minimized effects; and the record provides no indication of an interaction of potential facility-related health effects with documented pre-existing health conditions in Medway. Consequently, the Siting Board finds that there is no evidence that the proposed facility would exacerbate existing public health problems in Medway. Accordingly, based on its review of the record, the Siting Board finds that the cumulative health impacts of the proposed facility would be minimized.

M. Conclusions

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

In Section II, the Siting Board has found that Sithe accurately described its site selection process.

In Section III.B, the Siting Board has found that, with the implementation of CO₂ mitigation, the air quality of the proposed facility would be minimized.

In Section III.C, the Siting Board has found that the water supply impacts and water resource impacts of the proposed facility would be minimized.

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

In Section III.E, the Siting Board has found that the solid waste impacts of the proposed facility would be minimized.

In Section III.F, the Siting Board has found that, with the implementation of the conditions directing Sithe 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 facility within one-half mile of the proposed facility, as requested by residents or appropriate municipal officials, the visual impacts of the proposed facility would be minimized.

In Section III.G, the Siting Board has found that the noise impacts of the proposed facility would be minimized, consistent with minimizing cost.

In Section III.H, the Siting Board has found that, with the implementation of the conditions directing Sithe to work with the Town of Medway Fire Department and appropriate officials to determine if additional training of Medway or other fire personnel is necessary and, if so, to provide funding in order to obtain such training, and to complete the construction section of its emergency response plan, the safety impacts of the proposed facility would be minimized.

In Section III.I, the Siting Board has found that, with the implementation of the conditions directing Sithe to coordinate with the appropriate authorities to place a uniformed traffic officer at the entrance to the property on Summer Street during the pouring of concrete and as needed; to install, prior to construction, 42-inch high concrete Jersey barriers along the south shoulder of the access road; and to include language in its contract with its EPC contractor specifying a truck delivery route and restricting the EPC contractor from using West Street for deliveries of equipment and materials, the traffic impacts of the proposed facility would be minimized.

In Section III.J, the Siting Board has found that the EMF impacts of the proposed facility would be minimized.

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

conditions directing Sithe to provide effective screening and fencing, the land use impacts of the proposed facility would be minimized.

In Section III.L, the Siting Board has found that: (1) the cumulative health impacts of criteria pollutant emissions from the proposed facility would be minimized; (2) the cumulative health impacts of non-criteria pollutant emissions from the proposed facility would be minimized; (3) the health risks of the proposed facility, related to discharges to ground and surface waters, would be minimized; (4) the health risks of the proposed facility related to the handling and disposal of hazardous materials would be minimized; (5) the health effects, if any, of magnetic fields associated with the proposed facility would be minimized, and (6) the health effects, if any, of noise from the proposed facility would be minimized.

Accordingly, the Siting Board finds that, with the implementation of the above-listed conditions, Sithe'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. COMPLIANCE WITH REQUIREMENTS UNDER THE TECHNOLOGY PERFORMANCE STANDARDS

A. Standard of Review

G. L. c. 164, § 69J¼ requires the Siting Board to promulgate technology performance standards for generating facility emissions. These technology performance standards are to be used solely to determine whether a petition to construct a generating facility shall include information regarding fossil fuel generating technologies other than the technology proposed by the petitioner. G. L. c. 164, § 69J¼. If the expected emissions of the facility do not meet the technology performance standards in effect at the time of filing, the petitioner must include in his petition a description of the environmental impacts, costs, and reliability of other fossil fuel generating technologies, and an explanation of why the proposed technology was chosen. Id.

The Siting Board must then determine whether the construction of the proposed generating facility on balance contributes to a reliable, low-cost, diverse regional energy supply with minimal environmental impacts. Id.⁷⁷

In Section III.B, above, the Siting Board determined that expected emissions from the proposed generating facility exceed the technology performance standard as set forth in 980 CMR, § 12.00 at the time of filing, and that the proposed generating facility therefore does not meet the Siting Board's technology performance standard. Therefore, in this section the Siting Board reviews the environmental impacts, costs, and reliability of the proposed generating facility and of other fossil fuel generating technologies in order to determine whether the construction of the proposed generating facility on balance contributes to a reliable, low-cost, diverse regional energy supply with minimal environmental impacts.

B. Description

The Company provided quantitative information on the cost, reliability, diversity, and environmental impact of its proposed gas-fueled combustion turbine technology as well as four other alternative peaking technologies including: oil-fueled reciprocating technology; oil-fueled combustion turbine technology; oil-fueled jet turbine technology; and gas-fueled jet turbine technology (Exh. SWM-1, at 3-17). In addition, the Company provided a general discussion of the costs and environmental impacts of a gas peaking unit versus a combined-cycle unit (id. at 2-14, 3-5, 3-6, 3-13, and 3-17). These data are provided on the following page.

⁷⁷ In fulfilling its statutory mandate under G. L. c. 164, §69J, the Siting Board required a petitioner to demonstrate that its proposed project was superior to alternate approaches in the ability to address a previously identified need in terms of cost, environmental impact, and reliability. We note that the test set forth in G. L. c. 164, § 69J¼ differs from the test applied under § 69J in three significant ways: it does not reference a previously identified need; it encompasses the issue of diversity as well as the issues of cost, environmental impacts, and reliability; and it does not require a finding that the proposed generating technology is superior to other generating technologies.

1. Reliability

The Company asserted that the proposed project would improve the reliability of electricity in New England by providing electricity to meet peak loads and address system contingencies (Exh. SWM-1, at 3-11). The Company stated that in New England, peak load occurs during the approximately five percent of the year when load varies between 18,500 MW and 22,000 MW, and noted that New England requires a substantial amount of capacity resources (about 4,000 MW) above and beyond the capacity called upon to serve load at lower non-peak levels of demand (id.). In comparison, New England has only 1,433 MW of simple-cycle peaking capacity and the majority of this capacity is between 20 and 30 years old (Exhs. EFSB-AT-15; SWM-1 at 3-8). The Company stated that peaking facilities help improve reliability through their ability to start up quickly and address peak electricity demand or system contingencies (Exh. SWM-1, at 3-13 to 3-14). The Company noted that combined-cycle technology is not an appropriate technology to serve peak loads, because the number of hours during which a facility can earn returns in the high peak energy market is insufficient to justify the higher capital costs of a combined-cycle facility (id.).

The Company stated that the location of the proposed facility would help ensure that the peaking unit improves system reliability (id.). Specifically, the Company stated that the facility would be located close to New England's load center⁷⁸ and at a juncture of eight different transmission line circuits on five different ROWs (id. at 3-13 to 3-14, 4-71). Consequently, the proposed peaking facility would be able to quickly handle increases in demand for electricity and or address contingencies in a variety of important subregions in the transmission grid (Exh. SWM-1, at 3-11; Tr. 2, at 90).

Finally, the Company stated that its proposed combustion turbine technology has a track record of reliability that is superior or similar to other peaking technologies and has the lowest forced outage rate of any peaking technology (Exh. SWM-1, at 3-18). Refer to Table 3 below for a comparison of forced outages.

⁷⁸ The Company noted that only 35 percent of the peaking facilities in New England are located in Eastern Massachusetts (Exh. SWM-1, at 3-11).

2. Cost

The Company stated that its proposed use of gas fired combustion turbines was more cost effective than other fossil-fired peaking alternatives, including jet turbine technology, reciprocating technology, and the oil-fired combustion turbines (Exh. SWM-1, at 3-16 to 3-17). To support this assertion, the Company provided the following cost data:

Table 3

Type of Peaking Technology	Fuel Type	Capital Cost (\$/kW,net)	Fixed O&M (\$/kW,yr)	Variable O &M (\$/kWhr)	Total Levelized Cost (\$/kWhr)	Effective Forced Outage Rate
Reciprocating Technology	Fuel Oil #2	780	14	0.003	0.305	3%
Combustion Turbine Technology	Fuel Oil #2	270	6	0.007	0.146	1%
	Natural Gas	270	5	0.006	0.123	1%
Jet Turbine Technology	Fuel Oil #2	610	12	0.009	0.259	2%
	Natural Gas	610	10	0.007	0.235	2%

Source: (Exh. SWM-1, at 3-17)

The Company noted that peaking facilities serve a much different function from combined-cycle facilities and hence have very different costs (*id.* at 3-5). The Company stated that as a result of the proposed peaking facility's limited operation, its capital cost must be lower than that of a combined-cycle facility, but that its heat rate (*i.e.*, fuel and operating costs) is higher than that of a combined-cycle facility (*id.* at 3-5).

3. Diversity

The Company stated that 25 percent of New England's existing peaking capacity is dual-fueled, with the capability to run on both oil and gas, and that the remaining 75 percent of the peaking capacity in New England consists either of oil-only facilities, or pumped storage capacity (Exh. SWM-1, at 3-18). The Company stated that because the proposed facility would

run only on natural gas, it would serve to diversify the fuel supply among New England's peaking units (*id.*). The Company noted that its proposed use of natural gas also would serve to diversify fuel supply if one were to take into account the fuel mix of New England's base load facilities (Exh. EFSB-AT-7). In addition, the Company stated that it has a diverse choice of gas providers as it is located close to both Algonquin and Tennessee gas pipelines, and that this would help the Company minimize the potential for fuel shortages in the winter months (*id.*).

4. Environmental Impacts

The Company stated that the proposed facility has a number of environmental advantages over a combined-cycle facility of similar capacity including: (1) a smaller development footprint⁷⁹; (2) a shorter construction period; (3) a shorter stack height; (4) limited operating hours; and (5) significantly lower water requirements (Exh. SWM-1 at 3-13). With respect to air impacts, the Company stated that while the facility does not meet the TPS, the emissions from its proposed gas-fired simple-cycle units are low when compared with those of other peaking technologies. In support of this statement, the Company provided the following air emissions data:

⁷⁹ The Company provided data showing that 540 MW of gas-fired combustion turbine technology requires a footprint of 3.5 acres, while similar generating capacity using reciprocating technology and jet turbine technology would require 6 and 9 acres, respectively (Exh. SWM-1, at 3-17). In addition, the Company noted that a peaking facility would have a small development footprint compared to a combined-cycle base load facility (Exh. SWM-1, at 2-14).

Table 4

Type of Peaking Technology	SO ₂ Lb/MMBTU	NOx ppmvd @ 15% O ₂	Full-Load Net Heat Rate ISO (Btu/kWh, LHV)
Reciprocating Technology Oil	0.052	900	8,095
Combustion Turbine Technology Gas	0.0031	9	9,360
Oil	0.052	42	9,630
Jet Turbine Technology Gas	0.0031	25	8,790
Oil	0.052	50	8,850

Source: (Exh. SWM-1, at 3-17).

The Company emphasized that even though the proposed facility does not meet the TPS emission standard, the facility would operate only a limited number of hours per year and that its total annual emissions therefore would be much lower than those of other proposed generating units reviewed by the Siting Board (Exh. SWM-1, at 3-6).

C. Analysis

Sithe has proposed construction of a natural gas fired peaking unit with per-megawatt emissions that exceed the levels set in 980 CMR, § 12.00. The Siting Board notes that the exceedances result primarily from the Company's decision to propose a simple-cycle peaking unit, rather than a more efficient combined-cycle plant. Therefore, as an initial matter, the Siting Board considers the desirability of additional peaking capacity in the New England region.

The Siting Board recognizes the value of peaking capacity generally, and its contribution to the reliability and cost-effectiveness of New England's electric system. The record shows that peaking facilities provide capacity with fast start-up times and an ability to handle system contingencies and peak electricity needs at a capital cost that is low enough to justify their limited use. The record also shows that peaking facilities generally have higher emissions of criteria pollutants than combined-cycle facilities on a per MWH basis. However, the Company

argued that this disadvantage is offset by the fact that peaking facilities operate only a limited number of hours per year.

The record shows that the majority of New England's fossil fuel peaking capacity is 20 to 30 years old, runs on oil (75 percent), and has a high heat rate (low thermal efficiency). Here, the Company has shown that the addition of new gas-fired peaking capacity would in general provide energy more efficiently, at a lower cost, with less air pollution and with a better fuel diversity than continued reliance on the existing fleet of oil-fired peaking facilities.

The record shows also that the Company's decision to use a gas-fired simple-cycle turbine technology provides significant advantages over other available peaking technologies. Specifically, the record shows that the total levelized cost (inclusive of fixed, capital, and operating costs) and the forced outage rates of the Company's proposed technology are one-half to one-third of the costs and forced outage rates of other available technologies, including reciprocating and jet turbine technologies. In addition, the Company's proposed technology has significantly lower per MW emissions of SO₂ and NO_x than the reciprocating technology, and lower NO_x emissions than the jet turbine technology.

In addition, there are a number of local advantages associated with the Company's decision to use the proposed peaking technology rather than combined-cycle technology. The proposed facility's small development footprint, short stack height, and short construction period help to minimize the local environmental impacts of the project. More important, the Company's proposed use of peaking technology at the site is appropriate given Medway's limited supply of municipal water. The proposed technology has annual water requirements that are approximately one percent of those of similar size combined-cycle facilities recently approved by the Siting Board. ANP Blackstone Decision, 8 DOMSB, at 116; ANP Bellingham Decision, 7 DOMSB, at 106. The Siting Board notes that the limited water supply of Medway likely would have prohibited the installation of a combined-cycle facility at the site.

Finally, the Siting Board notes that the West Medway Station is a particularly appropriate location for a peaking facility, in that it has access to eight different transmission line circuits on five different ROWs serving a number of important load centers. In addition, the proposed facility location, close to both the Algonquin and Tennessee gas pipelines, would improve the

facility's reliability in terms of obtaining natural gas during times of fuel shortages, which may coincide with peak load periods.

The Siting Board notes that it does not intend to suggest that a significant amount of the region's electricity should be provided by simple-cycle or similar technologies. The significant cost and environmental benefits of using the more efficient combined-cycle technology to meet baseload demands generally would outweigh the local benefits associated with smaller scale single-cycle units. However, the addition of limited clean peaking capacity is important in order to ensure the reliability of New England's electric system. The proposed facility is sited and designed in a manner that allows it to contribute to regional reliability at a low cost with minimal environmental impacts. Consequently, the Siting Board finds that the construction of the proposed facility on balance contributes to a reliable, low-cost, diverse, regional energy supply with minimal environmental impacts.

V. CONSISTENCY WITH THE POLICIES OF THE COMMONWEALTH

A. Standard of Review

G. L. c. 164, § 69J^{1/4} 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 riverfront 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.⁸⁰

B. Analysis

In Sections II and III, above, the Siting Board has reviewed the process by which Sithe sited and designed the proposed facility, 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 facility. These are briefly summarized below.

As discussed in Section III.B, above, the MADEP extensively regulates emissions of criteria and non-criteria pollutants from new sources such as the proposed facility. Sithe has demonstrated that it expects to comply with all MADEP standards.

As discussed in Section III.C, above, Sithe has demonstrated that it will comply with state and local requirements related to wastewater treatment and stormwater.

As discussed in Section III.D, above, Sithe has demonstrated that the wetlands impacts of the proposed facility would be minimized. In addition, Sithe has received an Order of Conditions for the proposed project from the Medway Conservation Commission, as required by the Massachusetts Wetlands Protection Act.

As discussed in Section III.G, above, Sithe has demonstrated that it will limit L₉₀ noise increases at the nearest residence to 10.0 dBA, consistent with MADEP Policy 90-001.

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.

Consequently, based on its review above, the Siting Board finds that plans for

⁸⁰ 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 IV, 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, §69J¼ was enacted.

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.

VI. 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 69J¼ 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 used is accurate and that the site selection process resulted in the selection of a site that contributes to the minimization of the environmental impacts of the proposed facility and the costs of mitigating, controlling, and reducing such impacts.

In Section III, above, the Siting Board has found that with the implementation of listed conditions relative to air quality, land use, visual, safety, and traffic impacts, 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 construction of the proposed facility on balance contributes to a reliable, low-cost, diverse, regional energy supply with minimal environmental impacts.

In Section V, 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.H, III.I, and III.K, 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 West Medway Development LLC to construct a 540 MW generating facility in Medway, Massachusetts, subject to the following conditions:

(A) In order to minimize/mitigate CO₂ emissions, the Siting Board directs the Company, prior to or within the first year of the proposed facility's operation, to provide it with evidence of agreements of arrangements relating to the proposed AQIP emissions reductions that establish that Sithe 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 CO₂ offsets for the proposed facility are based. Alternatively, consistent with the precedent established in Dighton Power Associates, Sithe may elect to offset one percent of its twenty-year CO₂ emissions through a monetary contribution to one or more cost-effective CO₂ offset programs to be selected in consultation with Siting Board staff. This contribution may be made as five annual installments during the first five years of facility operation totaling \$238,911 or as a single first-year contribution of \$194,461.

(B) In order to minimize land use impacts, the Siting Board directs the Company to provide, in consultation with the owner of the day care center, effective screening such as solid wooden fencing and an expanded vegetative border, with the wooden fence to be installed prior to construction and the additional vegetation after construction has ended.

(C) In order to minimize visual impacts, 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 facility at properties within one-half mile of the proposed facility, as requested by residents or appropriate municipal officials. In implementing this off-site mitigation, 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

appropriate municipal officials; (2) shall provide written notice of this requirement to appropriate municipal officials and to all potentially affected property owners, 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.

(D) In order to keep the Siting Board and the Town of Medway informed of the noise impacts, the Siting Board directs the Company to provide the following information to the Town of Medway Board of Selectmen, Town of Medway Board of Health, and the Siting Board, for the first three years of operation, with the first such submittal to be provided after the end of the first full operating year: (1) the total number of hours the proposed facility operated that year; (2) the number of hours that year the proposed facility operated past 6 p.m., 7 p.m., 8 p.m., 9 p.m., and 10 p.m.; (3) the number of hours per year the existing facility operated before and after 6 p.m.; and (4) the number of hours per year the existing and proposed facility operated at the same time, before and after 6 p.m.

(E) In order to minimize safety impacts, the Siting Board directs the Company to complete the construction section of its emergency response plan and to file it with the Town of Medway before construction begins.

(F) In order to minimize safety impacts, the Siting Board directs the Company to consult with the Medway volunteer fire department and appropriate officials, to determine if additional training of Medway or other fire personnel is necessary to ensure that adequately trained personnel are available to respond to reasonable contingencies, and if so, to provide funding for such training.


(G) In order to minimize traffic impacts, the Siting Board directs the Company to include a traffic delivery route requirement in its contract with its EPC contractor to use Route 109 and to restrict the contractor from using West Street for deliveries of materials and equipment (with the exception of deliveries of heavy equipment such as generators and step-up transformers).

(H) In order to minimize traffic impacts, the Siting Board directs the Company to install, prior to construction, 42-inch high concrete Jersey barriers along the south shoulder of the access road at sufficient length to prevent a vehicle traveling on the access road from crashing into the playground area located on the north and west sides of the day care center.

(I) In order to minimize traffic impacts, the Siting Board directs the Company to coordinate with the appropriate authorities to place a uniformed traffic officer at the entrance to the property on Summer Street during the pouring of concrete as needed.

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 this decision.

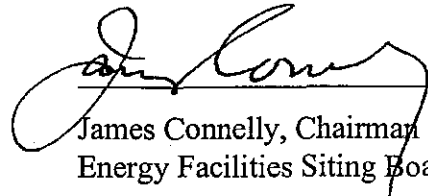
In addition, the Siting Board notes that the findings in this Decision are based upon the record in this case. A project proponent has an absolute obligation to construct and operate its facility in conformance with all aspects of its proposal as presented to the Siting Board. Therefore, the Siting Board 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.



Denise L. Desautels
Hearing Officer

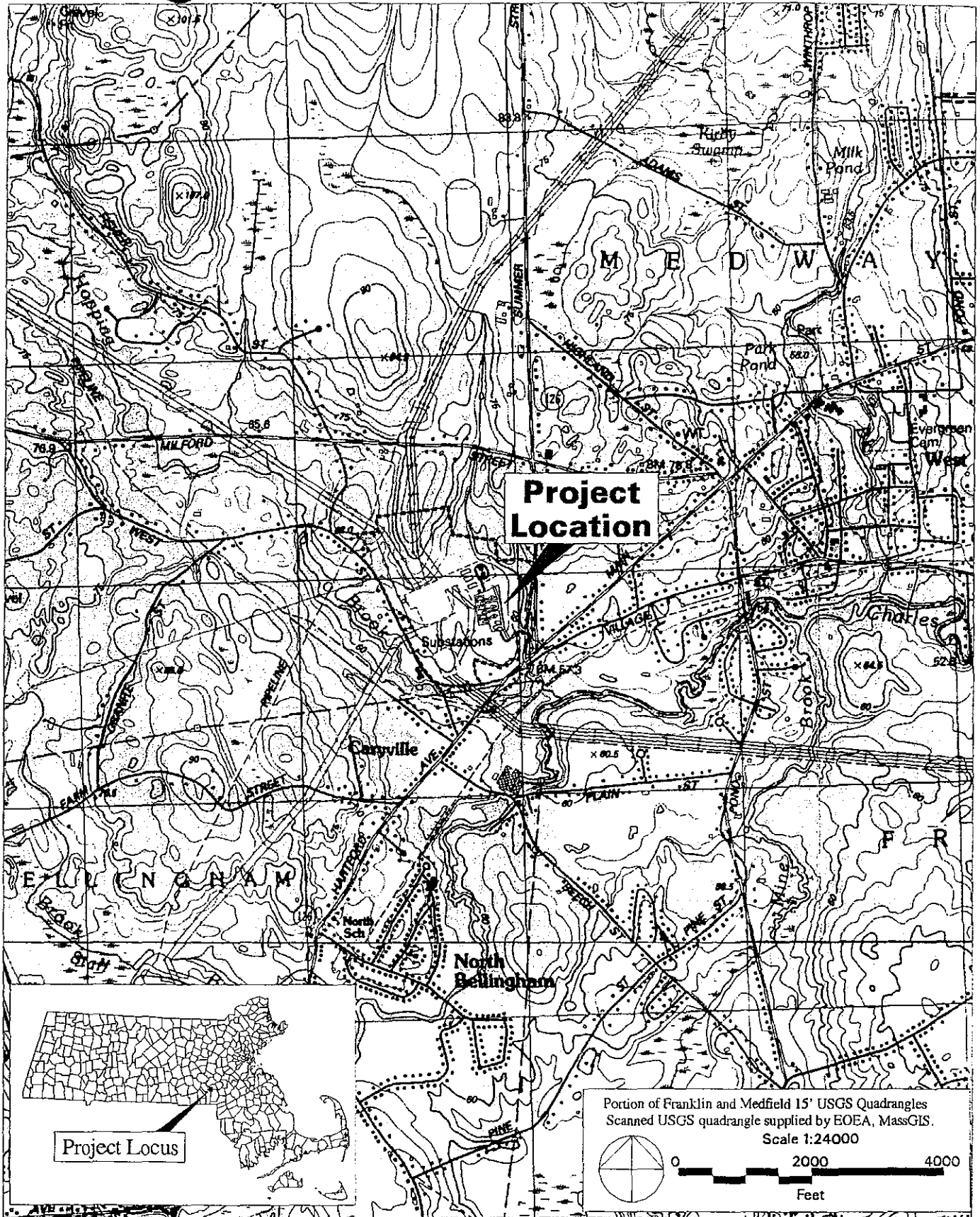
Dated this 13th day of April, 2000.

APPROVED by the Energy Facilities Siting Board at its meeting of April 13, 2000, by the members and designees present and voting: James Connelly (Chairman, DTE/EFSB); Deirdre K. Manning (Commissioner, DTE); David L. O'Connor (Commissioner, Division of Energy Resources); Joseph Donovan (for Carolyn Boviard, Director of Economic Development); and Sonia Hamel (for Robert Durand, Secretary of Environmental Affairs).



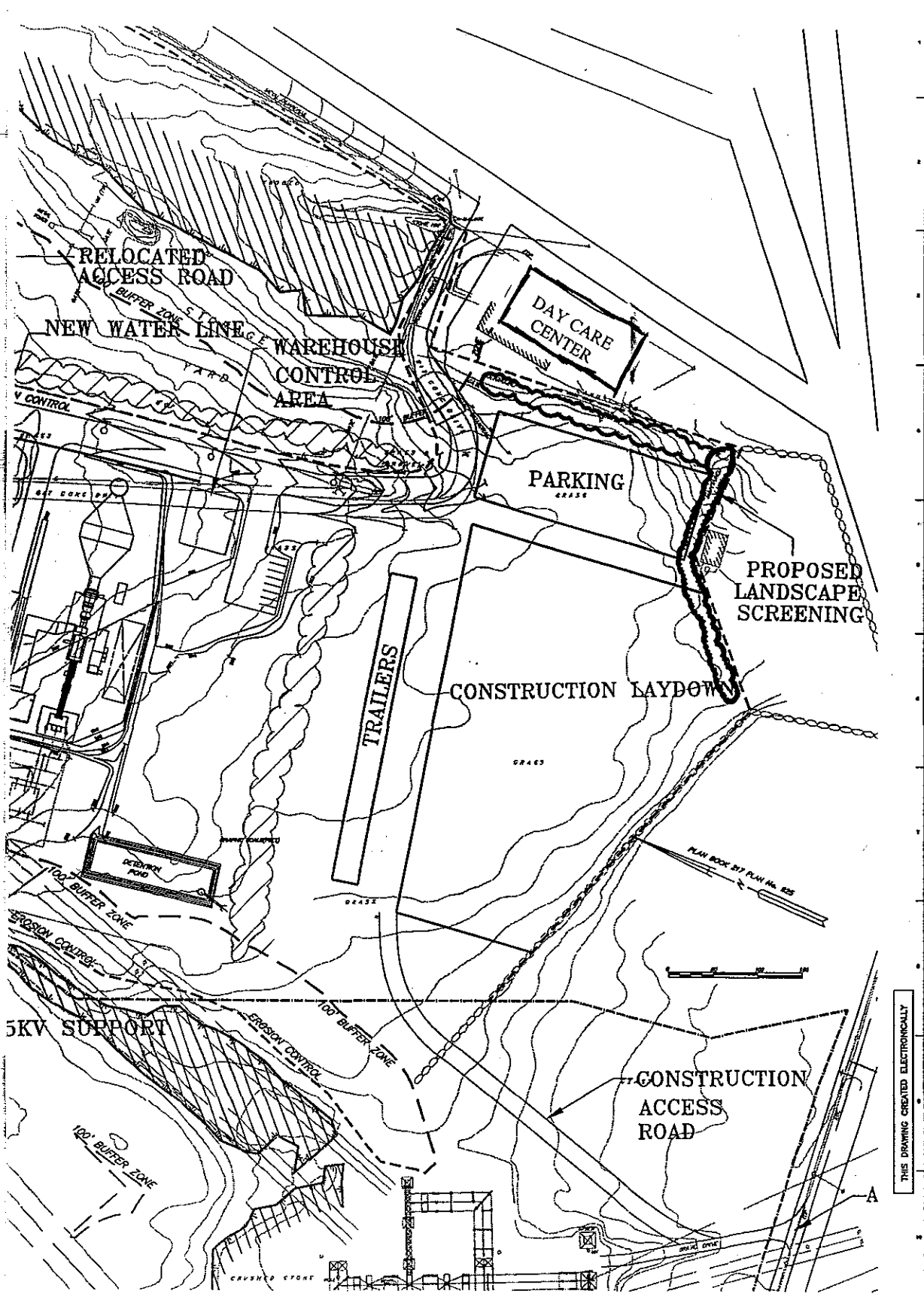
James Connelly, Chairman
Energy Facilities Siting Board

Dated this 13th day of April, 2000.



Date: 14 Apr 99 22:21:53 Wednesday
maplinus/aisite/meddq.map

Figure 2 - 1
Site Locus Map



THIS DRAWING CREATED ELECTRONICALLY

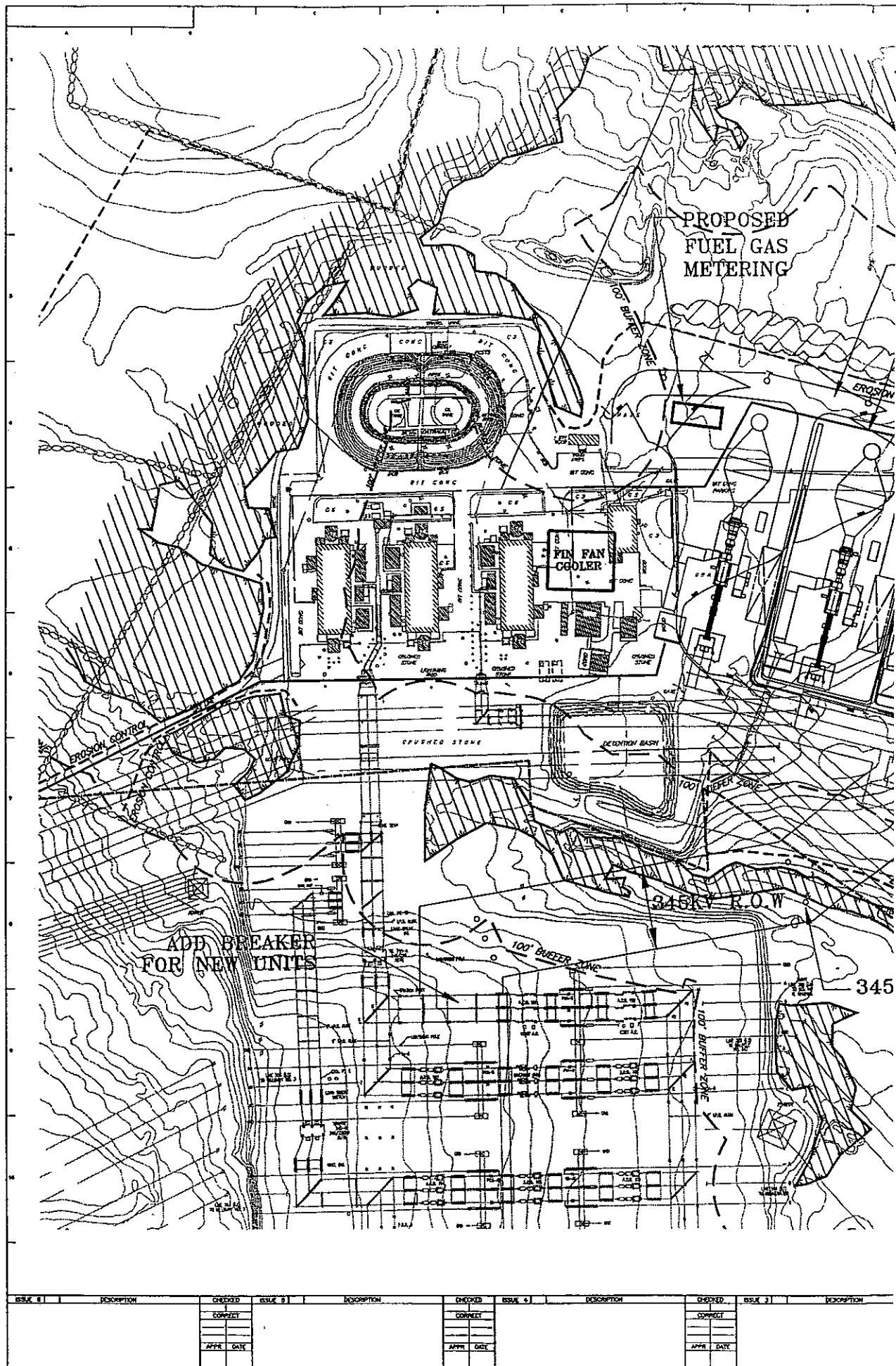
FIGURE 9-1
WETLAND RESOURCE AREAS

MEDWAY STATION
EXPANSION
STONE & WEBSTER ENGINEERING CORPORATION
BOSTON, MASS.



DRAWING NUMBER

CREATED	ISSUE # 1	DESCRIPTION	CREATED	ISSUE # 1	DESCRIPTION	CREATED
		REVISED FOR REPORT 4/14/99 EARTH TECH			ORIGINAL ISSUE	
CORRECT			CORRECT			CORRECT
APPR. DATE			APPR. DATE			APPR. DATE



ISSUE #	DESCRIPTION	CHECKED	ISSUE #	DESCRIPTION	CHECKED	ISSUE #	DESCRIPTION	CHECKED	ISSUE #	DESCRIPTION
		COMPLETE			COMPLETE			COMPLETE		
		APPR. DATE			APPR. DATE			APPR. DATE		

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

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

