

Decisions and Orders

Massachusetts Energy Facilities Siting Board

VOLUME 9

TABLE OF CONTENTS

		Page #
Berkshire Gas Company	EFSB 99-2/D.T.E. 99-17	1
Sithe Mystic Development LLC	98-8	101
ANP Bellingham Energy Company - Compliance	97-1	211
IDC Bellingham LLC	97-5	225

COMMONWEALTH OF MASSACHUSETTS
Energy Facilities Siting Board

In the Matter of the Petition of)	
The Berkshire Gas Company for Approval)	
to Construct a Liquefied Natural Gas Storage and)	EFSB 99-2
Vaporization Facility in Whately, Massachusetts)	
)	
)	
<hr/>		
The Petition of The Berkshire Gas Company))	
for an Exemption from the Zoning Bylaws of)	
the Town of Whately in Connection with the)	D.T.E. 99-17
Construction and Operation of a Liquefied)	
Natural Gas Storage and Vaporization Facility)	
)	
)	

FINAL DECISION

M. Kathryn Sedor
Hearing Officer
September 13, 1999

On the Decision:
Christopher Bourne
Richard Essex
William Febiger
Jenna Ide
Barbara Shapiro

APPEARANCES: James M. Avery, Esq.
Rich, May, Bilodeau & Flaherty, P.C.
176 Federal Street, 6th Floor
Boston, Massachusetts 02110-2223
FOR: Berkshire Gas Company
Petitioner

Timothy A. Clark, Esq.
Bruce B. Glendening, Esq.
Colonial Gas Company
40 Market Street
Lowell, Massachusetts 01852
FOR: Colonial Gas Company
Intervenor

J. Raymond Miyares, Esq.
Pickett and Miyares
47 Winter Street, 7th Floor
Boston, Massachusetts 02108
FOR: Town of Deerfield and Deerfield Planning Board
Intervenor

Joel B. Bard, Esq.
Edward M. Reilly, Esq.
Kopelman and Paige, P.C.
2 South Street
The Berkshire Common
Pittsfield, Massachusetts 01201
FOR: Town of Whately
Intervenor

Richard G. McLaughry, Esq.
Robert A. Nailling, Esq.
Cabot LNG Corporation
75 State Street, 12th Floor
Boston, Massachusetts 02109-1806
FOR: Cabot LNG Corporation
Interested Person

Theodore F. Cycz
40 Old State Road
South Deerfield, Massachusetts 01373
Interested Person

TABLE OF CONTENTS

I.	<u>INTRODUCTION</u>	Page 1
A.	<u>Summary of the Proposed Project</u>	Page 1
B.	<u>Jurisdiction</u>	Page 2
	1. <u>Petition to Construct</u>	Page 2
	2. <u>Zoning Exemption Petition</u>	Page 3
C.	<u>Procedural History</u>	Page 3
D.	<u>Scope of Review</u>	Page 5
	1. <u>Petition to Construct</u>	Page 5
	2. <u>Zoning Exemption Petition</u>	Page 5
II.	<u>ANALYSIS OF THE PROPOSED PROJECT</u>	Page 6
A.	<u>Need</u>	Page 6
	1. <u>Standard of Review</u>	Page 6
	2. <u>Description of Existing System</u>	Page 6
	3. <u>Reliability of Supply</u>	Page 8
	a. <u>Design Standards</u>	Page 9
	b. <u>Sendout Forecast</u>	Page 10
	c. <u>System Pressure and Contingency Analysis</u>	Page 11
	d. <u>Demand-Side Management</u>	Page 15
	(1) <u>Analysis</u>	Page 16
	e. <u>Consistency with Long Range Forecast</u>	Page 16
	f. <u>Conclusion on Reliability of Supply</u>	Page 17
A.	<u>Comparison of the Proposed Project and Alternative Approaches</u>	Page 17
	1. <u>Standard of Review</u>	Page 17
	2. <u>Identification of Project Approaches for Analysis</u>	Page 18
	a. <u>The Proposed Project</u>	Page 19
	b. <u>Pipeline Alternative</u>	Page 20
	c. <u>Pipeline/200 Psig Alternative</u>	Page 21
	d. <u>Liquid Propane Alternative</u>	Page 21
	e. <u>Analysis</u>	Page 22
	3. <u>Reliability</u>	Page 23
	4. <u>Environmental Impacts</u>	Page 24
	a. <u>Construction Impacts</u>	Page 25
	b. <u>Permanent Impacts</u>	Page 26
	c. <u>Conclusion on Environmental Impacts</u>	Page 28
	5. <u>Cost</u>	Page 28
	6. <u>Conclusions: Weighing Need, Reliability, Environmental Impacts and Cost</u>	Page 30
III.	<u>ANALYSIS OF THE PROPOSED AND ALTERNATIVE FACILITIES</u>	Page 30
A.	<u>Description of the Proposed Facilities and Alternative Facilities</u>	Page 30
	1. <u>Proposed Facilities</u>	Page 30
	2. <u>Alternative Facilities</u>	Page 31

B.	<u>Site Selection Process</u>	Page 32
1.	<u>Standard of Review</u>	Page 32
2.	<u>Development and Application of Siting Criteria</u>	Page 32
3.	<u>Analysis and Findings</u>	Page 37
4.	<u>Geographic Diversity</u>	Page 39
5.	<u>Conclusions on the Site Selection Process</u>	Page 39
C.	<u>Environmental Impacts, Cost and Reliability of the Proposed and Alternative Facilities</u>	Page 39
1.	<u>Standard of Review</u>	Page 39
2.	<u>Environmental Impacts</u>	Page 41
a.	<u>Wetland and Water Resource Impacts</u>	Page 41
(1)	<u>Preferred Site</u>	Page 41
(2)	<u>Alternative Site</u>	Page 44
(3)	<u>Analysis</u>	Page 46
b.	<u>Land Use, Visual, and Land Resource Impacts</u>	Page 47
(1)	<u>Preferred Site</u>	Page 47
(2)	<u>Alternative Site</u>	Page 52
(3)	<u>Analysis</u>	Page 54
c.	<u>Air and Noise Impacts</u>	Page 56
(1)	<u>The Preferred Site</u>	Page 56
(2)	<u>The Alternative Site</u>	Page 56
(3)	<u>Analysis</u>	Page 57
d.	<u>Traffic Impacts</u>	Page 57
(1)	<u>Preferred Site</u>	Page 57
(2)	<u>Alternative Site</u>	Page 59
(3)	<u>Analysis</u>	Page 60
e.	<u>Conclusions on Environmental Impacts</u>	Page 61
3.	<u>Cost</u>	Page 62
4.	<u>Reliability</u>	Page 63
5.	<u>Conclusions on Environmental Impacts, Cost, and Reliability</u>	Page 64
D.	<u>Safety</u>	Page 64
1.	<u>Standard of Review</u>	Page 64
2.	<u>Compliance with Applicable State and Federal Regulations</u>	Page 65
3.	<u>LNG Spill Control</u>	Page 66
4.	<u>Vapor Dispersion Protection</u>	Page 66
5.	<u>Thermal Radiation Protection</u>	Page 67
6.	<u>Separation of Components</u>	Page 68
7.	<u>Inspection of Insulating Material</u>	Page 68
8.	<u>Plan for Removal of Precipitation</u>	Page 69
9.	<u>Safety Plan</u>	Page 70
10.	<u>Alarm System</u>	Page 70
11.	<u>Remote Operation of the Facility</u>	Page 72
12.	<u>Conclusions on Safety</u>	Page 73

E.	<u>Scope of Approval</u>	Page 74
1.	<u>Status of the Record on Need</u>	Page 74
a.	<u>Tanks One and Two</u>	Page 74
b.	<u>Tank Three</u>	Page 75
c.	<u>Tanks Four and Five</u>	Page 75
2.	<u>Status of the Record on Environmental Impacts</u>	Page 76
3.	<u>Scope of Further Review</u>	Page 77
IV.	<u>ZONING EXEMPTION</u>	Page 77
A.	<u>Standard of Review</u>	Page 78
B.	<u>Analysis and Findings</u>	Page 80
1.	<u>Public Service Corporation Status</u>	Page 80
2.	<u>Need for the Requested Exemption</u>	Page 80
3.	<u>Public Convenience or Welfare</u>	Page 84
a.	<u>General Public Interest</u>	Page 84
b.	<u>Local Interest</u>	Page 85
4.	<u>Conclusion</u>	Page 86
V.	<u>DECISION</u>	Page 87
A.	<u>Petition to Construct</u>	Page 87
B.	<u>Zoning Exemption Petition</u>	Page 89

The Energy Facilities Board ("Siting Board") hereby APPROVES subject to conditions (1) the Petition of the Berkshire Gas Company for approval to construct and operate a liquified natural gas storage and vaporization facility at the Company's preferred site in the Town of Whately, Massachusetts, and (2) the Petition of the Berkshire Gas Company for certain exemptions from the Town of Whately Zoning ByLaw.

I. INTRODUCTION

A. Summary of the Proposed Project

Berkshire Gas Company ("Berkshire") distributes and supplies gas for residential, commercial, and industrial use in nineteen communities of western Massachusetts (Exh. EFSB-N-8, at 4). These communities are served by three separate divisions of Berkshire's distribution system, the Pittsfield, North Adams, and Greenfield Divisions (*id.* at 14). Berkshire is proposing to establish a liquified natural gas ("LNG") storage facility within the Town of Whately, Massachusetts in order to provide additional energy resources for the Greenfield Division of its distribution system (Exh. EFSB-1, at 1).

Berkshire indicated that, on several occasions, it has had difficulty maintaining adequate feedline pressures in the northern portion of the Greenfield distribution system (Exh. EFSB-N-1). Berkshire attributed this problem to the length of the Division's 200 psig feedline and unforeseen decreases in inlet pressure at Tennessee Gas Pipeline Company's ("Tennessee") Northampton gate station¹ (Exhs. BG-RMA-1, at 3; BG-1, at 1-2, 3-1). Berkshire predicted that the vulnerability of the Greenfield Division would become more acute in the near future due to forecast increases in demand (Exh. BG-1, at 1-2, 3-1). Berkshire stated that the proposed LNG storage and vaporization facility would make it possible to "maintain adequate operating pressures during peak or near peak periods" for the next twenty years (Exh. EFSB-1, at 2).

¹ Berkshire has contracted with Tennessee for a 100 psig minimum gas pressure at the Northampton gate station (Exh. BG-1 (att. 2-D)) but the gas pressure at the Northampton gate station is usually greater than 200 psig (Exh. EFSB-N-5). Berkshire indicates that when the pressure drops below 200 psig at the Northampton gate station it is difficult to maintain system pressure in the northern portion of the Greenfield Division even under non-peak demand conditions (Exh. BG-1, at 3-1 to 3-9, (att. 3-B)).

Berkshire's proposed facility would consist of five prefabricated above ground storage tanks, each with a nominal capacity of 70,000 gallons (id. at 2). The first two tanks are proposed for installation in 1999 (id.). The three remaining tanks would be installed over twenty years, as needed to meet projected sendout requirements (id.). A shop fabricated building that houses vaporization, odorization, and onsite control facilities would be installed with the two initial storage tanks (Exh. BG-1 (att. G)). Berkshire also indicated that construction of an interconnecting gas line from the LNG storage facility to the Greenfield Feedline would be part of the project (id. (att. 5-H)). Major safety features of the proposed facility include earthen dikes between tanks, remote impoundment sumps for each tank, and a vapor barrier/security fence (Exh. BG-1 (att. F at 1-1, 1-4)).

Berkshire intends to remotely² control, monitor, and initiate facility operations from its control center in Pittsfield, Massachusetts (Exh. EFSB-S-3). The proposed facility would be operated as a peaking unit during periods when an additional gas supply is needed to maintain system integrity for the Greenfield Division (Tr. 3, at 330-331).

Berkshire has proposed a preferred site and an alternative site for the LNG storage facility (Exh. BG-1, at 1-1). The preferred site is a 16.2 acre parcel located in the northeast corner of Whately, immediately south of the Ukrainian Greek Catholic Church Cemetery and between the Boston & Maine Railroad and Long Plain Road (id. (atts. 1-A, 5-E)). The alternative site is a 17 acre parcel located near the center of Whately, 0.5 miles north of interchange 23 off of Interstate 91 (id. (atts. 1-B, 5-E)). The alternative site is bounded by Route 5/10 to the west and Interstate 91 to the east (id.).

B. Jurisdiction

1. Petition to Construct

The Company's petition to construct a natural gas storage and vaporization facility was filed in accordance with G.L. c. 164, § 69H, which requires the Siting Board to implement the

² Berkshire indicates that it intends eventually to operate the facility remotely but would operate the facility from onsite for an initial period of at least one year (Tr. 1, at 48 - 49).

energy policies in its statute to provide a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost, and pursuant to G.L. c. 164, § 69J, which requires a project applicant to obtain Siting Board approval for the construction of proposed energy facilities before a construction permit may be issued by another state agency.

As a unit designed for and capable of the storage of natural gas, the Company's proposed LNG Facility falls squarely within the definition of "facility" set forth in G.L. c. 164, § 69G(5), which provides that a "facility" is:

a unit, including associated buildings and structures, designed for or capable of the manufacture or storage of gas, except such units below a minimum threshold size as established by regulation.

2. Zoning Exemption Petition

The Company's petition for a zoning exemption was filed in accordance with G.L. c. 40A, § 3, which authorizes the Department of Telecommunications and Energy ("Department") to exempt a public service corporation from the requirements of local zoning bylaws. The Company's petition is reviewable by the Siting Board in this proceeding in accordance with G.L. c. 164, § 69H(2), which authorizes Siting Board review of any petition referred to the Siting Board by the Department pursuant to G.L. c. 25, § 4.

C. Procedural History

On February 2, 1999, Berkshire filed with the Siting Board a petition to construct a new LNG storage and vaporization facility ("project") in the Town of Whately. The Siting Board docketed the petition as EFSB 99-2. On February 2, 1999, Berkshire also filed with the Department a petition for an exemption from certain provisions of the Town of Whately Zoning ByLaw. The Department docketed the petition as D.T.E. 99-17.

Also on February 2, 1999, Berkshire filed with the Siting Board and with the Department a motion requesting that the petition in EFSB 99-2 and the petition in D.T.E. 99-17 be consolidated for hearing. On February 19, 1999, the Chair of the Department referred D.T.E. 99-17 to the Siting Board, and directed the Siting Board to review both petitions in a consolidated proceeding.

On March 24, 1999, the Siting Board conducted a public hearing in Whately. In accordance with the direction of the Hearing Officer, the Company provided notice of the public hearing and adjudication.

Timely petitions to intervene in the proceeding were filed by Colonial Gas Company, the Town of Deerfield and the Deerfield Planning Board ("Town of Deerfield"), and the Town of Whately. Timely petitions to participate as an interested person were filed by Cabot LNG Corporation ("Cabot") and Theodore F. Cycz. The Company did not file opposition to the petitions to intervene or the petitions to participate as an interested person.

The Hearing Officer granted the petitions to intervene filed by Colonial, the Town of Deerfield and the Town of Whately Berkshire Gas Company, EFSB 99-2/D.T.E. 99-17, Hearing Officer Memorandum, April 15, 1999. Cabot and Mr. Cycz were granted status as interested persons (id.).

The Siting Board conducted four days of evidentiary hearings commencing on June 7, 1999, and ending on June 11, 1999. The Company presented the testimony of four witnesses: Robert M. Allesio, Vice President of Utility Operations for Berkshire, whose testimony addressed the need for the proposed project, project alternatives, and site selection; Richard E. Nasman, Manager of Engineering for Berkshire, whose testimony addressed the need for the proposed project, project alternatives, site selection, and safety matters; Thomas G. Quine, engineering consultant to the Company, whose testimony addressed project design, project alternatives, and safety matters; and Gary A. Jacob, environmental consultant to the Company, whose testimony addressed environmental and site selection matters.

The Company, The Town of Deerfield, and the Town of Whately each filed an Initial Brief. The Company filed a Reply Brief.

The Hearing Officer entered 285 exhibits into the record, consisting primarily of information request responses and record request responses. The Company entered twelve exhibits into the record.

D. Scope of Review

1. Petition to Construct

In accordance with G.L. c. 164, § 69J, before approving a petition to construct facilities, the Siting Board requires an applicant to justify its proposal in three phases. First, the Siting Board requires the applicant to show that additional energy resources are needed (see Section II.A, below). Next, the Siting Board requires the applicant to establish that, on balance, its proposed project is superior to alternative approaches in terms of cost, environmental impact, reliability, and ability to address the identified need (see Section III.C, below). Finally, the Siting Board requires the applicant to show that its site selection process has not overlooked or eliminated clearly superior sites, and that the proposed site for the facility is superior to a noticed alternative site in terms of cost, environmental impact, and reliability of supply (see Section III.B and III.C, below).

Additionally, in the case of a gas company which is required by G.L. c. 164, § 69I to file a long-range forecast with the Department, the applicant must show that the facility is consistent with the gas company's most recently approved long-range forecast. G.L. c. 164, § 69J. Berkshire is a gas company required to make such a filing and to make such a showing (see Section II.A, below).

Additionally, in the case of a proposed LNG facility, the applicant must show that the facility will comply with the Siting Board regulations governing the siting of such facilities (see Section III.D, below).

2. Zoning Exemption Petition

In accordance with G.L. c. 164, § 69H(2), in reviewing a petition referred by the Department, the Siting Board applies Department and Siting Board standards in a consistent manner. In accordance with G.L. c. 40A, § 3, and consistent with Department standards, the Siting Board requires an applicant that is seeking a zoning exemption to make a three-part showing. First, the applicant must qualify as a public service corporation. Second, the applicant must establish that it needs an exemption from the local zoning bylaw. Finally, the applicant must demonstrate that the present or proposed use of the land or structure is reasonably necessary

for the public convenience or welfare (see Section IV, below).

II. ANALYSIS OF THE PROPOSED PROJECT

A. Need

1. Standard of Review

In accordance with G.L. c. 164, § 69J, the Siting Board is charged with the responsibility for implementing the energy policies in its statute to provide a necessary energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost. In carrying out its statutory mandates with respect to proposals to construct energy facilities such as Berkshire's proposed LNG facility, the Siting Board first evaluates whether there is a need for additional energy resources³ to meet reliability, economic efficiency, or environmental objectives. The Siting Board must find that additional energy resources are needed as a prerequisite to approving a proposed energy facility. New England Power Company, EFSB 97-3, at 6 (1998) ("NEPCo Decision"); Boston Edison Company, EFSB 96-1, at 9 (1997) ("1997 BECo Decision"); Massachusetts Electric Company, 18 DOMSC 383, at 393 (1989) ("MassElectric Decision").⁴

2. Description of Existing System

Berkshire Gas Company serves approximately 33,000 customers within Berkshire, Hampshire, and Franklin Counties of western Massachusetts (Exh. BG-1, at 2-1). The Greenfield Division is the easternmost division in Berkshire's system and includes the towns of

³ In this discussion, the term "additional energy resources" is used generically to encompass both supply and capacity additions, including, but not limited to, new or expanded gas pipelines, new or expanded gas storage facilities, new gas supply or transportation contracts, and savings associated with conservation and load management ("C&LM").

⁴ In contrast to the Company's proposed LNG facility, which is reviewable pursuant to G.L. c. 164, § 69J, proposed electric generating facilities are reviewable pursuant to G.L. c. 164, § 69J½. In accordance with its statutory mandate under G.L. c. 164, § 69J½, the Siting Board does not review the need for, or the cost of, proposed generating facilities.

Amherst, Turners Falls, Deerfield, Whately, Hatfield, Hadley and Greenfield (id. at 1-1, 2-1). Gas supplies for the Greenfield Division are received from Tennessee's Northampton lateral at the Northampton Gate Station (id. at 2-1). Berkshire's main feedline for the Greenfield Division is a 200 psig pipeline which starts at the Northampton Gate Station and extends northward following Route 5/10 for 22 miles through the towns of Hatfield, Whately, and Deerfield to the center of Greenfield ("Greenfield Feedline") (id. at 5-2, (att. 2-B)). Five miles north of the Northampton Gate Station, a 200 psig lateral branches off of the Greenfield Feedline to supply gas to the Amherst area ("Amherst Feedline") (id. at 2-1). A compressor station⁵ is located at the interconnection point of the Greenfield and Amherst Feedlines ("Northampton compressor station") (id. at 2-2). At the north end of the Greenfield Division, within the Town of Greenfield, Berkshire maintains a temporary LNG facility and a liquified propane ("LP") facility (id. at 2-2). These facilities are located on the same site and feed directly into the Greenfield Division's intermediate pressure system (id.; Exh. EFSB-N-15). In 1991, 2.5 miles of looping pipeline at the southern end of the Greenfield Feedline was approved to augment system capacity. Berkshire Gas Company 23 DOMSC 294 (1991). Only a 0.25 mile segment of the pipeline was completed (Exh. EFSB-N-21).

Berkshire indicated that it uses the Northampton compressor station, the LP facility, and the temporary LNG facility to augment pipeline gas supplies during periods of peak or near peak sendout⁶ (Exh. BG-1, at 3-2). According to Berkshire, all of these peaking measures can be dispatched independently and the compressor station can be dispatched in combination with the LP or temporary LNG facilities (id. at 3-3). However, Berkshire indicated that the LP facility

⁵ The compressor station is referred to as the "Northampton" or "Laurel" compressor station in the Petition (Exh. BG-1, at 2-2). Berkshire indicated that Northampton compressor station has two compressors, but did not specify the capacity of the compressors (id. at 3-3, n. 3).

⁶ Berkshire stated that the compressors at Northampton station are used to maintain system pressure in the Greenfield Feedline at 200 psig but are rarely operated (\approx 1000 hours each, since 1986) (Exhs. BG-1, at 2-2; 3-3, n. 3; EFSB-N-11). Berkshire indicated that the LP facility can provide 55 Mcf per hour while the temporary LNG facility can provide up to 175 Mcf per hour but lacks onsite storage capacity (Exh. BG-1, at 2-2).

and the temporary LNG facility cannot be operated simultaneously⁷ (*id.*). Currently, the maximum available daily supplies for the Division are 14,180 Mcf for pipeline supplies augmented by the temporary LNG facility or 14,480 Mcf for pipeline supplies augmented by the LP facility⁸ (Exh. EFSB-N-9 (b+c)). Berkshire also maintains a load management rate agreement with the University of Massachusetts in Amherst ("UMass") as a peak shaving resource⁹ (Exh. BG-1, at 3-2). Berkshire's load management rate with UMass can reduce sendout requirements by at least 1600 Mcf per day during peak usage periods (Exh. EFSB-N-15d).

3. Reliability of Supply

Berkshire asserted that additional natural gas resources are needed to maintain system reliability in the Greenfield Division (Exh. BG-1, at 1-1). Specifically, Berkshire claimed that under certain contingencies, it would not have sufficient system pressure or gas volumes to maintain reliable service in the northern portion of the Greenfield Division during peak or near-peak usage (*id.*). Berkshire attributed this system vulnerability both to the length of the Greenfield Feedline and to increased system demand (Exhs. BG-RMA-1, at 3; BG-1, at 3-3 n. 4). Unpredictable reductions of inlet pressure at the Northampton Gate Station and a dependence upon several separate components for adequate peaking resources were also cited by Berkshire as

⁷ Berkshire indicated that the LP system needs a line pressure of 60 psig or greater to operate and the temporary LNG facility needs line pressures of less than 50 psig to vaporize the LNG (Exh. BG-1, at 3-3). Consequently, it is not possible to operate the two systems simultaneously (*id.*).

⁸ Berkshire's maximum daily quantity ("MDQ") of pipeline gas for the Greenfield Division is 12,380 Mcf (Exh. BG-1, at 2-1). Berkshire indicates that 1,800 Mcf of temporary LNG supplies or 2,100 Mcf of LP-air supplies are also available for the Greenfield Division (Exh. EFSB-N-9c).

⁹ Berkshire's tariff agreement with UMass stipulates that with twenty four hours notice, Berkshire can curtail or suspend delivery of gas for up to fifteen days a year (Exh. BG-1, at 3-2; 3-6 n. 8; 4-3). Berkshire indicated that curtailment of service to UMass could be initiated on days when the temperature is 0-19 degrees (Fahrenheit) and service could be terminated for days temperature is below 0 degrees (Exh. EFSB-N-15a).

major contributing factors to system vulnerability (Exh. BG-RMA-1, at 5 - 6).

Berkshire indicated that an inability to maintain minimum system pressures would lead to a temporary loss of service for substantial portions of its service area (Exh. EFSB-N-1).

Berkshire also stated that any loss of service would result in significant costs to the Company for service restoration, unserved demand, production loss, and property damage and could result in health and safety issues for the Company's customers (Exh. EFSB-N-22).

a. Design Standards

Berkshire indicated that it used four sets of planning standards to predict sendout for its distribution system and to evaluate the adequacy of its existing facilities: a normal year of 7624 heating degree days¹⁰ ("DD"); a design year of 8194 DD; a design day of 75 DD; and a ten-day cold snap of 620 DD (Exh. EFSB-N-8a, at 15-21). These standards, which were derived from a comprehensive weather analysis performed by Management Applications Consulting, Inc., are taken from Berkshire's Long Range Forecast and Resource Plan (1998-1999 to 2002-2003) filed with the Department on October 1, 1998 ("LRF"), docketed as D.T.E. 98-99, and approved by the Department on August 27, 1999 (id. at 10).

Berkshire indicated that one measure of the adequacy of its distribution system is the ability to maintain system pressure (Exh. BG-1, at 3-1, 3-4 to 3-6). Berkshire stated that loss of service in Greenfield may occur when the delivery pressure for the intermediate system drops to 85 psig (id. at 3-9). Berkshire asserted that to maintain system reliability in the Greenfield Division, it designs the high pressure system to maintain a minimum inlet pressure of 100 psig at regulator stations for the intermediate distribution system (id. at 2-2). In support of this standard, Berkshire noted that flow rate requirements of greater than 180 Mcf per hour have been observed

¹⁰ A heating degree day ("DD") is calculated by subtracting a measured or predicted average daily temperature from a standard reference temperature (for instance, 60 degrees Fahrenheit). Therefore, the lower the measured or predicted temperature the larger the calculated DD value. A sum of DD's is used for purposes of describing periods longer than one day.

at the Greenfield regulator station,¹¹ but when the regulator inlet pressure drops to 85 psig the maximum flow capacity is only 175 Mcf per hour (Exh. EFSB-N-1). Therefore, Berkshire stated at inlet pressures below 100 psig there is a "significant risk" that flow capacity would be insufficient to meet demand requirements (*id.*).

Berkshire's planning standards and its methods for deriving standards for the Greenfield Division are set forth in the LRF. The Department, which has jurisdiction of over Berkshire's LRF, has reviewed the planning standards and determined that they are reviewable, appropriate, and reliable. Berkshire Gas Company, D.T.E. 98-99 (1999). The Siting Board adopts the findings of the Department for this decision. Accordingly, the Siting Board finds that the Company's planning standards are suitable for the purposes of this review.

Berkshire did not present a detailed analysis in support of its minimum 100 psig inlet pressure standard for the Greenfield intermediate distribution system. However, the record suggests that the standard is system-specific and is based on the observation that some portions of the Greenfield Division could experience service loss if inlet pressures for the intermediate distribution system drop to 85 psig or less. We note that the 100 psig standard provides a moderate safety margin (less than a 20 percent) above 85 psig. Accordingly, the Siting Board finds that the Company's reliability criterion with respect to system pressures in the Greenfield Division is suitable for the purposes of this review.

b. Sendout Forecast

Berkshire provided a copy of its LRF showing current and forecast normal year, design year, and design day sendout for its distribution system (Exh. EFSB-N-8a, at 10). Berkshire indicated that its forecast of system sendout is based on market area conditions, projected changes in population, saturation analysis, and projected implementation of demand-side management (*id.* at 24 - 36).

¹¹ The Greenfield regulator is an inlet point for the intermediate distribution system within the town of Greenfield (Exhs. BG-1, at 2-2; EFSB-N-1). Berkshire indicated that the projected peak hourly flow rate for this regulator station during split year 1998/1999 was 205 Mcf per hour (Exh. EFSB-N-1).

Berkshire stated that the LNG facility is proposed for use as a peaking facility (Tr. 3, at 331). Therefore, the design day standard is most applicable for analysis of need. Based on its design day planning standard of 75 DD, Berkshire forecasted that peak-day sendout for the Greenfield Division would increase from 11,762 Mcf in 1997/1998 to 12,353 Mcf in 1998/1999 and then to 13,455 Mcf by 2002/2003 (Exh. EFSB-N-9 (atts. b, c)). This corresponds to peak-day LNG requirements of 2,640 Mcf in 1998/1999 growing to 3,809 Mcf in 2002/2003 (Exh. BG-1, at 4-F).

The sendout forecast for the Greenfield Division and the methods which Berkshire used to develop that forecast are set forth in the LRF. The Department, which has jurisdiction of over Berkshire's LRF, has reviewed and approved the LRF¹². Berkshire Gas Company, D.T.E. 98-99. The Siting Board adopts the findings of the DTE for this decision. For purposes of establishing need in this review, the Siting Board finds that the Company's sendout forecast is reliable.

c. System Pressure and Contingency Analysis

To evaluate the need for the proposed facility, Berkshire modeled pipeline delivery pressures for the Greenfield distribution system (Exh. BG-1, at 3-6). Berkshire's modeling of system pressure considered the effect of: (1) pressure losses inherent in pipe flow; (2) estimates of peak day "network load"¹³ as established in the LRF; and (3) various peak shaving measures (*id.*). The model was used to calculate system pressure at interconnect points between the intermediate pressure distribution system and the 200 psig Greenfield and Amherst Feedlines (*id.* at 3-6). Consistent with its system operation criteria, Berkshire stipulated that model inlet

¹² The Department specifically determined that although the sendout forecast is reviewable and reliable, it is not appropriate because Berkshire's sales forecasting techniques did not use econometric modeling or time-series analysis. Berkshire Gas Company, D.T.E. 98-99, at 20-21. The Department determined that Berkshire's results are consistent with previous filings but that it would be suitable for a company of Berkshire's size to employ more sophisticated and theoretically well-founded forecasting techniques (*id.*).

¹³ Berkshire indicated that it used billing records to determine the load at each model node and that forecast increases in sendout were distributed to each node based on a historical average (Exhs. BG-1 at 3-4 n. 5; EFSB-N-2).

pressures for the intermediate distribution system that are less than 100 psig result in system "failure" for the model run (*id.*). Although not specifically stated by Berkshire, it appears that the Company considers system performance to be "marginal" when the lowest modeled inlet pressures equals 100 ± 5 psig (Exhs. BG-1, at 3-A-2; EFSB-N-2). The variables for the model runs included: 1) inlet pressures at the Northampton Gate Station; 2) operation of the Northampton compressor station; 3) operation of the temporary LNG facility; 4) operation of the LP facility; and 5) forecast peak sendout (Exhs. BG-1, at 3-6 to 3-9; EFSB-N-2). Service to UMass was assumed to be interrupted for all model runs, and the compressors, LP facility, and temporary LNG facility were assumed to be either running at full capacity or off (*id.*).

Berkshire provided assumptions and results from 13 model runs that encompass various contingencies at peak-day sendout levels for various years. These model runs are summarized in Table 1, attached to this Decision. The model runs show that system pressure in the Greenfield Division could be adequately maintained during forecast peak-day sendout for split year 1999/2000, provided that the Northampton compressor station and the temporary LNG facility are operational and service to UMass is curtailed (Exh. EFSB-N-2). If the inlet pressure at the Northampton Gate Station decreases to 135 psig, the system pressures would be marginal; inlet pressures of 100 psig at Northampton Gate Station will result in system failure (*id.*; BG-1, at 3-8 to 2-9). The modeling also indicates that the LP facility, in conjunction with operation of the compressor station and curtailment of service to UMass, will only be capable of maintaining marginal system pressure in the Greenfield Division for forecast peak-day sendout during split year 1999/2000 and will be insufficient during split year 2002/2003 (*id.*; Exh. BG-1, at 3-7). Furthermore, relatively low inlet pressure (175 psig or less) and failure of the compressor station would result in insufficient system pressure at current peak-day sendout levels even with the operation of the existing LNG or LP facility (Exh. BG-1, at 3-9).

In addition to the modeling results, Berkshire documented incidences of unexpected pressure drops at the Northampton Gate Station and contingencies affecting peak shaving facilities in the Greenfield Division (Exh. EFSB-N-5). Berkshire stated that, over the last five years, the inlet pressure at the Northampton Gate Station has dropped below 200 psig on twelve occasions; in addition, there have been two periods when the Northampton compressor station

has been unavailable, and one period when the LP facility has been unavailable (id.).

Berkshire also submitted documentation showing the effect of unexpected reductions in inlet pressure at the Northampton Gate Station on system pressure in the Greenfield Division (Exh. BG-1, at 3-9 (att. 3-B)). For example, Berkshire stated that on February 5, 1996, the pressure on its Tennessee supply line dropped steadily and, as a result, pressures at the northern end of the Greenfield Feedline dropped to 90 psig (id.). Berkshire indicated that the pressure drop occurred despite "extraordinary efforts" to maintain pressure such as by-passing the regulator station at Northampton (id.). According to Berkshire, the temporary LNG facility was not operating and "there was no reason to anticipate the need for LNG on such a day" since the service area was not, in fact, experiencing design or near design weather (id.).

Berkshire indicated that there is limited potential for the Northampton compressor station to address reliability concerns because low inlet pressure at the Northampton Gate Station results in gas supply rates that are insufficient to meet potential sendout requirements (Exhs. EFSB-N-3; BG-TGQ-1, at 15-16). Furthermore, Berkshire emphasizes that peak-day requirements of the Greenfield Division are close to the MDQ for the Division, so the compressor may not be effective at raising system pressure without exceeding Berkshire's MDQ agreement with Tennessee (Exh. EFSB-N-24). Berkshire also pointed out that the compressor station is a mechanical means for maintaining supply and is therefore subject to mechanical failure (Exh. BG-TGQ-1, at 16).

Berkshire cited the lack of on-site storage for the temporary LNG facility as another cause for concern about system reliability (Exh. BG-1, at 3-3). Berkshire indicated that a lack of readily available LNG could result in serious contingencies when there is an unanticipated need for additional resources due to unpredicted changes in weather conditions or a sudden drop in inlet pressures at the Northampton Gate Station (Exh. EFSB-N-4). Berkshire also expressed concern that severe weather conditions may make it impossible for the tanker trucks to deliver LNG within one day (id.). Finally, Berkshire argued that the temporary LNG facility is aging, so that mechanical failures are possible and may be difficult and costly to repair (Exhs. BG-TGQ-1, at 16; BG-1, at 3-2 n. 2).

The Siting Board has consistently found that if the loss of any single major component of

a supply system would cause significant loss of service to customers or the failure of other system components, then there is justification for additional energy resources to maintain system reliability. Norwood Municipal Light Department, EFSB 96-2 at 11 (1997); 1996 NEPCo Decision, EFSB 95-2 at 10; Holyoke Gas and Electric Department, 3 DOMSC 1, 7 (1978). Here, the record indicates that on a peak day during the 1999/2000 winter a variety of individual contingencies could lead to system pressures in the Greenfield Division below the 100 psig minimum standard for system reliability. Contingencies that could independently compromise system pressures include: (1) inlet pressures at the Northampton Gate Station below 135 psig, but still within the limits of Berkshire's contractual agreements with Tennessee Gas of 100 psig; (2) failure of existing peaking facilities such as the Northampton compressor station, the LP facility, or the temporary LNG facility; and (3) an inability to obtain LNG supplies within 24 hours.

In addition to these independent contingencies, the record indicates that any combination of 1) relatively low inlet pressures (175 psig), 2) the failure of any peak-shaving component, or 3) unavailable LNG supplies would also lead to system pressure below the 100 psig threshold. The reasonableness of assessing need based on the results of two or more concurrent contingencies depends in large part on the probability that such contingencies will occur. The Greenfield Division currently does not have any LNG storage capacity and must, therefore, order LNG when it is reasonably expected to be used. Consequently, LNG supplies are more frequently "unavailable" than available. In addition, inlet pressures at the Northampton Gate Station as low as 100 psig are contractually allowable. Because, both the lack of LNG on site and low inlet pressures at the Northampton gate station are within the limits of normal system operation, it is appropriate to consider multiple simultaneous "contingencies" when assessing the need for additional resources.

Based on the above, the Siting Board finds that, beginning in the 1999/2000 split year, there is a need for additional energy resources in order for the Company to satisfy its reliability

criteria with respect to system pressure¹⁴.

d. Demand-Side Management

Berkshire stated that it has successfully implemented conservation and load management ("C&LM") programs for a number of years and considered employing additional conservation measures to meet the need in the Greenfield Division (Exh. BG-1, at 4-2.). Berkshire concluded, however, that conservation measures would not address the resource needs of the Division, given the "magnitude and immediacy of the reliability concerns" (*id.*).

In its analysis of demand-side management ("DSM") potential, Berkshire estimated that a total potential savings of 42,166 Mcf for the entire distribution system may be achievable over two years (1999-2000) (Exh. EFSB-N-28). The Company indicated that these savings would be equivalent to 2.4 Mcf per hour, evenly divided throughout the two years (*id.*). As a conservative estimate of possible benefits, Berkshire assumed that 2 Mcf of the total 2.4 Mcf hourly DSM savings are from the northern end of the Greenfield Division (*id.*). Berkshire's forecasts, however, indicate that peak hour demand in the Greenfield Division will grow by approximately 15 Mcf each year (Exh. BG-1, at 4-F). Therefore, Berkshire argued that a 2 Mcf per hour savings would translate to an insignificant reduction during peak use periods (*id.*; Tr. 1, at 108 - 114). Berkshire acknowledged that an estimated system-wide DSM savings of 11.2 Mcf per hour might be a more accurate estimate of peak hourly savings, but stated that this level of reduction

¹⁴ Although the Siting Board found a need for additional energy resources to meet the Company's reliability criteria with respect to system pressure, we note that Berkshire's reliability concerns can not be entirely divorced from supply issues. For example, Berkshire acknowledged that difficulties in maintaining system pressure in the Greenfield Division are due, in part, to insufficient gas volumes and increased system demands during peak or near peak use periods (Exh. BG-1, at 1-1, 3-3 n. 4). Berkshire also stated that its MDQ agreement with Tennessee may be exceeded if the compressors at the Northampton compressor station were used more aggressively to maintain system pressures during peak use periods (Exh. EFSB-N-24). Furthermore, Berkshire has stated that the proposed project will not only address pressure problems but will also defer the need for additional upstream gas resources (Tr. 3, at 332-339). The Siting Board, therefore, emphasizes that its analysis in this decision should not be construed as an endorsement of any particular type of rate making treatment for the subject facilities.

still would not be sufficient to offset load growth or meet existing resource needs¹⁵ (Tr. 1, at 108 - 114). Berkshire also emphasized that this DSM program would be a one-time reduction that would not produce increasingly larger reductions to offset continued load growth (id.).

With regard to load management, Berkshire stated that substantial cost benefits have already been obtained from its load management agreement with UMass (Exh. BG-1, at 4-3). Berkshire noted, however, that even with this sendout flexibility, system reliability is marginal at current rates of peak sendout (id., at 3-6 to 3-11). Berkshire concluded that there are not enough additional load management opportunities in the Greenfield Division to address the current and future needs of the Division (id. at 4-3).

(1) Analysis

For the purpose of evaluating DSM, Berkshire assumed that a large proportion of the potential reduction in hourly sendout that may be obtained from conservation measures was concentrated in the most vulnerable portion of the Greenfield Division. The Siting Board notes that, even assuming this significantly accelerated implementation of DSM, the potential DSM savings are still not sufficient to alleviate system pressure problems during peak use periods. Therefore, the Siting Board finds that accelerated C&LM efforts would not eliminate the need for additional energy resources based on the Company's reliability criteria.

e. Consistency with Long Range Forecast

In section 1.D.1 above, it is indicated that Berkshire must demonstrate that the proposed project is consistent with its most recent Long Range Forecast, as required by G.L. c. 164, §69I.

The record indicates that Berkshire used the predicted sendout values from the most recently approved LRF to model system integrity in the Greenfield Division (Exh. EFSB-N-2). Furthermore, in the Department's decision with regard to Berkshires LRF, the Department

¹⁵ Berkshire indicated that, traditionally, 1 percent of total annual customers usage is attributable to peak day usage and that peak hour usage is 5.3 percent of the peak day quantity (Tr. 1, at 108-109). If DSM savings were proportional to usage, then 21,083 Mcf of annual savings would result in approximately 11.2 Mcf of peak hour savings (id.).

determined that the Company has formulated an appropriate process for identifying a comprehensive set of C&LM options. Berkshire Gas Company, D.T.E. 98-99, at 42. These C&LM options and the forecast sendout from the LRF, in conjunction with observed system reliability issues, were used by Berkshire to determine the need for additional energy resources. Accordingly, the Siting Board finds that the proposed project is consistent with Berkshire's most recent LRF.

f. Conclusion on Reliability of Supply

The Siting Board has found that the Company's reliability criterion with respect to system pressures in the Greenfield Division is suitable for the purposes of this review. The Board has also found that the Company's sendout forecast is reliable for the purposes of this review and that Berkshire's System Pressure and Contingency Analysis indicates the need for additional energy resources in split year 1999/2000. The Board has found that accelerated DSM efforts would not eliminate the need for additional resources to satisfy the system design standards. Furthermore, the Siting Board has found that the project proposed is consistent with Berkshires most recent LRF.

Based upon forecast peak sendout requirements, the Greenfield distribution system is not adequate to meet system design standards in the event of several different contingencies with a reasonable likelihood of occurring. The record also shows that system vulnerability will become more critical as sendout requirements increase and that DSM can not adequately offset forecasts increases in sendout. Accordingly, the Siting Board finds that Berkshire has demonstrated a need for additional energy resources to maintain system reliability in the Greenfield Division by the 1999/2000 split year.

A. Comparison of the Proposed Project and Alternative Approaches

1. Standard of Review

G.L. c. 164, § 69H requires the Siting Board to evaluate a proposed project in terms of its consistency with providing a reliable energy supply to the Commonwealth with a minimum impact on the environment at the lowest possible cost. In addition, G.L. c. 164,

§ 69J requires a petitioner to present "alternatives to planned action" which may include:

(1) other methods of generating, manufacturing, or storing; (2) other sources of electrical power or natural gas; and (3) no additional electric power or gas.¹⁶

In implementing its statutory mandate, the Siting Board requires a petitioner to show that, on balance, its proposed project is superior to alternative approaches in terms of cost, environmental impact, and ability to meet the identified need. NEPCo Decision, EFSB 97-3, at 20; 1997 BECo Decision, EFSB 96-1, at 37; Boston Edison Company, 13 DOMSC 63, at 67-68, 73-74 (1985) ("1985 BECo Decision"). In addition, the Siting Board requires a petitioner to consider reliability of supply as part of its showing that the proposed project is superior to alternative approaches. NEPCo Decision, EFSB 97-3, at 6; Commonwealth Electric Company, EFSB 96-6, at 23 (1997) ("1997 ComElectric Decision"); MassElectric Decision, 18 DOMSC 383, at 404-405.

2. Identification of Project Approaches for Analysis

The Company identified three approaches for meeting the identified need: (1) expansion of the existing LP facilities or the construction of new LP facilities ("LP alternative"); (2) construction of new pipeline and associated distribution facilities, along with securing additional upstream capacity and MDQ expansion ("pipeline alternative"); and (3) construction of a new LNG storage and vaporization facility ("proposed project") (Exh. BG-1, at 4-1).¹⁷ Staff asked the Company to address a fourth alternative, a combination of the pipeline alternative with a guarantee by Tennessee of a minimum pressure of 200 psig at the Northampton Gate Station

¹⁶ G.L. c. 164, § 69J also requires a petitioner to provide a description of "other site locations." The Siting Board reviews Berkshire's proposed and alternative sites, as well as other potential site locations, in Section II.B, below.

¹⁷ Berkshire also analyzed additional conservation and additional load management options and determined that these options would not meet the identified need. These options are discussed in Section II.A.3.d, above.

("pipeline/200 psig alternative").¹⁸

a. The Proposed Project

Berkshire stated that the proposed project would consist of two nominal 70,000 gallon LNG storage tanks (with three additional 70,000 gallon tanks to be added at a later date), and a vaporizer, truck unloading facilities, spill containment structures, odorization facilities, buildings, controls and associated piping and attachments (Exh. BG-1 (att. F at 1-3)). Berkshire stated that there would be a pipeline to interconnect the proposed facility with the Company's existing distribution system (id. (att. 5-H)).¹⁹

The Company indicated that, to ensure system reliability, it would size the LNG facility to provide sufficient storage capacity to meet sendout requirements for three peak days (Exh. BG-1 (att. 4-F)). The Company stated that the combined effective storage capacity for the two

¹⁸ In response to staff questioning, the Company also indicated that it considered and discarded the alternative of installing a second compressor on the Greenfield Feedline, downstream of the Northampton compressor station (Tr. 1, at 121-122). Berkshire asserted that there are numerous operational problems which would make adding a second compressor station impractical, including lack of adequate upstream pressure, and the difficulty of coordinating two compressors to operate in tandem (id. at 122). The Company also explained that the existing system is small, and that multiple compressor stations are usually located on larger, cross-state-type pipelines (id.). Therefore, due to the operational drawbacks of adding another compressor station, the Siting Board did not elevate this option as an identified project alternative requiring further analysis.

¹⁹ The primary route proposed for the interconnecting pipeline for the preferred facility site runs north along Long Plain Road to Route 116, where it turns west, crosses a railroad overpass, and connects with the Greenfield Feedline at Route 5/10 (Exh. BG-1 (att. 5-H)). Various routes for the pipeline have been proposed that follow other roads leading to Route 5/10 or go under the railroad tracks rather than across the overpass (Exhs. BG-1 (att. 5-H); EFSB-EG-2). The various routes would range from approximately 3,500 feet to 6,250 feet in length (Exh. BG-1 (att. 5-H)). The Siting Board notes that if the selected interconnection route is to be over one mile in length, the Company would be required to come before the Board to request approval to construct the interconnect.

initial tanks would be 115,000 gallons,²⁰ equivalent to 10,032 decatherms ("Dth") (*id.*; Tr. 3, at 275). The Company added that 10,032 Dth of capacity would be sufficient to meet forecasted requirements for three peak days through split year 1999/2000 (Exh. BG-1 (att. 4-F)). The Company projected that additional tanks would be required in years 4, 12, and 19 (*id.*).

The Company asserted that the proposed project would meet the Company's identified need at the least cost and with a minimum impact on the environment (Exh. BG-1, at 1-3). The Company noted that the proposed project would be able to operate without the use of additional LP or pipeline facilities (Exhs. BG-1, at 4-14; BG-RMA-1, at 10). The Company indicated that the net present value ("NPV") of the twenty-year cost of the proposed project would be \$8,661,624 (Exh. RR-24(c)).

b. Pipeline Alternative

Berkshire identified a pipeline alternative which would involve looping sections of the Greenfield Feedline and increasing its MDQ at the Northampton Gate Station (Exh. BG-1, at 4-5).²¹ Berkshire stated that the pipeline alternative would initially involve looping 11 miles of the existing Greenfield Feedline and an upgrade to the Northampton Gate Station, with a total of 3.6 miles of additional pipeline to be installed in later years (Exh. BG-1, at 4-7, 4-8 and (att. 4-E)). The 12-inch pipeline loop would travel along Route 5/10 in the existing ROW through the towns of Northampton, Hatfield, and Whately (Exhs. BG-GAJ-1, at 7; EFSB-PA-4). Berkshire indicated that the pipeline alternative would also require an increase in its MDQ in year five (Exh. BG-1, at 4-8). Berkshire also stated that the existing LP facilities would need to remain operational under the pipeline alternative (Tr. 3, at 279). The Company indicated that the NPV of the twenty-year cost of the pipeline alternative would be \$23,793,144 (Exh. RR-24(a)).

²⁰ Berkshire explained that each tank is capable of containing 64,000 gallons of LNG, 90 percent of which is considered the effective storage capacity (Tr. 3, at 269).

²¹ The Company indicated that Tennessee's Northampton Lateral is currently operating at full capacity and that requests for additional capacity or an increase to Berkshire's MDQ would require larger diameter pipe or looping between the Tennessee mainline and the Northampton Gate Station (Exh. BG-1, at 2-1).

c. Pipeline/200 Psig Alternative

In response to a Siting Board request, the Company developed a project alternative that combined components of the pipeline alternative described above with a guarantee by Tennessee of a minimum pressure of 200 psig at the Northampton Gate Station (Tr. 3, at 297). Berkshire determined that under this scenario, in year one it would need to construct an approximately eight mile pipeline, upgrade the Northampton Gate Station, and increase its MDQ to ensure system reliability (Exh. HO-RR-23). The Company indicated that a total of four miles of additional pipeline would need to be installed in later years (*id.*). Berkshire stated that any needed upgrades to the Tennessee lateral would take approximately two and a half to three years to complete (Tr. 4, at 425-426). The Company indicated that the NPV of the twenty-year cost of the pipeline/200 psig alternative would be \$21,788,820 (Exh. RR-23(S)).

d. Liquid Propane Alternative

Berkshire also developed a LP alternative involving the construction of a new liquid propane facility at the site of the proposed project (Tr. 3, at 325). The Company stated that in year one, the LP alternative would consist of two 60,000 gallon LP storage tanks, vaporization equipment, 9.5 miles of looping and an upgrade to the Northampton Gate Station (Exh. BG-1, at 4-7 and (att. 4-D)). Berkshire noted that in later years additional looping and LP storage would be required, projecting that the additions would consist of .33 mile pipeline increments in years 6, 11, and 16 and a third 60,000 gallon LP tank in year 16 (*id.* at (att. 4-D)). Berkshire noted that the LP alternative would also require an increase to its MDQ in year 13 (Exh. BG-1, at 4-7 (att. 4-E)). The Company stated that the size of the LP tanks and the layout of the LP facility would be very similar to the LNG tanks and the layout of the LNG facility (Tr. 3, at 351, 354).²²

The Company asserted that construction of a liquid propane facility by itself would not constitute a long term solution to its pressure problems because propane must be mixed with natural gas in certain ratios (Exhs. BG-1, at 4-4; BG-TGQ-1, at 22). The Company therefore

²² Berkshire stated that, over the planning period, the LP facility would require two fewer tanks than the proposed project and would not require any impoundment areas (Tr. 3, at 351).

concluded that the LP alternative also would require the acquisition of additional pipeline supplies and looping of the Greenfield Feedline (Exhs. BG-1, at 4-4; BG-TGQ-1, at 22). The pipeline associated with the LP alternative would travel the same route as the pipeline alternative; however, it would end one to one and a half miles south of the proposed site (Tr. 3, at 350). Berkshire asserted that the LP alternative would involve somewhat more substantial environmental impacts than the proposed project or the pipeline alternative because it combines the construction of a satellite facility, similar to the proposed project, with the construction of a pipeline only slightly shorter than that required for the pipeline alternative (Exh. BG-GAJ-1, at 11). The Company indicated that the NPV of the twenty-year cost of the LP alternative would be \$14,164,295 (Exh. RR-24(b)).

e. Analysis

The Company has identified four project approaches which would address the identified resource need: the proposed project, the pipeline alternative, the pipeline/200 psig alternative, and the LP alternative. However, two of the four approaches are clearly inferior to the others. The LP alternative involves the construction of both a new LP facility and 9.5 miles of looping, thus combining the environmental impacts of the proposed project and the pipeline alternative without providing any significant offsetting advantage. The pipeline/200 psig approach initially appears attractive because it would require approximately three fewer miles of looping than the pipeline approach, (8 miles versus 11 miles) and would cost approximately 10 percent less. However the lead time required for Tennessee to construct the necessary gate station upgrades would be two to three years; thus, this alternative could not meet the identified need until the winter of 2002/2003. Given our finding, above, that Berkshire has demonstrated a need for additional energy resources to maintain system reliability in the Greenfield Division by the 1999/2000 heating season, the Siting Board concludes that the environmental, and cost savings are small when compared to the delay in meeting the identified need. Therefore, the Siting Board focuses on the two remaining approaches, the proposed project and the pipeline alternative.

Accordingly, the Siting Board finds that both the proposed project and the pipeline alternative would meet the identified need in the Greenfield Division of the Berkshire system. In

the following sections, the Siting Board compares the proposed project and the pipeline alternative with respect to reliability, environmental impacts, and cost.

3. Reliability

In this section, the Siting Board compares the proposed project and the pipeline alternative with respect to their ability to provide a reliable supply of gas to the Greenfield Division of the Berkshire system.

Berkshire stated that the proposed project is essentially identical to the pipeline alternative in terms of the reliability of delivery (Exh. BG-1, at 4-16). However, the Company asserted that the proposed project is superior to the pipeline alternative with respect to operational flexibility (*id.*; Exh-EFSB-PA-9). Berkshire indicated that, as a new separate supply, the proposed project would be capable of providing complete system redundancy for the Greenfield Division during most of the year; the pipeline alternative, which is not a separate supply source, does not offer the same benefit (Exhs. BG-1, at 4-16; Tr. 3, at 327). In addition, Berkshire noted that the proposed project may allow for flexibility in terms of the Company's ability to pursue release of its interstate pipeline capacity (Exh. BG-TGQ-1, at 23).

Berkshire explained that under the pipeline alternative the existing LP facility would need to be retained due to the unpredictable inlet pressure at the Northampton Gate Station (Exh. BG-TGQ-1, at 23; Tr. 3, at 279). The Company stated that the pipeline alternative may also require the simultaneous operation of the compressor station at higher sendouts, while the proposed project would not have to be run coincidentally with the compressor station at any sendout level, and in fact the proposed LNG facility and the compressor station would operate at different points in time during the season (Tr. 3, at 324-325).²³ The Company acknowledged however, that if the MDQ were increased in conjunction with the assurance of adequate pressures from Tennessee, the existing LP facility would not be needed under the pipeline alternative (*id.* at 280). In addition, the Company asserted that the inadequate delivery pressures associated with

²³ Berkshire stated that it expected to operate the compressor in the swing months -- late winter and early spring -- when the need for supplemental resources would be lower (Tr. 3, at 90-91).

the pipeline alternative contributes to a lesser degree of operational flexibility (Tr. 3, at 329).

Berkshire asserted that the current condition of the LNG market is strong, citing the completion of a new Distrigas facility in Trinidad (id.). The Company stated that it plans to maintain a minimum three-day supply at the proposed project which would insure flexibility in terms of traffic and/or other weather conditions (Exh. EFSB-PA-8). The Company asserted that the design of the proposed project would incorporate substantial system redundancy in order to operate in a reliable manner (Exh. EFSB-PA-9).

The record indicates that the proposed project and the pipeline alternative would provide a reliable supply. However, the proposed project possesses some operational advantages: it would provide complete system redundancy for the Greenfield Division and it could open up opportunities for increased upstream resources and capacity release. Moreover, in order for the pipeline alternative to maintain adequate reliability it would need to be backed up by the existing LP facility and the compressor station, while the LNG alternative would require no such backup.

Accordingly, the Siting Board finds that the proposed project would be preferable to the pipeline alternative with respect to reliability.

4. Environmental Impacts

In this Section, the Siting Board compares the proposed project to the pipeline alternative with respect to environmental impacts resulting from: (1) facility construction; and (2) permanent land use.

Berkshire asserted that both the proposed project and the pipeline alternative would have limited impacts on the environment and that both projects could be constructed and operated consistent with relevant regulatory requirements (Exh. BG-1, at 4-11). Berkshire explained that in its environmental comparison of the project alternatives it assumed the most probable locations of each alternative based on Berkshire's need, the environmental characteristics of the area, and the nature of the distribution system in the Greenfield Division (Exh. BG-GAJ-1, at 6-7).

a. Construction Impacts

Berkshire indicated that construction of the first phase of the proposed project would take approximately four months, and would be restricted to the project site (Tr. 3, at 288). The Company stated that the tanks, control building, truck unload skid, and the vaporizer skid would be prefabricated off-site and transported to the proposed site (Exhs. BG-1, at 4-13; EFSB-ET-2; EFSB-EN-1).

The Company estimated that the daily volume of vehicles during the construction period would average between 10 and 20 vehicles each way (Exh. EFSB-ET-2). Berkshire indicated that it would use traffic details during construction when necessary in order to alleviate traffic impacts (*id.*). In regard to the construction of the interconnect from the proposed project to the Greenfield Feedline, the Company stated that it would work with local officials to schedule construction in more heavily traveled areas to reduce traffic impacts (Exh. EFSB-ET-10). The Company indicated that the construction of the proposed project would not generate any air impacts or noticeable noise impacts (Exhs. EFSB-EA-1; EFSB-EN-1).

Berkshire indicated that the first phase of the pipeline alternative would take approximately six to seven months to complete (Tr. 3, at 288). The Company indicated that the new pipeline would be adjacent to the existing Greenfield Feedline, which runs along Route 5/10 (Exh. EFSB-PA-17). The Company stated that the exact alignment of the looping had not been determined; however Berkshire anticipated staying within its existing ROW and off the hardened road surface (*id.*; Tr. 3, at 288).

Berkshire asserted that construction of the pipeline alternative would have greater environmental impacts than construction of the proposed project due to the larger area affected by construction (Exh. BG-GAJ-1, at 7). The Company indicated that the installation of the pipeline alternative would necessarily involve some disruption to trees and other vegetation, as well as wetlands and other water resources along the ROW (*id.* at 8). Berkshire presented a study ("Huntley Study") that identified potential sensitive receptors affected by the pipeline construction such as residences; the study also identified commercial buildings, large trees, wetlands, culverts, and bridges (Exh. BG-1 (app. E)). The Company explained that since the exact alignment of the pipeline within the ROW had not yet been determined, there could be

potential impacts on parking for commercial buildings, large trees along road edges, residential driveways, and wetlands located close the to shoulder of Route 5/10 (Tr. 3, at 359-361).²⁴

The Company indicated that the traffic impacts associated with construction of the pipeline alternative would be manageable because Interstate 91, which runs parallel to Route 5/10, could be used as an alternative during the construction period (Exh. BG-1, at 4-12).²⁵ The Company stated that public transportation would not be substantially affected because all roadways would remain open during construction (id. at 4-12).

The record indicates that the pipeline alternative would involve installation of 11 miles of pipeline along Route 5/10, resulting in construction impacts in the towns of Northampton, Hatfield, and Whately. While the exact alignment of the pipeline within the ROW has not yet been determined, a number of residences, commercial establishments, trees, wetlands and culverts would experience temporary impacts due to the construction. Further, while traffic apparently can be re-routed to Interstate 91, a measure of inconvenience to travelers would result. The construction impacts of the proposed project on the other hand, would be both localized due to the single site with a small interconnect, and minimized due to the use of pre-fabricated equipment. In addition, the construction period for the proposed project would be shorter.

Accordingly, the Siting Board finds that the proposed project would be preferable to the pipeline alternative with respect to construction impacts.

b. Permanent Impacts

The Company asserted that the proposed project would have no noise impacts during normal operation, since it is designed not to increase noise levels at the property line, and since all equipment is to be located inside a control building (Exhs. EFSB-EN-1; EFSB-EN-5;

²⁴ The Huntley Study identifying general receptors provided the following information on potential numbers for targeted construction impacts: residences (188); commercial buildings (56); wetlands (23); culverts (7); bridges (5); and large trees (58) (Exh. BG-1 (app. E)).

²⁵ Berkshire noted that presently the traffic volumes on Interstate 91 are under capacity (Exh. BG-1, at 4-12).

BG-GAJ-1, at 10). Berkshire also indicated that there would be no short or long term impacts on local hydrology or on the recharge capacity of any aquifer (Exh. EFSB-EW-1). The Company asserted that the proposed facility would require only limited truck deliveries of LNG (Exh. BG-RMA-1, at 10).

The Company asserted that the pipeline alternative would have greater visual impacts and truck traffic impacts than the proposed project due to the continuing use of the existing LP facility (Exh. BG-1, at 4-13). Berkshire stated that presently the LP facility receives one truck load of LP every one to two weeks during the winter heating season (Tr. 3, at 264). Berkshire explained that the entire existing Greenfield LP facility would remain in place under the pipeline alternative, while under the proposed project the portion of the LP facility that is used for serving Berkshire's natural gas customers would be used on a standby basis for one to two years and then would be retired and removed (Tr. 3, at 262-263).²⁶ Berkshire noted the portion of the existing LP facility used for the retail sale of propane, which consists of propane tanks used for storage, would remain in place regardless of the project alternative chosen (Exh. EFSB-PA-11; Tr. 3, at 261).

The Company argues that the pipeline alternative would have greater permanent impacts than the proposed project based on the fact that the entire existing LP facility, rather than just the retail portion, would remain in place in Greenfield. The Siting Board notes that the actual impacts associated with maintaining the entire existing LP facility, rather than just the retail component, appear to be minimal based on the limited number of trucks presently associated with the LP facility, and that the tanks would remain in place under both alternatives. The operational environmental impacts of the 9.5 miles of underground pipeline associated with the LP alternative also appear to be minimal. While the record indicates that the proposed project also would only have minimal operational impacts, it would nonetheless contribute to an increase in traffic due to LNG deliveries, which will increase over time. Further, the proposed project could require the clearing of trees, and could have visual impacts and wetland impacts

²⁶ The Company stated that it was not aware of whether there would be any regulatory steps that it would need to take in order to retire the existing LP facility (Tr. 3, at 263).

depending on the site selected.

Accordingly, the Siting Board finds that the pipeline alternative would be preferable to the proposed project with respect to permanent impacts.

c. Conclusion on Environmental Impacts

In Sections II. A. 4. a. and b. above, the Siting Board has found that: (1) the proposed project would be preferable to the pipeline alternative with respect to facility construction impacts; and (2) the pipeline alternative would be preferable to the proposed project with respect to permanent land use impacts. The Siting Board notes that while both construction impacts and permanent land use impacts contribute to the overall environmental component of a project, the construction impacts are temporary in nature. Accordingly, the Siting Board finds that the pipeline alternative would be slightly preferable to the proposed project with respect to environmental impacts.

5. Cost

The Company stated that it conducted detailed economic analyses of the construction and operational costs of the project alternatives (Exh. BG-RMA-1, at 8). Based on these analyses, Berkshire asserted that the proposed project was the least-cost alternative (id.).

The Company explained that it assumed that the proposed facility would be constructed in late 1999 and that the facility initially would consist of two 70,000 gallon LNG tanks, costing \$600,000 per tank, with an additional tank being constructed in each of years 4, 12, and 19, for a total of five tanks (Exhs. BG-1, at 4-10 and (att. 4-F); EFSB-PA-14). Berkshire indicated that the total facility cost presented in year one of the analysis included the cost of the interconnect of the proposed facility to the existing distribution system, and that additional pipeline requirements of approximately one mile in year 14 and one and a half miles in year 17, also were factored into the analysis (Exhs. BG-1 (att. 4-F); HO-RR-24(c); Tr. 3, at 307). Berkshire stated that it estimated operation and maintenance costs to be approximately \$175,000 per year, based on the input of its engineering staff and Northstar (Exh. BG-1, at 4-10). The Company stated that since LNG is typically more expensive than pipeline gas, it calculated a \$1.00 per Dth commodity

premium based on recent discussions with Tennessee (Exhs. BG-1, at 4-10; BG-TGQ-1, at 21; Tr. 3, at 292-293). Berkshire calculated the NPV of the 20 year revenue requirements for the proposed project to be \$8,661,624 (Exh. RR-24(c)).²⁷

The Company assumed that the pipeline alternative would initially consist of 11 miles of pipeline, with additional pipeline lengths of 1.2 miles for each of years 6, 11, and 16 (Exhs. BG-1, at 4-8; EFSB-PA-14). Berkshire estimated that pipeline costs would be \$150 per foot, based on the Company's recent experience with pipeline construction and discussion with vendors (Exh. BG-1, at 4-7). Berkshire indicated that the total facility cost presented in year one of the analysis included the cost of upgrading the Northampton Gate Station as well as construction of the first 11 miles of pipeline (Exh. BG-1, at 4-8, and (att. 4-E)). In addition, the Company explained that the pipeline alternative costs assume a system operating pressure of 175 psig based on historical experience of low pressure on the Tennessee transmission system (Exh. BG-1 (att. 4-E)). The Company indicated that under the pipeline alternative it would upgrade the Northampton lateral in year five, which is reflected in an incremental upstream cost of \$3.31 per Dth for each successive year of the 20 year period (Exh. BG-1; Tr. 3, at 303-304).²⁸ Berkshire calculated the NPV of the twenty-year revenue requirements for the pipeline alternative to be \$23,793,144 (Exh. RR-24(a)).²⁹

²⁷ The calculated NPV includes a 2.5 percent inflation factor (Exh. RR-24). The initial financial analysis presented in the filing by Berkshire did not include an inflation factor over the 20-year period for either capital costs or operation and maintenance costs (Exh. BG-1 (atts. 4-D, 4-E, 4-F)). The Company stated that for purposes of conservatism it had not adjusted the costs for inflation (Exhs. BG-1, at 4-7; EFSB-PA-7). The NPV over a 20 year period of the proposed project without an inflation factor is \$7,625,153 (id. (att. 4-F)).

²⁸ The Company provided information concerning the derivation of the pipeline capacity cost of \$3.31 per Dth, which is comprised of Tennessee's transportation costs from the Gulf and from the Northampton Lateral based on an upgrade of 2,000 Dth/d (Exh. BG-1 (att. 4-H)). In the event that the upgrade is based on 10,000 Dth/d, the cost would decrease to \$3.00 per Dth (id.).

²⁹ The calculated NPV includes a 2.5 percent inflation factor (Exh. RR-24) (see n. 27 for a discussion of the inflation factor). The NPV over a 20 year period of the proposed project

The record demonstrates that the overall cost of the pipeline alternative, including capital costs and operating and maintenance costs, would be higher by a factor of three than the overall cost of the proposed project. Accordingly, the Siting Board finds that the proposed project would be preferable to the pipeline alternative with respect to cost.

6. Conclusions: Weighing Need, Reliability, Environmental Impacts and Cost

In comparing the proposed project to the pipeline alternative, the Siting Board has found that both the proposed project and the pipeline alternative would meet the identified need in the Greenfield Division of the Berkshire system.

The Siting Board has also found that the proposed project would be preferable to the pipeline alternative with respect to reliability and cost, and the pipeline alternative would be slightly preferable to the proposed project with respect to environmental impacts. Given the magnitude of the cost differential, the incremental environmental impacts attributed to the proposed project are outweighed. Accordingly, the Siting Board finds that the proposed project is preferable to the pipeline alternative with respect to providing a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.

III. ANALYSIS OF THE PROPOSED AND ALTERNATIVE FACILITIES

A. Description of the Proposed Facilities and Alternative Facilities

1. Proposed Facilities

Berkshire's preferred site is a 16.2 acre parcel located on Long Plain Road in the Town of Whately, Massachusetts ("Long Plain Road site"). The site is a level, wooded lot, bounded by the B&M railroad on the west and Long Plain Road on the east (Exh. BG-1 (atts. 5-E, 5-F)). The proposed facilities include two prefabricated 70,000 gallon LNG tanks, each twelve feet in diameter and 120 feet long which would be set on a concrete pad, separated from each other by earthen dikes, and surrounded by a gravel field (Exhs. BG-RMA-2; BG-1 (app. F, at 1-8); Tr. 2,

without an inflation factor is \$17,085,153 (Exh. BG-1 (att. 4-E)).

at 209). The Company plans to install up to three additional tanks over a twenty year planning period (Exhs. BG-1 (att. 4-F); BG-RMA-2). Each tank is connected to a 46 foot square sump by a spillway (Exhs. EFSB-FR-1; EFSB-SR-6).³⁰ Each containment system can contain 150 percent of the contents of a tank (Exh. BG-TGQ-3). To the east of the tanks and gravel area would be a 20' by 60 foot one story control building, which would house the control valves, remote access facilities, vaporization and odorization controls (Exhs. BG-RMA-2; HO-RR-28 (att. a, at 2); EFSB-EN-1). The Company indicated that it would enclose the building and tanks with a ten foot high vapor fence with a ten foot gravel fire break on either side. (Exhs. BG-RMA-2; BG-1 (app. F, at 1-25)).

The Company proposes to create a curved access road off of Long Plain Road that would lead to a small parking area and loop around the tanks (Exh. BG-RMA-2). The Company also proposes to build a unloading area for truck deliveries of LNG (Exh. EFSB-EN-4). The Company proposes that all other areas inside of the vapor fence would be grassed and that outside the fence the Company would maintain a mature stand of trees (Exhs. BG-RMA-2; BG-1 (att. 5-F)).

The Company described four alternative routes for a pipeline connecting the proposed LNG facility to the Greenfield Feedline. The Company's preferred route runs north along Long Plain Road to Route 116, then turns west and runs along a bridge over the railroad and Route 91 until it meets Route 5/10 where it connects to Berkshire's Greenfield Feedline (Exhs. BG-1 (att. 5-H); EFSB-EG-2 (att. a); Tr. 2, at 138-139).

2. Alternative Facilities

The alternative site is a 17 acre parcel located on Route 5/10 in the Town of Whately, Massachusetts abutting Route 91 near Interchange 23 ("Route 5/10 site") (Exh. BG-1 (att. 5-E)). The site is currently a level open field use for agriculture and contains one tobacco barn and a large borrow pit (*id.*). The facilities proposed for the alternate site are similar to those proposed

³⁰ Exhibit EFSB-FR-1 describes the sumps as a 56 foot square. In calculations and in all other exhibits the Company has proposed 46 foot square sumps that are six feet deep (Exhs. BG-TGQ-3; EFSB-SR-6). The spillways are 153 feet long (Exh. EFSB-FR-1).

for the primary site; however the sumps at the alternative site would be smaller and deeper and the spillways would be shorter³¹ (Exhs. EFSB-FR-1; BG-1 (app. F, fig. 1.3.8-1, 1.3.8-2); EFSB-EV-1).

The Company proposes a shorter access road at the alternative site than the primary site (Exh. BG-1 (app. F, fig. 1.3.8-2). The site abuts Berkshire's Greenfield Feedline on Route 5/10, so no interconnecting pipeline is required (Exh. BG-1 (att. 5-C)).

B. Site Selection Process

1. Standard of Review

In order to determine whether a petitioner has shown that its proposed facilities' siting plans are superior to alternatives, the Siting Board first requires the petitioner to demonstrate that it examined a reasonable range of practical siting alternatives. NEPCo Decision, EFSB 97-3, at 36; 1997 BECo Decision, EFSB 96-1, at 59; Northeast Energy Associates, 16 DOMSC 335, at 381, 409 (1987) ("NEA Decision"). In order to determine that a petitioner has considered a reasonable range of practical alternatives, the Siting Board requires the petitioner to meet a two-pronged test. First, the petitioner must establish that it developed and applied a reasonable set of criteria for identifying and evaluating alternative sites in a manner which ensures that it has not overlooked or eliminated any sites which, on balance, are clearly superior to the proposed site. NEPCo Decision, EFSB 97-3, at 36; 1997 BECo Decision, EFSB 96-1, at 59; Berkshire Gas Company (Phase II), 20 DOMSC 109, 148-149, 151-156 (1990) ("Berkshire Gas Phase II Decision"). Second, the petitioner must establish that it identified at least two noticed sites or routes with some measure of geographic diversity. NEPCo Decision, EFSB 97-3, at 36; 1997 BECo Decision, EFSB 96-1, at 59; NEA Decision, 16 DOMSC 335, at 381-409.

2. Development and Application of Siting Criteria

Berkshire stated that it began its site selection process by defining a study area, a

³¹ The Company has proposed 36 foot square impoundments that are ten feet deep, and 127 foot long spillways at the alternative site (Exh. EFSB-FR-1).

preliminary set of criteria, and a set of principles to guide its search for potential sites (Exhs. BG-1, at 5-1 to 5-2; EFSB-SS-2). The Company defined a study area that fell within a one-half mile corridor around the Greenfield Feedline in Greenfield, Deerfield, and Whately, assuming that sites nearer to the Greenfield Feedline were likely to have lower interconnection costs and environmental impacts (*id.*). The study area was bounded to the south by the Whately/Hatfield border, because the Company calculated that an LNG facility further south would be too far away from the load to provide adequate pressure to meet the need (Tr. 3, at 371-372). The Company indicated that this corridor also generally avoided flood plains, airports, and steep grades for which regulations impose stricter requirements (Exh. BG-1, at 5-2 to 5-3). The Company outlined its study area on a U.S. Geological Survey map, and used that as a guide in locating appropriate sites (Exhs. BG-1 (att. 5-B); BG-1, at 1-4).³²

The Company stated that it looked for sites with at least two prime buildable acres, plus ten additional suitable acres to allow it to meet regulatory requirements related to vapor fences and exclusion zones (Exhs. BG-1, at 5-3; BG-TGQ-1, at 24; Tr. 3, at 374-376). The Company stated that it followed a number of federal and state guidelines and regulations concerning the siting of LNG tanks, including 980 CMR 10, 220 CMR 112, 49 CFR 193, National Fire Protection Association ("NFPA") 59A, and Federal Emergency Management Agency ("FEMA") flood plain regulations (Exhs. BG-1 (app. F at 1-22)). The Company stated that sections 49 CFR 193.2057 and 2059 affected the size and shape of the proposed facility, since these regulations specify the amount of area needed for exclusion zones for thermal radiation and flammable vapor gas dispersion (Exh. EFSB-SS-7 (atts. c, d); Tr. 4, at 430-432). The Company explained that sections 49 CFR 193.2063, 2071, and 2073 affected its consideration of surrounding land uses and flooding (Exh. EFSB-SS-7 (atts. f, j, k); Tr. 4, at 433-435). The Company asserted that it was more conservative than the federal code regarding the control over exclusion zones and the use of floodplains, since it avoided dense areas and floodplains from the start (Exh. BG-1, at 5-2; Tr. 4, at 431-433).

³² The Company noted that its study area was used as a guideline and that it evaluated at least thirteen sites outside the study area boundaries (Exhs. BG-1 (att. 5-B); BG-GAJ-1, at 13; Tr. 3, at 370-371).

The Company also determined that it would seek sites where construction would be consistent with local land use policies and which were easily accessible from either Interstate 91 or Route 5/10 (Exhs. BG-1, at 5-1, 5-4; EFSB-SS-4). The Company asserted that it considered zoning and land use issues carefully during the site selection process, but did not specifically reject any site based upon land use or zoning (Exhs. EFSB-SS-4; EFSB-SS-5).

The Company also developed a set of principals to guide its site selection process. The Company stated that it expected to evaluate a large number of sites through an iterative process, where sites would continually come in and out of consideration (Exh. BG-1 at 5-4; Tr. 3, at 378). The Company also indicated that it applied its criteria flexibly, so as to not eliminate any potentially attractive site while also developing a comprehensive list of sites (Exhs. BG-1 at 5-4, 5-5; BG-RMA-1, at 12). In addition, the Company stated that it expected to include local officials and the public in its process, and noted that public input proved to be a significant component of its site selection process (Exh. BG-RMA-1, at 11-13).

Having established a study area, some preliminary criteria, and some general principles, the Company proceeded to identify potential sites. The Company indicated that its site selection team used USGS and other maps, local real estate brokers, Berkshire employees, local officials and business leaders to help develop a comprehensive list of potential sites (Exhs. BG-1, at 5-5; EFSB-SS-3(2)). The Company identified, inspected, and reviewed over forty potential sites during this process (Exhs. BG-1, at 5-6; BG-1 (att. 5-B); BG-RMA-1, at 11; Tr. 3, at 377-378). The Company explained that it eliminated sites from consideration for reasons including: the size and shape of the site, slope³³, large or interspersed wetland areas, high property cost, close proximity to an airport, or poor transportation access for LNG deliveries (Exh. EFSB-SS-3 (att. a); Tr. 3, at 385-389). The Company stated that it did not review all the sites together; if the site passed initial inspection, then Berkshire would approach the owner to inquire about purchase (Tr. 3, at 380).

Berkshire indicated that its application of certain criteria evolved during the process, and

³³ The Company asserted that steeply sloped sites would require a higher vapor fence on the downslope, thus significantly affecting cost and environmental impacts (Exh. EFSB-SS-10).

that community input strengthened Berkshire's commitment to find a site zoned industrially, which required it to become more flexible with respect to cost (Exhs. EFSB-SS-4; BG-1, at 5-8; Tr. 3, at 383). The Company noted that it originally pursued a site in South Deerfield; however after soliciting opinions from the public, it ultimately rejected the site based in part upon community opposition (Exhs. BG-1 at 5-8; BG-1 (app. I); Tr. 4, at 445-446). As a result, the Company indicated that the public became increasingly involved in the site selection process, which led the Company to reconsider other sites, including the Long Plain Road site (Exh. EFSB-SS-5; Tr. 4, at 443-444).

Berkshire argued that the Long Plain Road site was the best site for construction of the proposed facility (Exh. BG-1, at 5-8 to 5-9). The Company indicated that the Route 5/10 site was under consideration at the same time that the South Deerfield site was being pursued, but noted that once it identified the Long Plain Road site it pursued it more actively than the Route 5/10 site (Tr. 4, at 493-494). The Company stated that it did not know of any site in the study area, other than the Long Plain Road site, that was industrially zoned, wooded, level, without substantial wetlands or agricultural restrictions, with good transportation access, and of a suitable size to meet regulatory requirements (Tr. 3, at 393-395).

In accordance with the Siting Board's regulations at 980 CMR 10.02 (4), the Company developed a matrix which compared the Long Plain Road and Route 5/10 sites based upon ease of acquisition, climatology, geology, hydrology, transportation access, ecological sensitivity, socioeconomics, special resources, commitment, and other (Exh. BG-1 (att. 5-D)). Using this matrix, the Company calculated that the Long Plain Road site was preferable to the Route 5/10 site (id.).³⁴

Berkshire indicated that it did not believe this matrix adequately reflected its consideration of environmental factors (Exh. GAJ-1, at 16). The Company therefore provided

³⁴ In this matrix, sites were assigned a score of one or two for each criteria, with one being less desirable and two being more desirable. No relative weighting of criteria was made. The total scores were seventeen for the Long Plain Road site and thirteen for the Route 5/10 site. The site with the higher total score is considered preferable (Exhs. BG-1 (att. 5-D); GAJ-1, at 15-16).

another site comparison which included the following fourteen criteria weighted from one to three for least to most importance (relative weight in parentheses): site size/geometry (2); proximity to the Greenfield Feedline (2); buffering potential (3); topography/geology (2); wetlands/water bodies (2); land use (3); transportation access (1); proximity to sensitive receptors (3); historic resources (2); archeological factors (2); community acceptance (3); ecological resources (3); utilities (3); and zoning (2) (Exhs. BG-1 (att. 5-C); BG-1, at 5-11 to 5-19). The Company indicated that it assigned the highest weights to criteria that were more important and had not been a significant part of the general criteria developed during the initial phase of site selection (Exh. GAJ-1, at 17-21). For example, the Company contended that although wetlands/waterways and transportation access were both very important considerations, any site that had significant wetland problems or difficult access would have been rejected during the initial site selection phase (Exhs. GAJ-1, at 17-18; EFSB-SS-3(1) (att. a)). The Company also stated that it gave a higher weight to community acceptance, land use and buffering potential criteria partly as a result of concerns raised by the community during public hearings (Exh. BG-1, at 5-12 to 5-17).

Berkshire stated that its siting team then scored the two sites for each criteria on a scale of zero to three, with zero indicating no problems associated with that category, and three indicating the most problems associated with that category (Exh. BG-GAJ-1, at 17). The Company stated that the Long Plain Road site received low or moderate (1 or 2, respectively) scores in all categories except "proximity to pipeline", and that the Route 5/10 site received high scores for site size, buffering potential, wetlands/water bodies, community acceptance, and zoning (Exh. BG-1 (att. 5-C)).³⁵ Based upon its matrix, the Company concluded that the Long Plain Road site was preferable to the Route 5/10 site for development of an LNG facility (Exhs. BG-1, at 5-19;

³⁵ The Company maintained that a low score for ecological resources is valid for both sites, although both are near or abut Natural Heritage and Endangered Species Program ("NHESP") identified habitat (*id.*, at 439-441). The Company indicated that, in retrospect, it might have assigned a lower score for archeological resources at the Long Plain Road site since no archaeological resources were found on the site (Tr. 4, at 437-438).

BG-GAJ-1, at 21).³⁶

The Company also compared the costs of the two alternative sites using the Alternative Site Evaluation Matrices set forth under 980 CMR 10.02 (4) (Exhs. BG-1, at 5-9; BG-1 (att. 5-D)). The Company detailed capital costs, including land acquisition, site preparation, structures and improvements, LNG processing equipment, LNG transportation facilities and other equipment for both sites (Exh. BG-1 (att. 5-D, 5-N)). The Company figured that the cost of utilities would be lower at the Route 5/10 site, since the site abuts the Greenfield Feedline (id.). The Company also noted that acquisition of the Route 5/10 site would cost \$200,000 less than the acquisition of the Long Plain Road site (id.). The Company stated that the cost of plant equipment would be identical at both sites. However, Berkshire asserted that the cost of installation and services at the Long Plain Road site would be substantially less than at the Route 5/10 site primarily as a result of lower civil site work, permitting and legal costs, septic systems, impoundments, and roadways (id.; Exh. EFSB-SS-13). The Company asserted that these costs were reasonable considering the wetlands, limited existing vegetation, high ground water, and community opposition associated with the Route 5/10 site (Exh. BG-1 (att. 5-N); Tr 3, at 400-406). Overall, the Company expected that the year one construction cost of the proposed project at the Long Plain Road site would be \$4,513,498, and the year one construction cost of the proposed project at the Route 5/10 site would be \$4,818,498 (Exh. BG-1 (att. 5-N)).

The Company indicated that it considered the Long Plain Road site to have slight reliability benefits over the Route 5/10 site, because it was farther north and closer to the load center (Exh. BG-1, at 5-20). In addition, the Company stated that the Long Plain Road site's buffer provided additional security (id.).

3. Analysis and Findings

Berkshire has developed a set of criteria for identifying and evaluating siting options that addresses environmental impacts, land use concerns, community issues, cost and reliability --

³⁶ The Company based this conclusion upon the total scores for each site, which were 40 for the Long Plain Road site and 58 for the Route 5/10 site. A lower ranking demonstrates that a site has lower overall impact (Exh. BG-1 (att. 5-C)).

types of criteria that the Siting Board has found to be appropriate for the siting of public utility facilities. See 1997 BECo Decision, EFSB 96-1, at 68; 1997 ComElec Decision, EFSB 96-6, at 53; New England Power Company, 4 DOMSB 109, 167 (1995) ("1995 NEPCo Decision").

The Company first identified an area that would encompass all viable siting options given the limitations imposed by federal/state regulations and the ability to meet the identified needs. The Company used this study area to guide, but not restrict, its search for sites. The Company identified over forty sites inside and outside the study area through an iterative process. The Company continually evaluated and rejected sites based upon a reasonable set of criteria, including site size and slope, wetlands, transportation access, community support, and proximity to airports. The Company demonstrated it used these criteria to narrow its search by eliminating any sites where construction of the LNG facility would cause substantial environmental impacts, or which did not meet regulatory criteria for size. The Siting Board notes that the Company eventually changed its application of certain criteria, as a result of community input, and refocused on finding a site with more appropriate surrounding land-use and zoning. Although criteria thus were not applied consistently throughout the initial phases of the site selection process, the Siting Board recognizes that it can be, and in this instance was, reasonable and beneficial for an applicant to adapt its criteria as it receives community input. Finally, Berkshire narrowed its search to the Long Plain Road and Route 5/10 sites and developed a comprehensive comparison of these two sites.

The Siting Board notes that the Company's comprehensive list of criteria, its evaluation of a large number of sites, its willingness to work with the community, and its willingness to re-evaluate sites, all contributed to a site selection process that led to the choice of a superior site. The Company has selected a site which meets almost all of its desired characteristics and which the Company has demonstrated also serves to minimize environmental and community impacts and cost. The Company has shown that it is highly unlikely that another site with such desirable attributes exists in the study area. The Company has shown that it applied a reasonable set of criteria to compare the two noticed sites, and that those criteria were applied consistently and appropriately to those two sites.

Based on the foregoing, the Siting Board finds that the Company has developed a

reasonable set of criteria for identifying and evaluating facility alternatives. The Siting Board also finds that the Company has applied its site selection criteria appropriately, and in a manner which ensures that it has not overlooked or eliminated any sites which are clearly superior to the proposed project.

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

4. Geographic Diversity

Berkshire during its site selection process, evaluated over forty sites in five towns. Berkshire identified and noticed two distinct sites in different parts of the Town of Whately. Consequently, the Siting Board finds that the Company has identified a range of practical siting alternatives with some measure of geographic diversity.

5. Conclusions on the Site Selection Process

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

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

1. Standard of Review

In implementing its statutory mandate to ensure a necessary energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost, the

Siting Board requires a petitioner to show that its proposed facilities are sited at locations that minimize costs and environmental impacts while ensuring a reliable energy supply. To determine whether such a showing is made, the Siting Board requires a petitioner to demonstrate that the proposed site for the facility is superior to the noticed alternatives on the basis of balancing cost, environmental impact, and reliability of supply. NEPCo Decision, EFSB 97-3, at 45; 1997 BECo Decision, EFSB 96-1, at 72; Berkshire Gas Company, 23 DOMSC 294, at 324 (1991).

An assessment of all impacts of a proposed facility is necessary to determine whether an appropriate balance is achieved both among conflicting environmental concerns as well as among environmental impacts, cost, and reliability. NEPCo Decision, EFSB 97-3, at 45; 1997 BECo Decision, EFSB 96-1, at 72; Eastern Energy Corporation, 22 DOMSC at 188, 334, 336 (1991). A facility which achieves that appropriate balance thereby meets the Siting Board's statutory requirement to minimize environmental impacts at the lowest possible cost. NEPCo, EFSB 97-3, at 46; 1997 BECo Decision, EFSB 96-1, at 287; Eastern Energy Decision, 22 DOMSC at 334-335.

The Siting Board recognizes that an evaluation of the environmental, cost and reliability trade-offs associated with a particular proposal must be clearly described and consistently applied from one case to the next. Therefore, in order to determine if a petitioner has achieved the proper balance among environmental impacts and among environmental impacts, cost and reliability, the Siting Board must first determine if the petitioner has provided sufficient information regarding environmental impacts and potential mitigation measures in order to make such a determination. NEPCo Decision, EFSB 97-3, at 46; 1997 BECo Decision, EFSB 96-1, at 73; 1997 CommElectric Decision, EFSB 96-6, at 61. The Siting Board can then determine whether environmental impacts would be minimized. Similarly, the Siting Board must find that the petitioner has provided sufficient cost information in order to determine if the appropriate balance among environmental impacts, cost, and reliability would be achieved. NEPCo Decision, EFSB 97-3, at 46; 1997 BECo Decision, EFSB 96-1, at 73; Boston Edison Company (Phase II), 1 DOMSB 1, at 40 (1993).

Accordingly, in the sections below, the Siting Board examines the environmental

impacts, cost and reliability of the Company's proposed LNG facility at the preferred and alternative sites to determine: (1) whether the environmental impacts of the proposed facility would be minimized; and (2) whether the proposed facility would achieve an appropriate balance among conflicting environmental impacts as well as among environmental impacts, cost and reliability. In this examination, the Siting Board conducts a comparison of the preferred and alternative sites to determine which is preferable with respect to providing a necessary energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.

2. Environmental Impacts

a. Wetland and Water Resource Impacts

(1) Preferred Site

Based upon a wetlands survey performed by a professional wetland scientist, Berkshire stated that the preferred site does not contain any wetlands or floodplains regulated by the state or federal government (Exhs. BG-1 (atts. 5-B, 5-C); EFSB-EW-5; EFSB-EW-19). The Company acknowledged that an area in the northwest corner of the site has some wetland indicator species, but argued that this area does not have any other characteristics, such as hydric soils or standing water, that would classify it as a bordering vegetated wetland, isolated area subject to flooding, or a vernal pool (Tr. 2, at 192-197). In addition, the Company indicated that it has consulted several town boards, and that no wetland issues have been raised with regard to the preferred site (Exh. EFSB-EW-5).

The Company indicated that the proposed facility would use an estimated five to twenty gallons of water per day for sanitary purposes, supplied from Town of Whately's water system (Exh. EFSB-EW-11). In addition, the Company stated that the proposed facility would have a closed-loop glycol water system within the heat exchanger that would use demineralized water delivered from an offsite source (*id.*). The Company estimated that an average of five gallons and a maximum of twenty gallons of sewage would be produced per day (Exh. EFSB-EW-20). Berkshire stated that it would need to install a septic system, similar to ones used for residential purposes, and asserted that there are no constraints to using a septic system on the preferred site

(Exh. EFSB-EW-10).

Berkshire provided evidence that the preferred site does not overlay any aquifer used for public drinking water or any designated Zone II³⁷ (Exhs. EFSB-EW-4; EFSB-EW-16). The Company stated that it found no evidence that individual wells (residential or industrial) exist in the areas of Whately and South Deerfield near the preferred site, and noted that these areas are served by town water (Exhs. EFSB-EW-3; EFSB-EW-16; Tr. 2, at 222-223). In addition, the Company asserted that the proposed facility would have no impact on groundwater recharge, since stormwater will run off the impervious areas of the proposed facility and percolate into the ground (Exh. EFSB-EW-15).

Berkshire calculated that the construction of the proposed project at the preferred site would create 1.18 acres of impervious surface (Exh. EFSB-EW-18). The Company stated that the soil characteristics at the preferred site are sandy/loam, which easily facilitate percolation of groundwater (Exhs. BG-1 (att. 5-E); EFSB-EW-9). Berkshire indicated that water level tests show that the groundwater level is between four and a half feet and eight feet from the surface (Exh. EFSB-EW-1). The Company asserted that the site's soils, topography, and the facility layout all combine to obviate the need for stormwater systems (Exh. EFSB-EW-9; Tr. 2, at 211-212). The Company indicated that stormwater runoff would fall to the sides of the roads and percolate into the ground, while runoff from the tanks, platforms and the control building would fall into the gravel areas surrounding those structures and percolate into the ground (Tr. 2, at 208-212). The Company asserted that it has not observed storm water accumulating on the site (*id.*).

Berkshire noted that Department regulations require LNG facilities to pump precipitation

³⁷ DEP defines the Zone II as "that area of an aquifer which contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated (180 days of pumping at approved yield, with no recharge from precipitation). It is bounded by the groundwater divides which result from pumping the well and by the contact of the aquifer with less permeable materials such as till or bedrock. In some cases, streams or lakes may act as recharge boundaries. In all cases, Zone II shall extend upgradient to its point of intersection with prevailing hydrogeologic boundaries (a groundwater flow divide, a contact with till or bedrock, or a recharge boundary)." 310 CMR 22.02.

out of the impoundments (Exh. BG-TGQ-2, at 7-1).³⁸ The Company stated that it has chosen to build wider and deeper impoundments at the preferred site than it would build at the alternative site in order to avoid the water table (Tr. 1, at 57-58). The Company has stated that it plans to install two water-level activated automatic sump pumps in each impoundment (*id.*; EFSB-EW-12). Berkshire submitted data indicating that the base of the remote containment sumps for the preferred site would be below ground water levels for at least part of the year³⁹ (Exhs. EFSB-FR-1; EFSB-EW-1). Berkshire also indicated that the outlet for the two sump pumps used to remove rainwater from each of the containment sumps at the preferred site will discharge near the sumps, but each pump would be at least forty feet away from another pump (Exh. HO-RR-16; Tr. 2, at 212-213). Berkshire indicated that it does not anticipate that groundwater would enter the sumps at either site for the reasonable life of the facility or that the rainwater discharged from the containment sumps would have any effect on local groundwater levels at the preferred site (Tr. 2, at 215, 217-218). Berkshire also indicated that the potential for groundwater incursion would be mitigated by employing specific construction measures for the containment sumps (*id.* at 218). The Company has proposed to discharge the water to a rip rapped splash pad area to prevent erosion, but the final design is not complete (Exh. HO-RR-16). Berkshire asserted that the stormwater discharge would not cause erosion since the soils readily absorb water (*id.*; Tr. 2, at 212-213).

The Company stated that it would not use any fertilizer, pesticides or chemicals to remove snow at the proposed facility (Exhs. EFSB-EW-2; EFSB-EW-13). Berkshire also indicated that it would employ techniques to minimize erosion during construction, including the use of many premanufactured components (Exh. BG-GAJ-1, at 24). Finally, the Company noted that it would require a U.S. Environmental Protection Agency NPDES General Permit for

³⁸ See also 980 CMR 10.04.

³⁹ Berkshire indicated that ground water at the preferred site was measured at depths between four and eight feet below ground level during April of 1998 (Exh. EFSB-EW-1). The remote containment sumps proposed for the site will be a minimum of six feet deep (Exh. EFSB-FR-1).

Stormwater Discharges From Construction Activities (Exh. EFSB-EW-9).⁴⁰ The Company stated that its preferred interconnecting pipeline route to the Greenfield Feedline would not cross any wetlands (Tr. 2, at 139).

(2) Alternative Site

The Company stated that the alternative site contains three types of wetlands: a man-made borrow pit on the southern portion of the site; a wooded vegetated wetland on the eastern side of the property; and a potential wetland area abutting the wooded wetland⁴¹ (Exhs. EFSB-EW-5; EFSB-EW-6; Tr. 2, at 197-198). The Company indicated that the borrow pit would probably be classified as Land Under Water and the wooded wetland areas would probably be classified as Bordering Vegetated Wetland (Exh. EFSB-EW-19). The Company proposed to keep all structures, except the vapor fence, outside wetland areas (Exh. BG-1 (app. F, fig. 1.3.8-2)). The Company asserted that a small amount of permanent fill would be needed to install the vapor fence in the cultivated wetland area, and indicated that a larger area of wetlands would be temporarily impacted during construction (Tr. 2, at 199-200). The Company provided a map showing that there are no floodplains on the alternative site (Exh. BG-1 (att. 5-B)).

The Company estimated that the construction of the proposed facility at the alternative site would result in the creation of .8 acres of impervious surface (Exh. EFSB-EW-18). The Company stated that water use and discharge would be the same at the alternative site as at the preferred site, but noted that the higher water table at the alternative site would necessitate a more costly septic system (Exh. EFSB-SS-13; Tr. 3, at 402). The Company indicated that the Town of Whately provides water to the area where the alternative site is located (Exhs. EFSB-EW-3; EFSB-EW-4). The Company submitted a map showing that the alternative site abuts, but does not overlie, the designated Zone II of a public water supply (Exh. EFSB-EW-16 (att. a)).

⁴⁰ This permit is needed for construction activities that disturb over five acres (Exh. EFSB-EG-3).

⁴¹ The Company indicated that this area has hydric soils and a high water table, but has been cultivated for many years, so it may not qualify as a regulated wetland (Exh. EFSB-EW-5; Tr. 2, at 198).

The Company stated that it found no evidence that individual wells (residential or industrial) exist in the areas of Whately near the alternative site, and noted that these areas are served by town water (Exhs. EFSB-EW-3; EFSB-EW-16; Tr. 2, at 222-223). In addition, the Company asserted that the proposed facility would have no impact on groundwater recharge, since stormwater would run off the impervious areas of the proposed facility and percolate into the ground (Exh. EFSB-EW-15).

Berkshire indicated that the sumps at the alternative site would be predominantly below groundwater levels (Exhs. EFSB-FR-1; EFSB-EW-1).⁴² Berkshire noted that it would build smaller but deeper impoundments at the alternative site than at the primary site in order to avoid permanent impacts to wetlands (Exh. HO-RR-29). The Company indicated that the sump pumps at the alternative site likely would discharge into a wetland area, and thus would require a section 401 Water Quality permit from the Massachusetts Department of Environmental Protection ("MDEP") and a U.S. Army Corps of Engineers Section 404 permit (Exh. EFSB-EW-6; Tr. 2, at 219-221). The Company stated that it would need to meet with the Whately Conservation Commission to discuss construction of the proposed project at the alternative site; however it was unsure whether the Conservation Commission would require a Notice of Intent (Exh. EFSB-EW-5; Tr. 2, at 219-221). The Company stated that wetland and water table issues at the alternative site would increase the cost of the proposed facility at that site relative to the preferred site (Exhs. BG-1 (att. 5-N); HO-RR-29).

The Company asserted that the proposed facility at the alternative site would not have any stormwater problems, although it acknowledged that stormwater would be more of an issue at the alternative site than at the preferred site, and that the Company would need a stormwater management plan for the alternative site (Exhs. EFSB-EW-9; EFSB-EW-15; Tr. 2, at 218-220). Finally, the record indicates that about half the alternative site contains poorly drained soils

⁴² Berkshire indicated that groundwater at the alternative site is within one foot of the ground surface (Exh. EFSB-EW-1). The remote containment sumps proposed for the site would be ten feet deep (Exh. EFSB-FR-1). Berkshire indicated that the relatively higher costs of building the containment sumps at the alternative site would be a direct result of the shallow groundwater depths (Tr. 4, at 458).

(Exhs. EFSB-EW-1; BG-1 (att. 5-E)).

(3) Analysis

The record shows that the preferred site is free of wetlands. The record also demonstrates that the Company would minimize its use of impervious surfaces for the proposed facility at the preferred site, and that stormwater can be contained and absorbed within the site without the use of specific stormwater controls. Consequently, the Siting Board finds that the environmental impacts of the proposed facility at the preferred site would be minimized with respect to wetlands.

In contrast, the record identifies Land Under Water, bordering vegetated wetland and one other large potential wetland area at the alternative site, and indicates that the vapor fence would affect two of these areas. Although the Company has shown that the wetland impacts of its proposed project probably could be minimized at the alternative site, the record is clear that no wetland impacts would occur at the preferred site. In addition, the presence of wetlands increases the cost of construction of the proposed facility at the alternative site. The record also indicates that if the facility were built at the alternative site, there would be stormwater discharges to the wetland areas. Accordingly, the Siting Board finds that the preferred site is preferable to the alternative site with respect to wetland impacts.

With respect to the water resource impacts, the record demonstrates that the Company would use little potable water and would produce only small quantities of sewage. The record also indicates that the proposed facility is not near any public water supply wells or well protection areas, and that few, if any, individual wells exist near the preferred site. In addition, the Company would employ techniques to protect the site from stormwater damage during construction and operation.⁴³ Consequently, the Siting Board finds that the environmental

⁴³ Berkshire stated that it did not anticipate groundwater intrusion into the containment sumps for the reasonable future of the facility (Tr. 2, at 217-218). Given the depth of the base containment sumps relative to the depth of groundwater at both the preferred and alternative site, the Siting Board considers that groundwater intrusion into the sumps would be reasonably likely over the lifetime of the facility. The Siting Board notes, however, that the proposed project would be capable of expelling groundwater from the

impact of its proposed facility at the preferred site would be minimized with respect to surface water, groundwater, and water supply.

The record shows that the source and quantity of water that would be used at either site is equal and, consequently, that there is no difference between the preferred and alternative site in terms of water use impacts. The record also indicates that the presence of a Zone II near the alternative site is a concern, whereas the proposed facility would not affect any known public water supply aquifers or wells at the preferred site. The record indicates that although the amount of sewage produced at each site is equal and minimal, the preferred site is better suited for a conventional septic system, since it has a lower water table. Lastly, the record indicates that stormwater may be discharged to surface waters at the alternative site, whereas stormwater would be absorbed into the ground at the preferred site. Therefore, the Siting Board finds that the preferred site is slightly preferable to the alternative site with respect to impacts to surface water, groundwater, and water supply.

b. Land Use, Visual, and Land Resource Impacts

(1) Preferred Site

The Company provided a copy of the Town of Whately Zoning Bylaw ("Bylaw"), which shows that the preferred site is industrially zoned (Exhs. BG-1 (app. J); EFSB-EL-6 (att. a)). The Bylaw also shows that the area immediately surrounding the site is zoned industrial or commercial/industrial, while neighboring areas are zoned agricultural/residential (*id.*). The Company stated that Whately has targeted the area where the preferred site is located for industrial development (Exhs. EFSB-EL-6 (att. a); EFSB-EL-4 (att. a)). The Company indicated that the nearest areas to the preferred site in South Deerfield are zoned planned industrial, commercial, industrial, or central village residential (Exh. EFSB-EL-2 (att. a)).

The Company stated that the current site is vacant wooded land that was used for agricultural purposes until the late 1950's, but is not subject to G. L. c. 61 restrictions (Exhs.

sumps. Therefore, groundwater intrusions would not impair the ability of the containment sumps to perform their intended function.

EFSB-EL-5; BG-1 (att. 5-E)).⁴⁴ The Company indicated that a graveyard lies directly to the north of the site, a railroad to the west, a cattle auction to the south, and the Whately Industrial Park to the east across Long Plain Road (Exh. BG-1 (att. 5-E)). The Company indicated that within a half mile of the preferred site, the existing land uses are 25 percent agricultural, 20 percent industrial, 12 percent Agricultural Protection Restriction ("APR"),⁴⁵ 10 percent commercial, 5 percent industrial/commercial, and 28 percent other land use uses (open space, wetlands) (Exh. EFSB-EL-1). Berkshire stated that the elevated B&M railbed separates the preferred site from the Tri Town Beach (Exh. EFSB-EV-2). The Company indicated that the only other sensitive receptors within one mile of the preferred site are a daycare facility, a school, a Town park, and Mount Sugarloaf State Park (Exhs. EFSB-EL-1 (att. a); EFSB-EL-3).

The Company stated that the proposed facility would be compatible with existing land-use plans for the area, including the Town of Whately Master Plan (August 1994), the Franklin Regional Council of Governments Regional Policy Plan (December 1998), and the Greater Franklin County Overall Economic Development Program (June 1995) (Exh. EFSB-EL-4 (atts. a, b, c)). In the Master Plan, the Town identified suitable areas for industrial and commercial development; the preferred site is located in an area identified as the first priority for industrial development (*id.* (att. a)).⁴⁶ The Regional Policy Plan indicates that Franklin County overall should encourage small and medium scale environmentally sound industrial development that is located in designated growth areas and that includes a minimum of 40 percent open space (*id.* (att. b at 15, 22, 28)).

The Town of Whately stated that it considers the preferred site to be a suitable site for development of an LNG facility (Exh. BG-RMA-3, at 2). The Town also indicated that the

⁴⁴ Chapter 61 restrictions refer to agricultural, open space, or forestry use restrictions that are incorporated into the deed of a property, and are approved by the Commonwealth of Massachusetts. See, G.L. c. 61, 61A, 61B.

⁴⁵ See n. 44.

⁴⁶ The priority industrial development areas were delineated to avoid wetlands, prime or state significant agricultural land, and the Mill River aquifer (Exh. EFSB-EL-4 (att. a)).

proposed facility, if built at the Long Plain Road site, would be consistent with the Town's long range planning efforts (*id.*).

Berkshire asserted that it does not expect significant change over the next twenty years in the area surrounding the preferred site (Exh. EFSB-EL-7). The Company elaborated that it does not expect any changes in land use to the north and west of the facility, based on current uses (a graveyard and a recreational area, respectively) (*id.*). Berkshire indicated that in the area to the south and east of the preferred site, the Company expects industrial/commercial growth, since this area is targeted for industrial development in local and regional plans (*id.*; Tr. 2, at 164-167). Berkshire maintained that its proposed use of the site would not conflict with industrial or commercial growth in the area since the area is industrially zoned and the Company has designed the proposed site to meet federal requirements concerning the separation of LNG facilities from different land uses (Tr. 2, at 169-170).

The Company indicated that the proposed facility would consist of a one story control building, twelve-foot high LNG tanks, a ten-foot high vapor fence and associated roads and utilities (Exhs. BG-1 (app. F at 1-8); HO-RR-28(att. a); BG-RMA-2). The Company stated that the preferred site contains mixed deciduous and evergreen trees between thirty and forty feet high (Exh. EFSB EV-6; Tr. 2, at 179). The Company indicated that the construction of the proposed facility would require the clearing of approximately five acres of trees, and that it would be surrounded by a wooded buffer of approximately 10 to 50 feet to the north, 75 feet to the west, 100 feet to the south, and 400 feet to the east (Exhs. EFSB-EV-7; BG-RMA-2; Tr. 2, at 180). Berkshire presented defoliate views of the preferred site from the nearest residence, the Tri Town Beach (west), the opposite side of Long Plain Road (east), and at points north and south of the site along Long Plain Road. All of these views indicate that a large buffer of thick trees would block views of the proposed facility (Exh. EFSB-EV-3). The Company has indicated that it would incorporate a curved access road in order to minimize the view of the proposed facility from Long Plain Road (Exhs. BG-RMA-2; EFSB-EV-2).

The Company asserted that the proposed site is listed in the Massachusetts Department of Environmental Management's "Massachusetts Landscape Inventory" (Exh. EFSB-EV-5).

Berkshire showed that the proposed site is visible from the Mount Sugarloaf State Park, but that

the view from the Park would not be negatively affected because the proposed facility would be surrounded by other larger industrial complexes (Exh. EFSB-EV-8).

The Company indicated that it is considering subdividing the preferred site and offering a portion of it for sale (Tr. 2, at 181-182). Berkshire stated that it would retain ownership of all safety exclusion zones, and that it would consider use of a restrictive covenant to ensure that the vegetative buffer was retained on any subdivided parcel (Exhs. HO-RR-13 (supp.); HO-RR-14). The Company stated it will comply with eight conditions imposed by the Town of Whately and set forth in a letter from the Board of Selectmen to the Company ("the Town of Whately conditions"), including requirements that all site lighting be directed downward, that the site be well screened in terms of its visibility from the road, and that the Planning Board be permitted to require additional screening throughout the life of the facility as the current vegetative cover matures and changes (Exhs. BG-RMA-1, at 14; BG-RMA-3, at 2). The Board of Selectmen requested that compliance with the Town of Whately conditions be included as a condition in the Siting Board's final decision in this proceeding (Exh. BG-RMA-3, at 2). The Company stated that a condition in the Siting Board's decision requiring compliance with the Town of Whately conditions would not negatively affect the Company's proposed project (Exh. HO-RR-34; Tr. 2, 251-254.)⁴⁷

The Company stated that it conducted an archeological impact assessment of the preferred site. The assessment report concluded that no significant artifacts or other archeological signs were found, and that there are no properties on the Massachusetts list of historical places near the preferred site (Exh. EFSB-EL-3 (att. a)).⁴⁸ In addition, the Company

⁴⁷ As noted below in this Section, the Siting Board's analysis and findings relative to land use, visual and land resource impacts relies, in part, on Berkshire's commitment to comply with the Town of Whately conditions. The Siting Board expects that Berkshire will comply with these conditions, particularly to the extent that they pertain to on-site lighting and the maintenance of a permanent visual buffer around the facility site.

⁴⁸ The Company stated that it contracted with the University of Massachusetts' Archeological Services to conduct consultation with the Massachusetts Historical Commission and historical and archaeological surveys of the preferred and alternative sites (Exh. HO-RR-12).

contacted the U.S. Fish and Wildlife Service ("US F&WS") and NHESP for documentation of rare, threatened, or endangered species (Exhs. HO-RR-9 (att. a); HO-RR-10 (att. a)). Although the preferred site abuts a mapped NHESP rare species habitat, the Company's exhibits show that neither the USF&WS nor the NHESP found any impact of the Company's proposal on rare or endangered species (Exhs. HO-RR-9 (supp.); HO-RR-10 (supp.)).⁴⁹ The Company indicated that it expects only minimal ecological impact from the construction and operation of the proposed facility at the preferred site, because a field reconnaissance did not reveal any ecologically significant issues (Exhs. BG-GAJ-1, at 18; BG-1 (att. 5-C)). In addition, the Company indicated that it would limit the construction area by using premanufactured structures, which would limit ecological disturbance (Exh. BG- GAJ-1, at 24).

The Company stated that the proposed facility would produce minimal solid waste, primarily compost, which would either be left on site or removed to an appropriate composting place (Exhs. EFSB EG-7; BG-GAJ-1, at 21; Tr. 2, at 148-149). The Company stated that other than LNG, no hazardous chemicals would be stored on site during operation or construction, and that only small quantities of oil and grease would be stored during operation (Exh. EFSB EG-8). The Company stated that its tests for hazardous waste on the site were negative, and that there is no indication from past uses that hazardous waste would be found at the preferred site (Tr. 2, at 206-207).

Berkshire stated that it has reviewed a number of pipeline alternatives to connect the LNG to the Greenfield Feedline, and that its chosen alternative would have the least impact, since it is the shortest route (Exhs. EFSB-EG-2; BG-1 (att. 5-H)). The Company indicated that the preferred interconnecting pipeline route would pass only six to ten homes (Tr. 2, at 146).

⁴⁹ In a subsequent discussion with Berkshire concerning the species protected in the areas shown on NHESP maps near the preferred site, NHESP stated that primarily tree species are protected in that area, and that if applicable, it would contact the Company with the relevant species to be protected (Exh. HO-RR-9 (2nd supp.)).

(2) Alternative Site

The Company stated that the alternative site is an open field currently used for agriculture, which also contains a wetland and a borrow pit on the southern and eastern portions of the site (Exh. BG-1 (att. 5-E)). The Company stated that the alternative site is zoned commercial and that the areas surrounding the alternative site are primarily zoned residential/agricultural, with some commercial/industrial areas nearby (Exh. EFSB-EL-6 (att. a)). The Company indicated that barns lie to the north of the alternative site with Route 91 to the east, a general store to the west across Route 5/10, and a residence to the south (Exhs. BG-1 (att. 5-E)). The Company showed that the area within a mile of the site consists primarily of agricultural, wetland, and residential land uses (Exh. EFSB-EL-1). The Company identified only one sensitive receptor, a playground, within one mile of the site (id. (att. b)).

Berkshire asserted that the construction of proposed facility at the alternative site would be consistent with the existing land uses, because the site is commercially zoned and the Town of Whately Master Plan has designated that area as a third priority commercial/industrial development area (Exhs. EFSB EL-4 (att. a)). The Town of Whately stated that it does not consider the proposed LNG facility an appropriate use at the alternative site, because it would be visually unappealing and incompatible with the rural and agricultural scenery in the area, while also destroying state significant farmland (Exh. BG-RMA-3). The Town indicated that the alternative site could not be rezoned to industrial use until the Whately Industrial Park is 75 percent occupied (Exh. EFSB-SS-12 (att. a)).

The Company proposed facility structures at the alternative site that would be of the same height and otherwise similar to those at the preferred site (Exhs. EFSB-EV-1; BG-1 (att. 5-G, app. F, fig. 1.3.8-2)). The Company proposed a shorter driveway at the alternative site than at the preferred site, with the control structures located closer to Rt. 5 & 10 and the impoundments located near the wetlands on the eastern portion of the site (Exh. BG-1 (app. F, fig. 1.3.8-2)). Berkshire stated that the existing tobacco drying barn on the site likely would be removed in order to accommodate the construction of the vapor fence (Tr. 2, at 176). The Company submitted photos of the site showing defoliate views from the nearest residence, from Route 5/10 across the street from the proposed facility, and from points north and south of the site along

Route 5/10 (Exh. EFSB-EV-4). These photos show some deciduous tree buffer on the northern portion of the site, while across the street, the predominant view is of the barn and the adjacent field (*id.*). To the south the site is entirely visible, with no trees or structures obstructing the view (*id.*). The Company indicated that a larger stand of trees grows on the eastern portion of the property, with a much smaller stand growing on the northwestern edge (Exhs. BG-1 (app. F, fig. 1.3-8-2); EFSB-EV-2). The Company indicated that the proposed facility at the alternative site would be visible from the back of properties in Whately Center (Exh. EFSB-EV-2). The Company proposed to landscape the alternative site to buffer the view of the proposed facility, but did not provide evidence that the plantings could substantially buffer the facility (*id.*; Exh. EFSB-EV-4). Berkshire stated that the proposed project at the alternative site would not affect any landscapes identified in the Massachusetts Landscape Inventory (Exh. EFSB-EV-5).

The Company provided consultant reports stating that the alternative site is of no historic or archeological importance (Exh. EFSB-EL-3 (att. a)). The Company did not make formal inquiry as to whether there are historic structures in the vicinity of the Route 5/10 site; however, the Town of Whately identified its Town Center, which overlooks the site and is less than one mile away, as a potential area for listing under the National Register of Historic Places (Exhs. EFSB-EL-4 (att. a, app. A); EFSB-EV-2).

Although the alternative site contains a significant amount of wetlands, Berkshire argued that the alternative site has little ecological value, because the wetlands are significantly disturbed or man-made (Exh. EFSB-EG-11).⁵⁰ The Company stated that the alternative site is near a NHESP estimated habitat of rare and endangered species; however, NHESP indicated that no impact to endangered or rare species or habitats would be expected from construction of the proposed project (Exh. EFSB-EG-14). Further, the Company noted that the mapped habitat is across the road and at some distance from the alternative site (Tr. 4, at 440). Berkshire stated that the USF&WS found that the proposed facility at the alternative site would have not any

⁵⁰ In the matrix developed under 980 CMR 10.02 (04), the Company gave the alternative site a higher score for ecological impact than the preferred site, indicating that more ecological impact would be expected from the construction of the proposed facilities at the alternative site (Exh. BG-1 (att. 5-D)).

impact on federally listed species (Exhs. EFSB-EG-6; EFSB-EG-9 (supp)).

The Company did not submit hazardous soil tests for the alternative site (Exh. EFSB-EW-8). As with the preferred site, the Company stated that it would produce minimal solid waste and that no hazardous waste would be stored on the site other than LNG and small amounts of lubricants (Exhs. EFSB-EG-7; EFSB-EG-8). The record does not indicate that Berkshire would need to clear trees at the alternative site in order to construct the LNG facility (Exh. BG-1 (app. F (fig. 1.3.8-2))).

(3) Analysis

The record demonstrates that the proposed facility at the preferred site is consistent and supportive of local and regional land use plans. The Company has shown that it has minimized the impact of the facility on land use by choosing an industrially zoned site that is surrounded by other industrial uses, and that is targeted for industrial development in Whately under the Town's master plan. In addition, the Company has also demonstrated that the area is likely to grow slowly, that the growth will be largely industrial, and that the proposed facility is not likely to conflict with future growth.

The preferred site has an existing wooded visual buffer, and the site is near a limited number of sensitive receptors or parks. The Company has shown that its site design maximizes use of the existing visual buffer and retains sufficient vegetation to block views of the proposed facility. In addition, the Company has made a commitment to comply with the Town of Whately's conditions concerning maintenance of a vegetative buffer. However, the Siting Board notes that the Company has not committed in any permit to maintaining the currently proposed vegetative buffer over the life of the proposed project. This is of particular concern given the Company's potential subdivision of the site and, therefore, its potential transfer of control over parts of the buffer. Consequently, to ensure that the visual impacts of the proposed project are minimized, the Siting Board requires the Company to maintain the current wooded buffer, as shown on Exhibit BG-RMA-2, to the north, west, and south of the proposed facility's vapor fence, and to maintain a 100-foot wooded buffer to the east of the proposed facility (measured from the edge of the most easterly facility structure) regardless of whether the site is subdivided.

Berkshire may accomplish this through retaining control of the area, restrictive covenants, conservation easements, or any other appropriate means.⁵¹

Berkshire has also demonstrated that it would minimize the use of hazardous waste, and that the facility would have little effect on the amount of solid waste produced. The record indicates that the facility would have little to no impact on historical and ecological resources. Therefore, subject to the above condition regarding the maintenance of a visual buffer, the Siting Board finds that the environmental impacts at the preferred site would be minimized with respect to land use, visual impacts, and other land resource impacts.

In contrast, while the alternative site is zoned commercial/industrial, the Town does not consider the LNG facility an appropriate use for that area. The record demonstrates that the alternative site is largely surrounded by farmland and one small commercial establishment, whereas the preferred site has existing manufacturing and other industrial uses surrounding it. The alternative site has little existing visual buffer, except for a barn, which needs to be removed in order to secure the appropriate exclusion zones. Although the Company has proposed to buffer the alternative site, plantings would likely take many years to adequately screen the facility. The Company has demonstrated that the proposed facility at both sites would have little impact on wildlife, although the alternative site contains wetlands, and thus the facility could have more impact on wildlife at the alternative site. Although the impacts from the connecting pipeline are contained on-site at the alternative site, the Company has demonstrated that the proposed pipeline route would have minimal impact. The preferred site and alternative site are nearly equivalent in terms of impacts from or to solid and hazardous waste and historical resources, except that the alternative site could be seen from an area of historical importance.

Consequently, the Siting Board finds that the preferred site is preferable to the alternative site with respect to land use, visual impacts, and other land resource impacts.

⁵¹ Where there is presently less than one hundred feet of wooded buffer, the Company shall maintain the existing buffer depth.

c. Air and Noise Impacts(1) The Preferred Site

Berkshire asserted that the design of the proposed control building and LNG facility is based upon the design for a similar Northstar facility which received an award for minimizing noise and air emissions and overall impact on land use (Exh. EFSB-EN-1). The Company indicated that the facility design would place the boiler inside the control building, and would use dry instrument air instead of odorized natural gas, so that odor emissions would be minimized and contained within the building (*id.*; Tr. 4, at 470-471, 474-475). Berkshire stated that the vaporizer would be powered by a "super-clean efficient, super-charged turbo 747 natural gas-fired heater," with air emissions similar to those of a residential gas heater (Exhs. EFSB-EA-2; BG-BAJ-1, at 22). Berkshire noted that the only other air impacts of the proposed facility would be the emissions of small quantities of natural gas, but that natural gas is primarily composed of methane, which is not regulated as a pollutant by federal or state agencies (Exhs. BG-TGQ-2, at 5-2; EFSB-EA-6).

Berkshire indicated that during normal operation the only sources of noise outside of the control building would be the impoundment sump pumps and the LNG delivery trucks (Exh. EFSB-EN-1). The Company noted that trucks would be required to turn off their engines during the transfer of LNG, and that most deliveries would take place during normal business hours (Exhs. BG-GAJ-1, at 22; EFSB-EN-4; BG-TGQ-2, at 2-23). Berkshire stated that the sump pumps would be electric (Exh. EFSB-EA-5). The Company indicated that there are no federal or state standards governing the noise impacts of LNG facilities, but stated that it would comply with the Whately Zoning code which prohibits noise that disturbs abutters (Exh. EFSB-EN-2).

Berkshire stated that noise and air emissions would be minimized during construction by the use of pre-manufactured components, which would limit the time of construction (Exhs. EFSB-EN-1; EFSB-EA-1).

(2) The Alternative Site

The Company indicated that the air and noise impacts at the alternative site would be similar to those at the preferred site, since facility components and operation would be the same

(Exhs. EFSB-EN-3; EFSB-EA-2). The Company asserted that there would be no significant difference between the preferred or alternative site with respect to the absorption of noise (Exh. EFSB-EN-3); however, the Company noted that the alternative site has a higher level of existing background noise, suggesting that additional noise would be less significant at that site than at the preferred site (Tr. 2, at 227-228).

(3) Analysis

The record indicates that at either the preferred or alternative site the proposed facility would not generate any significant noise or air emissions or produce significant noise increases during normal operation. The Company has taken additional measures to minimize noise and air emissions from the proposed facility by enclosing any sources of emissions, securing a large buffer, choosing low emission equipment, and limiting its construction time on-site. Therefore, the Siting Board finds that the environmental impacts of the proposed facility at the preferred site would be minimized with respect to noise and air impacts.

Although the record does not demonstrate that there is any real difference between the two sites with respect to noise and air impacts, it does show that the land uses around the preferred site are more compatible with industrial facilities than land uses around the alternative site, and that neighboring properties around the preferred site are more likely to have compatible industrial growth than are the alternative site's abutting properties. Thus, the Board finds that the preferred site is slightly preferable to the alternative site with respect to noise emissions, and comparable to the alternative site with respect to air emissions.

d. Traffic Impacts

(1) Preferred Site

Berkshire indicated that the primary traffic route to the preferred site both for LNG deliveries and for construction traffic would be along Interstate 91⁵² to interchange 24, then east along Route 116 and south on Pine Street, which becomes Long Plain Road at the Whately-

⁵² Figure 5-H-1 of Exhibit BG-1 incorrectly identifies Interstate 91 as Interstate 92.

Deerfield town line (Exh. BG-1 (fig. 5-H-1)). The proposed entrance to the preferred site is approximately 2000 feet south of Pine Street on the west side of Long Plain Road (*id.*).

Berkshire has identified various secondary routes to the preferred site that use interchange 23 off of Interstate 91 and/or avoid the use of Pine Street (*id.*). Berkshire has stated that if a road is constructed connecting the adjacent Deerfield and Whately industrial parks, it would consider using this new road as the primary route between Long Plain Road and Route 116 (Exh. BG-REN-1, at 6). Berkshire indicated that traffic along the primary route to the site would pass one small neighborhood (Exh. EFSB-ET-6). Berkshire submitted a map which shows that this neighborhood is along Pine Street and therefore, would be avoided if the primary route passed through the industrial parks (Exh. BG-1 (fig. 5-H-1)).

Berkshire indicated that traffic associated with the construction and operation of the proposed project would have minimal impacts on the primary routes to the preferred site (Exh. EFSB-ET-2). Berkshire submitted supporting documentation including a traffic study of the Pine Street section of the primary route, a discussion of traffic volumes associated with the project, and a discussion of the advantages and disadvantages of the site (Exhs. BG-1 (att. 5-I); EFSB-ET-2; EFSB-ET-15). Berkshire's traffic study indicated an average weekday traffic volume of 1105 vehicles (18 percent trucks) traveling on Pine Street between Long Plain Road and Route 116 (*id.*). Berkshire maintained that the maximum volumes of project-related traffic would occur during the four-month period of facility construction and would average ten to twenty vehicles entering and leaving the site each day⁵³ (Exh. EFSB-ET-2). Berkshire indicated that when the facility is fully operational project-related traffic will consist of LNG deliveries and daily inspections (Exh. BG-RMA-1, at 10). Berkshire predicted that, during the 1999/2000 heating season, a total of 33 LNG tanker truck deliveries⁵⁴ would be necessary, and that during a

⁵³ Berkshire indicated that construction traffic will occur during normal working hours of 7:00 AM to 5:00 PM (Exh. EFSB-ET-2).

⁵⁴ Berkshire indicated that due to the projected construction schedule for the proposed facility, the LNG tanks would be empty until January 1, 2000. Therefore, 33 LNG tanker deliveries may be required over the 1999/2000 winter (Exh. EFSB-ET-2). However, once the facility is operational, the LNG tanks normally would be full at the beginning of

design ten-day cold snap an average of one tanker delivery per day would be required (Exh. EFSB-ET-15). A design 1999/2000 winter would require as many as 55 LNG tanker deliveries over the winter season (id.). For the 2017/2018 heating season, Berkshire predicted that a normal winter would require ten LNG tanker deliveries a week and that a design winter would require an average of fifteen deliveries per week (id.). The maximum rate of tanker truck deliveries forecast by Berkshire in the 2017/2018 split year would be an average of three per day during a design ten-day cold snap and two per day during an average winter ten-day cold snap⁵⁵ (id.).

Construction of the interconnecting pipeline between the preferred site and the Greenfield Feedline would, at a minimum, affect traffic along Long Plain Road and a short stretch of Route 116 (Exh. BG-1, (att. 5-J)). Berkshire indicated that the pipeline construction activities would last two to three weeks and would result in only limited restrictions and partial lane closures along Long Plain Road and Route 116 (Exh. EFSB-EG-4; Tr. 4, at 480-481). To mitigate possible impacts, Berkshire indicated that it would provide for a police detail when necessary and would work with officials from the towns of Whately and Deerfield to develop a construction plan (Exhs. EFSB-ET-2; EFSB-ET-10).

(2) Alternative Site

Berkshire indicated that the alternative site is directly accessible from Route 5/10 (Exh. BG-1, (fig. 5-H-2)). Berkshire outlined primary traffic routes to the site that run along Interstate 91 to Route 5/10 at interchanges 22 (from the south) and 23 (from the north) (id.). Berkshire identified a secondary route to the alternative site that runs along Interstate 91 to interchange 24 and then south along Route 5/10 (id.). A map, submitted by Berkshire, shows that the primary route to the site from the south passes through the Town of North Hatfield and a small developed area along Route 5/10 just north of Interchange 23 (id.). Berkshire's map also indicates that the

the heating season, resulting in thirteen fewer deliveries per winter (based on two tanks) (id.).

⁵⁵ Berkshire assumed an average winter cold snap to be a total of between 450 to 500 DD over ten consecutive days, and added that it would expect seven to eight cold snaps meeting or exceeding that DD level in a ten-year period (Tr. 3, at 317-320)

route from the north passes through the developed area along Route 5/10 just north of interchange 23 (id.). Berkshire indicated that the higher traffic speed and volume along Route 5/10 would be a disadvantage for the alternative site (Exh. EFSB-ET-6).

Berkshire indicated that traffic impacts for the alternative and preferred sites would result from construction and operation activities and would be the same for both locations (Exh. EFSB-ET-2). Although Berkshire did not submit traffic data for Route 5/10, the Company did note that Route 5/10 is a major thoroughfare (Exh. EFSB-ET-6). Berkshire also indicated that construction of the pipeline interconnect for the alternative site would have an insignificant impact on traffic because the site abuts the Greenfield Feedline (Exh. EFSB-EG-4).

(3) Analysis

Based on Berkshire's estimates, the four-month facility construction phase at the preferred site would result in a maximum increase in daily traffic along Long Plain Road and Pine Street of 3.6 percent (counting twenty vehicles going to and leaving the facility site). During facility operation, the maximum projected rate of tanker truck deliveries over a ten-day period -- an average of three tanker trucks per day during a design cold snap -- would result in a 3.0 percent increase in daily truck traffic over currently observed traffic volumes and a 1.3 percent increase in total traffic.⁵⁶

The record demonstrates that pipeline construction between the preferred site and the Greenfield Feedline would have minimal effects on traffic due to the short duration of the proposed construction activities and the limited extent of the impacts during construction. However, the record also shows that the alternative site affords direct access to the Greenfield Feedline and to Route 5/10 resulting in very limited potential traffic impacts due to construction and operation of the proposed facility.

The record indicates that if a road is constructed between the adjacent industrial parks in Whately and Deerfield, this road would provide a traffic route to the preferred site that would

⁵⁶ Percentages include delivery and return trips as well as separate trips for Berkshire personnel to supervise delivery and to perform daily inspections (Exh. EFSB-S-2).

avoid a small neighborhood on Pine Street. The record also indicates that Berkshire would consider using a road through the industrial parks as the primary route to the preferred site. Therefore, the Siting Board directs that, for deliveries of LNG, the Company use the traffic route through the Whately/Deerfield industrial parks if a connecting roadway is constructed. Accordingly, with implementation of the above condition, the Siting Board finds that the environmental impacts of the proposed project at the preferred site would be minimized with respect to traffic impacts.

At the alternative site, which would be accessed from a major thoroughfare (Route 5/10), the relative increase in traffic associated with the proposed project at the alternative site would likely be considerably less than that estimated at the preferred site. Delivery routes to the alternative site, however, would pass considerably more homes and businesses than the route to the preferred site and would require turning on to and off of a busier road with faster moving traffic.

Due to the location of the necessary pipeline interconnection for the preferred site, the Siting Board notes that short term traffic impacts from construction of the proposed project at the preferred site would be greater than those at the alternative site. Conversely, the alternative site would have long term disadvantages with regard to traffic safety resulting from access routes through more developed areas than the preferred site and from the higher speeds and traffic volumes associated with Route 5/10. It appears that increases in traffic volumes resulting from the proposed project would have minimal impacts at either site. Accordingly, the Siting Board finds that the preferred site is comparable to the alternative site with respect to traffic impacts.

e. Conclusions on Environmental Impacts

In Section III. C. 2., above, the Siting Board has reviewed the information provided by Berkshire regarding the environmental impacts of the proposed facilities at the preferred site on Long Plain Road in Whately. The Siting Board finds that the Company has provided sufficient information regarding environmental impacts of the proposed facilities at the preferred site and potential mitigation measures for the Siting Board to determine whether environmental impacts would be minimized and whether the appropriate balance among environmental impacts would

be achieved.

In Section III. C. 2., above, the Siting Board has found that: (1) the environmental impacts of the proposed facilities at the preferred site would be minimized with respect to wetlands and water resources; (2) with the Town of Whately conditions agreed to by the Company, and with the condition of the maintenance of a vegetative buffer, the environmental impacts of the proposed facilities at the preferred site would be minimized with respect to land use, visual, and land resource impacts; (3) the environmental impacts of the proposed facilities at the preferred site would be minimized with respect to noise and air impacts; (4) with the condition that, for deliveries of LNG, the Company use the traffic route through the Whately/Deerfield industrial parks if a connecting roadway is constructed, the environmental impacts of the proposed facility at the preferred site would be minimized with respect to traffic impacts.

Accordingly, the Siting Board finds that with the implementation of proposed mitigation, compliance with applicable state and local requirements set forth above, and with the conditions described above, the environmental impacts of the proposed facilities at the preferred site would be minimized.

In Section III. C. 2., above, the Siting Board found that the preferred site was slightly preferable to the alternative site with respect to noise and water resource impacts, preferable to the alternative site with respect to wetland impacts and land-use, visual, and other land resource impacts, and equivalent to the alternative site with respect to traffic and air impacts. Accordingly, the Siting Board finds that the preferred site is preferable to the alternative site with respect to environmental impacts. Since the preferred site is preferable or comparable to the alternative with respect to all environmental impacts, the Siting Board finds that an appropriate balance among environmental impacts has been achieved. In Section III. C. 3. and 4., below, the Siting Board addresses whether an appropriate balance among environmental impacts, cost, and reliability would be achieved.

3. Cost

The Company also compared the costs of the two alternative sites using the Alternative

Site Evaluation Matrices set forth under 980 CMR 10.02 (4) (Exhs. BG-1, at 5-9; BG-1 (att. 5-D, 5-N)). The Company detailed capital costs, including land acquisition, site preparation, structures and improvements, LNG processing equipment, LNG transportation facilities and other equipment for both sites (Exh. BG-1(atts. 5-D, 5-N)). The Company calculated that the cost of utilities would be lower at the Route 5/10 site, since the site abuts the Greenfield Feedline (id.). The Company also noted that acquisition of the Route 5/10 site would cost \$200,000 less than the acquisition of the Long Plain Road site (id.). The Company assumed that the cost of plant equipment would be identical at both sites (id.). However, Berkshire asserted that the cost of installation and services at the Long Plain Road site would be substantially less than at the Route 5/10 site primarily as a result of lower civil site work, permitting and legal costs, septic systems, impoundments, and roadways (id.; Exh. EFSB-SS-13). The Company asserted that these costs were reasonable considering the wetlands, limited existing vegetation, high ground water, and community opposition associated with the Route 5/10 site (Exh. BG-1(att. 5-N); Tr 3, at 400-406). Overall, the Company expected that the total cost of the proposed project at the Long Plain Road site would be \$4,513,498, and the total cost of the proposed project at the Route 5/10 site would be \$4,818,498 (Exh. BG-1 (app. N)).

The Siting Board finds that the Company has provided sufficient information to compare the costs of the proposed facility at the preferred and alternative sites, and to determine whether an appropriate balance would be achieved among environmental impacts, cost, and reliability. In addition, the Siting Board finds that the preferred site is preferable to the alternative site with respect to cost.

4. Reliability

Overall, the Company indicates that the preferred and alternative sites would have little difference with respect to reliability, based upon its systems analysis for need and project alternatives (Exh. BG-1, at 5-20; see Sections II. A. and II. B., above). The Company indicated that it considered the Long Plain Road site to have slight reliability benefits over the Route 5/10 site, because it was farther north and closer to the load center (Exh. BG-1, at 5-20). In addition, the Company stated that the Long Plain Road site's buffer provided additional security (id.).

The Siting Board finds that the Company has provided sufficient information to compare the reliability of the proposed facility at the preferred and alternative site, and to determine whether an appropriate balance would be achieved among environmental impacts, cost, and reliability. The Siting Board finds that the preferred site would be slightly preferable to the alternative site with respect to reliability.

5. Conclusions on Environmental Impacts, Cost, and Reliability

In Section III. C. 2. e., above, the Siting Board found that the proposed facilities at the preferred site would be preferable to the alternative site with respect to environmental impacts. In Section III. C. 3. the Siting Board found the proposed facilities at the preferred site would be preferable to the proposed facilities at the alternative site with respect to cost. In Section III. C. 4., above, the Siting Board found that the preferred site would be slightly preferable to the alternative site with respect to reliability. Accordingly, the Siting Board finds that the proposed facilities at the preferred site would be preferable to the proposed facility at the alternative site with respect to providing for a necessary and reliable energy supply for the Commonwealth with a minimum impact of the environment at the lowest possible cost. In addition, because the Siting Board has not identified any tradeoffs among environmental impacts, cost, and, reliability, the Siting Boards finds that an appropriate balance has been achieved among environmental, cost, and reliability concerns.

D. Safety

In this section the Siting Board addresses safety requirements set forth in 980 CMR 10.00, "which implements the Siting [Board's] statutory mandate under G.L. c. 164 . . . and sets forth regulatory standards for the siting of intrastate LNG facilities proposed for construction." 980 CMR 10.01(1).

1. Standard of Review

The Siting Board requires a petitioner to demonstrate that its proposed facility will comply with the Board's regulations governing the siting of LNG facilities, as set forth at 980

CMR 10.00.

2. Compliance with Applicable State and Federal Regulations

The Siting Board's regulations do not address the design, construction, operation, and maintenance of an LNG facility. In the case of a facility operated by a gas distribution company such as Berkshire, the Board's regulations specifically state that the Department has the authority "to assure safe and prudent design, construction, operation, and maintenance of LNG facilities" 980 CMR 10.01. The Department enforces its own regulations, as well as the federal pipeline safety regulations for LNG facilities. Both sets of regulations include requirements for the siting, design, construction, operation, and maintenance of LNG facilities. 220 CMR 112.00; 49 CFR 193.⁵⁷

Berkshire stated that it intends to comply with the applicable state and federal regulations (Exh. BG-1, at 1-3; Tr. 1, at 53). The Company indicated that the design of the facility would be similar to that of the Greenville LNG plant constructed by Northstar, which is "compliant with the Federal Department of Transportation Regulations for LNG storage and vaporization (Exh. BG-TGQ-1, at 26).

Berkshire testified that it intends to adhere to regulations in 49 CFR Part 193 and NFPA 59A [National Fire Protection Association 59A: Standard for the Production, Storage, and Handling of Liquefied Natural Gas (LNG)] which gives guidance to facility designers (Tr. 1, at 30). Berkshire also stated that it intends to comply with Massachusetts regulations. In particular, the Company stated that its design will comply with the standards of the Department's regulations for the siting, design, operation, maintenance, and safety of LNG facilities (Exh. BG-TGQ-1, at 26).

In its regulations, the Siting Board has recognized the legal authority and responsibility of

⁵⁷ The Siting Board expects that applicants will comply with all applicable State and federal regulations. Thus, the Siting Board expects that Berkshire will comply with applicable State and federal pipeline safety regulations. However, consistent with the Siting Board's authority under G.L. c. 164, the Siting Board in this proceeding determines Berkshire's compliance with the requirements of 980 CMR 10.00 only.

the Department to enforce the federal and state LNG safety regulations. The Siting Board finds that Berkshire has indicated its intent to comply with all applicable federal and state regulations enforceable by the Department.

3. LNG Spill Control

The Siting Board's regulations require that each storage tank at an LNG facility be surrounded by a dike. 980 CMR 10.04(1). The dike must be able to contain at least 150 percent of the volume of the tank. It must also be large enough so that a jet of LNG from any location on the tank will not land outside the dike. "An excavation, a natural geological formation, manufactured diking or any combination thereof" may be used as a dike. 980 CMR 10.04(1)(b).

Berkshire stated that it proposes to construct a three-foot high dike around the sides and back of each tank at the proposed facility (Exh. EFSB FR-1). The Company indicated that the dikes would be made of earth, geotechnical fabric, and crushed stone (Tr. 1, at 25-27). Berkshire explained that on the fourth side, it would construct a concrete apron and a trench, where the trench would extend from the dike area to an impoundment sump (Exhs. BG-TGQ-2, at 5-11; EFSB FR-1). The Company reported that the floor of the dike area, the apron, and the trench would slope towards the sump, and that each sump would be sized to hold at least 150 percent of the contents of a single tank (Exhs. BG-TGQ-3; EFSB-FR-2). The Company explained that the sumps at the primary site would be 46 feet long x 46 feet wide by 6 feet deep; whereas the sumps at the alternative site would be 36 feet long x 36 feet wide x 10 feet deep. (Exhs. EFSB-FR-1; BG-TGQ-3). The Company stated that the preferred site would have shallower sumps to reduce the potential for inflow of groundwater (Tr. 1, at 57, 26).

The Siting Board finds that the proposed project as designed for both the primary site and the alternate site satisfies the requirements for spill control set forth in 980 CMR 10.04(1) .

4. Vapor Dispersion Protection

The Siting Board's regulations require that an LNG facility be designed "to prevent flammable vapor from a design spill . . . from crossing the property line" of the facility site. 980

CMR 10.03(2)(a).⁵⁸ To comply with this requirement, each LNG storage tank on the facility site must be surrounded by an area owned or controlled by the facility operator and capable of containing the vapor from a design spill ("vapor dispersion exclusion zone"). 980 CMR 10.01(2)(a). The vapor dispersion exclusion zone must be of sufficient size so that "no flammable vapor having an average gas-to-air concentration of more than two percent will travel beyond the zone's outer boundary" 980 CMR 10.01(2)(a).⁵⁹

The Company stated that it proposes to surround the facility's storage tanks, vaporizer, and truck unloading station with a vapor fence: a chain link fence with slats woven into it (Exh. EFSB-SR-2). The Company stated that the area to be enclosed by the vapor fence would be sufficiently large to contain all of the vapor from a design spill, and to prevent vapor with a gas-to-air concentration of greater than two percent from leaving the facility site (*id.*; Exhs. BG-1 (app. F, at 1-4); EFSB-SR-2).⁶⁰ The Company further stated that it would own all land within the vapor dispersion exclusion zone for the proposed facility, at both the preferred and alternative sites (Tr. 4, at 447-449).

The Siting Board finds that Berkshire has satisfied the requirements for vapor dispersion protection of 980 CMR 10.03(2).

5. Thermal Radiation Protection

The Siting Board's regulations require that an LNG facility be surrounded by an area owned or controlled by the facility operator and of sufficient size "that in the event of a fire

⁵⁸ A design spill is a "sudden total spill of the maximum contents of the largest component served" 980 CMR 10.03(2)(b)(2).

⁵⁹ The lower flammable limit ("LFL") of natural gas is five percent gas in air (Exh. BG-1, (app. F, at 1-2)). By establishing an allowable concentration of less than half of the LFL, the regulations allow for LNG vapor to cross the boundary line, but only in concentrations that are not flammable.

⁶⁰ While it is colder than -160°F, the vapor is heavier than air and will remain within the fence. As the gas warms and rises, it will mix with the surrounding air, thus keeping the vapor concentration below two percent (Exh. BG-TGQ-2, at 5-11).

resulting from a spill, thermal flux levels at the outer boundary" of the site will not exceed levels specified in the regulations ("thermal protection zone"). 980 CMR 10.01(2).

The size of the thermal protection zone required by the Siting Board's regulations depends upon the zoning classification of the land surrounding the facility site. (980 CMR 10.03(1)(e). Less area is required if the area surrounding the facility is zoned for industrial use, than if zoned for other uses. 980 CMR 10.03(d).

The record indicates that both the preferred and alternative sites are of sufficient size to allow for thermal protection zones that meet the requirements of 980 CMR 10.03(1) (Exh. BG-1, (figs. 1.3.8.4-1 and 1.3.8.4-4)).

The Siting Board finds that Berkshire has satisfied the requirements for thermal radiation protection of 980 CMR 10.03(1).

6. Separation of Components

The Siting Board's regulations require that LNG storage tanks be designed and constructed in accordance with Department requirements to allow for "the predictable movement of personnel, maintenance equipment, and emergency equipment within and around the facility." 980 CMR 10.04 (2). Berkshire stated that it intends to comply with the Department's regulations relative to separation of components on the facility site (Exh. BG-TGQ-1, at 1-26).

7. Inspection of Insulating Material

The Siting Board's regulations require annual inspection and certification of LNG storage tank insulation and sealant. 980 CMR 10.04(3).

Berkshire stated that it would use shop-fabricated double wall cryogenic tanks with evacuated perlite as insulation in the storage tanks (Exh. BG-1(app. F, sec. 1.3.4.3, at 1-9)). The Company proposed a two-part plan for inspecting the tanks' insulating material where the first part would consist of annual monitoring of the vacuum in the tanks and the second part would consist of daily monitoring of the boil-off rate (Exhs. BG-1(app. F, sec. 1.3.4.2, at 1-80); EFSB-FR-3). Berkshire stated that it would have a registered professional engineer certify inspection records annually, and that the records would be kept on file and would be available to the

Department (Exh. EFSB-FR-3).

The Siting Board finds that the Company's plan for inspection and certification of storage tank insulation satisfies the requirements set forth in 980 CMR 10.04(3).

8. Plan for Removal of Precipitation

The Siting Board's regulations require an applicant to develop a plan for the removal of rain, snow, and ice from the diked area surrounding a facility's storage tanks. 980 CMR 10.04(4).

With respect to rain, Berkshire stated that each LNG tank at the proposed facility would have a separate impoundment system (Exh. EFSB-FR-2). As previously discussed, the impoundment system would consist of a low dike and a sump and the floor of the dike area would be sloped towards a trench that would connect to the sump (id.). The Company further indicated that each sump would have two pumps to remove rain water. In order to comply with federal regulations, one of the pumps would have a flow capacity equal to that of the predicted ten-year storm with a one hour duration (Exh. BG-TGQ-2, sec. 7.2). The size of the second pump has not yet been determined (id.).

With respect to snow, the Siting Board's regulations require that snow removal be completed within 48 hours after the snowfall starts. 980 CMR 10.04(4). Berkshire stated that it would use snow plows for the roads, and snow blowers for the impoundments and the accessible parts of the process areas to meet this requirement (Exh. BG-TGQ-2, sec. 7.3). Hand shovels would be used in other parts of the process areas and the sumps (id.). The Company's precipitation removal plan addresses the possibility that snow plows and snow blowers could ignite LNG vapor (id.). The plan states that the entire area within the vapor fence would be checked for combustible gas concentrations before snow removal begins and that the area would be monitored for as long as the work continues (id.). Berkshire's precipitation removal plan does not address ice removal.

The Siting Board finds that Berkshire has not met the requirements of 980 CMR 10.04(4), because the Company's precipitation removal plan does not address the removal of ice from the diked area surrounding the storage tanks. Accordingly, the Siting Board requires

Berkshire to develop and file with the Siting Board a revised precipitation removal plan, prior to commencing commercial operation of the proposed facility. The plan shall include appropriate methods and materials to be used for removal of ice from the diked areas surrounding the facility's LNG storage tanks.

9. Safety Plan

The Siting Board's regulations require an applicant to develop a comprehensive safety plan for a proposed LNG facility. 980 CMR 10.04(5). The plan must include procedures to be followed by facility personnel and public safety officials in case of an emergency. Id. The safety plan also must provide for "yearly safety consultations with each property owner within the affected portion of the industrial zone." Id.

Berkshire submitted portions of the Company's draft operating, maintenance, and emergency procedures with its initial petition (Exhs. BG-1(app. F); BG-TGQ-2). The Company stated that the remainder of these plans and procedures is incomplete, and is still under review by Berkshire and by local officials (Exhs. BG-TGQ-1, at 27-28; EFSB FR-5).

The Siting Board finds that Berkshire has not met the requirements of 980 CMR 10.04(5), because the Company has not yet submitted to the Board a completed comprehensive safety plan. Accordingly, the Siting Board requires Berkshire to file with the Board a completed comprehensive safety plan acceptable to the Department's Pipeline Engineering and Safety Division, prior to commencing commercial operation of the proposed facility.

10. Alarm System

Pursuant to the Siting Board's regulations, an LNG facility must have an alarm system to alert certain specified neighbors in the event of an accident, and the alarm must sound "simultaneously with the alerting of the fire department of an accident." 980 CMR 10.04(6). The alarm must be loud enough to warn persons in the most distant of the facility's vapor dispersion or thermal radiation protection zones that an accident has occurred (id.). In addition, the facility operator must notify the Siting Board "that persons within that zone have been acquainted with the system." Id.

Berkshire stated that the facility's alarm system "will satisfy this requirement by means of an alarm signal sent to the Whately Fire Department Dispatcher as well as an audible and visible alarm at the site" (Exh. EFSB-FR-6). The Company further stated, however, that not all types of alarms would be sent to the Whately Fire Department; rather, only "smoke, heat, or fire detection would trigger an actual alarm to the fire department" (Tr. 1, at 42).

As discussed above, the record shows that the vapor dispersion zone at both the preferred and alternative sites is confined within the facility boundaries. However, the record shows that the most distant thermal radiation zone, the one that corresponds to a thermal radiation level of 460 British Thermal Units per square foot ("BTU/ft.²"), extends beyond the site boundaries at each site (Exh. BG-1(app. F, fig. 1.3.8.4-2)).

With respect to the preferred site, the record shows that the 460 BTU/ft.² zone extends approximately 115 feet beyond each of the southern and western boundaries (id.). The record indicates that the area to the west of the site is owned by the B & M Corporation; the record shows both the B & M Corporation and the Northampton Co-operative Association as the abutting landowners to the south of the site (Exh. BG-1(app. F, fig. 1.3.8.4-2)). With respect to the alternative site, the record shows that the 460 BTU/ft.² zone extends approximately 77 feet beyond the northern boundary (Exh. BG-1(app. F, fig. 1.3.8.4-5)). However, the record does not identify the owner of the area to the north of the site (id.).

The Siting Board notes that there is no evidence in the record that persons within the most distant thermal radiation protection zone have been acquainted with the Company's alarm plan. Further, the record indicates that only facility personnel and the Whately Fire Department would be alerted in the event of an accident. Therefore, the Siting Board finds that Berkshire's current alarm system plan does not meet the requirements of 980 CMR 10.04(5). Accordingly, the Siting Board requires Berkshire to: (1) install a facility alarm that is audible to persons off the facility site but within the facility's most distant thermal radiation protection zone; and (2) to notify the Siting Board in writing that the alarm is operational and that landowners within the thermal radiation protection zone have been acquainted with the alarm system, prior to commencing commercial operation of the proposed facility.

11. Remote Operation of the Facility

Berkshire stated that the Company intends to operate the proposed facility locally, i.e., with personnel physically located on the facility site, during its first year of operation (Tr. 1, at 45-49). The Company stated that, after the first year or two of operation, start-up and monitoring of the facility may be done by Company dispatchers located in Pittsfield (id. at 46). Berkshire said that the Company's operating plans and procedures would be revised to reflect remote operation of the facility (id. at 48). The Company said that it would consider changes in equipment, such as closed circuit television and remotely operated fire protection equipment, before converting to remote operation (id. at 47-48; Tr. 4, at 466-467).

The Siting Board's LNG regulations do not expressly authorize or otherwise address the remote operation of an LNG facility.⁶¹ However, based on the Siting Board's examination of the Company in this proceeding, it is clear that remote operation raises a number of public safety issues that require further inquiry. The Siting Board recognizes that Berkshire does not intend to commence remote operation immediately after construction of the proposed facility. We therefore will not require the submission of additional information on remote operation as a condition of approval of the Company's petition to construct. However, the Siting Board requires Berkshire, prior to commencing remote operation of the proposed facility, to file a Remote Operation Plan for the Board's review and approval in consultation with the Department's Pipeline Engineering and Safety Division. The Plan shall include, at a minimum, the following:

- (1) a comprehensive set of proposed standard operating procedures ("SOP's") for remote

⁶¹ Remote operation of LNG facilities is permitted, subject to certain restrictions, under both federal and Department regulations. The federal regulations require that each "LNG plant must have a control center from which operations and warning devices are monitored." 49 CFR §193.2441. The section also specifies that "all remotely actuated control system and each automatic shutdown control system required by this part [49 CFR Part 193] must be operable from the control center." 49 CFR 193.2441(b). Department regulations require that a remote control center must have controls that are "linked to an alarm audible throughout the plant." 220 CMR 112.20(2). Both federal and State regulations require that a control center be continuously manned while the plant is in operation. 49 CFR 193.2441(c); 220 CMR 112.20(2).

operation of the facility;

(2) a specific SOP for use by the dispatchers at the Pittsfield facility, setting forth the criteria to be used in determining when additional personnel are necessary or appropriate to operate the facility remotely;

(3) a summary of changes to the facility's emergency response system as a result of remote operation, including any changes requested by the Whately and Deerfield Fire Departments and the Company's response to such requests; and

(4) a proposal to install on the facility site a CCTV system suitable for operational, emergency, and security uses by the dispatchers in Pittsfield; and

(5) a detailed plan, developed with the assistance of a qualified fire protection engineer familiar with LNG plants, for protection of the facility with a remotely operated firefighting system, including identification of the specific areas to be protected and the type(s) of equipment best suited for use in each area; and

(6) a false alarm study, including: (1) a record of false alarms at the facility; (2) a list of the detectors most likely to produce false alarms; (3) a proposal for minimizing false alarms; and (4) an analysis of the extent to which components of the remotely operated firefighting system could be connected to the alarm system.

Berkshire shall not commence remote operation of the facility until the Siting Board has approved the Remote Operation Plan.

12. Conclusions on Safety

The Siting Board finds that Berkshire has met the requirements of 980 CMR 10.00 relative to LNG spill control, vapor dispersion protection, thermal radiation protection, and inspection of insulating material.

The Siting Board finds, upon submission to the Board of a revised precipitation removal plan that contains appropriate methods and procedures for the removal of ice from the tank impoundment areas, the Company will meet the requirements of 980 CMR 10.04(4).

The Siting Board finds that upon submission to the Siting Board of a final and

comprehensive safety plan, as described above, the Company will meet the requirements of 980 CMR 10.04(5).

The Siting Board finds that upon submission to the Board of a revised alarm system which, (1) identifies all property owners within the most distant thermal zone, (2) indicates that the alarm system is sufficiently loud to alert all such persons in the event of an accident, and (3) indicates that all such persons have been acquainted with the alarm system, the Company will meet the requirements of 980 CMR 10.04(6).

The Siting Board finds that upon submission to and approval by the Siting Board of a Remote Operation Plan, as described in Section III.D.11., above, the Company may operate the facility from the Pittsfield Dispatch Center. Until this is completed, only local operation of the facility shall be allowed.

E. Scope of Approval

In its petition, Berkshire seeks approval to construct a new LNG storage and vaporization facility as part of a twenty-year plan to address system pressure issues. As presented in the petition, the twenty-year plan includes construction of two LNG tanks at the preferred site in year 1 of the project; construction of three additional tanks in years 4, 12, and 19; and looping of a 1 mile and a 1.42 mile section of the Greenfield feedline in years 14 and 17, respectively (Exh. BP-1 (att. 4-F)). In this section, the Siting Board considers the sufficiency of the record to support an approval of each of the five proposed storage tanks.⁶²

1. Status of the Record on Need

a. Tanks One and Two

Berkshire seeks immediate approval to construct an LNG storage and vaporization

⁶² The Siting Board notes that construction of the looping projects will require Siting Board approval, since each project is a mile or more in length and the Greenfield Feedline operates at over 100 psig. Berkshire has not requested approval of the looping projects as part of this proceeding, and this decision does not address the need for, alternatives to, or impacts of these projects.

facility, including two initial LNG tanks, at the preferred site. The Company seeks to maintain sufficient on-site LNG storage capacity to meet supplementary sendout requirements for three consecutive peak days (Exhs. BG-1, at 4-F; EFSB-N-7). The Company explained that a three day on-site supply would allow it flexibility in meeting peak shaving needs and would provide adequate peaking supplies if weather-related contingencies prevented delivery of LNG for a short period (Exh. BG-TGQ-,1 at 23; Tr. 3, at 265-267). The Siting Board finds that Berkshire's proposal to maintain a three peak day supply of LNG on site is appropriate given the Company's anticipated use of the LNG facility for pressure maintenance and peak shaving.

In Section II.A, above, the Siting Board found that there was a need for additional energy resources to meet the Company's reliability standards with respect to system pressure beginning in the 1999/2000 split year. The Company's analysis indicates that two LNG tanks are required to store sufficient LNG to meet supplementary sendout requirements for three consecutive peak days in split year 1999/2000 (Exh. BP-1 (att. 4-F)). Consequently, the Siting Board finds that there is a need for Tanks One and Two beginning in the 1999/2000 split year.

b. Tank Three

In its petition, Berkshire projects that Tank Three will be constructed in year 4 of the project (Exh. BP-1 (att. 4-F)). However, based on the sendout levels set forth in the LRF, the Siting Board concludes that Berkshire may need to install Tank Three as early as split year 2000/2001, or year 2 of the project, in order to maintain a three peak day supply of LNG on-site (Exh. BG-1 (att. 4-F); Tr. 4, at 498-499). The planning horizon for the LRF extends through the 2002/2003 split year. Consequently, the Siting Board finds that there will be a need for Tank Three within the planning horizon of the current approved LRF.

c. Tanks Four and Five

Berkshire projects the need to construct Tanks Four and Five in years 12 and 19 of the proposed project, respectively. This projection of need falls well outside the five-year planning horizon of the current approved LRF. Consequently, the Siting Board makes no finding regarding the need for Tanks Four and Five.

2. Status of the Record on Environmental Impacts

In Section III.C.2, above, the Siting Board reviewed the environmental impacts of the proposed LNG facility and determined that, with the implementation of conditions relating to visual buffers and truck traffic, the environmental impacts of the facility would be minimized. Given the Company's long term plans, the Siting Board reviewed the ability of the site to support five LNG tanks, and analyzed the environmental impacts of the LNG facility based on the assumption that it would eventually include all five LNG tanks. The record on environmental impacts therefore is sufficient to support the approval of the proposed facility with up to five LNG tanks at the current time.

Berkshire, however, does not intend to construct tanks Four and Five for over a decade. In this period of time, there is clearly potential for significant changes, including changes in environmental laws and regulations applicable to the facility and changes in land uses in the surrounding area, that might affect our analysis of the environmental impacts of the project and the conditions necessary to minimize those impacts. In addition, Berkshire has indicated that its use of the proposed facility may be affected over time by changes in the availability and economics of upstream gas supply resources (Exh. EFSB-N-7c). To the extent that Berkshire relies increasingly on its LNG storage to replace other supplies (particularly outside the traditional winter peaking season), the traffic impacts of the proposed project could be significantly greater than anticipated in this proceeding, and could require additional mitigation.

In previous cases, the Siting Board has recognized that the assumptions underlying its analysis of a project could change over time, and has required that construction commence within three years of the date of the approval decision. See Berkshire Power Decision, 4 DOMSB 221, 449 (1996); Dighton Power Decision, EFSB 96-3, at 69 (1997); U.S. Generating Company, EFSB 96-4, at 191 (1997). If construction did not begin within three years, the approval was no longer valid; if the applicant still wished to construct the project, it would have to file a new petition with the Siting Board. Here, the Siting Board recognizes that major portions of the proposed facility, including two storage tanks, vaporization facilities, and an interconnection line, are likely to be constructed almost immediately upon receipt of this approval. Consequently, we see no reason to require Berkshire to relitigate issues related to

project alternatives and site selection when it seeks to construct additional storage tanks at the proposed facility. However, for any tank to be constructed more than three years after the date of this decision, the Siting Board directs Berkshire to file for the Siting Board's approval of updated plans for minimizing the environmental impacts of the proposed project, given any changes in environmental laws and regulations applicable to the project, any changes in the site or in surrounding land uses, and any changes in the expected timing and frequency of use of the facilities.

3. Scope of Further Review

The Siting Board has found that there is a need for Tanks One and Two beginning in the 1999/2000 split year, and that there will be a need for Tank Three within the planning horizon of the current approved LRF, which extends through the 2002/2003 split year. The Siting Board also has indicated that additional environmental review will be required only for construction which commences more than three years after the date of this approval. Consequently, the Siting Board approves the construction of Tanks One and Two, subject to the conditions set forth in Section V, below. The Siting Board also approves the construction of Tank Three subject to those conditions, provided that construction commences within three years of the date of this approval.

The Siting Board has made no finding regarding the need for Tanks Four and Five. In addition, the Siting Board has required Berkshire to file updated environmental information if it commences construction of any project component more than four years after the date of this approval. Consequently, before beginning construction of Tanks Four and Five, Berkshire must file for the Siting Board's review and approval information regarding both the need for the additional storage tanks and an updated assessment of environmental impacts. The Siting Board recommends that this filing be made well in advance of the proposed commencement of tank construction to allow the Board sufficient time to review the filing.

IV. ZONING EXEMPTION

As noted in Section I.B, above, Berkshire has filed two petitions in connection with its

proposal to construct and operate the proposed facility. In a petition filed with the Siting Board pursuant to G.L. c. 164, § 69J, and discussed in Sections II and III above, the Company seeks Siting Board approval to construct the facility. In a second petition, filed with the Department and subsequently referred to the Siting Board, the Company seeks an exemption, pursuant to G.L. c. 40A, § 3, from certain provisions of the Town of Whately Zoning Bylaw, asserting that such an exemption is necessary to allow construction and operation of the facility at the Company's preferred site ("zoning exemption petition"). The Siting Board discusses the Company's zoning exemption petition below.

A. Standard of Review

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

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

Thus, a petitioner seeking exemption from a local zoning bylaw under G.L. c. 40A, § 3 must first qualify as a public service corporation. Save the Bay, Inc. v. Department of Public Utilities, 366 Mass. 667 (1975) ("Save the Bay"). The petitioner then must establish that it requires a zoning exemption, and that its present or proposed use of the land or structure is reasonably necessary for the public convenience or welfare. New England Power Company, EFSB 97-3 (1998) ("1998 NEPCo Decision"), at 73.

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

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

Save the Bay, 366 Mass. 667, 680. See also, Berkshire Power Development, Inc. D.P.U. 96-104 (1997) ("Berkshire Decision"), at 26-36.

In determining whether the present or proposed use is reasonably necessary for the public convenience or welfare, the Siting Board must balance the interests of the general public against the local interest. Save the Bay, 366 Mass. 667, at 680; Town of Truro v. Department of Public Utilities, 365 Mass. 407 (1974); 1998 NEPCo Decision, EFSB 97-3, at 73; Berkshire Decision, D.P.U. 96-104, at 18. Specifically, the Siting Board is empowered and required to undertake "a broad and balanced consideration of all aspects of the general public interest and welfare and not merely [make an] examination of the local and individual interests which might be affected." New York Central Railroad v. Department of Public Utilities, 347 Mass. 586, at 592 (1964); 1998 NEPCo Decision, EFSB 97-3, at 73. When reviewing a petition for a zoning exemption under G.L. c. 40A, § 3, the Siting Board is empowered and required to consider the public effects of the requested exemption in the State as a whole and upon the territory served by the petitioner. Save the Bay, 366 Mass. 667, at 685; New York Central Railroad, 347 Mass. 586, at 592; 1998 NEPCo Decision, EFSB 97-3, at 74.

With respect to the particular site chosen by a petitioner, G.L. c. 40A, § 3 does not require a demonstration that the petitioner's preferred site is the best possible alternative, nor does the statute require the Siting Board to consider and reject every possible alternative site presented. Martarano v. Department of Public Utilities, 401 Mass. 257, 265 (1987); New York Central Railroad, at 591; 1998 NEPCo Decision, EFSB 97-1, at 74. Rather, the availability of alternative sites, the efforts necessary to secure them, and the relative advantages and disadvantages of those sites are matters of fact bearing solely upon the main issue of whether the preferred site is reasonably necessary for the convenience or welfare of the public.

Therefore, when making a determination as to whether a petitioner's present or proposed use is reasonably necessary for the public convenience or welfare, the Siting Board examines: (1) the present or proposed use and any alternatives or alternative sites identified. See 1998 NEPCo Decision, EFSB 97-3, at 74; Massachusetts Electric Company, D.P.U. 93-29/30 (1995) ("1995 MECo Decision"), at 10-14, 22-23; New England Power Company, D.P.U. 92-278/279/280 (1994) ("1994 NEPCo Decision"), at 10-14, 22-23; Tennessee Gas

Pipeline Company, D.P.U. 85-207 (1986) ("1986 Tennessee Decision"), at 18-20; (2) the need for, or public benefits of, the present or proposed use, See 1998 NEPCo Decision, EFSB 97-3, at 74; 1995 MECo Decision, D.P.U. 93-29/30, at 10-14; 1994 NEPCo Decision, D.P.U. 92-278/279/280, at 20-23; 1986 Tennessee Decision, D.P.U. 85-207, at 20-25); and (3) the environmental impacts or any other impacts of the present or proposed use. See 1998 NEPCo Decision, EFSB 97-3, at 74; 1995 MECo Decision, D.P.U. 93-29/30, at 14-21; 1986 Tennessee Decision, D.P.U. 85-207, at 20-25. The Siting Board then balances the interests of the general public against the local interest, and determines whether the present or proposed use of the land or structures is reasonably necessary for the convenience or welfare of the public.⁶³

B. Analysis and Findings

1. Public Service Corporation Status

Berkshire is a "gas company" as defined by G.L. c. 164, § 2 (Exh. EFSB-2, at 1). Accordingly, Berkshire qualifies as a public service corporation for the purposes of G.L. c. 40A, § 3.

2. Need for the Requested Exemption

Berkshire stated in its zoning exemption petition that the preferred site for the proposed facility currently is zoned for commercial and/or industrial use (Exh. EFSB-2, at 3). The Company subsequently clarified that the preferred site is industrially zoned (Exh. EFSB-EL-6 (att. a)).

⁶³ In addition, the Massachusetts Environmental Policy Act ("MEPA") provides that "[a]ny determination made by an agency of the commonwealth shall include a finding describing the environmental impact, if any, of the project and a finding that all feasible measures have been taken to avoid or minimize said impact"("Section 61 findings"). G.L. c. 30, § 61. Pursuant to 301 CMR 11.01(3), Section 61 findings are necessary when an Environmental Impact Report ("EIR") is submitted to the Secretary of Environmental Affairs, and should be based on such EIR. Where an EIR is not required, Section 61 findings are not necessary. 301 CMR 11.01(3). Berkshire informed the Siting Board that it had determined that no EIR was required for the proposed project (see Company Reply Brief at 78). Accordingly, Section 61 findings are not necessary in this case.

In its petition, Berkshire requested exemption from eight sections of the Whately Zoning Bylaw (Exh. EFSB-2, at 3-4). The Company stated that, without the requested exemption, construction of the proposed facility on the preferred site "could require" rezoning of the site or amendment of the Bylaw (id. at 3). Berkshire requested exemption from: Section 171-7, which limits the number of structures per lot, and requires general compliance with the Bylaw; Section 171-8, the Table of Use Regulations, which prescribes the permitted and prohibited uses in commercial, industrial and agricultural/residential districts; Section 171-15, Environmental Performance Standards; Section 171-17(3), (4) and (5), which sets forth the procedures, submittal requirements and criteria for site plan review; Section 171-28.1, the regulations governing Planned Industrial Districts; Section 171-31, the regulations governing special permits; Section 171-18, earth removal and restoration requirements; and Chapter 171, Part 2, the Zoning Board of Appeals Rules and Regulations (id. at 3-4; Exh. BG-1 (app. J)).⁶⁴ Additionally, Berkshire stated that if the Siting Board were to grant the Company's request for a zoning exemption as set forth in its zoning exemption petition, it would be the Company's expectation that "the Company also would be exempt from the requirements of obtaining a building permit" (Exh. HO-RR-21).

With respect to the necessity for exemption from the specific provisions identified in its petition, Berkshire stated that the Company requires an exemption from Section 171-8, the Table of Use Regulations, because the Table does not expressly authorize the type of use associated with the proposed project (Exh. EFSB-EG-1, at 1).⁶⁵ The Company stated that it therefore requires an exemption from Section 171-7, because Section 171-17 prohibits uses not authorized under the Bylaw (id.). Similarly, with respect to Section 171-15, the Bylaw's environmental

⁶⁴ The Company subsequently narrowed the scope of its request for exemption from the Zoning Board of Appeals Rules and Regulations as a whole, to a request for exemption from Articles IX and XI only (Exh. HO-RR-17).

⁶⁵ The Siting Board notes that, on its face, the Table of Use Regulations could be interpreted as permitting such a use, if a Special Permit is obtained. See, Section 171-8, Table B (public utility facilities and nonresidential uses involving hazardous materials each are allowed in an industrial district, by Special Permit).

performance standards, the Company stated in its petition that it requires an exemption because the Standards apply to "any use allowed by right or special permit," and the proposed facility is not allowed as of right or by special permit under the Bylaw (Exh. BG-1 (app. J at 17120.2); Exh. EFSB-EG-1, at 1).⁶⁶ The Company also stated, however, that it "does not foresee any inability" to meet the substantive requirements of Section 171-15, and that it expects to meet all nine of the environmental performance standards set forth in that Section (Exhs. EFSB-EG-12; EFSB-EG-1, at 1).

With respect to the provisions of the Bylaw governing site plan submittal and review, the Company stated that it seeks exemption from Section 171-17(3), (4), and (5) "primarily to prevent unnecessary delays" in construction of the proposed facility, "and in recognition of the Department's primary jurisdiction" in reviewing such facilities (Exh. EFSB-BG-1, at 2; Tr. 2, at 243). During hearings, the Company added that it "believes" it would require exemption from certain substantive provisions of Section 171-17 as well, including the provisions of Section 171-17A(5)(a) through (i) (Exh. HO-RR-20). Berkshire stated that the Company "is concerned" that it may not be able to meet the design criterion in subsection (5)(b), which requires architectural "compatibility" between new and existing structures, or the design criterion in subsection (5)(c), which requires that proposed buildings "relate harmoniously to each other" (Exhs. HO-RR-20; BG-1 (app. J at 17126.1)). Additionally, the Company stated that it requires exemption from Section 171-17A(4)(b)(9), because this provision "appear[s] to require the indoor storage of . . . hazardous materials [and] that may conflict with the design, safety and operational benefits" of the proposed facility (Exh. HO-RR-19).⁶⁷

The Company cited prevention of delay as the primary basis for requesting exemption from three additional sections of the Bylaw: the requirements of Section 171-31, pertaining to special permits; the requirements of Section 171-18, subsection C, pertaining to earth removal

⁶⁶ See n. 65, above.

⁶⁷ The Town stated that it supports a "waiver" of the Bylaw "pertaining to the prohibition of the storage of fuels" (Exh. BG-RMA-3).

and restoration; and the requirements of Part 2 of the Bylaw, the Zoning Board of Appeals Rules and Regulations (Exhs. EFSB-2, at 3-4; HO-RR-17). Additionally, with respect to the earth removal requirements of Section 171-18, Berkshire stated that it requires exemption because the Company expects to excavate more than ten cubic yards of soil within the project site (Tr. 2, at 245-246).⁶⁸

The Company cited two reasons for its requested exemption from the Planned Industrial District regulations in Section 171-28.1 of the Bylaw. First, the Company stated that it requires an exemption "to the extent that" the proposed facility would not qualify as a use permitted in a Planned Industrial District (Exhs. EFSB-BG-1, at 2, (app. J at 17150-17150.2)). The Company also requested a specific exemption from Section 171-28.1, subsection F, which prohibits the "bulk storage and/or sale of petroleum products" in a Planned Industrial District (Exhs. EFSB-EG-1, at 2; BG-1 (app. J at 17150.2-17150.3)). In response to questioning during hearings, however, the Company confirmed that although the Whately Bylaw provides for a Planned Industrial District, no such District currently exists and "[t]hus, the regulations at § 171-28.1 do not apply to any area in the Town of Whately" (Exh. HO-RR-18 (att.)).

The Siting Board finds that Berkshire has not established the need for exemption from the requirements of Section 171-28.1, because the record demonstrates that the Town of Whately does not contain a Planned Industrial District, and that the requirements of that Section pertain exclusively to such Districts.

It cannot be conclusively determined from the record in this proceeding whether Sections 171-7, 171-8, 171-15, 171-17, 171-31 or Articles IX and XI of the Zoning Board of Appeals Rules and Regulations would apply to construction and operation of the Company's proposed facility. The Siting Board acknowledges, however, that resolving the question of their applicability could result in project delay, which is of somewhat heightened concern in this case in light of the Board's finding that Berkshire has demonstrated the need for additional energy

⁶⁸ Removal of more than ten cubic yards of material from any lot within one year requires a special permit (BG-1 (app. J at 17129)).

resources by the 1999/2000 heating season.⁶⁹ Accordingly, the Siting Board finds that Berkshire has demonstrated a need for exemption from these sections of the Zoning Bylaw.

The record shows that Section 171-18, subsection C, would require the Company to obtain a special permit for excavation of the project site. The Siting Board acknowledges that such a result could result in project delay. Consequently, the Siting Board finds that Berkshire has established the need for exemption from Section 171-18, subsection C.

With respect to the issue of a building permit for the proposed facility, the Siting Board notes that Berkshire's zoning exemption petition did not request such an exemption, and that the Company has not articulated a rationale to support a finding that this particular is needed. The Siting Board notes further that the requirements of the Zoning Bylaw pertaining to building permits, which are set forth in Article VIII, appear to apply exclusively to dwellings (Exh. BG-1 (app. J at 17159-17162, Article VIII)). Nevertheless, the Siting Board acknowledges that resolving any possible ambiguity in this regard would be consistent with the Company's stated purpose in seeking a zoning exemption: the prevention of undue delay in construction and operation of the facility. Accordingly, the Siting Board finds that Berkshire has established that it requires exemption from Article VIII of the Zoning Bylaw.

3. Public Convenience or Welfare

a. General Public Interest

In Section II.A, above, the Siting Board found that Berkshire has demonstrated a need for additional energy resources by the 1999/2000 heating season, to maintain system reliability in the Company's Greenfield Division. In its most recent review of the Company's Long Range Forecast and Supply Plan, the Department found that "with the inclusion of the proposed LNG facility in the second year of forecast," Berkshire would be able to meet its firm sendout requirements during a prolonged cold snap. Berkshire Gas Company, D.T.E. 98-99, at 37. Accordingly, the Siting Board finds that the public interest would be served by approving the

⁶⁹ If found to apply, special permit or site plan review requirements could be expected to result in additional delay.

proposed project, particularly if the project can be constructed and placed into operation for the 1999/2000 heating season.

In Section III.B, above, the Siting Board reviewed the Company's site selection process, including its selection of the Long Plain Road site as its preferred site for the proposed project. The Siting Board finds that the public interest would be served by the siting of the proposed project on the preferred site, because the record shows that the Company examined a reasonable range of practical siting alternatives, and that its preferred site is superior to the alternative Route 5/10 site in terms of minimizing environmental impacts and costs while ensuring a reliable energy supply.

b. Local Interest

The Town of Whately stated during the course of the proceeding that it supports Berkshire's proposed project, with the condition that it is built on the preferred, rather than the alternative, site (Exh. BG-RMA-3, at 2). The Town also stated that it supports the granting of a zoning exemption to the Company (id.).⁷⁰ Based on the Town's expressions of support, the Siting Board finds that the local interest will be served by approving construction of the proposed project on the preferred site, and by granting the Company an exemption from the Zoning Bylaw, to the extent that an exemption is necessary for project construction or operation.⁷¹

⁷⁰ The zoning exemption requested by Berkshire in its zoning exemption petition is broader in scope than that which the Town expressed direct support for during the proceeding (Exh. BG-2; BG-RMA-3, at 2). However, there is no evidence in the record of any opposition by the Town to the Company's petition.

⁷¹ The Siting Board also notes that the local interest is served by the letter agreement between the Town and the Company which addresses several matters that might otherwise have been addressed through the zoning process (Exh. RMA-3(att.)). The Company has agreed, for example, to maintain a permanent visual screen between the facility and the road, and to notify the Town when additional tanks are to be constructed, so that Town officials may review the site before and after construction (id.).

4. Conclusion

Berkshire has established that it is a public service corporation. Berkshire also has established that it requires exemption from certain provisions of the Whately Bylaw, including the provisions relative to a special permit for the proposed facility. The record shows that both the general public interest and the local interest would be served by construction of the proposed project on the preferred site, and by granting the Company an exemption from the Whately Zoning Bylaw, to the extent that an exemption is necessary for construction or operation of the project without undue delay. Accordingly, the Siting Board finds that the Company's proposed facility on the preferred site is reasonably necessary for the convenience or welfare of the public.

V. DECISION

A. Petition to Construct

In Section II.A, above, the Siting Board has found that additional energy resources are needed by the 1999/2000 split year to maintain system reliability in the Company's Greenfield Division. The Siting Board also has found that the proposed project is consistent with the Company's most recently approved long-range forecast.

In Section II.B, above, the Siting Board has found that both the proposed project and the pipeline alternative would meet the identified need. The Siting Board also has found that the proposed project is preferable to the pipeline alternative.

In Section III.B, above, the Siting Board has found that the Company has considered a reasonable range of practical siting alternatives.

In Section III.C, above, the Siting Board further has found that, with implementation of proposed mitigation, compliance with all applicable local, state, and federal requirements, and compliance with the condition described in Section III.C and listed below, the environmental impacts of the proposed project at the preferred site would be minimized.

In Section III.D, above, the Siting Board further has found that, upon compliance with the conditions described in Section III.D and listed below, the proposed project would comply with the safety requirements of 980 CMR 10.00.

In Section III.C, above, the Siting Board further has found the proposed project at the preferred site would achieve an appropriate balance among conflicting environmental concerns as well as between environmental impacts and cost.

Finally, in Section III.C, above, the Siting Board has found that the proposed project at the preferred site would be preferable to the proposed project at the alternative site with respect to providing a necessary energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.

Accordingly, the Siting Board APPROVES the Company's petition to construct an LNG storage and vaporization facility at the Company's preferred site on Long Plain Road in Whately, Massachusetts, subject to the following CONDITIONS:

1. To ensure that the visual impacts of the proposed project are minimized, the Siting Board requires the Company to maintain the wooded buffer, as shown on Exhibit BG-RMA-2, to the north, west, and south of the proposed facility's vapor fence, and to maintain a 100-foot wooded buffer to the east of the proposed facility (measured from the edge of the most easterly facility structure), regardless of whether the site is subdivided. The Company may accomplish this through retaining control of the property, restrictive covenants, conservation easements, or any other appropriate means. Where there is presently less than 100 feet of wooded buffer, the Company shall maintain the existing buffer depth.

2. To ensure that traffic impacts are minimized, the Siting Board directs that, for deliveries of LNG, the Company use the traffic route through the Whately/Deerfield industrial parks if a connecting roadway is constructed.

3. Prior to commencement of commercial operation of the proposed facility:

a. Berkshire shall develop and file with the Siting Board a revised plan for removal of precipitation, as required by 980 CMR 10.04(4). The plan shall include a description of appropriate methods and materials to be used for ice removal.

b. Berkshire shall file with the Siting Board a completed "comprehensive safety plan," acceptable to the Department's Pipeline Engineering and Safety Division, in accordance with 980 CMR 10.04(5).

c. As required by 980 CMR 10.04(6), Berkshire shall install a facility alarm that is audible to persons off the facility site but within the facility's thermal radiation protection zone. Berkshire shall notify the Siting Board in writing that the alarm is operational, and that landowners within the thermal radiation protection zone have been acquainted with the alarm system.

4. Prior to commencement of remote operation of the proposed facility:

a. Berkshire shall file with the Siting Board for review and approval in consultation with the Department's Pipeline Engineering and Safety Division a Remote Operation Plan. The Remote Operation Plan shall include, at a minimum, the following: (1) a comprehensive set of proposed standard operating procedures ("SOP's") for remote operation of the facility; (2) a proposed SOP for use by dispatchers at the Company's Pittsfield facility in

determining the circumstances in which additional personnel are needed to operate the facility remotely; (3) a summary of changes to the facility's emergency response system as a result of remote operation, including a summary of all changes requested by the Whately or Deerfield Fire Departments and the Company's response to such requests; (4) a proposal to install on the facility site a CCTV system suitable for operational, emergency and security uses; a detailed plan for protection of the facility with a remotely operated firefighting system. The plan should identify which area(s) of the facility could be protected with remotely operated firefighting equipment, and the type of equipment that would be best suited to that area. The plan should be developed with the assistance of a qualified fire protection engineer familiar with LNG facilities; and (5) a plan regarding use of the facility's existing alarm system under remote operation. The plan should include the results of a false alarm study performed during the first year(s) of local operation of the facility. The plan should indicate which detectors were most likely to give false alarms; how the Company proposes to minimize false alarms; and to what extent components of the remotely operated firefighting system could be connected to the alarm system.

B. Zoning Exemption Petition

The Siting Board has found that construction and operation of the Company's proposed facility at the preferred site is reasonably necessary for the public convenience or welfare.

Accordingly, the Siting Board GRANTS the Company's petition for an exemption from certain provisions of the Town of Whately Zoning Bylaw. Specifically, the Company shall be exempt from those sections of the Zoning Bylaw enumerated in Section IV, above, with the exception of Section 171-28.1. The Company also shall be exempt from Article VIII of the Zoning Bylaw.

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

information on changes to the proposed project to enable the Siting Board to make these determinations.

M. Kathryn Sedor

M. Kathryn Sedor
Hearing Officer

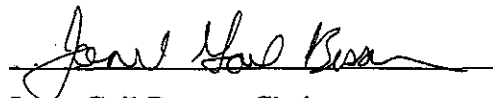
Dated this 13th day of September, 1999

Model Run	Inlet Pressure (psig)	Northampton Compressor (on/off)	UMass Service (on/off)	Temporary LNG Facility (Mcfh/off)	Liquid Propane Facility (Mcfh/off)	Forecast Peak Sendout (split year)	Result
3-A-1	200	on	off	175	off	1998/1999	Pass
N-2d	200	on	off	175	off	1999/2000	Pass
N-2a	175	on	off	175	off	1998/1999	Pass
N-2b	175	on	off	175	off	1999/2000	Pass
3-A-7	175	<u>OFF</u>	off	175	off	1998/1999	Fail
N-2f	135 ⁷²	on	off	175	off	1998/1999	Marginal
3-A-6	<u>100</u>	on	off	175	off	1998/1999	Fail
3-A-2	200	on	off	off	55	1998/1999	Marginal
N-2c	200	on	off	off	55	1999/2000	Marginal
3-A-3	200	on	off	off	55	<u>2002/2003</u>	Fail
3-A-4	200	<u>OFF</u> (failure)	off	off	55	1998/1999	Fail
3-A-5	200	on	off	off	<u>0</u> (failure)	1998/1999	Fail
N-2e	<u>175</u>	on	off	off	55	1999/2000	Fail

Table1. Summary of reliability modeling for the Greenfield Division distribution system (Exhs. BG-1, at 3-6 - 3-9, (att. 3-A), EFSB-N-2). "Pass", "Marginal", and "Fail" mean that modeled node pressures are greater than 105 psig., at 100±5 psig, or below 95 psig, respectively. Underlined variables are the inputs that appear to be responsible for system failure in a model run.

⁷² The text describing this model run indicates a model outlet pressure at the Northampton gate station of 150 psig (Exh. EFSB-N-2). The model schematic, model printouts, and direct testimony indicate a 135 psig outlet pressure (id., Exh. BG-TGQ-1 at 13).

APPROVED by the Energy Facilities Siting Board at its meeting of September 9, 1999, by the members and designees present and voting: Sonia Hamel (for Robert Durand, Secretary of Environmental Affairs); James Connelly (Commissioner, DTE); W. Robert Keating (Commissioner, DTE); John Malena (for Carolyn Boviard, Director of Economic Development); Louis Mandarinini (Public Member); and Janet Gail Besser (Chair, EFSB/DTE)

A handwritten signature in dark ink, appearing to read "Janet Gail Besser", written over a horizontal line.

Janet Gail Besser, Chair
Energy Facilities Siting Board

Dated this 13th day of September, 1999

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).

COMMONWEALTH OF MASSACHUSETTS
Energy Facilities Siting Board

In the Matter of the Petition of)
Site Mystic Development LLC for Approval)
to Construct a Bulk Generating Facility in)
in the City of Everett, Massachusetts)
_____)

EFSB 98-8

FINAL DECISION

Selma Urman
Hearing Officer
September 30, 1999

On the Decision:
William S. Febiger
Enid Kumin
Barbara Shapiro

APPEARANCES:

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

Ronald J. Salvato, City Solicitor
Law Department
Everett City Hall
484 Broadway
Everett, Massachusetts 02149-3694
FOR: City of Everett
Intervenor

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

Rob Sargent, Energy Program Director
Massachusetts Public Interest Research Group
29 Temple Place
Boston, Massachusetts 02111
FOR: Massachusetts Public Interest Research Group
Clean Water Action
Intervenors

The Sor Family
40 Robin Street
Everett, Massachusetts 02149
Intervenor

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

Richard G. McLaughry, Esq.
Robert A. Nailling, Esq.
75 State Street, 12th Floor
Boston, Massachusetts 02109
FOR: Cabot Power Corporation
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

James and Kathleen Godding
50 Belmont Street
Charlestown, Massachusetts 02129
Interested Persons

Roger Mann, Jr.
423 Bunker Hill Street, #2
Charlestown, Massachusetts 02129
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 2
C.	<u>Scope of Review</u>	Page 4
1.	<u>Background</u>	Page 4
2.	<u>Position of the Company</u>	Page 5
3.	<u>Analysis</u>	Page 5
II.	<u>SITE SELECTION</u>	Page 7
A.	<u>Standard of Review</u>	Page 7
B.	<u>Description</u>	Page 7
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 18
3.	<u>Offset Proposals</u>	Page 22
4.	<u>Analysis</u>	Page 24
C.	<u>Water Resources</u>	Page 31
1.	<u>Description</u>	Page 31
2.	<u>Analysis</u>	Page 35
D.	<u>Wetlands</u>	Page 37
1.	<u>Description</u>	Page 37
2.	<u>Analysis</u>	Page 38
E.	<u>Solid Waste and Hazardous Waste</u>	Page 39
1.	<u>Solid Waste</u>	Page 39
2.	<u>Site Cleanup</u>	Page 40
3.	<u>Analysis</u>	Page 42
F.	<u>Visual Impacts</u>	Page 43
1.	<u>Description</u>	Page 43
2.	<u>Analysis</u>	Page 47
G.	<u>Noise Impacts</u>	Page 50
1.	<u>Description</u>	Page 50
2.	<u>Analysis</u>	Page 54
H.	<u>Safety</u>	Page 56
1.	<u>Materials Handling and Storage</u>	Page 56
2.	<u>Fogging and Icing</u>	Page 58
3.	<u>Emergency Response</u>	Page 58
4.	<u>Barge Deliveries</u>	Page 59
5.	<u>Analysis</u>	Page 59

I.	<u>Traffic</u>	Page 60
1.	<u>Description</u>	Page 60
2.	<u>Analysis</u>	Page 65
J.	<u>Electric and Magnetic Fields</u>	Page 68
1.	<u>Description</u>	Page 68
2.	<u>Analysis</u>	Page 71
K.	<u>Land Use Impacts</u>	Page 73
1.	<u>Description</u>	Page 73
2.	<u>Analysis</u>	Page 78
L.	<u>Cumulative Health Impacts</u>	Page 79
1.	<u>Baseline Health Conditions</u>	Page 80
2.	<u>Criteria Pollutants</u>	Page 81
3.	<u>Air Toxics</u>	Page 83
4.	<u>Emissions to Ground and Surface Waters</u>	Page 84
5.	<u>Handling and Disposal of Hazardous Materials</u>	Page 86
6.	<u>EMF</u>	Page 86
M.	<u>Conclusions</u>	Page 89
IV.	<u>CONSISTENCY WITH THE POLICIES OF THE COMMONWEALTH</u>	Page 91
A.	<u>Standard of Review</u>	Page 91
B.	<u>Analysis</u>	Page 91
V.	<u>DECISION</u>	Page 94

FIGURE 1: SITE LOCUS MAP

LIST OF ABBREVIATIONS

<u>Abbreviation</u>	<u>Explanation</u>
AALs	Allowable Ambient Limits
Algonquin	Algonquin Gas Transmission Company
ANP	American National Power, Inc.
<u>ANP Blackstone Decision</u>	<u>ANP Blackstone Energy Company</u> , EFSB 97-2/98-2 (1999)
AQIP	Sithe Mystic's Air Quality Improvement Plan
<u>Berkshire Power Decision</u>	<u>Berkshire Power Development, Inc.</u> , 4 DOMSB 221 (1996)
BACT	Best available control technology
BECo	Boston Edison Company
Brownfields Act	c. 206 of Acts of 1998
Cabot	Cabot Power Corporation
<u>Cabot Power Decision</u>	<u>Cabot Power Corporation</u> , EFSB 91-101A (1998)
Campaign	Campaign to Clean Up Polluting Power Plants
Cancer Incidence Report	1997 Massachusetts Department of Health Report on cancer incidence in 351 cities and towns
cfs	Cubic feet per second
Citizen Groups	Massachusetts Public Interest Research Group, Clean Water Action, and Campaign to Clean up Polluting Power Plants
CO	Carbon monoxide
CO ₂	Carbon dioxide
Company	Sithe Mystic Development LLC
Company Brief	Sithe Mystic Development's brief
CSOs	Combined Sewer Flows
CTGs	Combustion Turbine Generators
CWA	Clean Water Action
dba	Decibel

DEIR	Draft Environmental Impact Report
<u>Dighton Power Decision</u>	<u>Dighton Power Associates</u> , EFSB 96-3 (1997)
DOMAC	Distrigas of Massachusetts
DPA	Designated Port Area
Earth Tech	Earth Tech, Inc.
EMF	Electric and magnetic fields
EPC	Engineering, procurement, and construction
ERC	Emission reduction credits
EUA	Eastern Utilities Associates
Everett	City of Everett
FEIR	Final Environmental Impact Report
FEMA	Federal Emergency Management Agency
GEP	Good Engineering Practice
gpd	Gallons per day
gpy	Gallons per year
HAPs	Hazardous Air Pollutants
HAPs Study	"Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units- Final Report to Congress" (1998)
HRSGs	Heat recovery steam generators
kV	Kilovolt
L ₉₀	The level of noise that is exceeded 90 percent of the time
LAER	Lowest Achievable Emission Rate
L _{dn}	EPA's recommendation of a maximum day-night noise level of 55 dBA in residential areas
LOS	Levels of service -- a measure of the efficiency of traffic operations at a given location
LNG	Liquified natural gas

LSP	Licensed site professional
MAAQS	Massachusetts ambient air quality standards
MassGIS	Massachusetts Geographic Information Systems
MBTA	Massachusetts Bay Transportation Authority
McDonald's	McDonald's Restaurant
MCZM	Massachusetts Coastal Zone Management
MCP	Massachusetts Contingency Plan
MDEP	Massachusetts Department of Environmental Protection
<u>Millennium Power Decision</u>	<u>U.S. Generating Company, EFSB 96-4 (1997)</u>
mG	Milligauss
mgd	Million gallons per day
MHI	Mitsubishi Heavy Industries
MVA	Megavolt-amperes
MW	Megawatt
MWRA	Massachusetts Water Resources Authority
NAAQS	National ambient air quality standards
NCI	National Cancer Institute
NEPCo	New England Power Company
NEPOOL	New England Power Pool
NHESP	Natural Heritage and Endangered Species Program
<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

Open Space Plan	City of Everett's Open Space and Recreation Plan
Pb	Lead
PM	Particulates
PM-10	Fine particulates
ppm	Parts per million
Prolerized	Prolerized of New England
PSD	Prevention of significant deterioration
RAO	Response action outcome
REC	Recognized environmental condition
Request for Comments	Requests for Comments issued by Energy Facilities Siting Board on March 14, 1999 on proposed standards of review
Restructuring Act	c. 164 of the Acts of 1997
RFP	Request for Proposals
ROW	Right-of-way
SCR	Selective Catalytic Reduction
SILs	Significant Impact Levels
Sithe Energies	Sithe Energies, Inc.
Sithe Mystic	Sithe Mystic Development LLC
Siting Board	Energy Facilities Siting Board
Siting Council	Energy Facilities Siting Council
SMD	Sithe Mystic Development LLC
SO ₂	Sulfur dioxide
SO _x	Sulfur oxides
SPCC	Mystic Station Spill Prevention Control and Countermeasure
STGs	Steam Turbine Generators
SWPPP	Stormwater Pollution Prevention Program
TEL	Threshold effects exposure limit
Tennessee	Tennessee Gas Pipeline Company
TPS	Technology Performance Standards

tpy	Tons per year
USEPA	The United States Environmental Protection Agency
USGen	U.S. Generating Company
USGS	United States Geological Survey
VOCs	Volatile organic compounds

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

I. INTRODUCTION

A. Description of Proposed Project, Site, and Interconnections

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

The Company has proposed to deliver natural gas to the generating facility via a new 20-inch diameter pipeline (Exh. SMD-1, at 1-2, 1-21). The pipeline would extend for approximately 3000 feet from the privately-owned property of the Distrigas of Massachusetts ("DOMAC") liquefied natural gas ("LNG") terminal to Mystic Station (*id.*). Based on the location of the proposed facility, the Company also could obtain natural gas supplies from the existing interstate pipeline companies, Algonquin Gas Transmission Company ("Algonquin") and Tennessee Gas Pipeline Company ("Tennessee") (*id.* at 1-4). Electric power generated by the proposed project

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

would be delivered via two interconnections through a switchyard within the Company's property (Exh. EFSB-RR-17). One line from one 775 MW power block would run to the existing BECo 345 kilovolt ("kV") substation at Mystic Station; the other line would run from the second 775 MW power block to the existing BECo 115 kV substation at Mystic Station (*id.*). The power would be distributed to substations in Woburn, Chelsea, and West Everett via three 115 kV lines (Exh. EFSB-RR-45).

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

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

B. Procedural History

On November 16, 1998, Sithe Mystic filed with the Siting Board² a petition to construct and operate a net nominal 1550 MW natural gas-fired, combined-cycle power generating facility

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

in the City of Everett, Massachusetts. The Siting Board docketed the petition as EFSB 98-8.

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

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

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

The Siting Board conducted seven days of evidentiary hearings, commencing on May 17, 1999 and ending on June 14, 1999. The Company presented the testimony of the following witnesses: James P. McGowan, Vice President of Development for Sithe New England, who testified as to the Company's site selection process and general project matters; Frederick M. Sellers, Vice President of Environmental Sciences and Planning of Earth Tech, Inc. ("Earth Tech"), who testified as to site selection and air impacts; George S. Lipka, Senior Project Manager for Earth Tech, who testified as to air impacts; David Keast, an independent acoustical engineer, who testified as to noise impact and noise mitigation issues; Donald R. Neal, Senior

Program Manager at Earth Tech, who testified as to water, traffic, safety, solid waste, land use and visual impacts; Susan F. Tierney, a partner at The Economic Resource Group, Inc., who testified as to the Company's site selection process and air impacts; Peter A. Valberg, Ph.D., Senior Scientist at Cambridge Environmental, Inc., who testified as to electrical and magnetic fields ("EMF") and health impacts; James J. Youmans, Project Manager with Stone & Webster Engineering Corp., who testified as to project design and engineering; and Gregg McBride, Principal at GZA GeoEnvironmental, Inc., who testified as to hazardous waste impacts.

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

C. Scope of Review

1. Background

On November 25, 1997, the Governor signed into law Chapter 164 of the Acts of 1997, entitled "An Act Relative to Restructuring the Electric Utility Industry in the Commonwealth, Regulating the Provision of Electricity and Other Services, and Promoting Enhanced Consumer Protection Therein" ("Restructuring Act"). Sections 204 and 210 of the Restructuring Act altered the scope of the Siting Board's review of generating facility proposals by amending G.L. c. 164, § 69H and by adding a new section, G.L. c. 164, § 69J ¼, which sets forth new criteria for the review of generating facility cases.

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

In its Request for Comments, the Siting Board stated that parties in pending generating facility cases would have an opportunity to brief the standards of review to be applied in their specific case (Request for Comments at 2). On June 14, 1999, staff issued revised standards of

review. On June 15, 1999, parties and interested persons in EFSB 98-8 were invited to submit comments on both versions of the standards of review. Sithe Mystic Development LLC, EFSB 98-8, Hearing Officer Memorandum, June 15, 1999.

2. Position of the Company

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

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

(id.).

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

3. Analysis

G.L. c. 164, § 69H clearly states that the Siting Board's review of generating facilities is limited to environmental issues, and that issues of reliability and cost are to be left to the marketplace. The Siting Board understands Sithe's concern that the Siting Board not appear to overstep its mandate in setting forth its standard of review for site selection. However, the Siting Board concludes that the change suggested by Sithe is unnecessary and could be counterproductive. As Sithe itself noted in its original response to the Request for Comments, our standard of review must recognize that "a developer's site selection must address [a] wider

spectrum of criteria” than that encompassed by an environmental review. The Siting Board notes that some of these criteria – proximity to the regional transmission system, for example – may be so fundamental to a particular project that the developer would not consider any site that lacked them. Alternatively, a site might be chosen, despite some environmental disadvantages, because of an outstanding non-environmental advantage relative to most other sites in the Commonwealth, not just to “other sites considered”. It is important that the Siting Board be able to weigh such considerations when determining whether an applicant’s process contributes to the minimization of environmental impacts of the proposed project and the costs of mitigating, controlling, and reducing such impacts.

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

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

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

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

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

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

The Company indicated that Sithe Energies initially narrowed the area of Company

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

The Company stated that between July, 1997 and December, 1997, Sithe Energies submitted bids to purchase the existing generating assets of three companies, New England Power Company ("NEPCo"), BECo, and Eastern Utilities Associates ("EUA") (id.). The BECo assets for which Sithe Energies bid included five sites: (1) Mystic Station in Everett; (2) New Boston Station in South Boston; (3) Edgar Station in Weymouth; (4) Framingham Station in Framingham; and (5) West Medway Station in Medway (id. at 3-8).^{6,7} The Company indicated that the BECo assets had characteristics that were compatible with Sithe Energies' development objectives, including available land for development, proximity to load centers, proximity to fuel supply, available transmission structure, ability to share infrastructure and operations personnel with existing units, and consistency with the Commonwealth's policy of encouraging brownfields development (id. at 3-7).

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

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

The Company explained that prior to submitting its bid, Sithe Energies conducted a half-day visit to each site, evaluated the properties based on environmental impacts as well as economics, and prepared summaries describing the strengths and weaknesses of each property (Exh. EFSB-SS-7). Based on the listed strengths⁸ and weaknesses, Sithe Energies identified base and alternative development configurations and potential development risks for each site (*id.*). Sithe Energies noted that the potential development risks for Mystic Station were (1) permitting once-through cooling, and (2) renegotiating property taxes (*id.*).⁹

Sithe Energies indicated that it based its bid on a target development figure of 2,800 MW (Exhs. SMD-1, at 3-8; EFSB-SS-5). Sithe Energies indicated that this figure represented the development potential for all the sites, and that Sithe Energies' internal economic and reliability analyses indicated that the New England market would benefit from at least an additional 2,800 MW of efficient generating capacity (Exh. EFSB-SS-5).¹⁰ The Company stated that the figure

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

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

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

reflected a dynamic analysis of how much capacity could be added to the sites, and what revenues could be expected under a range of scenarios (Tr. 5, at 454).

On December 10, 1997, BECo announced that it had selected Sithe Energies to purchase its generating assets (Exhs. SMD-1, at 3-7; EFSB-SS-3). Sithe Energies stated that it then conducted the second phase of its site review, which built upon the initial pre-bid analyses (Exh. SMD-1, at 3-8). The second phase included the evaluation of each site based on three categories of criteria: (1) consistency with Sithe Energies' development objectives; (2) environmental impacts; and (3) community issues (id. at 3-9). Consistency with development objectives encompassed the following sub-criteria: (1) availability of land; (2) proximity to electric load; (3) availability of natural gas; (4) electric transmission;¹¹ (5) availability of water for cooling purposes; and (6) compatibility with planned and existing uses (id. at 3-9 to 3-10). Environmental impacts encompassed the following sub-criteria: (1) air quality impacts; (2) water consumption;¹² (3) wastewater impacts; (4) wetlands; (5) noise;¹³ (6) land use; (7) historical and cultural resources; (8) visual impacts; (9) traffic impacts; (10) solid and hazardous waste; (11) safety; and (12) EMF effects (id. at 3-10; Exh. EFSB-SS-15). Community issues

at 3-9).

¹¹ The Company stated that the Framingham site is the most constrained with regard to transmission interconnection, and therefore would have the greatest costs associated with interconnection (Tr. 5, at 457). The Company further indicated that although BECo has not yet completed the system interconnection studies, it would be feasible to interconnect Mystic, Edgar, and West Medway in an economical manner (id. at 466).

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

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

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

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

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

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

Medway Station, together with the Company's existing peaking capacity, provide adequate peaking capacity for a diverse generating portfolio (Tr. 5, at 527).

The Company argues on brief that its site selection process contributes to the minimization of environmental impacts, as well as the minimization of costs associated with the mitigation, control, and reduction of such environmental impacts (Company Brief at 18). Sithe Energies indicated that it categorized its development plans and subsequent site selection as a "brownfield approach", which focused on identifying and evaluating appropriate sites with land uses already committed to power generation and transmission (Exh. SMD-1, at 3-3). The Company argues that it achieved the minimization goals, listed above, by (1) adopting the brownfield strategy for development, and (2) evaluating the five sites and selecting the Mystic, Edgar and West Medway Stations for initial development (Company Brief at 18). The Company asserted that the environmental benefits of brownfield development arise from the use of existing infrastructure on or near the site for the development, construction and operation of the proposed facility (Exh. EFSB-SS-23). In addition, the Company noted that brownfield development largely avoids disturbing the features at or near a pristine site, and affords opportunities to provide environmental improvements at the existing sites (*id.*). In particular, Sithe Energies noted the specific opportunities to reduce air quality impacts at Mystic Station; to reduce visual impacts and remediate hazardous waste problems at Edgar Station; and to mitigate the noise impacts of the existing generating units at West Medway Station (Exhs. EFSB-SS-22; EFSB-23; Tr. 5, at 499-504).

C. Analysis

Sithe Energies has presented a site selection process which resulted in the selection of three sites to be developed on three distinct parcels: Mystic Station, Edgar Station, and West Medway Station. The Company described the development process and objectives which it used to determine the level of development for each site. Sithe Energies provided information on all five of the sites which it acquired from BECo, detailing their infrastructure strengths and weaknesses, and identifying base and alternative configurations and potential development risks. Sithe Energies applied criteria to assess each site's consistency with Company development

objectives, environmental impacts, and community impacts. The Siting Board notes that the information provided by the Company was developed based on site visits, engineering and environmental analyses specific to each site, and economic and reliability analyses. The Siting Board finds that the applicant's description of the site selection process used is accurate.

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

Sithe Energies attributed minimization of environmental impacts to the use of a "brownfield approach". The Siting Board notes that the redevelopment and reuse of previously disturbed sites and the use of existing infrastructure can limit many of the environmental impacts that may be associated with industrial development. Additionally, where an industrial character and the presence of industrial support infrastructure are already evident, there often is the potential to develop additional facilities such as a generating plant, consistent with considerations of land use compatibility for such development. The Siting Board encourages such "brownfield" development where appropriate. However, the Board notes that the benefits of such an approach are necessarily site and facility-specific. A review of any such site must take into account the scale, nature and physical attributes of any existing or recent use on the site, the existing character of the surrounding area, and the impacts which the specific proposed use will have on the surrounding area.

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

Accordingly, the Siting Board finds that the Company's site selection process resulted in

B. Air Quality

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

1. Applicable Regulations

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

The Company indicated that, under NAAQS, all geographic areas are classified and designated as attainment, non-attainment¹⁵ or unclassified for the six criteria pollutants: Sulfur dioxide ("SO₂"), fine particulates ("PM-10"), nitrogen oxide ("NO_x"), carbon monoxide ("CO"), ground level ozone ("O₃") and lead ("Pb") (Exh. SMD-1, at 4-3 to 4-4).¹⁶ The Company further indicated that, although the Charlestown/Everett area is classified as "attainment" or "unclassified" for SO₂, PM-10, NO_x, CO, and Pb, the entire Commonwealth of Massachusetts is in "serious" non-attainment for O₃ (*id.* at 4-5).

The Company stated that under PSD requirements, it must (1) demonstrate that its proposed facility will comply with NAAQS, and (2) apply Best Available Control Technology ("BACT") at its proposed facility to emissions of CO, particulates ("PM"), and PM-10, pollutants for which emissions may potentially exceed 100 tons per year ("tpy") (Exh. EFSB-A-

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

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

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

1-S (att.) at 5-3 to 5-4). The Company indicated it would voluntarily implement an Air Quality Improvement Plan ("AQIP") involving both the existing and proposed units at Mystic Station which would produce net reductions in SO₂, NO_x, and sulfuric acid mist s such that these emissions would not require PSD review (Exh. EFSB-A-7-S (att.) at 3-3).¹⁷ The Company also stated that lead emissions do not meet the regulatory threshold for PSD review (id.).

The Company stated that, to comply with the requirements of NSR for NO_x and VOCs, which are precursors of O₃, the proposed facility would be required to obtain emissions offsets at a minimum ratio of 1.26 to 1.0 if net increases in emissions of any non-attainment pollutant were to exceed 25 tpy (Exh. EFSB-A-1-S (att.) at 5-18). Si the proposed a net decrease in total (including existing and proposed units) NO_x emissions at Mystic Station through its AQIP such that NO_x offsets would not be required under NSR (id.).

The Company stated, however, that the proposed facility, even with the AQIP in place, would result in a net increase in VOCs emissions of more than 25 tpy (id.). The Company proposed meeting the VOCs offset requirement on a net-out basis by using a portion of the net reduction of NO_x emissions from the AQIP, applied at a ratio of two tons of NO_x emissions reduction for each ton of VOCs emissions reduction (id.). The Company indicated, however, that such an arrangement would require demonstration by MDEP to USEPA that additional NO_x reductions would be at least as effective as VOCs reductions in reducing ozone concentrations

¹⁷ PSD review is a federally mandated program for new major sources or major modifications to existing major sources of criteria pollutants (Exh. EFSB-A-1-S (att.) at 5-4). Si the proposes, through the AQIP, to reduce actual emissions from the existing Mystic Station to offset the potential emissions from the proposed facility (id.). Under PSD, a modification is not a "major modification" if the net increase in potential emissions is less than 100 tpy of CO; 40 tpy of NO_x, or SO₂; 25 tpy of PM (total); 15 tpy of PM-10; 0.6 tpy of Pb; or 7 tpy of sulfuric acid mist (H₂SO₄) (id.). Significant net increase is defined under PSD as the increase in potential emissions from the modification minus the reduction in actual emissions from the existing equipment (id.). If reductions in actual emissions from existing equipment are available to limit the net increase in potential emissions of all criteria pollutants below significance levels, the new equipment would not be a major modification under this rule and could "net out" of PSD (id.).

(id. at 5-18 to 5-19).¹⁸ The Company stated that it would need to apply Lowest Achievable Emission Rate ("LAER") technology and "external" emissions offsets for VOCs at its proposed facility should the Company be unable to "net out" of NSR using NO_x offsets from its AQIP at a 2:1 ratio (id. at 5-5; 5-19).

With respect to NSPS requirements, the Company indicated that emissions of regulated pollutants -- NO_x and SO₂ -- would fall well below NSPS threshold levels (id. at 5-5).¹⁹ In addition, the Company stated that the proposed facility would incorporate BACT for SO₂ and VOCs as well as for other non-criteria pollutants and air toxics that are regulated as part of the MDEP air plans approval process (id. at 5-6, 5-15 to 5-17).

The Company indicated that its proposed facility would meet Technology Performance Standards ("TPS") for air emissions from New Electric Generating Facilities promulgated in 980 CMR 12.00 by the Siting Board on July 17, 1998 (Exh. SMD-1, at 2-1 to 2-3). The Company provided documentation indicating that its proposed facility would meet TPS for both criteria and non-criteria pollutants (id. at Table 2.2-2, Revised Table 2.2-1).²⁰

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

¹⁹ The Company stated that although the proposed facility would "net out" of NSR for NO_x and could potentially "net out" of NSR for VOCs, LAER for NO_x would be demonstrated by the use of dry low-NO_x combustors and Selective Catalytic Reduction ("SCR") to achieve NO_x emissions of 2.0 ppm dry volume corrected to 15 percent O₂ (Exh. EFSB-A-1-S (att.) at 5-6). The Company also indicated that LAER for VOCs would be demonstrated by combustion control to minimize incomplete combustion (id.).

²⁰ Because the Company provided documentation indicating that its proposed facility would meet TPS for both criteria and non-criteria pollutants, the Company is exempt from the requirements of 980 CMR 12.00 to provide data comparing its proposed facility to alternative fossil-fuel generating technologies (Exh. SMD-1, at 2-2 to 2-3, Revised Table 2.2-1). Provision of such information is intended to enable the Siting Board to determine whether the proposed facility will contribute on balance to "a reliable, low-cost, and diverse regional energy supply with minimal environmental impacts." M.G.L. c. 164, § 69J½. Exempting projects which meet the TPS streamlines EFSB review of proposed facilities which incorporate "state-of-the art" environmental performance characteristics.

2. Emissions and Impacts

The Company indicated that the proposed facility would emit regulated pollutants, including criteria and non-criteria pollutants, and CO₂ (Exh. SMD-1, at 4-17 to 4-20). The Company asserted, however, that air quality impacts from the proposed facility would be minimized through the use of natural gas as fuel, efficient combustion technology, advanced pollution control equipment and the proposed AQIP for Mystic Station (Exhs. EFSB-A-7-S (att.) at 4-1 to 4-10; EFSB -A-7-S (att.) at 1-1 to 1-2). The Company also asserted that dispatch of the proposed project in preference to older generating resources in the region would result in displacement of NO_x, SO₂ and CO₂ emissions (Exhs. SMD-1, at 1-32 to 1-33; EFSB-A-6; EFSB-RR-20).

The Company stated that its proposed facility would incorporate BACT for CO, PM-10, SO₂, and Pb as well as both BACT and LAER for NO_x and VOCs (Exhs. EFSB-A-1-S (att.) at App. C; EFSB-A-1-S-3, at 4-5 to 4-7). The Company further stated that emission rates for non-criteria pollutants would represent BACT for each substance (Exh. EFSB-A-1-S (att.) at App. C). In support of its contention that the proposed facility would represent BACT and/or LAER for the identified pollutants, the Company provided information regarding control options for the proposed facility (*id.*; Exhs. EFSB-A-7-S (att.) at 4-1 to 4-10; EFSB-A-1-S-3, at 4-1 to 4-7).

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

The Company provided results of local air quality modeling indicating that the air quality impacts of the proposed facility on ambient concentrations of criteria pollutants would be below established significant impact levels ("SILS") (Exhs. EFSB-A-1-S (att.) at 5-20; EFSB-RR-23).

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

The Company stated that evaluation of predicted ambient air quality impacts from the proposed facility followed prescribed USEPA and MDEP procedures (Exh. EFSB-A-1-S (att.) at 5-20). The Company indicated that it had used the USEPA-approved Industrial Source Complex Short-Term ("ISCST3") and SCREEN3²² atmospheric dispersion models to calculate ground-level concentrations resulting from the proposed facility's emissions (Exh. EFSB-A-7, at 5-8 to 5-12).

The Company stated that it examined a range of stack heights and associated air quality impacts in selecting the stack height for the proposed facility (Exh. EFSB-RR-19).²³ The Company indicated that its selected stack height for the proposed facility, 305 feet, would be just above the height where air quality impacts due to building downwash effects are projected to increase significantly as the stack height is reduced (id.). Specifically, the Company stated that a stack height of less than 305 feet would produce air quality impacts greater than SILs at the proposed facility; conversely, if the stack height were increased above 305 feet, the incremental reduction of air emissions would be outweighed by the increased visual impacts (id.). Based on its analysis, the Company asserted that its proposed 305-foot stack height would minimize air quality impacts consistent with minimizing visual impacts (id.).

The Company also examined a range of cooling options for its proposed facility before choosing an air-cooled condenser to reduce water supply requirements (Exhs. SMD-1, at 4-1 to 4-6; EFSB-W-1; see also Section III.C, below). The Company indicated that the tradeoff associated with using air-cooled condensers is a decrease in facility power output, particularly at higher ambient air temperatures, and that the reduction in facility output requires additional operation of a marginal unit (Exh. EFSB-W-1). The Company stated that, because the marginal unit emits criteria pollutants at a greater rate than would the proposed facility for the same

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

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

output, air cooling would have a corresponding negative effect on regional air quality (*id.*). The Company further stated that the proposed facility is designed to maintain plant output levels and to avoid potential negative air quality impacts through the use of evaporative coolers on the combustion turbine air intakes (*id.*).²⁴

The Company also proposed implementing an AQIP for existing Mystic Station Units 4 through 9, inclusive, which would reduce total NO_x emissions from all units at Mystic Station by 21 percent, and would reduce total SO_x emissions from all units by 42 percent (Exh. EFSB-RR-21). The Company indicated that it would begin to implement its AQIP coincident with commercial operation of proposed Units 8 and 9 (Exhs. SMD-1, at 1-19 to 1-20; EFSB-A-2). The Company stated that, to accomplish these reductions, it would voluntarily (a) limit operations of each of the existing Mystic Station Units 4-6 to 720 hours per year at full-load equivalent; (b) modify Unit 7 to incorporate additional NO_x emissions control technology; and (c) adhere to an absolute station-wide cap on NO_x emissions of 3,000 tons per year, and on SO₂ emissions of 10,000 tons per year, to be met through selective fuel use and operational limits (Exhs. SMD-1, at 1-19 to 1-20; EFSB-A-2; EFSB-A-1-S-3, at 3-3 to 3-4).

The Company conducted dispersion modeling of the effect on ambient air quality of anticipated air emissions from the proposed facility, considered separately and together with emissions from the existing Mystic Station units and assumed background air quality (Exhs. SMD-1, at 4-18 to 4-19; EFSB-A-1-S (att.) at 5-20 to 5-21; EFSB-RR-23; EFSB-RR-46; EFSB-A-1-S-3, at 2-6). The Company's dispersion modeling predicted ambient pollutant concentrations of criteria and non-criteria pollutants and air toxics from the proposed facility at receptor locations within a radius of 10 miles from the Mystic Station site (Exh. EFSB-A-1-S (att.) at 5-20 to 5-21).²⁵ The Company provided dispersion modeling results of cumulative air

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

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

quality impacts from the proposed and existing Mystic Station units for three criteria pollutants, SO₂, NO₂, and PM-10 (Exh. EFSB-RR-46).

The Company indicated that, assuming maximum air emission impacts from the proposed facility, all of the predicted contributions of the proposed facility to ambient air quality would fall within the applicable SILs for criteria pollutants and the applicable MDEP limits for non-criteria pollutants and air toxics (Exhs. SMD-1, at 4-18 to 4-19; EFSB-A-1-S (att.) at 5-20 to 5-21; EFSB-A-1-S-3 at 2-6).²⁶ The Company's modeling of maximum cumulative air quality impacts, including emission additions from the proposed facility and emission reductions from implementation of the AQIP at the existing Mystic Station units, showed that annual pollutant concentrations would decrease by 19 percent for SO₂ and 2 percent for NO₂ (Exh. EFSB-RR-46, (att.)). Twenty-four hour concentrations of PM-10 would increase by 1 percent, while 3-hour SO₂, 24-hour SO₂ and annual PM-10 concentrations would be essentially unchanged (id.).^{27,28}

The Company also provided vegetation sensitivity screening data for background plus predicted SO₂ concentrations from the proposed facility (Exh. EFSB-A-1-S (att.) at 4-21). The Company's data indicate that, for both the one-hour and three-hour averaging times, as predicted by ICSCT3 dispersion modeling, background plus maximum SO₂ concentrations from the proposed facility would be substantially below the screening threshold (id.).

(att.) at 5-20 to 5-21; EFSB-A-1-S-3, at 2-6).

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

²⁷ Three-hour concentrations of SO₂ would increase by .1 percent; 24-hour concentrations of SO₂ would increase by .03 percent, and annual concentrations of PM-10 would decrease by .24 percent (Exh. EFSB-RR-46 (att.)).

²⁸ For all measurements, existing background levels at the point of maximum predicted concentration were well below applicable ambient standards. Specifically, background levels of NO_x were 71 percent of the annual standard; background levels of SO₂ were 48 percent of the annual standard, 8 percent of the 24-hour standard, and 4 percent of the 3-hour standard; and background levels of PM-10 were 82 percent of the annual standard and 45 percent of the 24-hour standard (Exh. EFSB-RR-46 (att.)).

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

In accordance with the above approach, the Company presented a table which compared emissions expected from the generation of 1500 MW in New England over a year (a) without the proposed facility and therefore with additional generation coming from existing marginal generating units, and (b) with the proposed facility operating fully and displacing other generation (*id.*). With operation of the proposed facility, the Company's analysis indicated that New England emissions of NO_x, SO₂ and CO₂ would be lower by approximately 16,740 tpy, 60,970 tpy and 4,631,850 tpy, respectively (*id.*).²⁹ The Company stated that even if New England's marginal rates of emission per unit energy output for NO_x and 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 the two pollutants; 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 (*id.*).

3. Offset Proposals

The Company indicated that, to comply with the requirements of NSR for VOCs, the proposed facility might be required to obtain emissions offsets at a minimum ratio of 1.26 to 1.0, given that the expected net increase in VOC emissions with the proposed facility and the AQIP

²⁹ By comparison, the emissions produced by the proposed facility, which are a part of the analysis, would be 395 tpy of NO_x, 138 tpy of SO₂, and 5.4 million tpy of CO₂ (Exhs. EFSB-A-5; EFSB-A-7 (att.) at 4-6 to 4-7).

exceeds 25 tpy (Exh. EFSB-A-1-S (att.) at 5-18).³⁰ The Company explained that while it proposes to use NO_x reductions from its AQIP at a 2:1 ratio to "net out" of the NSR offset requirement for VOCs, it is possible MDEP would not approve this proposal; if so, the Company would need to provide "external" emissions offsets at a ratio of 1.26:1.0 for the VOCs emissions from its proposed facility (*id.* at 5-5; 5-19; *see* Section III.B.1, above). The Company indicated that it had identified a company in Massachusetts with sufficient, available certified VOCs offsets for purchase to provide the necessary amount of "external" VOCs offsets if required (Exh. EFSB-A-1-S-3, at 4-6 to 4-7).³¹

The Company indicated that the proposed facility would emit a maximum of 5.4 million tpy of CO₂ (Exh. EFSB-A-1-S (att.) at 5-19). The Company further stated that the AQIP would result in a reduction in CO₂ emissions at Mystic Station Units 4, 5 and 6 of 973,000 tpy, effectively offsetting approximately 18 percent of the added CO₂ emissions from the proposed facility (*id.*; Tr. 4, at 325-332).

Sithe stated that, to meet the Siting Board's CO₂ offset requirement, it proposes to use reductions in CO₂ emissions from curtailment of generation at Units 4, 5 and 6 as provided in its AQIP (Exh. EFSB-A-1-S (att.) at 5-19; Company Brief at 31).³² Sithe argued that its proposed use of curtailment offsets for 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 Brief at 31-32).

To support its position that the proposed CO₂ offsets would be incremental, Sithe stated that the AQIP and any emission reduction credits related thereto would not be implemented

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

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

³² Sithe stated that there is currently no commodity market for CO₂ allowances or ERCs, but noted that there are occasionally trades for CO₂ emission reductions in the range of \$1 to \$2 per ton of emission reduction (Exh. EFSB-RR-22).

unless and until the proposed facility commences operation (Exh. EFSB-A-5). The Company also stated that the portion of curtailed operations at Units 4, 5 and 6 proposed for use in offsetting CO₂ emissions at the proposed facility was separate from the portion of such curtailed operations that is proposed for use in offsetting emissions of NO_x and VOCs at new facilities, including the proposed facility (Tr. 4, at 323- 335; Company Brief at 32).³³ The Company agreed that the portion of CO₂ emissions reductions used as offsets for emissions from the proposed facility would not be resold in the future as offsets for another CO₂ emission source (Tr. 4, at 344; Company Brief at 32).

4. Analysis

The record indicates that the proposed facility would consist of four highly efficient combustion turbines, four HRSGs with supplemental firing, and two steam turbines, all using natural gas as their sole fuel, and incorporating advanced pollution control equipment including dry low-Nox combustors and SCR. The Company proposes to achieve BACT for CO, PM-10, SO₂, and Pb, and to achieve BACT and LAER for NO_x and VOCs. The Company provided information regarding total facility emissions which demonstrates that the proposed facility

³³ The Company indicated that the proposed operating and pollution control modifications at Units 4, 5, 6 and 7 are equivalent to 2157 tpy of NO_x emissions (Tr. 4, at 325-327). Of that amount, the Company would use 395 tpy to “net out” the added NO_x emissions from the proposed facility, and if allowed by MDEP, would use 142 tpy to “net out” the added VOCs emissions from the proposed facility (*id.* at 327-329). The Company also would use approximately 800 tpy to provide NO_x offsets for two other projects that Sithe affiliates are developing in Massachusetts – the Sithe Fore River project and the Sithe West Medway project (*id.* at 329-330). The Company stated that it has no specific plans regarding future use of the remainder of the NO_x emissions reductions from the existing units, over 800 tpy or 37 percent, but indicated that it would seek certification by MDEP of such unused reductions as Massachusetts Emission Reduction Credits (*id.* at 330; Exh. EFSB-A-7 (att.) at 1-1). The Company did not identify any plans with respect to reductions in emissions of other criteria pollutants from the existing units. Regarding CO₂ offsets, the Company indicated that the curtailed operations at units 4, 5, and 6 is equivalent to 973,000 tpy, and that of that amount 54,000 tpy, or 5.5 percent, would provide an offset for 1 percent of the emissions from the proposed facility consistent with the Siting Board’s requirement (Exhs. SMD-1, at 4-20; EFSB-A-5).

would meet TPS for both criteria and non-criteria pollutants. Consequently, the Siting Board finds that no alternative technologies assessment is required for the proposed facility.

The record also indicates that the Company intends to implement a voluntary AQIP for its four existing units at the Mystic Station site. The AQIP would reduce emissions from existing units sufficiently to result in net reductions in annual emissions of SO₂, NO_x, and sulfuric acid mist at the Mystic Station site, while leaving annual emissions of PM-10 essentially unchanged.

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

The Company's cumulative air quality modeling demonstrates that construction of the proposed facility, combined with implementation of the AQIP, would result in a 19 percent reduction in annual SO₂ concentrations and a 2 percent reduction in annual NO_x concentrations at the point of maximum impact. Thus, the proposed facility/AQIP provide significant local improvements with respect to SO₂, and minor local improvements with respect to NO_x.

The proposed facility/AQIP also would provide net reductions in total SO₂ and NO_x emissions from the site, while increasing on-site generating capacity by 150 percent. Sithe anticipates using some of these emissions reductions to meet other permitting requirements for the proposed facility. Specifically, Sithe proposes to use NO_x reductions from the AQIP to "net out" the VOCs emissions from the proposed facility. MDEP has expressed concern about this approach; the record demonstrates that Sithe has identified a source for 90 tpy of ERCs for VOCs consistent with NSR and MDEP requirements, in the event that MDEP does not accept the Company's netting proposal for VOCs.

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

The Company also proposes to use emissions reductions from its AQIP to meet the Siting Board's 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").³⁴ In the Dighton Power Decision, the Siting Board expressed an expectation that the contributions of future project developers would reflect that set forth in that decision, which was based on an offset of one percent of annual facility CO₂ emissions, at \$1.50 per ton, to be donated in the early years of facility operation. Id. at 43.

In an earlier generating facility review, the Siting Board addressed a proposal to provide CO₂ mitigation by contracting for the shutdown or curtailment of an existing source of CO₂ emissions through direct purchase or through purchase collateral to transfer of NO_x ERCs. Berkshire Power Decision, 4 DOMSB 221, at 370-374. Although the Siting Board did not accept that proposal, the Siting Board did set forth a standard for accepting such an offset

³⁴ 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.

approach should that applicant or a future applicant pursue it.³⁵ Id. at 373-374. The Siting Board stated that, to obtain approval of a CO₂ mitigation program based on shutdown or curtailment of existing sources, 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. Id. at 373.

Here, Sithe proposes to provide CO₂ mitigation based on using a portion of CO₂ emission reductions from its AQIP to provide offsets for emissions from the proposed facility. Sithe argues that an offset level of 54,000 tpy, representing 5.5 percent of the emissions reduction available from the AQIP and 1 percent of the added emissions from the proposed facility, meets the requirements of the Siting Board for 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, and that in this case also is within the same Mystic Station site on which the proposed facility would be sited. The Siting Board finds that the transfer of offsets proposed by Sithe, although distinct in transactional terms, falls within the general scope of the offset transfer framework addressed in the Berkshire Power Decision.

As recognized by Sithe, there currently is insufficient development of a 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

³⁵ 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.

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 AQIP, including use of between 395 and 437 tpy of NO_x emissions reductions for netting out NO_x and possibly VOCs emissions from the proposed facility and use of approximately 800 tpy of NO_x emissions reductions for offsetting NO_x emissions at the Sithe Fore River and Sithe West Medway projects. The record further shows that Sithe's identified netting/offset arrangements would not consume such a large share of the emissions reductions from the AQIP for any pollutant as to necessarily be collateral to the CO₂ reductions to be used for meeting the Siting Board's CO₂ mitigation requirement, *i.e.*, the identified arrangements would not consume more than 94.5 percent of the reductions available from the AQIP for any pollutant.

However, the record also shows Sithe plans to seek certification by MDEP of unused NO_x reductions as Massachusetts Emission Reduction Credits. Beyond criteria pollutants, Sithe also may consider using CO₂ reductions from the AQIP to meet CO₂ offset requirements for other projects, for example the Sithe Fore River project or the Sithe West Medway project.

To ensure the consistency of Sithe's proposed 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 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 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 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.

Accordingly, as a condition of accepting Sithe's proposed CO₂ mitigation, the Siting Board will require 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 proposed AQIP emissions reductions that establish that the Company will make no collateral use, for purposes of providing emissions offsets for other pollutants and/or other sources, of the portion of the AQIP curtailment on which the CO₂ offsets for the proposed facility is based.

The record suggests that Sithe's proposal to provide offsets for 1 percent of facility emissions also would generally conform to the Siting Board's requirements set forth in the Dighton Power Decision, which provided for a monetary contribution for CO₂ mitigation, based on an offset level of 1 percent of facility emissions and an assumed mitigation cost of \$1.50 per ton. While no monetary transaction is required as part of Sithe's proposal, the record evidence as to the range of recent transaction prices for CO₂ offsets is reasonably consistent with the assumed value of \$1.50 per ton.^{36,37}

The Siting Board finds that, subject to the above condition that Sithe provide a CO₂ mitigation plan to establish that the Company will make no collateral use of the portion of the

³⁶ The Siting Board recognizes that, in future reviews, evidence may be developed that supports use of a different assumed monetary value for the cost of providing 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.

³⁷ 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. EFSB 96-3, at 42-43. See, e.g., ANP Blackstone Decision, EFSB 97-2/98-2, at 113-114.

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, 54,000 tpy, from a portion of the CO₂ emissions reductions from the 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; or should the Company provide evidence to establish that it will make no additional use of the CO₂ reductions from the AQIP to provide CO₂ offsets, the Company may elect to provide such monetary contribution based on the maximum net CO₂ emissions from the proposed facility and the AQIP. If the Company elects to provide a monetary contribution, the Siting Board requires the Company to provide CO₂ offsets as described above through a total contribution of \$1,720,161, or \$1,410,213 if based on maximum net CO₂ emissions from the proposed facility and the AQIP,³⁸ to be paid in five annual installments during the first five years of facility operation.³⁹

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

³⁸ 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 increase of 3 percent. See ANP Blackstone Decision, EFSB 97-2/98-2, at 114; Cabot Power Decision, EFSB 91-101A at 57; Millennium Power Decision, EFSB 96-4, at 117-118.

³⁹ If the Company chooses, the 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-year amount. The net present value is to be based on discounting, at ten percent, the five annual payments totaling \$1,720,161 or \$1,410,213 if based on the net maximum CO₂ emissions from the proposed facility and the AQIP.

C. Water Resources

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

1. Description

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

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

⁴⁰ The Company explained that air cooling commonly reduces the water supply requirements of a generation facility but decreases plant output at higher ambient air temperatures, and that the decrease in plant output at the proposed facility would be partially offset by the addition of the evaporative coolers (Exh. EFSB-W-1). The Company noted that water supply requirements of the proposed facility with air cooling and evaporative coolers would still be significantly less than with wet cooling (*id.*).

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

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

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

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

Station by 131,000 to 132,000 gpd (Exh. EFSB-W-4).⁴²

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

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

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

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

cleaning wastes, would be off site (id. at 8-7 to 8-8). The Company stated that the proposed facilities as designed would recycle blowdown as make-up water to provide reductions in wastewater flows beyond those already achieved through the use of air cooling (id. at 8-7).

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

The Company stated that, in addition to ensuring no discharge of process wastewater to adjacent ground and surface waters, it would implement the following measures to minimize impacts of the proposed facility on water quality, especially of the Mystic River: use of erosion and sediment controls between the proposed facilities site and the Mystic River during construction; collection and treatment of industrial stormwater, including parking lot runoff, to

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

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

meet MDEP stormwater guidelines; and development of a stormwater pollution prevention program ("SWPPP") (Exhs. EFSB-A-1-S (att.) at 10-16 to 10-17; EFSB-RR-13).

The Company indicated that measures to prevent release of pollutants into groundwater would include refueling over portable containment devices during construction and locating all hazardous chemicals and materials used during construction and operation within portable secondary containment systems (Exh. EFSB-W-7). The Company also stated that it would integrate the proposed facility into the existing Mystic Station Spill Prevention Control and Countermeasure ("SPCC") plan to direct spill response procedures (id.; Exh. EFSB-SF-1). The Company further stated that detention and catch basins for the proposed facility's stormwater management system would be lined to prevent groundwater discharges prior to stormwater treatment (Exh. EFSB-W-7).⁴⁶

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

2. Analysis

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

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

⁴⁷ This compares favorably with the per MW water use of other facilities recently before the Siting Board. The comparable usage rates in recent reviews were: 99,450 gallons per year ("gpy") per MW (with 20 percent steam augmentation) for the 580 MW air-cooled ANP Blackstone project; 224,000 per gpy per MW for the 170 MW air-cooled Dighton Power project; 2.4 million gpy per MW for U.S. Generating Company's 360 MW water-cooled project in Charlton. ANP Blackstone Decision, EFSB 97-2/98-2, at 132; Dighton

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

The Company plans to draw its water supply from the Everett municipal water supply system, which in turn is supplied by the MWRA. The record demonstrates that, given the current and projected water demand for the entire MWRA system through 2020, and the current and projected water use of the City of Everett, the Company's designated water supply is adequate to meet the needs of the proposed facility over the 20-year planning horizon. The record further demonstrates that construction and operation of the proposed facility will not necessitate capacity or pressure upgrades to the Everett municipal water supply system, and will have no impact on the quality of surface and groundwater adjacent to the Mystic Station site, including that of the Mystic River. In addition, the proposed facility will not affect groundwater recharge areas associated with a sole source aquifer or private drinking water wells.

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

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

Power Decision, EFSB 96-3, at 219, 240; Millennium Power Decision, EFSB 96-4, at 58, 118-119.

D. Wetlands

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

1. Description

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

With respect to floodplains, the Company provided a detailed topographic survey of the portion of the Mystic Station site closest to the adjacent Mystic River. This survey indicated that the elevation of all interior portions of the site, including the location of the proposed facility, is more than 10 feet above sea level (Exh. EFSB-L-10). The Company therefore asserted that the

⁴⁸ The Siting Board notes that barge deliveries would replace some deliveries by truck (see Section III. G, below).

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

100-year floodplain does not encroach upon interior portions of the site (id.).⁵⁰

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

2. Analysis

The record demonstrates that impacts to wetlands resulting from construction and operation of the proposed facility would be limited to 500 square feet of wetland disturbance in the vicinity of two planned stormwater outfall structures. The record also shows that any wetland excavation for the outfall structures will require approval of the Everett Conservation Commission, and that a portion of the affected wetlands would revert to their original condition. The Company has indicated that wetland impacts also could result from dock modifications for barge delivery to the proposed site if such modifications are necessary. The Siting Board notes that any such modifications to the docks also will require approval of the Everett Conservation Commission.

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

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

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

E. Solid Waste and Hazardous Waste

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

1. Solid Waste

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

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

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

Company stated that hazardous wastes would be separated from normal wastes, containers would be properly labeled and storage areas would be segregated (id.).

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

2. Site Cleanup

The Company stated that oil and/or hazardous material releases had occurred in the past at a number of locations at the Mystic Station site, most recently in October and December, 1998 (Exh. EFSB-A-1-S (att.) at 11-1; Tr. 2, at 87). The Company indicated that prior to the October and December, 1998 releases, investigations⁵² by the Company had identified three locations on

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

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

the Mystic Site property with "the potential to present a risk to health, safety or public welfare" (Exh. EFSB-A-1-S (att.) at 11-3). A later study conducted by the Company and submitted to the Siting Board, "Preconstruction Site Assessment, Mystic Power Generating Facility," addressed the two 1998 releases as well (Exh. EFSB-RR-6-S (att.); Tr. 2, at 69). The Company indicated that it had retained a Licensed Site Professional ("LSP") who had prepared a remediation plan for the three pre-1998 release locations on the Mystic Station property (Exh. EFSB-A-1-S (att.) at 11-3).⁵³

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

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

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

⁵⁵ The Company noted that some oil remained in the soil around the foundations of tanks in the berm area where the spill occurred (Tr. 2, at 101 to 102). The Company stated that this was because, due to structural considerations, it was not possible to dig at depth around the foundations of these facilities, which were still in use (id.). The Company indicated that no free oil remained from the December, 1998 spill, and that, with the possible exception of maintenance-related exposure, no contact to the oil from the spill

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

3. Analysis

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

The record further demonstrates that the Company intends, in accordance with MDEP specifications, to remediate past spills at Mystic Station, both in the vicinity of existing facilities at the site and within the area where the proposed facility would be constructed. The record demonstrates that, in conjunction with its efforts to remediate on-site contamination, the

would occur (id.). The Company stated that, in conjunction with MCP regulations, MDEP would include the 1998 spill in its tracking of oil and/or hazardous waste releases at the Mystic Station site (id.). The Company also stated that it intended to achieve RAO status for the proposed site prior to the beginning of construction of the proposed facility (id.).

Company recently completed a study of oil and other hazardous waste releases at the Mystic Station site. The Company's investigation included an evaluation of three sites previously identified as within the area of proposed facility construction and two more recent releases of oil also within the proposed construction area.

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

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

F. Visual Impacts

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

1. Description

The Company stated that a large, densely-developed industrial area immediately surrounds the proposed facility site (Exh. SMD-1, at 4-72). The Company indicated that intervening industrial structures would buffer views from many of the residential areas closest to the proposed facility site (*id.*). The Company stated that the nearest residences are located .02 to .03 miles north of the project site, between Alford Street/Broadway and Robin Street⁵⁶ (Exh.

⁵⁶ Information provided by the Company delineates the nearest residential area to be north of the project site, bounded by Robin Street to the east, Alford Street/Broadway to the west, also encompassing a number of blocks north of Beacham Street extending to

SMD-1, at 4-37). The Company also indicated that the proposed site is at a low elevation relative to the surrounding terrain and that hills to the north and south of the proposed site would afford additional buffering to areas beyond them (id.).

In support of its statements, the Company provided a study of the visibility of the project from twelve receptor locations⁵⁷ (id. at 4-72 to 4-87). The Company indicated that it selected the twelve receptor locations to include the most unobstructed, proximate views of the proposed facility site (id. at 4-73). The Company also stated that it considered the elevation of potential receptor locations as shown on the applicable United States Geological Survey ("USGS") topographic map (id.). The Company stated that photographs from each of its selected receptor locations were taken in mid-summer and that computerized perspective views of the structures of the proposed facility were superimposed to simulate the proposed facility's visual impacts to the surrounding areas (id.).

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

The Company listed a number of standard measures to reduce the visual impacts of large

Bartlett Street (Exh. EFSB-L-2 (att.)).

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

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

The Company indicated that it planned some landscaping in conjunction with its proposed facility and in addition to current landscaping around the Mystic Station site (Exh. EFSB-L-5).⁵⁸ The Company stated that it would seed or apply a layer of crushed stone to areas disturbed by construction after the completion of final grading activities (id.). The Company stated that it also intended to plant coniferous trees along that portion of the northern edge of the Mystic Station property adjacent to Rover Street (id.; EFSB-V-7).⁵⁹

With respect to building sight lines and structure height, the Company indicated that the generation building would house most of the equipment for the proposed facility, and that it would have a continuous roofline (Exh. EFSB-V-1). The Company stated that the air-cooled condensers for the proposed facility would be placed symmetrically at either end of the generation building (id.). The Company further stated that auxiliary equipment, including transformers and storage tanks, would be shielded from view by the generation building and the existing Mystic Station (id.). The Company indicated that the stack of the proposed facility

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

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

would be almost 200 feet lower than the highest stack at the existing Mystic Station (id.).⁶⁰ In comparing the second highest buildings at the proposed facility and existing Mystic Station units, the Company indicated that the two air-cooled condensers for the proposed facility would be approximately 90 feet lower than the highest boiler building for an existing unit (id.; Exh. SMD-1, at 1-9).

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

The Company indicated that the existing Mystic Station operates continuously and is illuminated (id.). The Company stated that outdoor lighting specific to the proposed facility would also be required, including Federal Aviation Administration regulation obstruction lighting for the two stacks and high pressure sodium fixtures for a variety of locations (id.). With respect to the high pressure sodium fixtures, the Company anticipated using pole-mounted fixtures providing 0.5 foot-candles of illumination each for the site perimeter fence and plant roadways, 10 foot-candles each for outdoor walkways, stairways and platforms, and 2 foot-candles each for the outdoor transformer areas (id.). The Company stated that all outdoor lighting for the proposed facility would be photocell controlled and that lights would be downward-directed to reduce off-site light or glare (id.). The Company also stated that it would

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

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

avoid exterior night lighting not required for safety or security reasons (Exh. EFSB-V-5). In addition, the Company stated that, in the transformer areas, lighting would be limited to a height of 20 feet above grade and further shielded from off-site view by transformer firewalls and strategic placement of the fixtures (id.).

With respect to mitigation of visible emissions, the Company indicated that any plume visibility at Mystic Station would be associated with the burning of No. 6 fuel oil (Exh. EFSB-V-3). The Company stated that existing Mystic Station Units 4, 5 and 6 always fire No. 6 fuel oil, while Unit 7 fires either No. 6 fuel oil or natural gas (id.). The Company estimated that, with implementation of its AQIP, operation of Units 4, 5 and 6 would be reduced by 79 percent below the average annual capacity factor of those units over the two-year period 1997 to 1998 (id.). The Company indicated that plumes from Units 4, 5 and 6 would therefore be visible less frequently because of the reduced operation of the units (id.). The Company stated it was unable to predict the extent to which use of No. 6 fuel oil at Unit 7 and associated plume visibility would be reduced under the AQIP for Mystic Station (id.). The Company indicated that to achieve AQIP target levels at Unit 7 it would use an array of strategies, including fuel switching, use of lower sulfur fuels, and curtailment of operations, and that use of No. 6 fuel oil and associated plume visibility would vary accordingly (id.).

2. Analysis

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

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

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

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

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

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

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

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

In implementing the above directives for off-site mitigation of visual impacts, the Company: (1) shall provide shrub and tree plantings, window awnings or other reasonable mitigation on private property, only with the permission of the property owner, and along public

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

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

G. Noise Impacts

1. Description

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

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

The Company explained that applicable governmental regulations include: (1) federal regulations limiting noise from new trucks and trucks in interstate commerce; (2) federal regulations limiting occupational noise exposure; (3) the MDEP Policy 90-001 limiting noise increases at property lines and nearest residences to 10 dBA above background levels, and prohibiting tonal sounds; and (4) Everett ordinances prohibiting unreasonable, loud or excessive

noise in excess of 50 dBA (Exh. SMD-1, at 4-64).⁶² The Company indicated that there are various measures of noise, and noted that the MDEP 10-dBA limit is based on L_{90} noise, the sound level that is exceeded 90 percent of the time during the measurement period (id. at 4-58).⁶³ With respect to the effect of changes in noise, the Company stated that an increase of 3 dBA is the minimum increase in sound level that is generally perceptible to the human ear (Exhs. EFSB-A-7-S (att.) at 6-18; EFSB-N-11).

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

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

⁶² The designation "dBA" indicates sound measured in decibels using the "A-weighting" network, which, within the range of sounds heard by the human ear, emphasizes middle frequency sounds and de-emphasizes lower and higher frequency sounds (Exh. SMD-1, at 4-56).

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

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

relatively constant contributors to ambient noise levels in the vicinity of the proposed site (Exh. EFSB-RR-38; Tr. 6, at 683).

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

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

The Company presented an analysis of the cost associated with reducing the noise impacts of the proposed facility at the nearest residence to 7, 4, and 2 dBA above ambient (*id.*).⁶⁶

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

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

Noise mitigation equipment was added for specific noise sources in the model until each noise reduction target (7, 4, and 2 dBA) was reached (id.). The major noise sources mitigated as part of the Company's analysis include: combustion turbine air intake and HRSG exhausts; air-cooled condensers and closed cooling water coolers; main power transformers; turbine walls and roof; and ventilation louvers (id.). The overall cost of noise mitigation for the proposed facility was estimated based on the cost of purchasing and installing the required equipment to achieve the incremental noise control targets (id.). The Company estimated that it would cost \$1,010,000⁶⁷ to reduce noise impacts from 10 dBA to 7 dBA; that it would cost \$10,079,000⁶⁸ to reduce noise impacts from 10 dBA to 4 dBA; and that it would cost \$16,031,000 to reduce noise impacts from 10 dBA to 2 dBA ⁶⁹ (id.; Exh. EFSB-RR-37).⁷⁰

The Company indicated that the highest predicted construction noise at the closest

a total noise level at the nearest residential receptor (on Mystic Street) of 10 dBA above ambient (id.).

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

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

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

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

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

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

2. Analysis

In past decisions, the Siting Board has reviewed the noise impacts of proposed facilities for general consistency with applicable governmental regulations, including the MDEP's 10 dBA standard. ANP Blackstone Decision, EFSB 97-2/98-2, at 153; Millenium Power Decision, EFSB 96-4, at 152; Altresco-Pittsfield, Inc., 17 DOMSC 351, at 401(1988). In addition, the Siting Board has considered the significance of expected noise increases which, although lower

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

than 10 dBA, may adversely affect existing residences or other sensitive receptors. ANP Blackstone Decision, EFSB 97-2/98-2, at 153; Millennium Power Decision, EFSB 96-4, at 152; Northeast Energy Associates, 16 DOMSC 335, at 402-403 (1987).

The record demonstrates that the existing L_{90} nighttime ambient noise level at the residential receptors monitored by the Company ranges from 47 to 55 dBA. The record also demonstrates that ambient noise levels in the area, with or without the facility, are well above the 55 dBA guideline identified by USEPA in residential areas as the noise level requisite to protect public health and welfare with an adequate margin of safety for both activity interference and hearing loss. Thus there is a compelling reason for the Company to use all cost-effective noise mitigation to limit noise increases at residential receptors closest to the Mystic Station site.

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

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

With respect to construction noise impacts, the Siting Board agrees that adherence to the Company's proposed construction site practices concerning machinery and hours of operation, combined with the proposed mitigation of steam release events, would minimize construction-related noise impacts. The Siting Board notes that such practices would be consistent with

approaches to construction noise mitigation that it has reviewed in recent generating facility cases. Therefore, the Siting Board finds that the environmental impacts of the proposed facility with respect to construction noise would be minimized.

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

H. Safety

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

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

(a) adhere to good engineering practices and comply with federal, state and local regulations in its design, construction and operation activities; (b) incorporate into its construction contracts provisions that require contractors to adhere to safety and health requirements; and (c) monitor operations on a regular basis (Exh. SMD-1, at 1-26 to 1-27, 4-133 to 4-134). In addition, the Company stated that, at a minimum, the proposed facility design would include the following safety features: (a) chemical storage vessels and areas with secondary containment; (b) equipment and building layouts that incorporate provisions for safe access to and egress from the facility, as well as adequate access for fire fighting and other emergency equipment; (c) emergency lighting with backup power supply; and (d) automatic shutdown systems with backup power supply for turbines, fuel supplies and chemical systems (id. at 1-26 to 1-27).

1. Materials Handling and Storage

The Company indicated it would store aqueous ammonia on site in two 100,000-gallon welded steel tanks (id. at 1-25). The Company stated that each tank would be double-walled and equipped with leak detection and an ammonia vapor treatment system (Exh. EFSB-SF-5). The Company indicated that the tanks would be leak-tested before use and inspected periodically (id.). The Company also stated that the tanks would be surrounded by concrete berms or fencing to prevent accidental contact with vehicles or other equipment (id.). Delivery would be via an

average of thirteen approximately 5,500-gallon tanker truckloads of 19.5 percent ammonia concentration per week (id.). The Company indicated that transfer of ammonia from trucks to the storage tanks would be through heavy-duty rubber hoses connected to a permanent pump/pipe system (id.). Trucks would be stationed in a bermed unloading area during ammonia transfer (id.).

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

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

The Company stated that operation of the proposed facility would require limited amounts of lubricating oils and other industrial chemicals, primarily for water and wastewater treatment, and for operation of the SCR system (Exh. SMD-1, at 1-24). The Company documented the storage and use of hazardous materials associated with construction and operation of the proposed facility and provided material safety data sheets for use by state and local emergency planning committees as required under the regulations of the Emergency Planning and Community Right-to-Know Act (Exh. EFSB-A-1-S (att.) at 11-1). The Company indicated that all on-site chemical storage would be in covered containment areas, with secondary containment appropriate to each chemical and equal, at a minimum, to the volume of

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

the stored material (Exh. SMD-1, at 1-24 to 1-25, 4-133; Tr. 2, at 126 to 129). The Company stated that employees would be trained to manage hazardous materials and respond to emergencies as appropriate (Exh. SMD-1, at 4-133).

2. Fogging and Icing

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

3. Emergency Response

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

4. Barge Deliveries

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

5. Analysis

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

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

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

The record further demonstrates that, to reduce the chance of mishap, barged delivery of equipment for the proposed facility would be scheduled to minimize disruption to the Mystic River DPA and avoid heavy seas, and would be coordinated with all appropriate oversight authorities.

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

I. Traffic

1. Description

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

The Company asserted that traffic impacts associated with constructing and operating the proposed facility would be minimized (Exh. SMD-1, at 4-87). In support of its assertion, the Company provided traffic volume data for existing traffic conditions, and modeled future (Year 2000 and Year 2003) traffic conditions with and without the proposed facility (id. at 4-87 to 4-114).^{73,74} The Company also modeled Year 2000 traffic conditions with construction traffic from both the proposed facility and the Island End project, another project proposed for a site to the east of Mystic Station (id.).⁷⁵

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

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

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

The Company's analyses focused on five major intersections in the vicinity of the proposed site: (a) Route 99/Mystic Station Access Drive -- a signalized T-intersection; (b) Route 99/Dexter Street -- a signalized, T-intersection (the first block north of the access drive); (c) Robin Street/Dexter Street/Rover Street -- an unsignalized, 3-way intersection on the northern boundary of Mystic Station; (d) Robin Street/Beacham Street -- an unsignalized, 4-way intersection north on Robin Street; and (e) Route 99/Beacham Street/McDonald's Restaurant ("McDonald's")-- a signalized 4-way intersection⁷⁶ north on Route 99 (*id.* at 4-87 to 4-92).

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

In modeling Year 2000 construction-related impacts of the proposed facility, the Company included passenger vehicle trips associated with the arrival and departure of workers and truck trips associated with the delivery of construction materials, equipment and supplies (*id.* at 4-100). The Company anticipated a maximum construction-related workforce for the proposed project of 1,078 (980 craft workers and 98 supervisory and support personnel) (*id.*)⁷⁷. The Company stated that its traffic analysis assumed the number of employees and shift timing typical of the period of peak construction activity (*id.*). The Company indicated that construction would occur during a normal 8-hour shift, from 7:00 a.m. to 3:00 p.m., but that construction shift periods might be lengthened based on available daylight hours (*id.*).

The Company's Year 2000 build scenario traffic analysis assumed that 100 percent of the heaviest morning construction-related traffic would occur during the morning commuter peak period, and 50 percent of the heaviest afternoon construction-related traffic would occur during

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

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

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

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

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

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

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

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

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

The Company's analysis indicated that one of the three signalized intersections studied, Route 99/Dexter Street, was, on average, already at Level of Service ("LOS") "D" during morning and afternoon peak hour traffic (Exh. SMD-1, at 4-105).⁸⁰ At the second signalized intersection, the intersection of Route 99 with Beacham Street and the access drive to McDonald's, the Company stated that existing morning peak hour traffic was LOS "D" and existing afternoon peak hour traffic was at LOS "C" (id.).

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

The Company proposed a number of measures to mitigate the deterioration in LOS associated with Year 2000 construction of the proposed facility (Exhs. EFSB-A-1-S (att.) at 12-

⁸⁰ The Company stated that LOS is a measure of the efficiency of the traffic operations at a certain location (Exh. SMD-1, at 4-94). The Company stated that traffic conditions on roadways and intersections are represented by the letters A through F on the LOS scale, where A represents a "free flow" condition with minimal delays, and F represents "forced flow" or breakdown conditions characterized by erratic vehicle movements (id. at 4-94 to 4-95).

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

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

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

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

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

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

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

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

2. Analysis

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

The record demonstrates that by the Year 2003, traffic levels in the Mystic Station site area would be greater than at present, but would have increased at the same rate with or without construction and operation of the proposed facility. With respect to Year 2000 traffic impacts, however, the record demonstrates that without proposed mitigation, LOS at three intersections in the Company's analysis would deteriorate more noticeably under the build scenario than under the no-build scenario. Specifically, without proposed mitigation the record shows deterioration

S (att.) at 12-20).

⁸⁵ The Company indicated that LOS "D" and LOS "E" represent acceptable operating conditions for peak-hour periods in highly developed urban areas (Exh. EFSB-T-7; Tr. 5, at 574 to 577; 595 to 599). The Company also stated, based on its traffic analysis, that LOS at the Route 99/Beacham Street/McDonald's intersection would revert to current (1998) morning and afternoon peak hour levels, LOS "D" and LOS "C", respectively, after construction and during operation of the proposed facility, in Year 2003 (Exh. SMD-1, at 4-109 (Table 4.13-7)).

to LOS "F" during morning peak traffic at the Route 99/Dexter Street intersection, deterioration to LOS "E" during morning peak traffic and LOS "D" during afternoon peak traffic at the Route 99/Beacham Street/McDonald's intersection, and deterioration from LOS "A" to LOS "C" during morning peak traffic at the Route 99/Mystic Station Access Drive. The record shows that under certain conditions in highly developed urban areas, LOS "D" and LOS "E" may be classified as acceptable levels of traffic flow. The Siting Board notes, however, that LOS "E" involves conditions at or near roadway capacity, and that LOS "F", projected at Route 99/Dexter Street during Year 2000 peak morning traffic, represents forced flow or breakdown conditions.

The record demonstrates that the Company would implement a number of measures to minimize traffic impacts from construction of the proposed facility: providing parking for 300 cars at the Company's proposed construction staging area to reduce traffic proceeding in a southerly direction through intersections of Route 99 in the vicinity of the Mystic Station site;⁸⁶ striping a Route 99 southbound right turn lane into the staging area; optimizing signal timing at the three Route 99 intersections near the proposed facility site to maximize traffic flow; manually controlling Route 99 traffic signals when beneficial; using uniformed traffic-control police as necessary at each intersection; encouraging workers' use of public transportation; encouraging carpools among Company employees and subcontractors and providing preferred parking to those who carpool; delivering large equipment by barge and rail as much as possible; and scheduling deliveries during off-peak hours to the extent practicable. The record demonstrates that the Company's proposed mitigation, assuming arrival of the Company's day-shift construction workforce between 6:00 and 7:00 a.m., would result in LOS "C" at all major intersections of the Company's traffic study with one exception, the Beacham Street/McDonald's intersection with Route 99. At this last intersection, the record shows Year 2000 LOS at LOS "E" during morning peak hour traffic and LOS "D" during afternoon peak hour traffic. The record also demonstrates, however, that LOS at the Route 99/Beacham Street/McDonald's intersection is projected to revert to current (1998) morning and afternoon peak hour levels, LOS

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

"D" and LOS "C", respectively, after construction of the proposed facility is completed. The record further demonstrates that the Company intends to maintain communication with local officials and police departments to address any traffic impacts arising from construction and subsequent operation of the proposed facility, and to ensure smooth passage of safety and emergency vehicles at all times.

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

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

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

notify the Siting Board, as discussed in Section V, below.

J. Electric and Magnetic Fields⁸⁷

1. Description

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

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

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

⁸⁸ The Siting Board notes that BECo's and other utilities' existing transmission lines are not ancillary facilities as defined in G.L. c. 164, § 69G. However, in order to allow comprehensive analysis of environmental impacts associated with the construction and operation of the proposed generating facility, the Siting Board may identify and evaluate any potentially significant effects of the facility on magnetic field levels along existing transmission lines. See ANP Blackstone Decision, EFSB 97-2/98-2, at 170; Altresco Lynn, Inc., 2 DOMSB 1, at 213 (1993); Boston Edison Company, 1 DOMSB 1, at 148 (1993).

extending to substations in Chelsea and West Everett, respectively (id.).

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

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

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

The Company stated that the plan to interconnect one of the power blocks to the 115 kV system replaced an earlier plan to interconnect that block to a second new 345 kV line to be installed in an existing underground duct parallel to BECo's existing 372 line (Tr. 3, at 228-229). The Company indicated that, under its earlier interconnection plan, both power blocks would be interconnected to underground 345 kV lines, and magnetic field changes along the affected lines from operation of the proposed project would be negligible (Exh. SMD-1, at 4-132).⁹¹

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

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

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

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

2. Analysis

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

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

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

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

Decision, EFSB 97-2/98-2, at 173; Silver City Energy Limited Partnership, 3 DOMSB 1, at 353-354 (1994).

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

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

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

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

Accordingly, the Siting Board finds that, with the Company's pursuit of an interconnection plan and related designs for upgrading affected transmission lines that the

Company and transmission providers determine would best limit magnetic field increases at affected residences, and also be practical and cost-effective, the environmental impacts of the proposed facility would be minimized with respect to EMF impacts.

K. Land Use Impacts

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

1. Description

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

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

The Company indicated that the proposed facility would be located within an Industrial Zoning District in Everett, and that all properties adjacent to the site are also part of the same

Industrial Zoning District (*id.* at 4-40 to 4-41).⁹⁴ The Company explained that any use is allowed in industrial districts except for those specifically prohibited in Everett Zoning Ordinance Section 7(a)(1)-(4) (*id.* at 4-40). The Company stated that because of its proposed combustion of natural gas rather than solid fuels, no specific prohibitions of Everett Zoning Ordinance Section 7(a)(1)-(4) would apply to the proposed facility (*id.*). However, the Company indicated that the height of the air-cooled condenser buildings (116 feet) and the main power house structures (102 feet) for the proposed facility would exceed the 100-foot maximum building height allowed within an industrial district under the Everett Zoning Ordinance; in addition, the two 305-foot-high stacks for the proposed facility would exceed the maximum stack height allowed under Everett Zoning Ordinance Section 7(b)(3) (*id.*). The Company stated that it would apply for variances to construct structures for the proposed facility as required (Exh. EFSB-L-11).

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

⁹⁴ The Company indicated that it had identified a parcel of land west of Route 99 which, assuming negotiations were successful, it would lease for construction staging (Exh. EFSB-L-12-S). The Company stated that a portion of the identified parcel is within Boston city limits, in the Charlestown General Industrial Subdistrict of the Charlestown Waterfront Harborpark District (*id.*). The Company indicated that Boston Zoning Code regulations apply to the Charlestown General Industrial Subdistrict, and that Article 8 of the Boston Zoning Code allows any industrial use, except industrial uses which are objectionable or offensive due to special danger or hazard (not applicable to construction staging or parking) and provided that all dust and dirt incident to storage or handling is contained at the parcel (*id.*). The Company also noted that Article 23 of the Boston Zoning Code requires that parking facilities be graded, surfaced, drained and maintained; parking facilities cannot be used for automobile storage or repairs; and that parking spaces be at least 8.5 feet wide, 20 feet long and located on site (*id.*).

for this area (id.).⁹⁵ The Company stated that beyond the Everett-Chelsea border, existing land uses include recreational and residential uses in addition to limited commercial and industrial uses (id.).

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

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

The Company described the area to the north of the proposed site as one of mixed land use, combining single and multiple family residential units with commercial establishments,

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

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

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

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

The Company indicated that, under G.L. Chapter 91 and 310 CMR 9.00, it had considered opportunities to accommodate public access along the shoreline within the Mystic Station property boundary (Exhs. EFSB-A-1-S (att.) at 10-7 to 10-8; EFSB-L-13; EFSB-W-16-S-2 (att. at C-5)). The Company stated that there is currently limited public access to Mystic

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

Station and no public access to the Mystic Station site shoreline due to public safety concerns (Exh. EFSB-W-16-S -2 (att.) at C-5). However, the Company stated that it does conduct pre-arranged tours of the station for school groups and other organizations and maintains landscaping between Mystic Station and the sidewalk for Route 99 (Alford Street), providing a point of access to the Mystic River via the Malden Bridge (id.).⁹⁷

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

The Company rejected other options, including widening of the sidewalk between Alford Street and Mystic Station and providing a point of access to the Mystic Station riverfront for observation and fishing (id. at C-6 to C-7). The Company explained that this option would require reconfiguring a fence and arranging an easement through adjacent BECo and MWRA properties (id.). The Company indicated it rejected widening the sidewalk because pedestrian and bicyclist safety at this location, already adequate, would not be improved (id.). In addition, widening the sidewalk would require removing a portion of the existing vegetated buffer between the sidewalk and Mystic Station (id.). The Company stated that it rejected providing a point of access on the Mystic Station site along the waterfront closest to Alford Street because BECo refused to allow a crucial easement through a gate on its property (id.). The Company stated that the alternative route to the point of access along the waterfront would require the public to walk between the high-voltage substation and the operating power plant, compromising site security and unnecessarily endangering public safety (id.). The Company indicated that it also saw a safety concern in the proximity of the point of access to the existing Mystic Station

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

cooling water intake system (id.).

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

2. Analysis

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

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

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

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

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

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

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

L. Cumulative Health Impacts

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

The analysis of the health effects of a proposed generating facility is necessarily closely related to the analysis, in Sections above, of specific environmental impacts which could have an

effect on human health and any necessary mitigation measures. This Section sets forth information on the human health effects that may be associated with air emissions, including criteria pollutants and air toxics, emissions to ground and surface waters, the handling and disposal of hazardous wastes, and EMF; describes any existing health-based regulatory programs governing these impacts; and considers the impacts of the proposed project in light of such programs.

1. Baseline Health Conditions

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

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

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

2. Criteria Pollutants

As discussed in Section Air, above, the MDEP regulates the emissions of six criteria pollutants under NAAQS: SO₂, PM-10, NO₂, CO, O₃, and lead. The Company indicated that PM-10, and particulate matter in general, is associated with increases in mortality or hospital admission from respiratory diseases such as chronic bronchitis; that carbon monoxide would be expected to aggravate heart disease conditions; that SO₂ might increase sensitivity to asthma; and that lead is a neurotoxin (Tr. 4, at 422-423).

The Company's witness, Dr. Valberg, provided an overview of how the USEPA determines NAAQS for each criteria pollutant. He indicated that USEPA first develops a "criteria document", which is a compilation of all the health-based studies that are available relevant to a specific standard (id. at 376). The criteria document also reflects comments received at public hearings from various interest groups (id. at 377). Based on the criteria document, USEPA staff then recommend to the USEPA administrator a standard that is protective of public health with an adequate margin for safety, and which protects sensitive subgroups (id. at 377-378). The Company asserted that, when a geographical area is in compliance with NAAQS for a particular pollutant, there would be no discernable health effects in that area from that pollutant (id. at 383-384). The Company provided data from MDEP monitoring stations in Boston, Lynn, and Waltham indicating that regional background levels of NO₂ are approximately 53 percent of NAAQS, while background levels of all other criteria pollutants except ozone are well below 50 percent of the standard (Exh. SMD-1, at 4-14).

The Company indicated that new sources of criteria pollutants, such as the proposed project, may not cause or significantly contribute to a violation of the health-based NAAQS (Tr.

4, at 397, 405). The Company stated that, to simplify the review of new sources, USEPA established SILs for each criteria pollutant. These SILs represent a level of emissions low enough that it would not significantly affect modeled ambient air quality (*id.* at 408). A new source with emissions levels below SILs is not required to do detailed emissions modeling (*id.* at 406).

The record indicates that the USEPA has set in place ambient air quality standards, called NAAQS, for six criteria pollutants – SO₂, PM-10, NO₂, CO, O₃, and lead. These standards are set based on an extensive review of the medical literature regarding the health effects of each pollutant, and are designed to be protective of human health, including the health of sensitive subgroups, with an adequate margin for safety. The Siting Board gives great weight to these standards as indicators of whether incremental emissions of criteria pollutants will have a discernable impact on public health.

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

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

in Boston, Lynn, and Waltham indicate that the regional background levels of five of the pollutants are 53 percent or less of the ambient standard; thus, Charlestown/Everett area levels of all criteria pollutants except O₃ are well within the standards set to protect human health. The proposed project's emissions of all criteria pollutants are anticipated to be below SILs. Consequently, the Siting Board concludes that the proposed project's emissions of SO₂, PM-10, NO_x, CO, and lead will have no discernable impact on public health.

Sithe Mystic has committed to meeting BACT or LAER, as applicable, and to obtaining offsets for its NO_x and VOCs emissions. In addition, the Company has demonstrated that implementation of its AQIP will result in net reductions in annual NO₂, SO₂, and PM-10 emissions from the Mystic Station site. Cumulative air modeling of the proposed project and the AQIP shows a 19 percent reduction in average annual SO₂ concentrations at the point of maximum impact, with a two percent reduction in average annual NO₂ concentrations and a one percent increase in 24-hour PM-10 concentrations.⁹⁹ For all modeled cases, the cumulative concentrations were below NAAQS. Consequently, based on its compliance with MDEP air quality standards, the Siting Board finds that the cumulative health impacts of criteria pollutant emissions from the proposed facility would be minimized.

3. Air Toxics

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

The MDEP has in place an air toxics program, the primary purpose of which is to protect public health (Exh. EFSB-RR-27, at v). The program sets AALs for a broad range of chemicals through a three-stage process (*id.* at viii-ix). First, a Threshold Effects Exposure Limit ("TEL") which is protective of public health from threshold effects is established (*id.* at viii). Next, a

⁹⁹ Changes in 3-hour SO₂ concentrations, 24-hour SO₂ concentrations, and annual PM-10 concentrations were negligible.

Non-threshold Effects Exposure Limit (“NTEL”) is derived (*id.*). Finally, the lower of the TEL and the NTEL is selected as the AAL (*id.*). Where carcinogenicity is the most sensitive effect, and adequate data are available to derive a cancer unit risk, the AAL is set to correspond to an incremental lifetime risk of developing cancer of one in one million (*id.* at ix). The Company asserted that AALs and TELs were designed to ensure that contributions from a single source would have an insignificant impact on public health (Exh. EFSB-H-3).

Sithe Mystic provided the Executive Summary of a 1998 study by the USEPA entitled “Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units – Final Report to Congress” (“HAPs Study”) (*id.*). The HAPs Study assessed emissions of 67 hazardous air pollutants (“HAPs”) from 52 fossil fuel generating units, and used this data to model human inhalation exposures to HAPs from all 684 fossil fuel plants nation-wide (*id.* at ES-2 to ES-4). The HAPs study included a detailed analysis of inhalation exposures and risks for 14 priority HAPs, and conducted multipathway assessments for the four highest-priority HAPs – arsenic, mercury, dioxins, and radio nuclides (*id.* at ES-6). The HAPs study eliminated gas-fired power plants from its analysis at the screening stage, noting that “[t]he cancer risks for all gas-fired plants were well below one chance in one million ... and no noncancer hazards were identified” (*id.* at ES-7). Based on the USEPA’s findings, the Siting Board concludes that, in the absence of project-specific evidence to the contrary, the air toxics emissions from a gas-fired generating facility should be considered to have no discernable public health impacts.

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

4. Emissions to Ground and Surface Waters

The Company identified two water-linked pathways by which substances hazardous to

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

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

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

5. Handling and Disposal of Hazardous Materials

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

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

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

6. EMF

As discussed in Section III.J, above, the estimated worst-case magnetic field levels resulting from the operation of the proposed facility as 1.9 mG above a proposed new 345 kV line; 4.5 mG above the 211-514 line; 110 mG at the edge of the ROW of the 488-515 line; 32

mG at the residence closest to the 488-515 line; 110 mG at the edge of the ROW of the 423-515 line; and 85 mG at the residence closest to the 423-515 line. The Company indicated that it had identified a possible configuration change which could reduce field levels at the residence closest to the 423-515 line by approximately 30 percent.

The possible health effects of exposure to EMF have been a subject of considerable debate. In a 1985 case involving the construction of the 345 kV overhead HydroQuebec line, the Siting Board heard expert testimony, reviewed the existing literature, and concluded that there was no affirmative evidence that the proposed facilities (which had edge-of-ROW levels of 85 mG) would produce harmful health effects. Massachusetts Electric Company et al, 13 DOMSC 119, 240 (1985). In this case, the Company has provided a summary of existing state and non-regulatory guidance regarding exposure to EMF, noting that the federal government has set no standards for such exposure (Exh. SMD-1, at 4-117 to 4-119). The Company stated that the International Radiation Protection Association recommends that occupational exposure be limited to magnetic fields below 5000 mG; that routine exposure for the general public be limited to 1000 mG; and that general public exposure to fields between 1000 and 10,000 mG be limited to a few hours per day (id. at 4-118). The Company also stated that the American Conference of Governmental Industrial Hygienists had established a Threshold Limit Value (a level to which nearly all workers may be exposed repeatedly without adverse health effects) of 10,000 mG (id.). The Company indicated that seven states have adopted EMF guidelines which are generally based on levels in existing transmission corridors; the maximum permissible levels for magnetic fields under those guidelines range from 150 mG (for a 230 kV line in Florida) to 250 mG (for a 500 kV, double circuit line in Florida) (id. at 4-118 to 4-119).

The Company also provided a 1997 report by the National Research Council ("NRC"), which provides a comprehensive review of research up to that date on the biologic effects of exposure to power-frequency electric and magnetic fields, including cellular and molecular studies, studies on whole animals, and epidemiological studies (Exh. EFSB-EE-3). The report concludes that the current body of evidence does not show that exposure to such fields presents a human health hazard (id. at 2). With respect to epidemiological studies, the report indicates that the aggregate evidence does not support an association between magnetic field exposure and

adult cancer, pregnancy outcome, neurobehavioral disorders, and childhood cancers other than leukemia (*id.* at 3).¹⁰⁰ With respect to in vitro studies, the report finds that exposure to 50-60 Hz fields induces changes in cultured cells only at field strengths 1000 to 100,000 times the levels typically found in residences (*id.* at 6). With respect to animal studies, the study finds no convincing evidence that exposure to power-frequency fields causes cancer or has any adverse effects on reproduction or development in animals (*id.* at 7). The report finds evidence of behavioral response to fields “considerably larger than those encountered in a residential environment”; however, there was no demonstration of adverse neurobehavioral impacts (*id.*).

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

Overall, although there are some epidemiological studies which suggest a correlation

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

between exposure to magnetic fields and childhood leukemia, and some evidence of biological response to exposure to magnetic fields in animal studies, there is no evidence of a cause-and-effect association between magnetic field exposure and human health. Thus, the record in this case does not support a conclusion that the EMF levels anticipated as a result of the proposed project would pose a public health concern. Nonetheless, consistent with its policy of encouraging transmission providers to take cost-effective steps to minimize magnetic fields, the Siting Board has required the Company to pursue an interconnection plan that minimizes magnetic fields at nearby residences. Accordingly, the Siting Board finds that the health effects, if any, of magnetic fields associated with the proposed project would be minimized.

M. Conclusions

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

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

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

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

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

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

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

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

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

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

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

Accordingly, the Siting Board finds that, with the implementation of the above-listed conditions relative to air quality, visual impacts, traffic, and electric and magnetic fields, the Company's plans for the construction of the proposed generating facility would minimize the environmental impacts of the proposed facility consistent with the minimization of costs associated with the mitigation, control and reduction of the environmental impacts of the proposed generating facility. In addition, the Siting Board finds that an appropriate balance would be achieved among conflicting environmental concerns as well as between environmental impacts and costs.

IV. CONSISTENCY WITH THE POLICIES OF THE COMMONWEALTH

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.¹⁰¹

B. Analysis

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

As discussed in Section III.B, above, the MDEP extensively regulates emissions of criteria and non-criteria pollutants from new sources such as the proposed project. Sithe Mystic has demonstrated that it intends to comply with all MDEP standards, in part by implementing an

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

AQIP which would produce significant net reductions in emissions of SO₂ and NO_x at the Mystic Station site.

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

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

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

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

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

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

The proposed project also is subject to federal coastal zone consistency review implemented by MCZM (Exh. SMD-1, at 4-48). Sithe has provided an analysis of the proposed project's consistency with various policies and principles for development in the coastal zone, including Energy Policy #1 (dependance on existing infrastructure); Water Quality Policies #1 (point source discharges), #2 (nonpoint pollution controls), and #3 (subsurface waste discharges and protection of wetlands); Habitat Policy #2 (restoration of degraded wetland resources); Protected Areas Policies #1 (Areas of Critical Environmental Concern) and #3 (historic districts and sites); Coastal Hazards Policies #1 (preservation of natural coastal landforms) and #2 (interference with water circulation and sediment transport); Ports Policy #3 (DPAs); Ports Management Principle #1 (expansion of water dependent uses in DPAs); Public Access Policy #1 (effects on public recreation sites); and Public Access Management Principle #4 (expansion and development of coastal recreational facilities) (Exh. SMD-1, at 4-50 to 4-55). The Siting Board concludes that the proposed project appears consistent with the policies of the Commonwealth regarding development in filled tidelands and coastal zone areas.

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

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

¹⁰² Sithe also asserts that its proposed project is consistent with environmental policies embodied in the Restructuring Act and in Chapter 206 of the Acts of 1998 ("Brownfields Act") (Company Brief at 85-87). 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 85). We do not, however, accept the notion that the proposed project, or any other similar project, is consistent with the principles of the Restructuring Act simply because the developer paid a "development premium" to the former utility owner of a site, and thus helped to reduce stranded costs (*id.* at 85-86). It is not immediately clear to the Siting Board which provisions of the Brownfields Act, if any, are applicable to the proposed project.

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

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

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

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 that resulted in the selection of site that contributes to the minimization of environmental impacts of the proposed project and the costs of mitigating, controlling, and reducing such impacts.

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

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

Accordingly, the Siting Board finds that, upon compliance with the conditions set forth in Sections III. B, III. F, III. I, and III. J, above, and listed below, the construction and operation of the proposed facility will provide a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.

Accordingly, the Siting Board APPROVES the petition of Sithe Mystic Development LLC to construct a 1550 MW bulk generating facility in Everett, Massachusetts. The Company shall comply with the following conditions during construction and operation of the proposed generating facility:

(A) In order to mitigate CO₂ emissions, the Siting Board requires the Company to offset 1 percent of its CO₂ emissions either: (1) through use of CO₂ offsets generated by its AQIP, if it can establish that it will make no collateral use, for purposes of providing emissions offsets for other pollutants and/or other sources, of the portion of the AQIP curtailment on which

the CO₂ offsets for the proposed facility is based; or (2) through a monetary contribution in the early years of facility operation to a cost-effective CO₂ mitigation program or programs to be selected upon consultation with the staff of the Siting Board, based on the maximum operation of the proposed facility over 20 years; or (3) should the Company provide evidence to establish that it will make no additional use of the CO₂ reductions from the AQIP to provide CO₂ offsets, through a monetary contribution based on the maximum net CO₂ emissions from the proposed facility and the AQIP, as further discussed in Section III. B, above.

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

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

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


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

(F) In order to minimize traffic related impacts, the Siting Board directs the Company

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

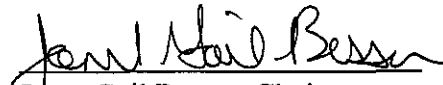
Because issues addressed in this Decision relative to this facility are subject to change over time, construction of the proposed generating facility must be commenced within three years of the date of the decision.

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


Selma Urman
Hearing Officer

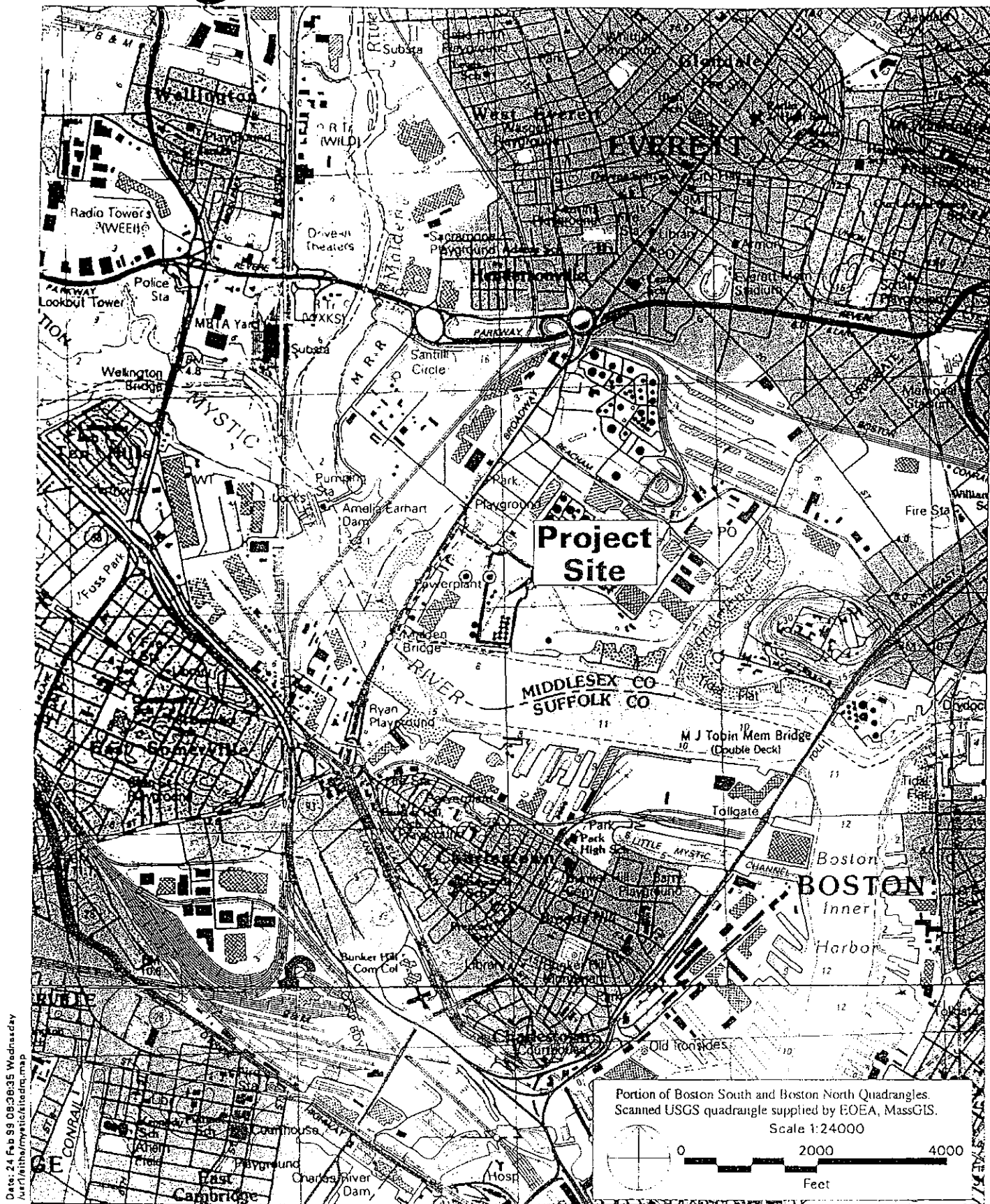
Dated this 30th day of September, 1999

APPROVED by the Energy Facilities Siting Board at its meeting of September 29, 1999, by the members and designees present and voting: Janet Gail Besser (Chair, EFSB/DTE); James Connelly (Commissioner, DTE); Sonia Hamel (for Robert Durand, Secretary of Environmental Affairs); and John Malena (for Carolyn Boviard, Director of Economic Development).


Janet Gail Besser, Chair
Energy Facilities Siting Board

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).



Date: 24 Feb 99 08:38:35 Wednesday
 Jurl/eth/mystic/ethdq.map

- Mystic Station Site
- Project Site

Figure 1
Site Locus Map

COMMONWEALTH OF MASSACHUSETTS
ENERGY FACILITIES SITING BOARD

In the Matter of the Petition of)
ANP Bellingham Energy Company)
for Approval to Construct)
a Bulk Generating Facility and)
Ancillary Facilities)
_____))

EFSB 97-1

FINAL DECISION
ON COMPLIANCE

M. Kathryn Sedor
Hearing Officer
October 18, 1999

APPEARANCES: Edward L. Selgrade, Esq.
Law Offices of Edward L. Selgrade, Esq.
200 Wheeler Road, 4th Floor
Burlington, Massachusetts 01803
FOR: ANP Bellingham Energy Company
Petitioner

Clifford A. Matthews, Chairman
Bellingham Conservation Commission
P.O. Box 213
Bellingham, Massachusetts 02019
FOR: Bellingham Conservation Commission
Intervenor

Mark J. Lanza
Town Attorney
150 Emmons Street
Franklin, Massachusetts 02038
FOR: Town of Franklin
Intervenor

J. Raymond Miyares, Esq.
Pickett and Miyares
47 Winter Street, 7th Floor
Boston, Massachusetts 02108
FOR: Town of Franklin
Intervenor

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

Kenneth and Judith Barnett
123 Maple Street
Bellingham, Massachusetts 02019
Intervenor

Linda L. Blais
155 Maple Street
Bellingham, Massachusetts 02019
Intervenor

Frank E. Falvey
920 Pond Street
Franklin, Massachusetts 02038
Intervenor

Joseph A. Goulart
9 Sunken Meadow Road
Franklin, Massachusetts 02038
Intervenor

James P. LaPlante
91 Chestnut Street
Franklin, Massachusetts 02038
Intervenor

Gary B. McAlister
35 Stanwood Drive
Franklin, Massachusetts 02038
Intervenor

John DeTore, Esq.
Rubin & Rudman
50 Rowes Wharf
Boston, Massachusetts 02110
FOR: Infrastructure Development Corporation
Interested Person

Mark A. Brady
11 Sunken Meadow Road
Franklin, Massachusetts 02038
Interested Person

Peter and Trisha Dorfman
23 Oxford Drive
Franklin, Massachusetts 02038
Interested Person

Frances Fabricotti
106 Mendon Street
Bellingham, Massachusetts 02019
Interested Person

Jon Fish
19 Stonehedge Road
Bellingham, Massachusetts 02019
Interested Person

Susan M. Flaherty
10 Sunken Meadow Road
Franklin, Massachusetts 02038
Interested Person

Richard R. Cornetta, Jr., Esq.
12 Washington Street
Franklin, Massachusetts 02038
FOR: Henry E. Faenza
Interested Person

John D. and Judith T. Webb
3 Sunken Meadow Road
Franklin, Massachusetts 02038
Interested Person

Richard G. McLaughry, Esq.
Robert A. Nailling, Esq.
Cabot Power Corporation
75 State Street, 12th Floor
Boston, Massachusetts 02109-1806
FOR: Cabot Power Corporation
Interested Person

Marc A. Silver, Esq.
Holland & Knight
One Beacon Street
Boston, Massachusetts 02108
FOR: Ocean State Power
Interested Person

Mary Beth Gentleman, Esq.
Andrew Latimer, Esq.
Foley, Hoag & Eliot LLP
One Post Office Square
Boston, Massachusetts 02109
FOR: U.S. Generating Company
Interested Person

The Energy Facilities Siting Board hereby determines that ANP Bellingham Energy Company has complied with Conditions A.1 and A.2 of the Siting Board's Final Decision in ANP Bellingham Energy Company, EFSB 97-1 (1998) and, consequently, that ANP's proposed project meets the standard of review for viability set forth in the ANP Bellingham Decision.

I. INTRODUCTION

On August 18, 1998, the Energy Facilities Siting Board ("Siting Board") conditionally approved the Petition of ANP Bellingham Energy Company ("ANP" or "Company") to construct a 580 megawatt natural gas-fired, combined-cycle independent power plant on approximately 20 acres of a 125-acre parcel of land in the Town of Bellingham, Massachusetts, which would commence commercial operation in the year 2000 ("proposed project"). ANP Bellingham Energy Company, EFSB 97-1, at 1, 32, 171-173 (1998) ("ANP Bellingham Decision").

On September 23, 1999, and October 12, 1999, ANP submitted to the Siting Board filings pertaining to: (1) the Company's compliance with the conditions of the ANP Bellingham Decision relating to project viability; and (2) notice of a project change relating to emissions limitations for ammonia and NO_x.

II. THE ANP BELLINGHAM DECISION

A. Project Viability

In the ANP Bellingham Decision, the Siting Board set forth its standard of review for viability, stating that a proposed non-utility generator is likely to be a viable source of energy if (1) the project is reasonably likely to be financed and constructed so that the project will actually go into service as planned, and (2) the project is likely to operate and be a reliable, least-cost source of energy over the planned life of the proposed project. ANP Bellingham Decision at 66; ANP Blackstone Energy Company, EFSB 97-2/98-2, at 73 (1999) ("ANP Blackstone Decision"); Berkshire Power Development, Inc., 4 DOMSB 221, at 328-329 (1996) ("Berkshire Power").

Decision").¹

In order to meet the first test of viability, a project proponent must establish (1) that the project is financiable, and (2) that the project is likely to be constructed within applicable time frames and will be capable of meeting performance objectives. In order to meet the second test of viability, the proponent must establish (1) that the project is likely to be operated and maintained in a manner consistent with appropriate performance objectives, and (2) that the proponent's fuel acquisition strategy reasonably ensures low-cost, reliable energy resources over the planned life of the proposed project. ANP Bellingham Decision at 66; ANP Blackstone Decision at 73; Berkshire Power Decision at 328-329.

In order to ensure that ANP's proposed project is likely to be constructed within applicable time frames and be capable of meeting performance objectives, the Siting Board in the ANP Bellingham Decision directed the Company to provide: (1) an executed engineering, procurement and construction contract ("EPC Contract") between ANP and ABB Power Generation, Inc. ("ABB"), or a comparable entity, containing provisions that would provide reasonable assurance that the project would perform as a low-cost, clean power producer ("Condition A.1"); and (2) an executed interconnection agreement between ANP and New England Power Company ("NEPCo") providing the project with access to the regional electrical transmission system ("Condition A.2"). ANP Bellingham Decision at 171.²

¹ On November 25, 1997, the Governor signed into law Chapter 164 of the Acts of 1997 ("Electric Restructuring Act") which, inter alia, altered the scope of the Siting Board's review of electric generating facility proposals. See St. 1997, c. 164, §§ 204, 210. Consistent with the changes to its statutory mandate, the Siting Board no longer conducts a stand alone review of project viability for generating facility proposals. Notice of Inquiry with Regard to the Siting Board's Standard of Review for Generating Facility Viability, EFSB 98-1 (August 17, 1998).

² In addition to the viability-related Conditions, the Siting Board imposed six conditions pertaining to construction and operation of the proposed project. See n.9, below.

B. Project Change Notification

In addition to imposing viability-related Conditions, the Siting Board in the ANP Bellingham Decision required ANP to notify the Siting Board of any changes to the proposed project, other than minor variations, so that the Siting Board could decide whether to inquire further into any issue associated with a particular change. Id. at 173-174.

III. THE COMPANY'S COMPLIANCE FILINGS

On September 23, 1999, ANP submitted to the Siting Board a filing pertaining to: (1) the Company's compliance with the conditions of the ANP Bellingham Decision relating to project viability; and (2) notice of a project change relating to emissions limitations for ammonia and NO_x ("Initial Compliance Filing"). On October 12, 1999, ANP submitted to the Siting Board a second filing pertaining to project viability ("October 12 Compliance Filing").

A. Project Viability

Among other documents, the Company's Initial Compliance Filing included a draft, unexecuted Equipment Supply Contract between ANP and ABB ("Draft Equipment Supply Contract"), and a draft, unexecuted Construction Contract between ANP and ABB ("Draft Construction Contract") (collectively, "Draft Contracts").^{3,4} As part of its Initial Compliance

³ The Company's Initial Compliance Filing consisted of the following documents, each of which shall be entered into the record of the underlying proceeding as an Exhibit: a seven-page cover letter, titled "Initial Pre-Construction Compliance Filing" (Exh. HO-V-39); the Draft Equipment Supply Contract (Exh. HO-V-39.1); the Draft Construction Contract (Exh. HO-V-39.2) and its attached "Technical Scope of Work": Volume 1 (Exh. HO-V-39.3) and Volume 2 (Exh. HO-V-39.4); a final, executed interconnection agreement between ANP and NEPCo (Exh. HO-V-39.5) and an attached three-page letter from New England Power Services to the FERC (Exh. HO-V-39.5a); a conditional air plan approval issued by the Massachusetts Department of Environmental Protection ("DEP") (Exh. HO-V-39.6); and a proposed notice letter from ANP to local residents regarding off-site visual impact mitigation (Exh. HO-V-39.6).

⁴ In its Initial Compliance Filing, the Company requested confidential treatment for the Draft Equipment Supply Contract, the Draft Construction Contract, and the Technical Scope of Work, Parts One and Two. The Company's request for confidentiality is granted with

Filing, ANP represented to the Siting Board that on or before October 8, 1999, the Company would file final, executed copies of the Draft Contracts, and that the executed contracts would be identical in most material aspects to the Draft Contracts included in the Company's Initial Compliance Filing (Exh. HO-V-39, at 3).⁵ In its October 12 Compliance Filing, ANP submitted to the Siting Board: (1) a final, executed Construction Contract between ANP and ABB, signed on October 11, 1999 ("Construction Contract"); (2) a final, executed Equipment Supply Contract between ANP and ABB, signed on October 11, 1999 ("Equipment Supply Contract") (collectively, "Executed Contracts"); and (3) a four-page cover letter, enumerating the differences between the Draft Contracts and the Executed Contracts.^{6,7}

A review of the Draft Construction Contract shows that it contains the type of guarantee, incentive and penalty provisions which the Siting Board has recognized in previous decisions as ensuring timely and quality construction. See, Berkshire Power Decision at 336. For example, Section 1.1 of the Construction Contract (definition of "Anticipated Commercial Operation Date") and Exhibit G provide for a guaranteed construction duration (HO-V-39.2, at 1, Exh. G). Section 14 provides for comprehensive reliability, performance and compliance testing (id. at 29-34). Section 18 provides operational guarantees for heat rate, output, availability, and noise and air emissions levels (id. at 46-49). Section 16 provides for liquidated damages for failure to

respect to these documents.

⁵ The Company stated that the only anticipated material difference between the Executed Contracts and the Draft Contracts "is the completion of the fixed aggregate lump sum price and of interrelated factors associated with the construction schedule" (Exh. HO-V-39, at 3).

⁶ The four-page cover letter, dated October 12, 1999 (Exh. HO-V-40) states that the Executed Contracts are substantially the same as the Draft Contracts in all material respects, with the exception of certain pricing-related provisions previously identified in the Company's Initial Compliance Filing (Exh. HO-V-40, at 1-2). See also, n.5, above.

⁷ In its four-page cover letter, ANP requested confidential treatment for the executed Equipment Supply Contract (Exh. HO-V-40.1) and the executed Construction Contract (Exh. HO-V-40.2)(Exh. HO-V-40, at 1). The Company's request for confidentiality is granted with respect to the Executed Contracts.

achieve substantial completion of the project by guaranteed completion dates and for failure to achieve operational guarantees, and provides for bonuses for early completion, and for improved heat rate, output and availability (id. at 38-42). Section 19 provides for warranties (id. at 49-53). Section 26 contains insurance coverage requirements (id. at 63-67).

Based on its review of the Draft Construction Contract and the Draft Equipment Supply Contract, the Siting Board finds that these documents, taken together, contain provisions that provide reasonable assurance that the proposed project will perform as a low cost, clean power producer. Based on its review of the Executed Contracts, the Siting Board further finds that the Executed Contracts are substantially as the Draft Contracts in their relevant and material provisions. Consequently, the Siting Board finds that ANP has complied with Condition A.1 of the ANP Bellingham Decision.

ANP's Initial Compliance Filing also included a final Interconnection Agreement, executed by the Company and NEPCo on February 23, 1999 ("NEPCo Interconnection Agreement") (Exh. HO-V-39.5). Pursuant to the Interconnection Agreement, NEPCo has agreed to own, operate and maintain the interconnection facilities needed to loop the existing 345 kV NEPCo line which traverses the proposed project site (line 303) into the switchyard on the site. NEPCo also has agreed to design and construct other interconnection reinforcements required by NEPOOL for electrical integration of the proposed project with the NEPOOL transmission grid (Exh. HO-V-39.5 (Exh. 1, Table 1); Exh. HO-V-39.5a, at 1-2).

Based on ANP's submittal of the executed NEPCo Interconnection Agreement, the Siting Board finds that ANP's proposed project is likely to be capable of being dispatched as expected and, consequently, that ANP has complied with Condition A.2 of the ANP Bellingham Decision.

B. Project Change Notification

The Siting Board in the ANP Bellingham Decision required ANP to provide notice of any changes other than minor variations to the proposed project, so that the Board could determine whether to inquire further into such issues. ANP Bellingham Decision at 173-174.

In its Initial Compliance Filing, ANP provided the Siting Board with information concerning an improvement in expected air emissions, associated with the proposed conditional

air plan approval for the proposed project issued by the DEP on or about July 30, 1999 (HO-V-39.6). ANP stated that, pursuant to the DEP conditional air plan approval, the project will reduce its emissions of NO_x (baseload operation) and ammonia ("ammonia slip") to 2 ppmvd @ 15 percent O₂ (Exh. HO-V-39.6, at 5 (Table 1) (2 ppmvd for NO_x during baseload operation, and 2 ppmvd for ammonia);⁸ compare, Exh. HO-EA-4.1 (App. B) (3.5 ppmvd for baseload NO_x) and Exh. BEL 13.2, at 4-3 (Table 4-4) (10 ppmvd for ammonia)).

In the underlying proceeding, the Siting Board found that ANP had demonstrated that emissions of criteria and other pollutants, including NO_x and ammonia, associated with the proposed project would be consistent with minimizing impacts on the existing air quality. ANP Bellingham Decision at 100, 105. The reported project change, if implemented, will result in lower levels of NO_x and ammonia emissions from the generating facility than the levels reviewed and approved by the Siting Board. Accordingly, because the reported change will reduce the environmental impacts of the Company's project, the Siting Board finds that this change does not require further inquiry.

IV. DECISION

The Siting Board finds that ANP has complied with Conditions A.1 and A.2 of the ANP Bellingham Decision pertaining to project viability. Consequently, the Siting Board finds that ANP's proposed project meets the standard of review for viability set forth by the Siting Board in the ANP Bellingham Decision.⁹ In addition, consistent with the Siting Board's directive to

⁸ The DEP conditional air plan approval provides that the emission rate for ammonia will be zero, but that at the option of ANP, the ammonia emission rate will be 2 ppmvd during the first five years of operation (Exh. HO-V-39.6, at 4, 6 (Table 2)). In accordance with a memorandum of understanding between ANP and DEP incorporated as part of the conditional air plan approval, it will be determined within the five year period whether a zero ammonia technology must be installed at the facility, based on consideration of technical and commercial availability, comparability of cost, and consistency with state and local permits, or whether the facility may continue to operate without installation of such technology (id. at 4, (att. B)).

⁹ ANP remains obligated to comply with Conditions B through G of the ANP Bellingham Decision during construction and operation of the project. See ANP Bellingham Decision

ANP in the ANP Bellingham Decision to inform the Siting Board of any changes to the Company's proposed project, other than minor variations, ANP has informed the Siting Board of one such change and the Siting Board finds that this change requires no further inquiry.¹⁰




M. Kathryn Sedor
Hearing Officer

Dated this 18th day of October, 1999

at 171-173.

¹⁰ The Siting Board notes that this Decision determines only (1) the Company's compliance with Conditions A.1 and A.2 of the ANP Bellingham Decision, and (2) whether the project change reported by the Company requires further inquiry by the Siting Board. The Decision is not intended to, and does not, re-open any matter finally determined by the Siting Board in the ANP Bellingham Decision.

APPROVED by the Energy Facilities Siting Board at its meeting of October 14, 1999, by the members and designees present and voting: W. Robert Keating (Commissioner, DTE); James Connelly (Commissioner, DTE); John Malena (for Carolyn Boviard, Director of Economic Development); Louis Mandarin (Public Member); and Janet Gail Besser (Chair, EFSB/DTE).



Janet Gail Besser, Chair
Energy Facilities Siting Board

Dated this 18th day of October, 1999

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).

COMMONWEALTH OF MASSACHUSETTS
Energy Facilities Siting Board

Petition of IDC Bellingham, LLC, for)
Approval to Construct and Operate a)
700-MW Bulk Generation Facility in the)
Town of Bellingham, Massachusetts)
_____)

EFSB 97-5

FINAL DECISION

Jolette A. Westbrook
Hearing Officer
December 21, 1999

On the Decision:

Jeffrey Brandt
William Febiger
Barbara Shapiro

APPEARANCES: John A. DeTore, Esq.
Donna C. Sharkey, Esq.
Maribeth Ladd, Esq.
Rubin and Rudman LLP
50 Rowes Wharf
Boston, Massachusetts 02110-3319
Petitioner

Clifford A. Matthews
Bellingham Conservation Commission
Town Hall
Bellingham, Massachusetts 02019
FOR: Bellingham Conservation Commission
Intervenor

Jerrold Oppenheim, Esq.
57 Middle Street
Gloucester, Massachusetts 01930-5736
FOR: Concerned Citizens of Bellingham, Inc. and
The Box Pond Association
Intervenor

Dean Rovedo
230 Depot Street
Bellingham, Massachusetts 02019
Intervenor

John W. Rovedo, Sr.
Betty A. Rovedo
234 Depot Street
Bellingham, Massachusetts 02019
Intervenor

James A. McCandless, Chairman
IDC Project Subcommittee
The Box Pond Association
52 Box Pond Road
Bellingham, Massachusetts 02019
FOR: The Box Pond Association, Inc.
Intervenor

Barbara A. Gordon-Wise, Esq.
68 North Main Street
Bellingham, Massachusetts 02019
FOR: Moo Realty Trust
Intervenor

Joan M. Eckert
24 Cape Road
Mendon, Massachusetts 01756
Intervenor

Rosemary & Richard Chiasson
93 Taunton Street
Bellingham, Massachusetts 02019
Intervenor

Robert E. McDonnell, Esq.
Maura McCaffery, Esq.
Bingham Dana, LLP
150 Federal Street
Boston, Massachusetts 02110-1726
FOR: Northeast Energy Associates
Limited Intervenor

David S. Rosenzweig, Esq.
Keegan, Werlin & Pabian, LLP
21 Custom House Street
Boston, Massachusetts 02110-3525
FOR: Cabot Power Corporation
Interested Person

Richard G. McLaughry, Esq.
Robert A. Nailing
Cabot Power Corporation
75 State Street, 12th Floor
Boston, Massachusetts 02109-1806
FOR: Cabot Power Corporation
Interested Person

Donald H. Keller
East Acres Recreational Vehicles
10 Cape Road
Mendon, Massachusetts 01756
FOR: East Acres Recreational Vehicles
Interested Person

Edward L. Selgrade, Esq.
200 Wheeler Road, 4th Floor
Burlington, Massachusetts 01803
FOR: ANP Bellingham Energy Company
Interested Person

Robert W. Loftus, Jr.
18 Cape Road
Mendon, Massachusetts 01756-1118
Interested Person

Stephen & Wanda Russell
116 Depot Street
Bellingham, Massachusetts 02019-1420
Interested Person

Andre R. Chapdelaine
52 Cape Road
Mendon, Massachusetts 01756
Interested Person

Glen J. Woloski
12 Water Street
Bellingham, Massachusetts 02019
Interested Person

TABLE OF CONTENTS

I.	<u>INTRODUCTION</u>	Page 1
A.	<u>Description of Proposed Project</u>	Page 1
B.	<u>Procedural History</u>	Page 2
C.	<u>Status of this Review</u>	Page 7
D.	<u>Scope of Review</u>	Page 9
	1. <u>Background</u>	Page 9
	2. <u>Positions of the Parties</u>	Page 10
	3. <u>Analysis</u>	Page 11
II.	<u>SITE SELECTION PROCESS</u>	Page 14
A.	<u>Standard of Review</u>	Page 14
B.	<u>Description</u>	Page 15
C.	<u>Analysis</u>	Page 21
III.	<u>ENVIRONMENTAL IMPACTS</u>	Page 24
A.	<u>Standard of Review</u>	Page 24
B.	<u>Air Quality</u>	Page 25
	1. <u>Applicable Regulations</u>	Page 25
	2. <u>Emissions and Impacts</u>	Page 26
	3. <u>Offset Proposals</u>	Page 31
	4. <u>Analysis</u>	Page 33
C.	<u>Water Resources</u>	Page 40
	1. <u>Description</u>	Page 40
	2. <u>Positions of the Intervenors</u>	Page 50
	3. <u>Analysis</u>	Page 50
D.	<u>Wetlands</u>	Page 54
	1. <u>Description</u>	Page 55
	2. <u>Analysis</u>	Page 55
E.	<u>Solid Waste and Hazardous Waste</u>	Page 56
	1. <u>Description</u>	Page 56
	2. <u>Analysis</u>	Page 57
F.	<u>Visual Impacts</u>	Page 57
	1. <u>Description</u>	Page 57
	2. <u>Analysis</u>	Page 63
G.	<u>Noise</u>	Page 65
	1. <u>Description</u>	Page 65
	2. <u>Theriault Study</u>	Page 71
	3. <u>NEA Noise</u>	Page 73
	4. <u>Intervenor Positions</u>	Page 75
	5. <u>Analysis</u>	Page 76
H.	<u>Safety</u>	Page 81
	1. <u>Materials Handling and Storage</u>	Page 81

	2.	<u>Fogging and Icing</u>	Page 84
	3.	<u>Emergency Response Plan</u>	Page 84
	4.	<u>Analysis</u>	Page 85
I.		<u>Traffic</u>	Page 87
	1.	<u>Description</u>	Page 87
	2.	<u>Analysis</u>	Page 92
J.		<u>Electric and Magnetic Fields</u>	Page 94
	1.	<u>Description</u>	Page 95
	2.	<u>Analysis</u>	Page 97
K.		<u>Land Use</u>	Page 98
	1.	<u>Description</u>	Page 98
	2.	<u>Positions of the Parties</u>	Page 104
	3.	<u>Analysis</u>	Page 106
L.		<u>Cumulative Health Impacts</u>	Page 108
	1.	<u>Baseline Health Conditions</u>	Page 109
	2.	<u>Positions of the Parties</u>	Page 110
	3.	<u>Criteria Pollutants</u>	Page 110
	4.	<u>Air Toxics</u>	Page 113
	5.	<u>Discharges to Ground and Surface Waters</u>	Page 115
	6.	<u>Handling and Disposal of Hazardous Materials</u>	Page 116
	7.	<u>EMF</u>	Page 116
	8.	<u>Noise</u>	Page 118
M.		<u>Conclusions</u>	Page 119
IV.		<u>CONSISTENCY WITH THE POLICIES OF THE COMMONWEALTH</u>	Page 121
	A.	<u>Standard of Review</u>	Page 121
	B.	<u>Analysis</u>	Page 121
V.		<u>DECISION</u>	Page 123

FIGURE 1: SITE MAP

LIST OF ABBREVIATIONS

<u>Abbreviation</u>	<u>Explanation</u>
AALs	Allowable Ambient Limits
ACEC	Area of Critical Environmental Concern
Act	Restructuring Act, c. 164 of the Acts of 1997
Algonquin	Algonquin Gas Transmission Company
ANP	American National Power, Inc.
<u>ANP Blackstone Decision</u>	<u>ANP Blackstone Energy Company</u> , EFSB 97-2/98-2 (1999)
Bellingham	Town of Bellingham
Bellingham parcel	156 acre parcel in Bellingham where the proposed facility would be located
<u>Berkshire Power Decision</u>	<u>Berkshire Power Development, Inc.</u> , 4 DOMSB 221 (1996)
BACT	Best available control technology
BCC	Bellingham Conservation Commission
BECo	Boston Edison Company
Board of Selectmen	Bellingham Board of Selectmen
BPA	The Box Pond Association
Cabot	Cabot Power Corporation
<u>Cabot Power Decision</u>	<u>Cabot Power Corporation</u> , EFSB 91-101A (1998)
Cancer Incidence Report	1997 Massachusetts Department of Health Report on cancer incidence in 351 cities and towns
CCOB	Concerned Citizens of Bellingham
cfs	Cubic feet per second
CO	Carbon monoxide
CO ₂	Carbon dioxide
Company	IDC Bellingham, LLC
Conservation Commission	Bellingham Conservation Commission

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>
DPA	Designated Port Area
Earth Tech	Earth Tech, Inc.
East Acres	East Acres Recreational Vehicles
EMF	Electric and magnetic fields
ENF	Environmental Notification Form
EPC	Engineering, procurement, and construction
EPR	Emergency Response Plan
Epsilon	Epsilon Associates, Inc.
ERC	Emission reduction credits
FAA	Federal Aviation Administration
FEIR	Final Environmental Impact Report
FEMA	Federal Emergency Management Agency
FPL	Florida Power and Light
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
IDC	IDC Bellingham, LLC
IEC	Intercontinental Energy Corporation
ISCST3	Industrial Source Complex Short-Term

kV	Kilovolt
L ₉₀	The level of noise that is exceeded 90 percent of the time
LAER	Lowest Achievable Emission Rate
L _{dn}	USEPA'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
MAAQS	Massachusetts ambient air quality standards
MA DEM	Massachusetts Department of Environmental Management
MA GIS	Massachusetts Geographic Information Systems
MA WMA	Massachusetts Water Management Act
MBTA	Massachusetts Bay Transportation Authority
MCZM	Massachusetts Coastal Zone Management
MCP	Massachusetts Contingency Plan
MDEP	Massachusetts Department of Environmental Protection
Mendon	Town of Mendon
Mendon Parcel	65 acre parcel in Mendon abutting the Bellingham parcel
MEPA	Massachusetts Environmental Policy Act Unit
<u>Millennium Power Decision</u>	<u>U.S. Generating Company, EFSB 96-4 (1997)</u>
mG	Milligauss
mgd	Million gallons per day
MLI	Massachusetts Landscape Inventory
MVA	Megavolt-ampers
MW	Megawatt
MWRA	Massachusetts Water Resources Authority
NAAQS	National ambient air quality standards
NEA	Northeast Energy Associates
NEA Bellingham facility	NEA's existing 300 MW facility in Bellingham

<u>NEA Decision</u>	<u>Northeast Energy Associates, 16 DOMSC 335 (1987)</u>
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 locations
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
PAL	Public Archaeological Laboratory, Inc.
Pb	Lead
PM	Particulates
PM-10	Fine particulates
ppm	Parts per million
PSD	Prevention of significant deterioration
RAO	Response action outcome
REC	Recognized environmental condition
Request for Comments	Requests for Comments issued by Energy Facilities Siting Board on March 14, 1999 on proposed standards of review
Restructuring Act	c. 164 of the Acts of 1997
RFP	Request for Proposals
ROW	Right-of-way
SCR	Selective Catalytic Reduction

SILs	Significant Impact Levels
<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
STGs	Steam Turbine Generators
SWPPP	Stormwater Pollution Prevention Program
TEI	Tech Environmental, Inc.
TEL	Threshold effects exposure limit
Tennessee	Tennessee Gas Pipeline Company
Town	Town of Bellingham
TPS	Technology Performance Standards
tpy	Tons per year
USEPA	The United States Environmental Protection Agency
USGen	U.S. Generating Company
USGS	United States Geological Survey
VOCs	Volatile organic compounds
Well 9	Town of Bellingham Well 9
Well 9A	Potential private well to be developed by IDC

The Energy Facilities Siting Board ("Siting Board") hereby APPROVES subject to conditions the petition of IDC Bellingham, LLC to construct a 700-megawatt bulk generating facility at the proposed site in Bellingham, Massachusetts.

I. INTRODUCTION

A. Description of Proposed Project

IDC Bellingham, LLC ("IDC" or "Company") proposes to construct a natural gas-fired, combined-cycle, electric generating facility with a net nominal electrical output of 700 megawatts ("MW") in the Town of Bellingham, Massachusetts ("generating facility" or "proposed project") (Exhs. IDC-DCD-1-R2, at 4; IDC-SRP-1-R at 3).¹ The proposed generating facility would be located on approximately 17 acres of a 156 acre site off Depot Street ("Bellingham parcel") in Bellingham, Massachusetts ("Bellingham" or "Town") approximately 1½ miles west of Interstate 495 (Exh. IDC-1, at 1-1; Tr. 1, at 153). IDC also has acquired rights to purchase a 65 acre parcel ("Mendon parcel") of land in the Town of Mendon ("Mendon") abutting the Bellingham parcel, which IDC has stated will be maintained as an undeveloped buffer between the facility and the neighboring businesses and residences in Mendon (Exh. RR-EFSB-9).

The Company stated that natural gas will be delivered to the generating facility via an existing transmission line owned and operated by Algonquin Gas Transmission Company ("Algonquin") located within 700 feet of the site (Exh. IDC-1, at 1-4; IDC Initial Brief at 4). The proposed project would be interconnected to the regional electric grid via a 345 kilovolt ("kV") transmission line operated and maintained by Boston Edison Company ("BECO") that runs in a southwesterly direction through the site (Exhs. IDC-1, at 1-4; EFSB-G-11-R2).

The generating facility would include the following major components and structures: two Westinghouse 501G combustion turbine generators ("CTGs"); two heat recovery steam

¹ The original petition for the proposed project was filed with the Siting Board by Infrastructure Development Corporation. On March 10, 1998, the Siting Board was informed that the name of the applicant had been changed to IDC Bellingham, LLC.

generators ("HRSGs"); two steam turbine generators ("STGs"); and two air-cooled condensers (Exhs. EFSB-G-11-R2; EFSB-EA-87-R3, at 2-1). The generating facility would also include a single stack, with two individual flues, which would be built at either the good engineering practice ("GEP") height of 225 feet or at IDC's preferred stack height of 190 feet (Exh. EFSB-G-11-R2).² Additional project components include an electrical switchyard, a water treatment building, a minimum 520,000 gallon (with an option for a storage tank of up to 1.9 million gallons) raw water storage tank, a 350,000 gallon demineralized water storage tank, and an administrative/control room/maintenance building (*id.*; Tr. 1, at 153).

The Bellingham parcel is zoned industrial with the exception of a small portion of the parcel that is zoned suburban (Exh. EFSB-EL-22). The Bellingham parcel is bordered to the east by Depot Street, with a sand and gravel operation located to the east of Depot Street, and to the west by the Charles River (Exhs. IDC-1, at 1-4; EFSB-EA-8-R3, at 1). To the northwest of the Bellingham parcel are businesses and residences in Mendon, and to the south are residences in Bellingham (Exhs. IDC-1, at 1-4; EFSB-EA-8-R3, at 1).

IDC is now owned by Florida Power and Light ("FPL") Energy Inc., a subsidiary of FPL Group, Inc. (Exhs. IDC-31; IDC-32). FPL Energy Inc. acquired IDC on June 14, 1999 (Exh. IDC-31). Prior to being purchased by FPL Energy Inc., IDC Bellingham LLC was affiliated with Intercontinental Energy Corporation, and with the Intercontinental Group of companies (Exhs. IDC-1, at 1-1; IDC-31; EFSB-G-1). FPL Group, Inc. also is a 50 percent owner of the existing 300 MW Northeast Energy Associates ("NEA") cogeneration plant in Bellingham, Massachusetts ("NEA Bellingham facility") (Exh. IDC-32).³

B. Procedural History

² The 225-foot stack height is based on GEP calculations (Exh. IDC-3, at 2-3). The Company stated that discussions with the Town of Bellingham resulted in the preferred 190-foot stack height (Tr. 4, at 387-378).

³ The Energy Facilities Siting Council approved the NEA Bellingham facility on December 18, 1987. Northeast Energy Associates, 16 DOMSC 335 (1987) ("NEA Decision")

On November 18, 1997, IDC filed with the Siting Board⁴ a petition to construct and operate a net nominal 1,035 MW natural gas-fired, combined-cycle power generating facility in the Town of Bellingham, Massachusetts.⁵ The Siting Board docketed the petition as EFSB 97-5.

On March 11, 1998, the Siting Board conducted a public hearing in Bellingham. In accordance with the direction of the Hearing Officer, the Company provided notice of the public hearing and adjudication.⁶

Timely petitions to intervene were filed by ANP Bellingham Energy Company ("ANP"); the Town of Bellingham Conservation Commission ("BCC" or "Conservation Commission"); NEA; Hopedale Airport; Mendon; the Box Pond Association, Inc. ("BPA"); Concerned Citizens of Bellingham ("CCOB"); James and Mary Beauchamp; Rosemary and Richard Chiasson; Joan M. Eckert; Robert and Kathleen Johnson; Gary C. Harris and Martina Königer; Eugene E. and Susan R. Pettinelli; Dean Rovedo; John W. and Betty A. Rovedo; Elizabeth McGeough Rovedo and John W. Rovedo; Ernie Torricelli; Glenn James Woloski; and Moo Realty Trust. Timely petitions to participate as an interested person were filed by Cabot Power Corporation ("Cabot"); Andre R. Chapdelaine; East Acres Recreational Vehicles ("East Acres"); Robert Loftus Jr.; and Stephen and Wanda Russell.

The Hearing Officer granted the petitions to intervene filed by the BCC, CCOB, Mendon,⁷ the BPA, the Beauchamps,⁸ the Chiassons, Ms. Eckert, the Johnsons,⁹ Mr. Harris and

⁴ 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.

⁵ In its original petition, IDC stated that the proposed facility would be 1035 MW and would use oil as a backup fuel (Exh. IDC-1, at 1-1, 1-16). By letter dated October 28, 1998, IDC informed the Siting Board that the size of the proposed facility was being reduced to 700 MW and that it no longer proposed to use oil as a backup fuel.

⁶ On September 16, 1999 the Siting Board granted IDC's request to notice only its preferred site. Energy Facilities Siting Board Advisory Ruling, September 16, 1997.

⁷ On June 11, 1999, the Hearing Officer granted Mendon's request to withdraw from the
(continued...)

Ms. Königer,¹⁰ the Pettinellis,¹¹ Dean Rovedo, John and Betty Rovedo, Elizabeth and John Rovedo,¹² and Moo Realty Trust. IDC Bellingham, LLC, EFSB 97-5, Hearing Officer Rulings May 1, 1998 and May 15, 1998. The Hearing Officer denied the intervention petition of NEA but granted it status as a limited intervenor. IDC Bellingham, LLC, EFSB 97-5, Hearing Officer Ruling, May 1, 1998. The Hearing Officer denied the petition of ANP but permitted ANP to participate as an interested person with expanded rights. IDC Bellingham, LLC, EFSB 97-5, Hearing Officer Ruling, May 28, 1998. Further, the Hearing Officer denied the petition to intervene of Mr. Woloski but allowed him to participate as an interested person. IDC Bellingham, LLC, Hearing Officer Ruling, May 1, 1998. In addition, the Hearing Officer denied the intervention petitions of Hopedale Airport and Mr. Torricelli and in the alternative also denied them status to participate as interested persons. IDC Bellingham, LLC, EFSB 97-5, Hearing Officer Rulings, May 1, 1998 and May 8, 1998. The Hearing Officer granted the petitions to participate as interested persons of Cabot, Mr. Chapdelaine, East Acres, Mr. Loftus and the Russells. IDC Bellingham, LLC, EFSB 97-5, Hearing Officer Ruling, May 1, 1998.

On August 25, 1998, the Hearing Officer suspended the procedural schedule in this case pursuant to an August 21, 1998 motion filed by IDC requesting that the procedural schedule be

⁷ (...continued)
proceeding. IDC Bellingham, LLC, EFSB 97-5, Hearing Officer Ruling, June 11, 1999.

⁸ On December 16, 1999, the Beauchamps withdrew from this proceeding.

⁹ On December 16, 1999, the Johnsons withdrew from this proceeding.

¹⁰ On March 8, 1999, the Hearing Officer granted IDC's motion to reconsider her grant of intervenor status to Ms. Königer and Mr. Harris, and removed their names from the service list.

¹¹ By letter dated February 9, 1999, the Pettinellis withdrew from the proceeding.

¹² By letter dated July 20, 1999, Elizabeth McGeough Rovedo and John W. Rovedo requested that the Hearing Officer "remove" their names from the intervention list. On August 17, 1999, the Hearing Officer issued a ruling stating that she interpreted this request as a motion to withdraw and granted the motion of Elizabeth and John W. Rovedo.

delayed until September 24, 1998, to allow IDC an opportunity to finalize the design of the proposed project. IDC Bellingham LLC, EFSB 97-5, Hearing Officer Procedural Order, August 25, 1998. Thereafter, IDC requested further extensions to provide updated information responses based on modifications in the design of the proposed project (IDC Letters to Hearing Officer dated October 20, 1998 and October 24, 1998). On October 28, 1998, IDC informed the Siting Board that the output of the plant would be reduced from 1035 MW to 700 MW (IDC Letter dated October 28, 1998). Following the Company's December 7, 1998 submission of updated information regarding the changes it had made to the proposed project, the Hearing Officer issued a new procedural schedule for this case. IDC Bellingham, LLC, EFSB 97-5, Hearing Officer Memoranda dated December 22, 1998 and December 30, 1998 and Hearing Officer Ruling dated January 12, 1999.

The Siting Board conducted procedural conferences on May 18, 1998 and March 23, 1999 and held 13 days of evidentiary hearings, commencing on April 14, 1999 and ending on May 26, 1999. The Company presented the testimony of the following witnesses: Theodore A. Barten, P.E., Managing Principal of Epsilon Associates, Inc., who testified as to the Company's site selection process, and safety and water issues; Donald C. DiCristofaro, Vice President of Environmental Affairs for IDC, who testified as to air modeling and environmental issues; David N. Keast, P.E., Consultant in Acoustics, who testified as to noise issues; Samuel G. Mygatt, Principal of Epsilon Associates, who testified regarding traffic, visual, wetlands, and land use impacts and environmental issues; Stephen R. Prichard, Vice President of Project Development for IDC, who testified as to project management, engineering, construction, safety and general issues; Dale T. Raczynski, P.E., Principal of Epsilon Associates, Inc., who testified as to air modeling issues; and Dr. Peter A. Valberg, Senior Scientist at Cambridge Environmental, Inc. and Adjunct Associate Professor of Harvard School of Public Health, who testified as to health and electric and magnetic field ("EMF") issues.

CCOB and BPA jointly presented the pre-filed direct testimony of two witnesses: Duff Kirklewski, who testified as to noise issues; and Alan Bedwell, Vice President at Goal Line Environmental Technologies, LLC, who testified as to the use of SCONOX technology. The Johnsons presented the pre-filed direct testimony of Kathleen Johnson, who testified as to health

issues and general issues. The Beauchamps presented the pre-filed direct testimony of Mary Beauchamp, who testified as to health and general issues. Joan Eckert sponsored her own pre-filed direct testimony and testified as to health and general issues.

Mendon sponsored the pre-filed direct testimony of Peter Confrey, Member of the Mendon Board of Selectmen, as to zoning issues and Michael Theriault, President and Principal Consultant for Michael D. Theriault Associates, Inc., as to noise issues; however, at the time that it withdrew from the proceeding it requested that its pre-filed testimony be withdrawn and indicated that since it no longer was an intervenor, it could not offer these witnesses for cross-examination. The Hearing Officer denied Mendon's request to withdraw the pre-filed direct testimony of Mr. Confrey and Mr. Theriault. IDC Bellingham, LLC, EFSB 97-5, Hearing Officer Procedural Order, June 11, 1999. By procedural order dated June 29, 1999, the Hearing Officer vacated subpoenas issued on behalf on the Johnsons and Ms. Eckert to the witnesses originally sponsored by Mendon and, as a result, Mr. Theriault and Mr. Confrey did not testify in this proceeding. However, their pre-filed testimony as well as various information responses prepared by Mendon are in the evidentiary record in this case and are given the weight they are due.

Initial briefs were submitted by IDC, the BCC, CCOB/BPA, the Beauchamps, the Johnsons, Ms. Eckert, Mr. Loftus and East Acres. Reply briefs were filed by IDC, Ms. Eckert, the Johnsons, and East Acres. The record includes over 2040 exhibits consisting primarily of information request responses and record responses.

On December 6, 1999, CCOB/BPA filed a motion to reopen the record in this proceeding to receive previously unknown information and to suspend the proceedings. On December 13, 1999 IDC filed an opposition to the motion. On December 15, 1999, the Hearing Officer issued a ruling denying CCOB/BPA's motion to reopen the record and CCOB/BPA's motion to suspend the proceedings

Response at 1; Johnson Response at 1-2; Eckert Response at 1). Further, the Intervenor argued that if the turbines change it may be necessary to reevaluate all of the evidence that has been submitted to the Siting Board (CCOB Response at 1; Johnson Response at 1-2; Eckert Response at 1). In addition, Ms. Johnson and Ms. Eckert indicated that because IDC may request the Massachusetts Department of Environmental Protection ("MDEP") to grant a permit allowing for a 10 parts per million ("ppm") ammonia slip, rather than the 2 ppm ammonia slip that has been assumed in this proceeding, a Tentative Decision should not issue until all issues concerning IDC's air permit have been resolved (Johnson Response at 1-2; Eckert Response at 1).

As a preliminary matter, the Siting Board notes that its review, by statute, is the first state review and that issuance of its Final Decision must precede MDEP permits. Thus, this decision cannot be delayed until after the air permits are issued. Because of its role as grantor of the first permit, the Siting Board has long recognized that changes may be made to a project after the Siting Board issues its decision as a result of other state and local permitting processes. For this reason, the Siting Board has put into place a process that allows it to determine whether it should take further action if definitive changes are proposed for a project after the Siting Board has rendered its decision. We therefore conclude that the possibility that IDC may change turbine manufacturers is not an impediment to the issuance of this decision, particularly since IDC has indicated that it will change turbines, if necessary, in order to meet the environmental commitments that it has made in this proceeding. It is those commitments, and not the specific turbine proposed, which serve as the basis for our decision here.

However, we also note that a change in the turbines could (although it would not necessarily) lead to changes in plant layout and design, which could in turn affect air, water, noise, visual and land use impacts and alter the balance of environmental considerations reached in this case. To meet the requirements of our statutory mandate, the Siting Board must be sure that the proposed facility as constructed achieves a balance that minimizes environmental impacts.

Consequently, the Siting Board directs IDC, prior to the commencement of construction, to make a compliance filing with the Siting Board regarding the Company's choice of turbines. If there has been no change in the Company's choice of turbine, the Siting Board will

expeditiously issue a compliance decision affirming this decision. If the Company's choice of turbine changes, the Siting Board will determine, based on the compliance filing, whether additional discovery and hearings are necessary. If additional proceedings are needed, they will be an extension of this case. Therefore, the parties to this case would be parties to any additional proceedings and the issues in any such additional proceedings would be limited to the issues raised by the changes to IDC's proposal.

D. 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" or "Act"). Sections 204 and 210 of the Restructuring Act altered the scope of the Siting Board's review of generating facility proposals by amending G.L. c. 164, § 69H and by adding a new section, G.L. c. 164, § 69J ¼, which sets forth new criteria for the review of generating facility cases.¹⁶

On March 19, 1999, the Siting Board issued a request for comments on the 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

¹⁶ In addition, Section 310 of the Restructuring Act states, inter alia, that any petition to construct a generating facility filed pursuant to G.L. c. 164, 69J, which was pending before the Siting Board as of the effective date of the Restructuring Act and was subject to a public hearing before the effective date of the Restructuring Act is governed by G.L. c. 164, 69J. If as of the effective date of the Restructuring Act the petition was pending but no public hearing had been conducted, then the petition may be reviewed pursuant to the provisions of either section 69J or section 69J¼ at the petitioner's discretion and request. IDC chose to delay its public hearing until after the effective date of the Restructuring Act to allow the proposed facility to be reviewed pursuant to G.L. c. 164, 69J¼ (IDC Bellingham, LLC, EFSB 97-5, Transcript at 6-7, March 23, 1999 Procedural Conference).

the proposed facility, consistency with the policies of the Commonwealth, and the generating technology comparison (required only in cases where the expected emissions from a proposed generating facility exceed the levels specified in 980 CMR 12.03).

In its Request for Comments, the Siting Board stated that parties in pending generating facility cases would have an opportunity to brief the standards of review to be applied in their specific case (Request for Comments at 2). On June 14, 1999, staff issued revised standards of review. On June 15, 1999, parties and interested persons in EFSB 97-5 were invited to submit comments on both versions of the standards of review. IDC Bellingham, LLC, EFSB 97-5, Hearing Officer Memorandum, June 15, 1999.

2. Positions of the Parties

IDC generally supports staff's revised proposed standard of review for site selection but suggests a further revision to that standard (IDC Initial Brief at 11). Specifically, the Company advocated the addition of the words "relative to other sites considered" at the end of the second paragraph, which states in pertinent part as follows:

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

(id.).

According to the Company, without the additional language, the standard as drafted may be interpreted as allowing the Siting Board to consider all aspects, not just the environmental aspects, of a proposed site, in contravention of the Restructuring Act (id. at 11-12).

With respect to site selection, CCOB and BPA stated that under the proposed standards of review for site selection, the reliability, regulatory, and other non-environmental advantages and disadvantages of the proposed site are considerations that the Siting Board will take into account in its review of IDC's site selection process (CCOB/BPA Brief at 5). Therefore, CCOB and

BPA argued that the concentration of power plants in the Bellingham area may be considered by the Siting Board in determining whether IDC has met the standards of review for site selection (*id.*). Relative to environmental impacts, CCOB and BPA asserted that the Siting Board's review is independent of other agencies' standards, such as emission controls and zoning restrictions, and should include assessments of tradeoffs among conflicting environmental goals (*id.*).

The Johnsons argued that Article 49 of the Constitution of the Commonwealth of Massachusetts as Amended by Article 97 read together with G.L. c. 30, § 61,¹⁷ "convey that the purpose of environmental review is to protect a **right of the people** to a quality of life that is recognized to be grounded in preservation of nature to the highest level that still allows for sustainable economic development" (Johnson Initial Brief at 1-2). Specifically, Article 97 states:

The people shall have the right to clean air and water, freedom from excessive and unnecessary noise, and the natural, scenic, historic, and esthetic qualities of their environment; and the protection of the people in their right to the conservation, development and utilization of the agriculture, mineral, forest, water, air and other natural resources is hereby declared to be a public purpose.

In addition, the Johnsons argued that the word "cumulative" as it is placed in the Siting Board's statute, modifies each type of environmental impact to be reviewed, including cumulative noise impact (*id.* at 6).

3. Analysis

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

¹⁷ The section of G.L. c. 30, § 61 referenced by the Johnsons states:

Unless a clear contrary intent is manifested, all statutes shall be interpreted and administered so as to minimize and prevent damage to the environment. Any determination made by an agency of the commonwealth shall include a finding describing the environmental impact, if any, of the project and a finding that all feasible measures have been taken to avoid or minimize said impact.

of the scope of the proceeding. Thus, the standard of review may not either add to or reduce the scope of the Siting Board's statutory responsibilities.

IDC has proposed a change to the Siting Board's proposed standard of review for site selection arguing that, as written, the standard suggests that the Siting Board's authority is broader than is stated under the applicable statute. G.L. c. 164, § 69H clearly states that the Siting Board's review of generating facilities is limited to environmental issues, and that issues of reliability and cost are to be left to the marketplace. The Siting Board understands IDC's concern that the Siting Board not appear to overstep its mandate in setting forth its standard of review for site selection. However, the Siting Board concludes that the change suggested by IDC is unnecessary and could be counterproductive. We note that we agree with the comments received suggesting that the Siting Board's standard of review must recognize that "a developer's site selection must address [a] wider spectrum of criteria" than that encompassed by an environmental review.¹⁸ The Siting Board notes that some of these criteria – proximity to the regional transmission system, for example – may be so fundamental to a particular project that the developer would not consider any site that lacked them. Alternatively, a site might be chosen, despite some environmental disadvantages, because of an outstanding non-environmental advantage relative to most other sites in the Commonwealth, not just to "other sites considered". It is important that the Siting Board be able to weigh such considerations when determining whether an applicant's process contributes to the minimization of environmental impacts of the proposed project and the costs of mitigating, controlling, and reducing such impacts.

CCOB and BPA have not suggested changes to the proposed standard of review, but instead have argued that in determining whether IDC has met the standard of review for site selection, the Siting Board should take into account reliability and fairness issues associated with the concentration of existing and proposed power plants in the Bellingham area. We note that although G.L. c. 164, § 69J¼ requires an applicant to provide the Siting Board with an accurate description of its site selection process (which likely would include environmental and non-

¹⁸ See comments from Sithe New England, April 15, 1999, at 3.

environmental issues), it also limits the Siting Board's review of the information provided to an assessment of environmental impacts and consistency with Commonwealth policies. Thus, we conclude that the effects of a concentration of power plants in any one area are best addressed in our review of individual environmental impacts (see, e.g., Sections III.B (air quality) and III.C. (water resources) below).

The Johnsons also did not suggest specific changes to the proposed standards of review, but rather suggest that our review should be consistent with Article 97 of the Massachusetts Constitution and G.L. c. 30, § 61. As a legal matter, the Siting Board is explicitly exempt from G.L. c. 30, § 61 by G.L. c. 164, § 69I. Specifically, G.L. c. 164, § 69I in relevant part states that [n]either the department [of telecommunications and energy], the [siting] board, nor any other person, in taking any action pursuant to section 69I to 69J¼, inclusive, shall be subject to any of the provisions of sections 61 to 62H, inclusive, of chapter 30." Further, we note that it is unclear whether Article 97 of the Massachusetts Constitution was intended to encompass Siting Board proceedings.¹⁹ However, we are of the opinion that our mandate – the minimization of 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 -- is consistent with the intent of both Article 97 of the Massachusetts Constitution and G.L. c. 30, § 61.

The Johnsons also argued that the word "cumulative" as used in G.L. c. 164, § 69J¼ modifies each type of environmental impact that the Siting Board reviews. As a matter of statutory construction, we note that the word is part of the phrase "local and regional cumulative health impact", and does not appear to modify other phrases. G.L. c. 164, § 69J¼. However, as a practical matter, the Siting Board frequently considers existing conditions, trends and sources when evaluating a facility's environmental impacts. Examples of analyses that may reflect existing environmental conditions, trends and/or sources include: (1) environmental impact modeling analyses, e.g., air dispersion modeling or noise propagation modeling; (2) resource use

¹⁹ We note that the Court has interpreted the purpose of Article 97 to be for the protection of land "taken or acquired for environmental or conservation purposes." Hanrahan v. Town of Fairhaven, 8 Mass L. Rptr. No. 10, 211 (1998).

summation or percentage mix analyses, e.g., compilation of water use in an affected watershed or land use within a set site radius; and (3) non-quantitative evaluations of the likely added extent of environmental impacts, e.g., visual impact analysis reflecting existing visual character and/or features, added structural visibility and added visual intrusiveness. Given the range of environmental issues in the Siting Board's scope of review, as well as the differing circumstances of individual proposals, the Siting Board exercises latitude in the degree to which it considers a proposed facility's environmental impacts as cumulative to existing conditions and impacts in the facility site area.

The Siting Board, therefore, finds that the revised standards of review with respect to the site selection process, environmental impacts, and consistency with the policies of the Commonwealth issued on June 14, 1999, comply with the requirements of G.L. c. 164, §§69H and 69J¼ and will govern the scope of review in this proceeding.²⁰

In Section II, below, the Siting Board considers the Company's site selection process; in Section III, below, the Siting Board considers the environmental impacts of the proposed facility; and in Section IV, below, the Siting Board considers 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.²¹

II. SITE SELECTION PROCESS

A. Standard of Review

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

²⁰ 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.

²¹ 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, § 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

Until its purchase by FPL Energy, Inc. on June 14, 1999, IDC Bellingham LLC, the developer of the proposed project was affiliated with Intercontinental Energy Corporation ("IEC"), and with the Intercontinental Group of companies (Exhs. IDC-1, at 1-1; IDC-31; EFSB-G-1). IDC stated that companies within the Intercontinental Group were involved in the development, permitting, financing, construction, and operation of facilities in the northeast (Exhs. IDC-1, at 1-1; EFSB-G-3).

IDC asserted that its site selection process was designed to: (1) identify a reasonable universe of site alternatives; (2) apply a consistent set of objective site evaluation criteria; and (3) select from the alternatives the site which offers the best balance of the least-cost, and least

environmental impact (Exh. IDC-1, at 5-3 to 5-4). The Company explained that its site selection process consisted of three basic phases: (1) the delineation of areas of interest; (2) the selection and screening of the pool of sites; and (3) the application of a scoring and weighting system to rank the sites (id. at 5-4).

The Company indicated that it focused its site search on Massachusetts for three reasons: first, the Commonwealth has been in the forefront of electric industry restructuring, resulting in a favorable market environment for merchant plants in Massachusetts; second, Massachusetts is in proximity to most of the significant load centers in the region; and third, IDC was based in Massachusetts and its then affiliate, IEC, owned and operated the NEA Bellingham facility (id.).²²

IDC asserted that its site selection process focused on sites capable of supporting 1,000 MW of capacity (id.).²³ The Company indicated that it initially looked for locations within a mile of major natural gas transmission pipelines and electric gas transmission systems in Massachusetts (id. at 5-6). The Company stated it identified six areas of geographical interest, half of which were located along the Algonquin gas pipeline system and half of which were located along the Tennessee Gas Pipeline Company ("Tennessee") system (id.; Tr. 3, at 251). IDC then developed and applied a series of six threshold requirements and additional guidelines, which yielded 51 potential sites in 22 towns (Exh. IDC-1, at 5-6).²⁴ The Company conducted a first-level screening review, consisting of an initial field visit, an examination of zoning/tax/property maps, and an overlay map based review, for each of the 51 sites (id. at 5-13). Based on this first-level screening review, approximately half of the sites were removed from consideration, leaving 24 candidate sites in 13 towns (id.).

²² The NEA Bellingham facility was purchased by an equal equity partnership made up of FPL Group and Tractabel on January 14, 1998 (Exh. EFSB-G-10; Exh. IDC-32).

²³ The capacity of the project initially proposed to the Siting Board was 1,035 MW.

²⁴ The Company noted that it also considered two additional sites, the existing NEA Bellingham facility and a parcel in Somerset owned by Eastern Utilities Associates (Exh. IDC-1, at 5-12).

The Company stated that a siting team was formed to oversee the review of the 24 candidate sites (Tr. 3, at 267).²⁵ Massachusetts Geographic Information System ("MA GIS") maps were obtained for each site, and members of the siting team visited each site (Exh. IDC-1, at 5-14; Tr. 3, at 267). The Company indicated that prior to conducting its site ranking analysis it used the MA GIS maps to identify areas of protected or public lands, and that it disqualified five more potential sites based on the presence of such lands (Exh. IDC-1, at 5-13; Tr. 3, at 230).

As a basis for evaluating and ranking the remaining 19 candidate sites, IDC developed 22 site evaluation criteria and assigned each criteria a weight of high (5), medium (3), or low (1) importance (Exh. IDC-1, at 5-14).²⁶ The Company stated that these criteria included: (1) 345 kV transmission interconnection; (2) gas transmission interconnection; (3) site size/buffer; (4) land availability; (5) water supply; (6) wastewater discharge; (7) highway/road access; (8) site topography; (9) existing site contamination; (10) railroad access; (11) proximity to airports; (12) air quality/complex terrain; (13) community support;²⁷ (14) sensitive receptors; (15) zoning; (16) land use compatibility; (17) acoustics; (18) visibility; (19) wetland resources/floodplains; (20) area of critical environmental concern ("ACEC")/protected species; (21) surface water resources; and (22) groundwater resources (*id.* at 5-15). In evaluating sites, the Company assigned a suitability score of 3, 2, or 1 for each criterion (Exh. TAB-2, Table 5-1 (rev.)).

The Company used this site ranking analysis to evaluate these 19 candidate sites in the

²⁵ The team that visited the 24 candidate sites consisted of Mr. Barten and Mr. Slocum, both from Epsilon, and Mr. DiCristofaro of IDC (Tr. 3, at 267). In addition, Mr. Slocum and another Epsilon employee visited all 51 initial sites (*id.*).

²⁶ IDC stated that its criteria fell into three groups: (1) site development/construction/cost factors; (2) human environmental factors; and (3) natural environmental factors (Exh. IDC-1, at 5-14).

²⁷ The Company explained that community support can significantly enhance a project's chance of success, and therefore it gave it a weighting of high (very important) (Exh. IDC-1, at 5-22). In order to receive a high community support score, the Company required that elected officials express support for the project and that the community be historically supportive of heavy industrial development (*id.*). The only sites which received a high score for community support were located in Bellingham (Exh. TAB-2, at Table 5-1).

Towns of Oxford, Millbury, Sutton, Upton, Blackstone, Mendon, Bellingham, Walpole, Attleboro, Rehoboth and Dighton (Exh. IDC-1, at 5-14). Based on the site scoring, the top five ranked sites were: (1) the proposed site, called Bellingham 1 (217); (2) the Walpole 2 site (187); (3) the Attleboro 2 site (184); (4) the Blackstone 1 site (180); and (5) the Mendon 1 site (178) (id. at 5-28; Exh. TAB-2, Table 5-1 (rev.)). The Company stated that it next conducted a comparative evaluation of the Bellingham 1 site in relation to the other four top ranked sites, and determined that overall the Bellingham 1 site was superior to the other top ranked sites (Exh. IDC-1, at 5-29 to 5-33). The Company listed the relative disadvantages of the other top ranked sites compared to the Bellingham 1 site as follows: (1) the Walpole 2 site was 25 acres smaller than Bellingham 1, had the potential for site contamination due to an onsite auto wrecking facility and junkyard, required utility interconnections potentially crossing endangered species habitat, and required siting in an USEPA-designated sole-source aquifer;²⁸ (2) the Attleboro 2 site was approximately one half the size of the Bellingham 1 site, required off-site electric interconnect access, had limited available buffering, and contained more extensive wetlands than Bellingham 1;²⁹ (3) the Blackstone 1 site required off-site electric interconnect access, had an uncertain water supply, and limited wastewater infrastructure,³⁰ would require improvement to narrow roadways, had a potential for contamination due to a nearby landfill, and was located in a

²⁸ The Company stated that it anticipated that the costs of noise mitigation for the Walpole and Blackstone sites would be similar, since both sites have good buffer in two directions with residences in the other two directions (Tr. 3, at 294; 324). The Company noted there would be mitigation costs for potential site contamination at the Walpole site (id.).

²⁹ The Attleboro site is bounded in one direction by residential uses (Tr. 3, at 306). The nearest off-site transmission line is located approximately 2,000 feet either north or west of the site (id. at 299). The Company indicated that the project footprint could be situated such that the wetlands were not disturbed (id. at 310).

³⁰ The Company noted that in general, due to the conservation measures that have been applied to the project, wastewater has become less of an issue since the quantity of wastewater to be generated by the proposed project is much less than originally anticipated (Tr. 3, at 308, 311).

rural/residential viewshed;³¹ and (4) the Mendon 1 site had uncertain water supply and limited wastewater infrastructure, would require improvement to narrow roadways, had an uneven topography, contained more extensive wetlands than Bellingham 1, and was in a town which had shown significant opposition to power plant development (*id.* at 5-29 to 5-33; Tr. 3, at 286 to 337).³² The Company stated that the Bellingham sites received a high score for community support since there was an existing power plant in the town that was generally regarded by the residents and town government as a good corporate citizen, and further that the ANP Bellingham plant was being proposed and was favorably received (Tr. 3, at 260).

The Company listed the relative advantages of the other top four sites over the Bellingham 1 site as follows: (1) the Walpole 2 site was located near an existing wastewater treatment plant and required only limited infrastructure improvements to dispose of its wastewater, and had industrial activity currently operating on-site; (2) the Attleboro 2 site had better access to wastewater treatment, was likely to have higher ambient noise levels and therefore require potentially less noise mitigation, and was removed from all Zone II well protection areas; (3) the Blackstone 1 site had on-site natural gas interconnection,³³ and was removed from all Zone II well protection areas; and (4) the Mendon 1 site was large and well buffered, had an on-site natural gas interconnection, and was removed from all Zone II well protection areas (Exh. IDC-1, at 5-29 to 5-33; Tr. 3, at 293-295, 301).

IDC also described the history of its interest in the proposed site and related that history to the site selection analysis described above (Exh. EFSB-S-11). The Company noted that the siting work for this site was initially conducted in the late 1980's, when the proposed site was

³¹ The Company also noted that in the course of the site selection analysis it determined that the Blackstone site was a noticed alternative for another proceeding, and that it might have been optioned by another party (Tr. 3, at 316).

³² The Siting Board notes that other disadvantages for the alternative sites concerned rezoning, single ownership of the site, and railroad access.

³³ The Company noted that it is more expensive to build a gas interconnect than an electric interconnect (Tr. 3, at 327).

selected as the alternate site for the existing NEA Bellingham facility (id.).³⁴ The Company's witness indicated that IDC felt that the work that had been undertaken in the NEA Bellingham proceeding with regard to this site demonstrated that it had the fundamental attributes of a good site (Tr. 3, at 254). The Company concluded that if the site could be re-zoned, it would be a viable site for development of a power plant and would compare favorably to other potential sites (id.).³⁵

The Company stated that in 1997, IDC resumed its power development process and conducted the site selection process described above (Exh. EFSB-S-11). In April 1997, IEC requested that the Town re-zone a 70-acre portion of the Bellingham parcel from agricultural/suburban to industrial (Exh. EFSB-EL-7 (att.); Tr. 3, at 254). The Company indicated that the re-zoning was approved at the Bellingham Town meeting in May, 1997; that the Company proposed construction of a 700+MW power plant on 30 acres of the Bellingham parcel in May 1997; and that the Company submitted its Environmental Notification Form ("ENF") for a 1,035 MW facility on the proposed site in July, 1997 (Exh. EFSB-SS-19a; Tr. 3, at 250). The Company's witness, Mr. Barton, stated that Epsilon was retained by IDC to conduct the site selection study shortly after the Town Meeting vote to re-zone the Depot Street site (Tr. 3, at 251). The Company indicated that: (1) the siting work for the proposed facility began in May 1997; (2) the identification of the areas of interest was completed in late May, 1997; (3) the inventory of 51 sites was identified by mid-June, 1997; (4) the initial field work and supplemental data collection was completed by the end of June, 1997; (5) the analysis and delineation of the 24 candidate sites was completed by late July, 1997; (6) a second round of field checks and the scoring and ranking was completed by late August, 1997; and (7) the entire

³⁴ The Bellingham 1 site, which was called the "Varney Site" in the NEA Bellingham proceeding, has remained under option by the Company since the late 1980's (Tr. 3, at 305).

³⁵ The Company stated that the proposed site was re-zoned to industrial before it began its site selection process (Company Brief at 20). The Company asserted that changing the score for the proposed site to a three (lowest) from a one (highest) in the category of zoning, to reflect the fact that the site was actively re-zoned, would not effect the ranking of the sites (Tr. 3, at 257-258).

study was completed in time for inclusion in the November, 1997 petition to the Siting Board (Exh. EFSB-S-11).

The Company argued on brief that its site selection process contributed 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 18). Specifically, the Company asserted that the Bellingham 1 site: (1) has an advantage over most other sites because it avoided direct and indirect impacts to wetlands; (2) has an advantage over all sites located outside of Bellingham because it is in an industrial zone in a town with historical support for power plant development; (3) is comparable to or has an advantage over all sites except for one located in Bellingham due to its significant buffer, availability of land, and proximity to industrial land uses; (4) is comparable to or has an advantage over other sites because it is not in an ACEC and contains no protected or rare plant or wildlife species; (5) is comparable to or has an advantage over other sites with respect to air quality; and (6) has an advantage over most other sites due to its accessibility to roadways, and because construction traffic would not create unacceptable traffic conditions (Company Initial Brief at 19-20).

C. Analysis

In this record, IDC has described two separate and overlapping "site selection processes". In its petition (which was developed prior to the Restructuring Act and which initially was filed pursuant to G.L. c. 164, § 69J) and related exhibits and testimony, the Company has presented a comparative analysis of 51 possible sites for generating facilities, which it terms its "site selection process". In information responses and testimony, the Company also has described the considerations that led to its decision to pursue the project as proposed at the proposed site. As discussed in Section I.C, above, the Siting Board has determined that the latter process is the proper focus of our site selection review pursuant to G.L. c. 164, § 69J½; we therefore discuss that process before turning to a discussion of the Company's comparative site analysis.

The record shows that IDC's affiliate, IEC, first considered the proposed site (then called the "Varney site") as a potential site for a power plant in the late 1980s, and presented it as the noticed alternate site in the petition to construct the NEA Bellingham facility. NEA Decision,

EFSC 87-100 (1987). In that decision, the Siting Board found that construction at the Varney site was slightly preferable on the basis of environmental impacts to construction at NEA's preferred Winiker site, but concluded that the cost advantages of the Winiker site outweighed the slight environmental advantages of the Varney site. NEA Decision, 16 DOMSC at 407-408.

The record further shows that IEC acquired an option on the proposed site at the time of the NEA proceeding, and retained that option for over a decade. In May of 1997, IEC sought and obtained a change of zoning from agricultural/suburban to industrial on a portion of the Bellingham parcel. Following the re-zoning, IDC and its environmental consultant undertook a "site selection study" and developed the ENF for the proposed project, which was filed with the Executive Office of Environmental Affairs (the MEPA Office) in July of 1997. The site selection study was completed in late August, 1997, and the Company filed its petition with the Siting Board on November 18, 1997. The Siting Board finds that IDC's description of its site selection process, as set forth in the testimony of Mr. Barton and in Exhs. EFSB-S-11 and EFSB-SS-19a, is accurate.

As noted above, IDC also has provided the Siting Board with a site selection analysis. The Company has described the development and application to 19 discrete sites of a broad range of site evaluation criteria, including criteria addressing site development/construction/cost, the human environment, and natural environment attributes. Taken together, these criteria are well-designed to assess the ability of a site to support a power plant, the level of environmental impacts which would result from siting a power plant in that location, and the likely cost of mitigating the resulting impacts. IDC also has provided short narrative descriptions and MA GIS maps for each site, with more detailed information on the five top ranked sites. The Company conducted a qualitative comparison of its preferred site (which was the top ranked site) with the next four sites, in order to identify the strengths and weaknesses of the Bellingham 1 site and to confirm its first placed ranking. The information provided by the Company was developed based on site visits, reviews of maps, and environmental analyses.

The Siting Board notes that its precedent developed under G.L. c. 164, § 69J mandated the presentation of this type of comparative analysis in power plant cases, either as part of the site selection process or in confirmation of that process. Although G.L. c. 164, § 69J¼ does not

require site-to-site comparisons, the Siting Board still finds such comparisons to be of value in our review, since they provide us with information regarding the relative strengths and weaknesses of the proposed site and thereby inform our analysis of whether the choice of site contributes to the minimization of environmental impacts and associated control and mitigation costs. This type of information is of particular importance in “greenfield” cases such as the instant one, where the developer is able to select from a broad range of potential sites for its project.³⁶

Here, the record indicates that IDC’s preferred Bellingham 1 site received the highest numeric score of the 19 sites evaluated. In addition, a qualitative comparison with the four next-highest ranked sites identified significant strengths of the Bellingham 1 site, including its size, available visual buffer, and a facility footprint entirely clear of wetlands and protected species and habitats, although each of the five top-ranked sites had offsetting strengths and weaknesses. The Siting Board notes that IDC, like many other developers, assessed “community support” based primarily on contact with local officials and on historical public reaction to industrial development within the Town of Bellingham. In doing so, it may have underestimated both the concern in the immediate neighborhood of the proposed site about noise from the NEA facility owned and operated by its then affiliate IEC, and the consequent need to aggressively mitigate noise from the proposed facility (see Section III.G, below). However, taken as a whole, IDC’s site selection study demonstrates that IDC’s choice of site contributes to minimizing both the environmental impacts of the proposed facility and the cost of controlling or mitigating those impacts.

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 of the proposed facility, and the costs of mitigating, controlling, and reducing such impacts.

³⁶ The Siting Board is of the opinion that conducting an impartial survey of potential sites prior to committing to a project constitutes best practice in greenfield project development, although we recognize that it is possible to develop a project that meets the requirements of G.L. c. 164, § 69J¼ in other ways.

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.^{37, 38}

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

³⁷ G.L. c. 164, § 69J¼ includes "radiation impacts" in the list of generating facility impacts to be reviewed by the Siting Board. However, since radiation is a property only of nuclear power plants, radiation impacts are not considered in the Siting Board's review of gas-fired generating facilities.

³⁸ The Siting Board also reviews in this decision the environmental impacts of the proposed project with regard to traffic, safety and EMF.

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 projects 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 the air impacts of the proposed facility include National Ambient Air Quality Standards ("NAAQS") and Massachusetts Ambient Air Quality Standards ("MAAQS"); Prevention of Significant Deterioration ("PSD") requirements; New Source Review ("NSR") requirements; and New Source Performance Standards ("NSPS") for criteria pollutants (Exh. IDC-1, at 6.2-4). In addition, the Company indicated that the proposed facility would be subject to the Title IV Sulfur Dioxide Allowances and Monitoring Regulations beginning in the year 2000 (Exh. EFSB-EA-8-R3, at 8-8).

The Company indicated that, under NAAQS, all geographic areas are classified and designated as attainment, non-attainment³⁹ or unclassified for the six criteria pollutants: sulfur dioxide ("SO₂"), fine particulates ("PM-10"), oxides of nitrogen ("NO_x"), carbon monoxide ("CO"), ground level ozone ("O₃") and lead ("Pb") (Exh. IDC-1, at 6.2-6). The Company further indicated that, although the Bellingham area is classified as "attainment" or "unclassified" for SO₂, PM-10, NO_x, CO, and Pb, the entire Commonwealth of Massachusetts is in "serious" non-attainment for O₃ (*id.* at 6.2-7).

The Company stated that under PSD requirements, the proposed facility must: (1) demonstrate compliance with NAAQS; and (2) apply Best Available Control Technology ("BACT") to emissions of NO_x, CO, and PM-10, pollutants for which emissions may potentially exceed 100 tons per year ("tpy") (Exh. IDC-1, at 6.2-5).

³⁹ Non-attainment conditions may be further classified as to seriousness based on the level and frequency of such conditions (Exh. IDC-1, at 6.2-6).

The Company further indicated that under NSR requirements, the proposed facility must apply Lowest Achievable Emission Rate ("LAER") technology and emissions offsets to any directly emitted pollutant which is a precursor to O₃, and which the proposed facility may emit at levels greater than 50 tpy (Exh. IDC-1, at 6.2-4). Thus, the Company must apply LAER technology to control NO_x, a precursor to O₃ (*id.*). With regard to NSPS requirements, the Company indicated that emissions of regulated pollutants NO_x and SO₂ would fall well below NSPS threshold levels (*id.* at 6.2-7). In addition, the Company noted that the proposed facility would incorporate BACT for SO₂ and Volatile Organic Carbons ("VOCs"), as well as for other non-criteria pollutants and air toxics that are regulated as part of the MDEP air plans approval process (*id.* at 6.2-8).⁴⁰

The Company indicated that its proposed facility would meet the Technology Performance Standards ("TPS") for air emissions from new electric generating facilities promulgated in 980 CMR 12.00 by the Siting Board on July 17, 1998 (Exh. EFSB-EA-3-R2). The Company provided documentation demonstrating that its proposed facility would meet TPS for both criteria and non-criteria pollutants (*id.*).

2. Emissions and Impacts

The Company indicated that the proposed facility would emit regulated pollutants, including criteria and non-criteria pollutants, and carbon dioxide ("CO₂") (Exh. IDC-1, at 6.2-1 to 6.2-4). The Company asserted, however, that air quality impacts from the proposed facility would be minimized through the use of natural gas as fuel, efficient combustion technology, advanced pollution control equipment, and acquisition of NO_x offsets (*id.*). In addition, IDC indicated the facility would not use oil as a backup fuel (Exh. IDC-3, at 4.1-1). The Company also asserted that dispatch of the proposed project in preference to older generating resources in the region would result in displacement of NO_x, SO₂ and CO₂ emissions (Exh. IDC-1, at 2-33 to

⁴⁰ Massachusetts regulates toxic air pollutants by assessing compliance with short term exposure guidelines (maximum 24-hour impact) known as Threshold Effects Exposure Limits ("TELs") and by assessing compliance with long term exposure guidelines (averaged over one year) referred to as Allowable Ambient Levels ("AALs").

2-39).

The Company stated that its proposed facility would incorporate BACT for CO, PM-10, SO₂, Pb, and VOCs as well as both BACT and LAER for NO_x (Exhs. IDC-2, at 5.1-2 to 5.1-4; EFSB-EA-R3, at 4-1 to 4-19). In addition, the Company stated that emission rates for non-criteria pollutants would represent BACT (Exh. EFSB-EA-8-R3, at 4-19 to 4-20). In support of its contention that the proposed facility would represent BACT and/or LAER for the identified pollutants, the Company provided information regarding control options for the proposed facility (id.).

The Company estimated the quantity of pollutants that would be emitted from the proposed facility on the basis of information from manufacturer's specifications and fuel characteristics (id. at 6-5). The Company provided calculations of air emissions for the proposed facility based on the identification of "worst-case" operating conditions, which the Company stated would be 75 percent and 50 percent load at 50 and 90 degrees Fahrenheit, respectively (id.). The Company asserted that the facility would emit insignificant concentrations of air pollutants relative to applicable ambient air quality standards (Exh. IDC-3, at 4.1-3). In support of its assertion, the Company provided results of local air quality modelling that indicate that the air quality impacts of the proposed facility on ambient concentrations of criteria pollutants would be below established significant impact levels ("SILs") for both the preferred stack height of 190 feet and the GEP stack height of 225 feet (Exh. EFSB-EA-8-R3, at 6-22).^{41,42} The Company asserted that while its modeled ambient air pollutant levels are higher using the 190 foot stack, the pollutant levels are still so small that they would not represent a threat to public health (Tr. 4,

⁴¹ The Company provided maps with pollutant isopleth contour intervals to show the results of its modeling work geographically (Exh. EFSB-EA-8-R3, at App. G). The maps show that the locations of such air pollutant increases vary with type of pollutant and length of modeling time (id.). The maps show that short term averaging period impacts are greatest near the site and long term averaging impacts are greatest at higher elevations at a distance from the site (id.). Maximum impacts are limited to small portions of areas and drop off several fold elsewhere (id.).

⁴² Sils range from one percent to five percent of NAAQS. (Exh. EFSB-EA-8-R3, at 6-22, 6-34)

at 376 to 377). In support, the Company stated that the NAAQS were set by USEPA to fully protect the populations most susceptible to health problems caused by air contaminants, and that since SILs are only a small fraction of the NAAQS, changes in contaminant levels within the SILs are not a health issue (Tr. 5, at 493 to 495).⁴³ Accordingly, the Company stated that it prefers a sub-GEP stack height to minimize visual impacts (Tr. 4, at 387).⁴⁴

With respect to emissions of non-criteria pollutants and air toxics, the Company stated that it conducted Industrial Source Complex Short-Term ("ISCST3") refined modeling to estimate emissions of formaldehyde, sulfuric acid, ammonia, arsenic, cadmium, chromium, lead and mercury (Exh. EFSB-EA-8-R3, at 6-23 to 6-24).⁴⁵ The Company then compared the predicted ambient concentrations of these pollutants to the applicable MDEP standards and predicted that the resulting concentrations would be below the TELs and the AALs for both the 190 foot stack and the 225 foot stack (id.).

With respect to impacts to sensitive vegetation and soils, the Company asserted, citing supporting documentation and modeling results, that its proposed facility would not have a negative impact on sensitive vegetation or soils (id. at 6-27 to 6-28).

The Company asserted that operation of the proposed facility would cause economic

⁴³ To illustrate that a sub-GEP stack height would not represent a threat to health, the Company showed that while SO₂ levels would be 90 percent higher using the 190 foot stack than using the 225 foot stack, the actual modeled levels are still only .0013 and .0024 percent of the NAAQS (Tr. 4, at 376 to 377).

⁴⁴ The Company stated that it chose a sub-GEP stack height based on comments it received from the Town of Bellingham (Tr. 4, at 387 to 388). According to the Company, the Town stated that the originally proposed stack height (250 feet) was too high and that the Town wanted a stack height similar to that of the existing NEA-Bellingham facility (190 feet) (id.).

⁴⁵ The Company stated that its refined modelling was based on: (1) 1,038 receptors; (2) a receptor grid extending out from the proposed facility 30 kilometers in each of the cardinal directions; and (3) the highest terrain features within half the distance to the next closest receptor (Exh. EFSB-EA-8-R3, at 6-19). The Company indicated that it used five years (1990 to 1994) of actual meteorological observations as inputs to the model, that the surface data was recorded at Worcester Airport and Bradley Field, and that mixing height data was recorded at Albany, New York (id. at 5-6).

displacement of older, higher emitting units and therefore would be expected to result in regional air quality benefits (Exh. IDC-1, at 2-34). In support of its assertion, the Company presented a displacement analysis for the six year period 2001 to 2006, indicating that the facility would reduce emissions of SO₂, NO_x, and CO₂ in Massachusetts by a total of approximately 16,976 tons, 9,643 tons, and 1,113,372 tons respectively (Exhs. EFSB-EA-42; EFSB-EA-43). On a New England wide basis, the Company stated the facility would reduce emissions of SO₂, NO_x and CO₂ over the six year period by a total of approximately 47,223 tons, 15,975 tons, and 7,306,083 tons respectively (*id.*). The Company's displacement analysis for both Massachusetts and New England showed that the emission savings that may result from displacement of older facilities with operation of the proposed facility could be many times the proposed facility's own SO₂ and NO_x emissions for that same time period (*id.*; Exh-EA-8-R3 at 3-2).⁴⁶ The Company stated that the net emissions reductions attributable to the proposed facility would make an important contribution to mitigating regional smog and to reducing contributions to global CO₂ emissions (Exh. IDC-1, at 2-39). The Company's displacement analysis for CO₂ showed that the emission savings the facility may obtain by displacing older facilities would be 63 percent of the proposed facility's CO₂ emissions over the six year period of the analysis.

The Company also stated that it conducted interactive source modelling to evaluate cumulative air impacts for SO₂, NO_x, CO and PM-10 (Exh. EFSB-EA-8-R3, at 6-29). The Company's analysis included the proposed project plus 19 other proposed and existing generating units in the region as well as other major sources in the region that were located

⁴⁶ The Company modeled Massachusetts and regional emissions based on NEPOOL's forecast of regional load and regional dispatch of available generating units, with and without the IDC project. (Exhs. EFSB-EA-42; EFSB-EA-43). At the request of the Siting Board, IDC adjusted its displacement analysis to account for the assumption that future capacity requirements would be met by (1) the proposed project, plus additional combined cycle generating capacity as needed, for the with-IDC case and (2) 700 MW of combustion turbine capacity plus additional combined cycle generation capacity as needed for the without-IDC case (Exhs. EFSB-EA-42; EFSB-EA-43). IDC stated that if all generic future capacity additions are assumed to be combustion turbines, emission savings would be greater by 7 percent for SO₂, 10 percent for NO_x and 17 percent for CO₂ (Exhs. EFSB-EA-42; EFSB-EA-43).

within ten kilometers of the proposed facility and had the potential to emit 50 tpy or more of NO_x and 100 tpy or more of SO₂, CO, and PM-10 (Exh. EFSB-EA-8-R3, at 5.1-19).⁴⁷ The Company stated that it used the ISCST3 model for its cumulative analysis and evaluated both a 190 and 225 foot stack height (*id.*). The Company provided results of the interactive source modeling that demonstrates that the maximum combined concentrations of NO₂, SO₂, PM-10 and CO at the location of maximum impact were between 21 and 63 percent of the NAAQS (Exh. EFSB-EA-8-R3, at 6-34). In addition, the data shows that IDC's contribution at the point of maximum cumulative impact was less than one percent of the cumulative pollutant concentrations (*id.*).⁴⁸

At the request of CCOB, IDC conducted a cumulative impact analysis of combined ammonia slip from existing and proposed facilities in the region including the IDC-Bellingham facility, the ANP-Bellingham facility, the ANP-Blackstone facility and the existing ANP-Milford facility (Exh. CCOB4-A-20).⁴⁹ This analysis found maximum predicted ground-level ammonia concentrations of 0.67 ug/m³ for 24-hour average and 0.09 ug/m³ for annual average (*id.*). The Company demonstrated that the results were within the MDEP established TEL and AAL for ammonia of 100 ug/m³ and explained that this level should not pose a health risk because MDEP sets the limits of the TELs and AALs to protect the individuals most sensitive to air pollutants (*id.*; Exh. CCOB4-A-20; Tr. 13, at 1525-1527).

CCOB/BPA nevertheless argued that: (1) uncertainty remains regarding the health impacts of ammonia emissions; and (2) there is still the danger of spills from the transportation and storage of aqueous ammonia and the Company therefore should use SCONOX or another

⁴⁷ Included among other sources were the existing NEA, ANP-Milford, Ocean State Power, and BECo-Medway facilities and the proposed IDC, ANP-Bellingham, and ANP-Blackstone facilities (Exh. IDC-2, at 5.1-20).

⁴⁸ The Company stated that other background sources with emissions less than the above modeling threshold criteria (*i.e.*, minor sources) are accounted for by the measured background air quality data for each pollutant (Exh. EFSB-EA-8-R3, at 5.1-19).

⁴⁹ The Company stated that Selective Catalytic Reduction ("SCR") is not used in the NEA Bellingham facility (Exh. CCOB4-A-20, at 1).

ammonia-free control technology to control NO_x (Tr. 13, at 1525 to 1527).⁵⁰ CCOB argued that at least one ammonia-free NO_x control technology is commercially available, and presented testimony of Allan Bedwell, Vice President, Goal Line Environmental Technologies, LLC, who said that SCONOx is now commercially available through Goal Line Technologies (Tr. 13, at 1401).

In response, IDC stated that the technology is not commercially available and that there remains uncertainty as to the ability of SCONOx to be scaled up for commercial use at a larger facility like the one proposed by IDC (Exh. EFSB-EA-8-R3, at 4-5; Company Brief at 32 to 41). In addition, the Siting Board notes that Mr. Bedwell's testimony did not fully explain the extent this technology would be guaranteed by the manufacturer (Tr. 13, at 1570 to 1575).

IDC made the following additional points to support its opinion that SCONOx is not a practicable NO_x control option: (1) SCONOx has only been tested on a 30 MW facility and has not yet been demonstrated in high temperature applications; (2) SCONOx catalyst absorbs SO₃ as well as NO₂, which could adversely affect the ability to remove NO_x and SO₃ efficiently; (3) the system is much more complex than SCR, containing a large number of moving parts; (4) the system would use 280,000 gpd of water for methane reformation which would be problematic given the constraints on available water for the project; and (5) the system needs hydrogen to regenerate the catalyst absorber coating and the system to accomplish this has not yet been tested or proven in operation (Exh. EFSB-EA-8-R3, at 4-5 to 4-6).

3. Offset Proposals

The Company stated that the proposed use of dry low-NO_x combustors and SCR for NO_x

⁵⁰ CCOB/BPA asserted that the MDEP has recently established a zero ammonia standard, based on concerns regarding ammonia (Exh. EFSB-RR-AB-1, at 2). CCOB/BPA cited the following from a document entitled "Best Available Control Technology (BACT)/Lowest Achievable Emission Rate (LAER) for Electric Power Generation" (MDEP Memorandum, January 29, 1999): "Although ammonia is not a criteria pollutant, its use in air pollution control equipment does contribute to the emissions of particulates and presents public safety issues on transportation, storage, and accidental release" (*id.*).

control would achieve a NO_x emission rate of 2.0 ppm (*id.* at 8-7).⁵¹ The Company indicated that, to comply with non-attainment NSR for NO_x in Massachusetts, it would obtain MDEP-certified Emission Reduction Credits ("ERCs") in an amount that is five percent greater than that required based on the 1.2 to 1.0 ratio, *i.e.*, a total ERC requirement of 1.26 times maximum facility NO_x emissions (Exh. EFSB-EA-8-R3, at 8-7). The Company indicated that this equates to 202 tons of NO_x (*id.*). The Company stated that it has contractual arrangements with three different offset brokers to assist in obtaining NO_x offsets and that before the facility can operate, IDC must have actually obtained the NO_x offsets (Tr. 4, at 409- 410).

The Company indicated that the proposed facility would emit a maximum of 2,340,000 tpy of CO₂ and asserted that the CO₂ impacts of the proposed facility would be minimized consistent with Siting Board requirements (Exh. EFSB-EA-28-S). The Company indicated that it has discussed with CO₂ brokers the approach of directly acquiring CO₂ offsets, and noted that one specific option it has considered is acquisition of CO₂ offsets which may be available from a landfill gas development project (Exh. EFSB-EA-28-S2; Tr. 4, at 215-216). The Company argued that, in meeting the Siting Board's CO₂ mitigation requirement, it should have the flexibility either to make a monetary contribution of \$1.50 per ton to offset 1 percent of its CO₂ emissions, or to offer a specific CO₂ mitigation plan at the appropriate time to offset 1 percent of its CO₂ emissions (Company Initial Brief at 31).

The Company further asserted that the operation and dispatch of the proposed facility would result in the displacement of CO₂ emissions from other facilities, which would contribute to the minimization of CO₂ impacts from the project (Exh. EFSB-EA-42). To support this assertion, the Company provided a displacement analysis for the identified six-year period 2001 to 2006 (*id.*). The analysis showed a six-year reduction in CO₂ emissions of 8,902,510 tons in New England, or 57 percent of the proposed facility's emissions of CO₂ in New England over the

⁵¹ The Company stated that its proposed NO_x emission rate of 2.0 ppm is equal to that achievable via a SCONOX system and that the only difference was that the SCR system would require the use of aqueous ammonia (Exh. CCOB-4-A-23).

same period (id.; Exh. EFSB-EA-28-S).⁵²

Finally, the Company considered the impact of its proposed on-site and off-site tree clearing on annual CO₂ assimilation (Exh. EFSB-EA-38). The Company stated that construction of the proposed facility would require the clearing of 32.4 acres of forest (id.). In addition, the Company provided a 1996 study titled Exchange of Carbon Dioxide by a Deciduous Forest: Response to Interannual Climate Variability conducted by Michael Goulden, William Munger, Song-Miao Fan et al. (Exh. EFSB-EA-38). The study, which was conducted approximately 45 miles from the site, concludes that the sequestration rate of deciduous trees is 3.6 tons of CO₂ per acre per year (id.)^{53,54}

4. Analysis

The record shows that the proposed facility would consist of two highly-efficient combustion turbines using natural gas as the sole fuel, and would incorporate advanced emissions control technologies including dry low-NO_x combustors and SCR. The Company proposes to achieve BACT for CO, PM-10, SO₂, Pb, and VOCs and to achieve BACT and LAER for NO_x. The Company provided information regarding facility emissions which demonstrates that the facility would meet TPS for both criteria and non-criteria pollutants. Consequently, the Siting Board finds that no alternative technologies assessment is required for the proposed facility.

The Company has used reasonable and appropriate air modelling techniques to assess the impacts of emissions from the proposed facility at the sub-GEP stack height of 190 feet, and has

⁵² The analysis shows a six-year reduction of 1,341,412 tons of CO₂ for facilities located in Massachusetts (Exh. EFSB-EA-42).

⁵³ Siting Board staff converted the Company's carbon sequestration rate data to determine the rate of removal of carbon dioxide and took an average of the values over the five year period of the study.

⁵⁴ The Company has stated that lay down areas and construction parking areas will be re-vegetated as meadow and will not be used as offsets to the loss of sequestration (Exh. EFSB-EA-38).

demonstrated that impacts from the proposed facility would be below SILs for all criteria emissions, and that hazardous or toxic air pollutants would be within the TELs and AALs. As further discussed in Section II. F., below, the GEP 225-foot stack would be more visually intrusive than the preferred 190-foot stack. Therefore, because modeled impacts are below SILs, and within applicable limits for non-criteria pollutants, and because the 190 foot stack is less visually intrusive, the Siting Board finds that construction of the preferred 190 foot stack height would minimize air quality impacts consistent with minimizing visual impacts.

The record shows that the Company conducted a cumulative air quality impact analysis that took into account 19 emission sources including but not limited to the existing NEA, ANP-Milford, Ocean State Power, and BECo-Medway facilities and the proposed IDC, ANP-Bellingham, and ANP-Blackstone facilities. The results of the cumulative air quality impact analysis show that the maximum combined concentrations of NO₂, SO₂, PM-10 and CO at the location of maximum impact were between 21 and 63 percent of the NAAQS. In addition, the record shows that IDC's contribution at the point of maximum cumulative impact was less than one percent of the cumulative pollutant concentrations. Finally, the Company has shown that the maximum predicted cumulative ground level ammonia concentrations that could result from IDC and three other existing and proposed generating facilities in the area were within MDEP's TELs and AALs for ammonia.

CCOB/BPA has argued that IDC should be required to employ an ammonia-free NO_x control technology such as SCONOx. However, the record in this case does not support the conclusion that SCONOx is commercially available, that SCONOx technology is guaranteed by the manufacturer, or that the SCONOx technology can be scaled up from a 30 MW facility to a larger facility such as the proposed 700 MW facility.⁵⁵ The record does indicate that zero-

⁵⁵ On December 6, 1999, after the issuance of the Tentative Decision, CCOB/BPA made a motion to reopen the record to admit a press release issued on December 1, 1999, by ABB Alstom Power ("December 1 press release"), announcing SCONOx, an ammonia-free NO_x control technology, had become commercially available. In her order denying CCOB/BPA's motion, the Hearing Officer noted that even if the Siting Board could make the findings that SCONOx is commercially available, that SCONOx can be installed at
(continued...)

ammonia NO_x control technologies are currently being field tested at small-scale facilities, that there is an on-going debate over their availability, reliability and cost effectiveness for larger facilities such as the proposed IDC project, that there are concerns which may or may not prove to be substantiated with regard to the water needs of these technologies, and that MDEP, the Massachusetts regulatory agency with primary jurisdiction over air permitting, approved the interim use of SCR rather than zero-ammonia NO_x-control technology in a recent air permit for a gas-fired generating facility.⁵⁶ Given the level of technical and economic uncertainty regarding zero-ammonia NO_x control technologies, the Siting Board cannot find that use of such technology would minimize the environmental impacts of the proposed facility consistent with minimizing the cost of mitigating or controlling such impacts. In addition, we are of the opinion that, due both 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. As a result, the Siting Board will not require use of such technology as a condition of this approval.

However, the Siting Board notes that MDEP, as part of its air plans review, will

⁵⁵ (...continued)

the proposed project, and that SCONOX is now guaranteed, this would not enable the Siting Board to determine that SCONOX is BACT and LAER. (IDC Bellingham, LLC, EFSB 97-5, Hearing Officer Ruling, December 15, 1999).

⁵⁶ In a recent conditional air plan permit for a generating facility issued on or about July 30, 1999, MDEP provided that the emission rate for ammonia will be zero, but that at the option of the permit holder, the ammonia emission rate will be 2 ppm dry volume during the first five years of operation. ANP Bellingham Decision on Compliance EFSB 97-1, at 6 (1999). In accordance with a memorandum of understanding between ANP and MDEP incorporated as part of that conditional air plan approval, it will be determined within the five year period whether a zero ammonia technology must be installed at the facility, based on consideration of technical and commercial availability, comparability of cost, and consistency with state and local permits, or whether the facility may continue to operate without installation of such technology. (Id.). Thus, the MDEP in its most 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.

determine the levels of NO_x control that constitute BACT and LAER for this facility⁵⁷ and in doing so will take up, with the information then available,⁵⁸ the issue of whether an ammonia-free NO_x control technology is commercially available and whether it constitutes LAER for this particular facility. The Siting Board notes that the MDEP's determination of BACT and LAER incorporates consideration of feasibility, cost, and environmental protection, and thus is generally consistent with the Siting Board's mandate to minimize both environmental impacts and the cost of mitigating or controlling such impacts. The Siting Board therefore concludes that by incorporating the control technology that MDEP determines to be LAER for NO_x, IDC will have minimized its NO_x emissions and ammonia slip consistent with minimizing the cost of mitigating and controlling such emissions.

With respect to emission offsets, the Company has discussed how it plans to offset proposed emissions of NO_x and CO₂ -- pollutants which potentially contribute to regional ground-level ozone concerns and international climate change concerns, respectively. The Company stated that it has contractual arrangements with three different offset brokers to assist in obtaining NO_x offsets and that before the facility can operate, the NO_x offsets must be obtained in accordance with NSR and MDEP requirements.

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

⁵⁷ In its December 6, 1999 motion, CCOB/BPA argues, based on the December 1 press release, that the Siting Board should make a finding of law that SCONOX constitutes BACT and LAER. The Siting Board notes that it has no authority to determine whether an ammonia-free NO_x control technology constitutes either BACT or LAER for this facility; on the contrary, this is a determination that lies squarely within the jurisdiction of MDEP, and will be made as part of MDEP's Air Plan Approval process under 310 CMR .02.

⁵⁸ This information would include any available technical studies supporting the claims made in the December 1, 1999 press release.

Decision, EFSB 96-3, at 42-43.⁵⁹ In the Dighton Power Decision, the Siting Board expressed an expectation that the contributions of future project developers would reflect the approach set forth in Dighton, 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 43.⁶⁰

With respect to the Company's argument that it should have the flexibility to offer a specific CO₂ mitigation plan to offset 1 percent of its CO₂ emissions, the Siting Board notes that its standard of review is based on achieving a 1 percent offset assuming a monetary commitment of \$1.50 per ton of offsets provided. Although expected to provide an offset level of approximately 1 percent of facility CO₂ emissions, the Siting Board's CO₂ mitigation requirement has been set forth as a monetary commitment to allow flexibility in selecting a specific plan which will be cost-effective, consistent with the Siting Board's mandate to ensure that environmental impacts are minimized consistent with minimizing cost. This approach provides a measure of certainty for applicants regarding their likely costs for CO₂ mitigation, as they investigate and develop CO₂ offset approaches during project development. See Dighton Power Decision, EFSB 96-3, at 43-44.

The Siting Board notes that, to the extent applicants may identify and pursue CO₂ offset approaches that are significantly more cost-effective than the benchmark level of \$1.50 per ton, the Siting Board's CO₂ mitigation requirement would result in offsetting significantly more

⁵⁹ Previously, the Siting Board required project proponents 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 at 373-374.

⁶⁰ 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. Sithe-Mystic Development LLC, EFSB 98-8, at 29 (1999) ("Mystic Decision").

than 1 percent of facility CO₂ emissions. The Siting Board has encouraged previous applicants to pursue the most cost-effective offset approaches, which would provide maximum CO₂ offsets consistent with our mandate. See Berkshire Power Decision, 4 DOMSB at 370-371, 373. While an increased level of CO₂ offsets is an important outcome with any such increase in cost-effectiveness, we recognize that to achieve a balance between cost and environmental impact, some reduction in applicants' cost may also be appropriate. Accordingly, in cases where applicants identify and pursue CO₂ offset approaches that are demonstrably more cost-effective than the assumed level of \$1.50 per ton, and are otherwise acceptable, the Siting Board may consider such approaches at offset levels that are greater overall than 1 percent of facility emissions, and at the same time represent an overall cost commitment of less than \$1.50 per ton.

Here, the Siting Board requires the Company to make a contribution that is based on the proposed facility's annual maximum CO₂ emissions over 20 years of operation.⁶¹ If the Company in consultation with the staff of the Siting Board selects a CO₂ offset program or programs with an overall projected cost to the Company of less than \$1.50 per ton, a different cost commitment may be set which will provide offsets for more than 1 percent of facility CO₂ emissions with a cost commitment of less than \$745,402. Based on projected maximum annual CO₂ emissions of 2,340,000 tpy for the proposed facility, the unadjusted contribution requirement would be \$702,000. Therefore, the Siting Board requires the Company to provide CO₂ offsets through a total contribution of \$745,402⁶² to be paid in five annual installments

⁶¹ The Siting Board notes that it is currently re-assessing the expected operational lifetime of new gas-fired electric generating facilities and may increase the number of years used to calculate total CO₂ emissions and offset requirements in future siting cases.

⁶² The contribution is based on offsetting one percent of facility CO₂ emissions, over 20 years of operation, at \$1.50 per ton. The 20-year amount of \$702,000 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 \$140,400; year two \$144,612; year three \$148,950; year four \$153,419; year five \$158,021. See ANP-Blackstone Decision, EFSB 97-2, at 114; Cabot Power Decision, EFSB 91-101A; ANP-Bellingham Decision, EFSB- (continued...)

during the first five years of facility operation, to a cost-effective CO₂ offset program or programs to be selected upon consultation with the staff of the Siting Board. Alternatively, the Company may elect to provide the entire contribution within the first year of facility operation. If the Company so chooses, the CO₂ offset requirement would be satisfied by a single first-year contribution, based on the net present value of the five-year amount, to a cost-effective CO₂ offset program or programs to be selected upon consultation with the Staff of the Siting Board.⁶³

With respect to the impact of tree clearing on CO₂, the record indicates that the Company plans to clear 32.4 acres of trees for construction of the proposed facility. In several recent cases, the Siting Board has recognized that the clearing of existing woodlands to allow for project development may have implications with respect to CO₂ sequestration. Here, the Company has provided a study by Michael Goulden, William Munger, Song-Miao Fan et al. that concludes that the sequestration rate of deciduous trees is 3.6 tons of CO₂ per acre per year. The Siting Board accepts this sequestration rate for the purposes of calculating carbon sequestration loss as a result of tree clearing in this review.⁶⁴ Thus the allowance for clearing 32.4 acres of forest would be 3,499 tons of CO₂. At \$1.50 per ton, this yields an additional first year offset contribution of \$5249 to the CO₂ offset program or programs designed to offset facility emissions.⁶⁵

⁶² (...continued)
97-1, at 104; Millennium Power Decision, EFSB 96-4, at 114, 117-118.

⁶³ The net present value amount is to be based on discounting, at ten percent, the five annual payments totaling \$745,402. See ANP-Blackstone Decision, EFSB 97-2, at 114; Cabot Power Decision, EFSB 91-101A at 57; ANP Bellingham Decision, EFSB 97-1, at 104; Millennium Power Decision, EFSB 96-4, at 117-118. The single up-front payment of \$606,718 would be due by the end of the first year of operation.

⁶⁴ In recent cases the Siting Board has used a sequestration rate of 30 tons per acre of forest per year and has rejected other studies with differing sequestration rates. However, in this case the Siting Board has adopted the results of the study by Michael Goulden, William Munger, Song-Miao Fan et al. because the study location is in close proximity to the project site and the study evaluates a deciduous forest.

⁶⁵ The Siting Board notes that here, and in the past, it has used a single time period of 30 years to account for loss of carbon sequestration associated with tree clearing for a
(continued...)

Accordingly, the Siting Board finds that, with implementation of the foregoing NO_x and CO₂ offset measures, the environmental impacts of the proposed facility at the proposed site 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: (1) the water supply requirements of the facility and related impacts on affected water supply systems and on wetlands and other water resources; and (2) the water-related discharges from the facility, including wastewater discharges and discharges from on-site storm water management facilities, and related impacts on wastewater systems and on wetlands and other water resources.

1. Description

In regard to water supply needs, the Company has provided estimates of water use requirements for three operating scenarios that it refers to as "Case 1", "Case 2", and "Case 3" (Exh. IDC-3, at 3-18 to 3-26). The Company explained that Case 1 would occur during initial operations when the facility may not have access to the Town of Bellingham Sewer system⁶⁶ and would have to truck sewage offsite (*id.*). IDC stated that in Case 1, it would use portable

⁶⁵ (...continued)
facility. In future cases, the Siting Board may consider whether it is more appropriate to include two time periods in calculating sequestration loss: a period of time to account for sequestration lost as a result of the removal of trees, and a period of time to account for loss of annual carbon uptake associated with the loss of a growing forest over the life of the proposed facility.

⁶⁶ The Company stated that the Town of Bellingham Phase III Sewer Project, which will interconnect the northern sewer system near the proposed facility to the Woonsocket Wastewater Treatment Plant, may not be completed in time to service the IDC facility when it first goes on line (Exh. IDC-3, at 3-18).

demineralizers to treat the 10,300 gallons per day ("gpd") of process water (id.).⁶⁷ After the Town installs new sewers, the Company stated it would either construct an onsite water treatment system to regenerate the demineralizers (Case 2), or construct an onsite treatment system that employs a reverse osmosis filtering system (Case 3) (id.). Base load water requirements under Case 2 and Case 3 would be 16,375 gpd, and 15,883 gpd respectively (id.).

In addition, the Company has stated that it would use an extra 36,400 gpd of water (for a total water use ranging from 46,700 gpd to 52,775 gpd) when the ambient air temperature is over 65 degrees Fahrenheit in order to run an evaporative air chiller system (Exh. IDC-3, at 3-18).⁶⁸ The Company estimated the evaporative air chiller would run 107 days per year and thus annual average water use for Case 1, Case 2 and Case 3 would be 20,971 gpd, 27,046 gpd, and 26,554 gpd respectively (Exh. IDC-3, at 3-18 to 3-16). The Company noted that while it fully expects to use water at rates consistent with these estimates during normal operation, there remains a chance the facility may require additional water if it has operational problems (Exh. RR-EFSB-55). Accordingly, the Company provided the Siting Board with a worst case estimate for average annual water use of 36,915 gpd (id.).⁶⁹

Based on its annual water use estimates, the Company asserted that the facility would have the lowest water use per megawatt of generation of any facility approved by the Siting

⁶⁷ During initial operations, the Company proposes to reduce water and sewage requirements by having a contractor truck the demineralizers offsite for regeneration (Exh. IDC-3, at 3-18 to 3-19). The Company stated that trucking demineralizers offsite would reduce onsite water use by 2 million gallons per year during initial operations (id.).

⁶⁸ The evaporative cooling system uses water and heat exchangers to cool air prior to combustion (Exh. IDC-2, at 3-11). The Company explained that cooler air is more dense than warm air and thus provides more mass for conversion to power, which in turn boosts energy output (id.).

⁶⁹ The Company's worst case water use scenario assumes: (1) the heat recovery steam generator blow down losses increase to 0.75 percent to degradation in cycle performance and lower annual average operating temperatures; (2) the blow down recovery system requires a 10 percent blow down to maintain cycle steam quality; and (3) the plant uses increase by 50 percent to account for additional testing, cleaning and miscellaneous leaks (Exh. RR-EFSB-55).

Board to date, and that its average annual water use per megawatt of generation would be one fourth that of ANP's proposed facilities in Bellingham and Blackstone (Exh. RR-EFSB-56). The Company stated that it would achieve its low level of water use by: (1) eliminating back-up fuel oil firing; (2) reducing plant size from 1035 MW to 700 MW; (3) recycling blow down water from the HRSG; (4) using portable demineralizers for water treatment (during initial operations); and (5) recycling plant use water (during initial operations) (Exhs. IDC-3, at 3-18 to 3-19; IDC-2, at 5.2-34 to 5.2-35).

The Company stated that its primary water source would be the Bellingham municipal water supply and that it may use the following supplies as backup: (1) the Town of Bellingham's Well Number 9 ("Well 9"), which is non-potable and located approximately 750 feet to the east-southeast of the site; (2) a potential private well to be developed by IDC located on an industrial parcel south of Well 9, ("Well 9A"); and (3) a potential private well to be developed by IDC on the IDC property (Exhs. IDC-2, at 4-12; IDC-3, at 4.2-3; EFSB-EW-94-S). The Company explained that it would only use the alternative sources under extraordinary circumstances where town water was not available due to maintenance or failure of the supply system (Tr. 10, at 1100).

The Company indicated that the water supply for the Bellingham comes from nine municipal wells in the watersheds of the Charles and Blackstone River Basins and their sub-basins (Exh. EFSB-EW-7a). The Company asserted that the facility would not significantly affect water resources (Tr. 10, at 1120). In support, the Company provided data from the Bellingham water supply wells by river basin, including permitted withdrawal volumes, actual average daily use, and total annual use for the years 1992 to 1996 (Exh. EFSB-EW-7a).

The Company also provided a comparison between the total water withdrawal rate for the Bellingham well system and the groundwater recharge rates for the wells (Exh. EFSB-EW-104). The Company stated that the average annual groundwater recharge rate⁷⁰ for the Town of

⁷⁰ The Company determined a system recharge rate by calculating the total size of all the aquifer recharge areas for the Town of Bellingham wells (5.63 square miles) and multiplying it by the rate of recharge to the regional aquifer of 17 inches per year (Exhs. (continued...))

Bellingham wells, 4.5 million gallons per day ("mgd"), is approximately three times the Town's permitted pumping rate and asserted that the Town wells therefore are not oversubscribed (id.).

In addition, the Company examined the impact of estimated population growth on water use projections within the Charles and Blackstone River Basins for the Town of Bellingham through the year 2020 (Exh. EFSB-EW-7a). The Company relied on several sources for its analysis, including a report of historic and projected water use for the Charles River Basin prepared by the Massachusetts Department of Environmental Management ("MA DEM") in 1989 and a 1997 study by consultants for the Town of Bellingham ("Herr and James Report") which modeled the Town's future growth (id.; Exh. EFSB-EW-56). The Company compared projections of population growth against actual water use and future permitted water use from the Charles and Blackstone River Basins for the Town of Bellingham under the Massachusetts Water Management Act ("MA WMA") (id.).

The Company indicated that annual average daily water withdrawals in recent years through 1996 were well below the MA WMA permitted water withdrawal for the Town of Bellingham (Exh. EFSB-EW-7a). The Company also indicated that the MA DEM and the Herr and James reports projected water use for the Town of Bellingham to increase at a rate equal to or less than the rate of permitted water use (Exhs. EFSB-EW-14a; EFSB-EW-56). The Company provided the data in Table 1 to support this statement:

⁷⁰ (...continued)
EFSB-EW-64; EFSB-EW-65; EFSB-EW-66).

Table 1
 Bellingham Water System Permitted Average Daily Withdrawal,
 Actual Average Daily Demand and
 Unused Permitted Average Daily Withdrawal

Year	MDEP Permitted Average Daily Withdrawal (mgd)	Actual Average Daily Demand (mgd)	Unused Permitted Capacity (mgd)	Herr & James Water Demand Forecast (mgd)	DEM Water Demand Forecast (mgd)
1992	1.97	1.66	0.31	*	1.97
1993	1.97	1.64	0.33	*	1.97
1994	2.43	1.81	0.62	*	2.43
1995	2.43	1.75	0.68	1.69	2.43
1996	2.43	1.51	0.92	*	2.43
1997	2.43	1.44	0.99	*	2.43
1998	2.43	1.39	1.04	*	2.43
2000	2.75	N/A	N/A	1.75	2.75
2005	3.10	N/A	N/A	1.80	3.10
2010	N/A	N/A	N/A	1.85	3.10
2020	N/A	N/A	N/A	1.94	3.38

*Not included in forecast

Sources: Permitted average daily demand data from MDEP Water Withdrawal Permits at Exh. EFSB-EW-14a and from Exh. EFSB-EW-56.
 Actual Daily Demand data from Exh. EFSB-EW-7a and Tr. 10, at 1207.

In regard to watershed impacts, the Company assessed the overall effects of water use for the proposed project and for other power generation facilities on low flow conditions of the Charles and Blackstone Rivers (Exh. RR-EFSB-53). As an indicator of low flow conditions, the

Company submitted 7Q10 low flow data⁷¹ for the Charles River and Blackstone River Basin (Exhs. EFSB-EW-51, at 30; RR-EFSB-53). The Company also provided a study of water resources and aquifer yields in the Charles River Basin, indicating that increased groundwater withdrawals could ultimately affect flow amounts in the Charles River (Exh. EFSB-EW-51).⁷²

With respect to IDC's proposed source of water supply, the Company stated that approximately half of the Town of Bellingham's water supply comes from the Peters Brook sub-basin of the Blackstone River Basin, and half comes from the Charles River Basin (Exhs. EFSB-EW-7a; RR-EFSB-53). The Company stated that the quantities of IDC's proposed water withdrawals are insignificant relative to the low flows in these rivers (Exhs. EFSB-EW-70; IDC-1, at 6.3-21; Tr. 10, at 1121). The Company further stated that the current total water use for the Town of Bellingham is only half of the safe yield of the Town's wells and that MDEP's definition of safe yield is the flow that can be maintained even under drought conditions without significant resource impacts, including effects on wetlands, water bodies, and drinking water supplies (Tr. 10, at 1119 to 1120). The Company therefore asserted that associated impacts of

⁷¹ The 7Q10 flow is the lowest daily flow in a river or stream averaged over seven consecutive days that is expected to occur every 10 years (Exh. EFSB-EW-51).

⁷² The 1991 report by the United States Geological Survey, Water Resources and Aquifer Yields in the Charles River Basin, Massachusetts ("USGS Study"), described a modeling analysis of available groundwater yields from 15 major aquifers in the middle and upper Charles River Basin (Exh. EFSB-EW-51). As part of the analysis, the USGS Study addressed the extent to which available groundwater yields from such aquifers would be reduced by varying assumptions as to minimum amounts of instream flow that are now, or may be in the future, deemed desirable or required for water quality or other environmental purposes (*id.* at 41, 45). The USGS study indicated that, although large amounts of water potentially are available from major aquifers, additional pumpage would reduce stream flow in the Charles River and its tributaries at some locations (*id.* at 41). The USGS Study assumed that wells in major aquifers by-and-large use groundwater that otherwise would discharge to streams, and thereby provide in-stream flow during dry periods (*id.*). The USGS Study concluded that, if a minimum streamflow requirement were set to ensure that 7Q10 is maintained 95 percent of the time, the ability of wells to use groundwater that otherwise would discharge to streams would be limited to an aggregated aquifer yield of less than one mgd in most of the 15 aquifers, including the Bellingham-Medway aquifer (*id.*).

the proposed facility on the Charles and Blackstone River Basins would be acceptable (id. at 1119 to 1122).

The Company stated that both the proposed IDC facility and the proposed ANP-Bellingham facility would obtain water from the Town of Bellingham water system (Exhs. EFSB-EW-7a; IDC-2 at 5.2-33; RR-EFSB-53). The Company stated that the maximum combined water use of the IDC project (0.055 mgd) and the ANP-Bellingham project (0.1 mgd), together with the existing ANP-Milford project (1.02 mgd) would be 1.175 mgd or approximately 12 percent of the 7Q10 low flow in the upper Charles River (id.).⁷³ In addition, the Company noted that the existing NEA facility uses approximately 0.57 mgd from a contaminated well (Well 9) in the Charles River Basin (Exh. IDC-1, at 6.3-8).

In regard to the Blackstone River, the Company noted that the proposed ANP-Blackstone facility (0.1 mgd) would obtain its water from the Blackstone River Basin and that the Blackstone River has a 7Q10 low flow rate of 65.2 mgd (Exh. RR-EFSB-53). The Company provided data that show the combined water requirements of the proposed IDC facility, the proposed ANP-Bellingham facility and the proposed ANP-Blackstone facility would not exceed 0.4 percent of the 7Q10 low flow in the Blackstone River (Exh. RR-EFSB-53).⁷⁴ The Company also provided a 1989 MA DEM Blackstone River Basin Conceptual Plan, which included data on stream flows during the 1980-1981 drought and 1988 community water use for 14 Blackstone River sub-basins in Massachusetts (Exh. EFSB-EW-104). The MA DEM report included estimates of available water supply yield by sub-basin, based on the 1980-81 drought flow amounts and adjusted for net interbasin transfers of water via municipal water supply and discharge systems. For the Peters Brook sub-basin, the MA DEM report showed that low stream

⁷³ The Company noted that the water use estimate for the ANP-Milford facility does not take into account that the facility is subject to a low flow cut off (Tr. 10, at 1123).

⁷⁴ The Company did not attempt to determine whether water withdrawals for the IDC and ANP-Bellingham projects would come from the Blackstone River Basin or the Charles River Basin. Siting Board Staff calculated percentage of low flow based on the 7Q10 data provided by the Company and using the conservative assumption that 100 percent of the water use from the proposed IDC, ANP-Bellingham and ANP Blackstone facilities would come from the Blackstone River Basin.

flow (lowest month out of a total of twenty months) during the 1980-1981 drought was 0.42 mgd and in 1988 municipal groundwater withdrawals resulted in the net export from Peters Brook sub-basin of 0.47 mgd (id.). The Company noted that although the MA DEM report showed such out of basin transfers, the water supply availability from Peters Brook sub-basin also should be viewed in light of the rates of groundwater recharge to the Bellingham wells as previously discussed (id.).

Finally, the Company stated that while the Town did have summertime voluntary water bans beginning in 1991, these bans were the result of insufficient pumping capacity, not of a shortage of groundwater, and that the Town has since addressed this issue by upgrading its water supply system (Exh. EFSB-EW-105).⁷⁵ In addition, the Company noted that its water agreement with the Town of Bellingham limits its water use to 55,000 gallons per day (Exhs. EFSB-EW-9-S; RR-EFSB-55; Tr. 10, at 1141). This usage limit is roughly equal to the Company's expected peak water use requirement during summer operations (id.). Further, the record shows that the water use agreement provides the Town with unilateral authority to reduce IDC's water allotment to 14,000 gallons per day in the event of a water supply emergency (Exh. EFSB-EW-9S).

In regard to the potential use of Well 9 as a backup supply, the Company stated that Well 9 is currently permitted by MDEP to withdraw 240.9 mgd, and that the NEA plant has used up to 207 mgd of this permitted withdrawal rate (Exh. IDC-1, at 6.3-8). The Company noted that MDEP sets water withdrawal limits based on the safe yield of the well and that MDEP determines the safe yield by calculating the recharge rate and assessing the results of draw down tests (id. at 1121). The Company stated that it would use a maximum of 9.87 mgd from Well 9 and hold the average daily water use of Well 9 to within MDEP's annual limit (Tr. 10, at 1121). The Company also provided results of draw down tests for Well 9 which show the well

⁷⁵ The Company stated that in 1998, the Town of Bellingham improved the capacity of its water supply system by: (1) constructing a new filtration plant; (2) adding a new water supply well; and (3) upgrading some of the pumps of existing wells (Exh. EFSB-EW-105).

withdrawals would have no significant impact on private wells, Well 5⁷⁶ or waterways or wetlands in the area (id. at 1116). The Company added that Well 9 has already been operating for seven years at a rate of 207 mgd without any perceptible impacts on yields from other wells (id.). Accordingly, IDC concluded that the possible withdrawal of an additional 9.87 mgd from Well 9 as a backup supply for its facility would be within the well's safe yield and would not have an impact on Well 5, the Charles River, Box Pond, nearby wetlands and/or private wells in the area (id.).⁷⁷

In regard to the potential development of Well 9A as a backup water supply, the Company stated it installed several exploratory wells at this location and is confident that it can develop an industrial well of less than 100,000 gpd of capacity (Exh. IDC-3, at 4.2-3). IDC indicated that it does not plan to conduct draw down tests at this time because IDC has entered into a water agreement with the Town of Bellingham (Exh. EFSB-EW-94-S). However, IDC indicated that if it does decide to develop Well 9A, it would first conduct a draw down test to ensure that water withdrawals from Well 9A would not have an impact on yields from Well 9, private wells, the Charles River and/or other waterways in the area (id.).⁷⁸

In regard to the potential development of an onsite well, so far the Company has only been able to find an onsite well location with a potential yield of 15,000 gpd (id.). As in the case of Well 9A, IDC plans not to conduct draw down tests at this time as it intends to use the Bellingham municipal water supply (id.). IDC again indicated that, if it decides to develop an onsite well, it would first conduct a draw down test and ensure that water withdrawals from an

⁷⁶ Well 5 is a town well located approximately 2000 feet to the northeast of the project site (Exh. IDC-1, at 6.3-6)

⁷⁷ The Company stated that water withdrawals from Well 9 would not have a significant impact on Well 5 even though Well 9 is located within the delineated Zone II recharge area of Well 5 (Exh. EFSB-EW-19). In support of this, the Company stated that the size of the recharge area for Well 5 is 40 times larger than is necessary to sustain the approved pumping rate (id.).

⁷⁸ The EOEIA has indicated in its Certificate on IDC's Final Environmental Impact Report that it would require the Company to file a Notice of Project Change if it decided to develop Well 9A (Exh. EFSB-G-19).

onsite well would not affect yields from other wells, wetlands and waterways in the area (id.).

In regard to sewage disposal needs, the Company proposed to implement interim measures to account for the likelihood that the Bellingham Phase III Sewage Project may not be completed prior to the time the facility would go on line (Exh. IDC-3, at 3-18). The Company stated that its initial sewage requirements would be only 500 gpd and that it would truck the sewage to either the Milford or Woonsocket sewage treatment facility (id.; Tr. 10, at 1124).⁷⁹ After Phase III is completed, the Company stated it would interconnect its facility with the new Town sewer lines, and the facility would discharge sewage to the Bellingham System at an annual average sewage rate of either 6,575 gpd, if the Company chooses an onsite demineralizer, or 6,083 gpd, if the Company chooses an onsite reverse osmosis/rejects water treatment system (Exh. IDC-3 at 3-18 to 3-26).⁸⁰

The Company developed a storm water management plan for the proposed facility that is designed to: (1) minimize pollutants in the proposed facility's storm water discharges; (2) assure compliance with the terms and conditions of the National Pollutant Discharge Elimination System ("NPDES") Multi-Sector General Permit requirements; (3) attenuate peak storm water runoff discharge rates to values not greater than the pre-development rates; and (4) meet the Massachusetts Storm Water Management Performance Standards (Exh. IDC-3, at Apps. D and E; Tr. 2, at 208 to 210). The Company stated that its drainage plan, use of retention basins and Spill Prevention Control and Countermeasure ("SPCC") plan would both minimize the decrease in recharge that would otherwise result from the increase of impervious pavement and buildings

⁷⁹ The Company indicated that both the Milford and the Woonsocket sewage treatment facilities are willing to accept these volumes via truck (Tr. 10, at 1124).

⁸⁰ The Company stated that approximately two thirds of the increase in water use after the facility connects to Town sewer would come from regenerating the water treatment system on site (instead of off site) (Exh. IDC-3 at 3-19 to 3-22). The Company stated that the remaining one third of the increase would be due to the Company's plan to discontinue recycling its plant use water (id.). IDC stated that it prefers to stop recycling plant use water in order to prevent the potential for contaminated water to cause damage to the steam turbines, HRSG steam generators, and high pressure piping (Exh. EFSB-EW-90).

and prevent the transport of contaminants into groundwater, wetlands and waterways (Exh. IDC-2, at Appendices D and E).

2. Positions of the Intervenors

CCOB/BPA and the Beauchamps expressed concerns about the Company's lack of a backup water supply and the capacity of the municipal water system to support the project's needs (CCOB/BPA Initial Brief at 12; Beauchamp Brief at 4). In addition, CCOB/BPA raised concerns that the Company's reliance on Town water would limit the amount of water available for residential use and that the Company's water use estimates may be low (CCOB/BPA Initial Brief at 12 to 13). Ms. Johnson raised general concerns over the proposed project's effect on the Town's available water supply (Johnson Brief at 3). The Conservation Commission requested that the Siting Board require the Company to obtain water from an alternative source in the event it requires more water than the amounts stipulated in its water contract (BCC Brief at 2 to 3). East Acres Recreational Vehicles expressed concerns about the extent the Siting Board would enforce its decision (East Acres Brief at 4).

3. Analysis

IDC has undertaken a significant and effective design effort to minimize the proposed facility's water supply needs. The record demonstrates that IDC has taken a number of steps to reduce its water use, including the elimination of oil as a backup fuel, reduction in plant size, recycling of its blow down water from the HRSG and the recycling of water for plant use. As a result of these water conservation efforts, IDC's proposed annual water use is less than the smaller 580 MW ANP Bellingham facility, and on a per megawatt basis, IDC's proposed water use is the lowest of any facility that the Siting Board has licensed to date. With regard to sewage, the Company has minimized the quantity of sewage generated at the facility and has developed an adequate interim and long term plan for sewage disposal. In addition, the Company has developed a storm water management plan to prevent storm water runoff from the site and prevent the transport of contaminants into the groundwater, wetlands and waterways.

With respect to proposed water use, the question of the acceptability of water impacts

hinges in particular on whether the proposed facility's water use will strain (1) the Town of Bellingham's municipal water supply, or (2) the basin resources on which the water system relies. We therefore examine the water consumption of the proposed facility in terms of water availability and impact on watersheds and proposed mitigation. Because of the number of proposed and existing power plants in the Bellingham area, we also consider issues related to the water consumption of the proposed IDC facility in the context of existing water use at the Milford Power and NEA facilities, and the proposed ANP-Bellingham and ANP-Blackstone facilities.

The record demonstrates that the permitted capacity of Town wells can accommodate withdrawals for the proposed facility at its expected average annual water use rate of between 20,971 gpd and 26,554 gpd, as well as IDC's worst case annual average estimate of 36,915 gpd. In addition, the record demonstrates that the combined water supply requirements of the Town and the proposed facility likely would continue to increase more slowly than the permitted MDEP capacity of Town wells.

The record also demonstrates that, based on 1992-1998 pumping rate data, precipitation recharge for Town of Bellingham wells would be above the Town's average annual water withdrawals, inclusive of future annual withdrawals for the proposed facility.

With respect to the use of Well 9 as a secondary option, the record shows that MDEP has permitted the well at a safe yield sufficient to accommodate both water use by NEA and the proposed water use by IDC. The record demonstrates that the use of either the Town's municipal system or Well 9 would not have a significant impact on groundwater supplies for the Bellingham municipal water system or on water levels in private wells, wetlands, Box Pond, the Charles River and the Blackstone River.

The record shows that IDC has not evaluated the safe yield of Well 9A or of an on-site well, two options that the Company may want to pursue in the future. The Company has committed to evaluating the potential impacts of these other wells if and when it needs an alternative water supply, and states that it would only use such an alternative water supply if such water withdrawal tests show the well would not have a significant impact on the Bellingham municipal water system, private wells, wetlands, Box Pond, the Charles River and the Blackstone

River. The record shows the Company intends to use municipal water and would only use the alternative sources under extraordinary circumstances where the Town water supply was not available due to maintenance or failure of some kind.

With respect to the CCOB/BPA's and the Beauchamps' concerns over the lack of a backup water supply, the Company has shown that Well 9 is a viable backup option and that Well 9A and onsite wells would likely provide all or at least a significant portion of the water required by the proposed facility. With respect to the concerns of CCOB/BPA, the Johnsons, and the Beauchamps that the Town may not have an adequate supply of water to accommodate the project, the Company has shown that the project's water use would be very low and that such water withdrawals would not affect the ability of the Town of Bellingham's water system to meet the Town's water needs now or in the future. With respect to CCOB/BPA's concern that IDC's water use estimates may be understated, the Company has provided a worst case scenario for water use, above and beyond what it expects to use under normal conditions, and even this amount (36,915 gpd annual average) is consistent with the daily limits of its 55,000 gallon water contract with the Town of Bellingham.⁸¹

With respect to watershed impacts, water for the proposed facility will be withdrawn from Town of Bellingham wells in two watersheds, those of the Charles and the Blackstone Rivers. Water from the Blackstone River will come more specifically from Peters Brook, a Blackstone River tributary. The Company compared the amount of water use for the proposed project and other power generation facilities in the area to rates of low flow in the Charles and Blackstone Rivers. The Company's analysis shows that IDC's water use would be only 0.5 percent of the low flow of the Charles River and that the combined water use of the IDC facility plus other existing and proposed generating facilities that rely on water withdrawals from Town

⁸¹ The Conservation Commission has requested that the Siting Board require IDC to obtain water from a source other than the Town of Bellingham if its needs exceed the amount stipulated in its contract. However, we note that Town of Bellingham could simply refuse to rewrite the contract at a higher level if it felt that this was necessary to protect the Town's water supply. With respect to watershed impacts, the record does not support a conclusion that drawing additional water from a source other than the Town of Bellingham would minimize the water supply impacts of the project.

wells in the area (the ANP-Bellingham facility and the NEA facility) would amount to 7.6 percent of the low flow of the Charles River. In addition, water use for the ANP-Milford plant, which diverts wastewater discharges and other water resources in the Charles River Basin, represents another 10 percent of the low flow. The USGS Study shows that the principal groundwater aquifer which supplies the Town of Bellingham wells in the Charles River Basin contributes to the streamflow of the Charles River.

The record shows that the Blackstone River has a 7Q10 low flow rate that is almost seven times that of the Charles River, and that the combined water use of 0.255 mgd by the proposed IDC facility, the proposed ANP-Bellingham facility and the proposed ANP-Blackstone facility is small in relation to the Blackstone River low flow. The record suggests that Peters Brook, the sub-basin of the Blackstone River Basin, from which the Town of Bellingham's well withdrawals are obtained, may be more thinly stretched in terms of its ability to handle water supply requirements.

In summary, the record shows that for both the Charles River and Peters Brook, the basin-wide water use as a percentage of low flow is relatively high. The USGS Study documents the efforts of water managers to assess long-term water availability in the upper Charles River Basin, consistent with maintaining environmental objectives such as ensuring minimum streamflow or otherwise protecting identified resources. Thus, meeting commonly recognized minimum streamflow criteria, if required for the Charles River or the Peters Brook, might trigger corresponding limits on withdrawals from aquifers that supply the Town of Bellingham wells. At the same time, the record shows that MDEP permitted water withdrawal rates from these waterways increase over time and are not seasonally restricted.

Water use concerns are partially offset by the high recharge rate in relation to water use: the record shows that only one third of the 4.5 mgd of average annual groundwater recharge for the Town of Bellingham is consumed and the remaining two thirds is available to supply groundwater levels which in turn provide flows to the affected waterways. In addition, based on the most recent trends and projections, the record shows that future water demand is expected to grow at significantly lower rates than identified in an earlier MA DEM basin report, and well below limits set in MDEP permits.

Water use concerns also are offset by the Company's success in reducing the proposed level of the facility's water consumption. IDC's water use on a per megawatt basis would be only one quarter of the ANP Blackstone and ANP Bellingham facilities recently approved by the Siting Board.

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

The Siting Board notes that the above finding is based on the water use projections set forth in this record. These projections are lower than those for similar plants recently proposed for the Bellingham/Blackstone area, due in part to IDC's decision to use evaporative cooling of its inlet air prior to combustion rather than the use of steam augmentation to boost output in warm weather. CCOB/BPA, the Conservation Commission, and East Acres all have raised questions about the reliability of IDC's water use projections and the consequences if IDC uses substantially more water than projected. In order to verify that the proposed project's water supply impacts are as set forth in this record, the Siting Board directs IDC to provide the Siting Board with a report at the end of its second year of operation setting forth the facility's monthly water use for the preceding two years. If the proposed facility's water use significantly exceeds the projections in this record, the Siting Board may direct the Company to participate in a water conservation program similar to that funded by ANP as a condition of its approvals, or to develop another cost effective approach to mitigate its water use. ANP-Bellingham Decision, EFSB 97-1, at 120; ANP-Blackstone Decision, EFSB 97-2, at 135.

The Company has demonstrated that it has a comprehensive plan for minimizing impacts to all water resources resulting from wastewater and storm water discharge from the proposed facility, and that its plan meets all applicable government regulatory policy requirements.

Accordingly, the Siting Board finds that impacts to all water resources resulting from wastewater and storm water discharge from the proposed facility would be minimized.

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 although the vast majority of the 156 acre project site is upland, a total of approximately 8.5 acres of wetland areas exist along the western and south/southwestern perimeters of the property (Exh. IDC-1 at 6.3-24). The Company stated that approximately 5 of these acres represent the wetland system along the east bank of the Charles River which lies west of the transmission line corridor, while 3.5 acres is comprised of three separate wetlands associated with the Charles River that extend further into the southwestern portion of the site (*id.*).⁸²

The Company stated that the proposed facility, its appurtenant infrastructure, construction staging, parking areas and interconnecting utility lines would be located outside of any wetlands, 100-foot wetland buffer zone area, and the 200-foot riverfront area, all protected under the Massachusetts Wetlands Protection Act and/or the Rivers Protection Act (Exh. IDC-2, at 5.2-29 to 5.2-30; IDC-3, at App. C at 39; Tr. 2, at 202 to 203). In addition, at the request of the BCC, the Company has agreed to maintain a 200-foot setback from all wetland resource areas on the site (Exh. IDC-2, at 5.2-30).⁸³ The Company has also agreed to allow vegetation to grow in the detention basins in order to create wildlife habitat (Tr. 2, at 207). The Company asserted that installation of detention basins upgradient of the wetlands would allow for recharge of groundwater and hence would not affect the hydrology of the wetlands (*id.* at 206).

2. Analysis

The record shows that the Company has designed the facility layout so that no portion of the power plant, parking areas, and utility lines would be located in wetlands, buffer zone or land

⁸² The Company stated that it delineated project area wetlands in accordance with the Massachusetts Wetlands Protection Act, associated regulations (310 CMR 10.00 *et seq.*), and the MDEP handbook, "Delineating Bordering Vegetated Wetlands under the Massachusetts Wetlands Protection Act."

⁸³ The Company stated that the Town of Bellingham's Phase III Sewer Project may cause a temporary impact to wetlands, but that the extent of any such impact has yet to be determined (Tr. 2, at 202 to 203).

subject to the Massachusetts Wetlands or Rivers Protection Act. Accordingly, the Siting Board finds that the environmental impacts of the proposed facility would be minimized with respect to on-site wetlands.

E. Solid Waste and Hazardous Waste

This section describes the solid waste 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 stated that solid wastes would be generated at the site both during construction and during operation and maintenance of the facility (Exh. EFSB-ESW-1). The Company stated that it would produce both hazardous and non-hazardous solid waste (id.).

The Company stated that during construction it would produce the following types of non-hazardous solid waste: excess fill from site preparation⁸⁴; waste lumber, concrete, metal, insulation, scrap cable and wiring, empty nonhazardous chemical containers, and paper, glass, and plastic from packing materials (id.). The Company stated that it would recycle approximately 100 tons of these wastes (id.). The Company estimated that during construction it would produce approximately 70 tons of excess concrete and 25 tons of excess metal (id.). The Company noted that metal wastes would include steel from welding/cutting operations, packing materials, scrap piping and siding, and empty nonhazardous chemical containers (id.).

In total, the Company estimated that approximately 200 tons of excess concrete, metals and construction debris would be generated during the 18 month onsite construction period (Exh. EFSB-ESW-3). The Company assumed the materials would be removed in standard 50 cubic yard roll off containers, holding a maximum of 10 tons per container, which would require at most 40 round trip truck trips (id.).

The Company stated that during facility operation, the proposed project would generate minimal non-hazardous solid wastes consisting of incidental office and maintenance wastes, and

⁸⁴ The Company stated it would try to eliminate or minimize the need for disposing of fill.

power plant wastes typical of power generation operations (id.; Exh. IDC-1, at 3-16). The Company stated that the limited hazardous solid wastes generated during operation would include spent lubrication oil filters, empty hazardous waste containers and depleted SCR catalyst units (which must be replaced every three to five years) (Exh. EFSB-ESW-1). IDC stated that it would ensure that these solid wastes would be properly handled in compliance with all applicable federal, state and local laws and regulations, including licensing, training of personnel, accumulation limits and times, and reporting and record keeping (id.). The Company stated that it would collect accumulated hazardous waste in the contractor's 90-day hazardous waste storage area, and deliver the hazardous waste to an authorized hazardous waste management facility via an authorized hazardous waste hauler (id.).

2. Analysis

The record demonstrates that where possible and cost-effective, solid waste from construction and operation of the proposed facility would be recycled, reclaimed or reused. The record also shows that the Company or its licensed contractor would dispose of all remaining solid waste from construction and operation of the proposed facility at appropriate disposal sites in a manner consistent with applicable governmental regulation.

Accordingly, the Siting Board finds that 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 Bellingham and surrounding communities, under seasonal conditions.

1. Description

The Company submitted an evaluation of the potential visual impacts of the proposed facility (Exhs. IDC-3, at 4.3-1 to 4.3-25; EFSB-EV-17R). As part of its evaluation of visual impacts, the Company conducted viewshed analyses of the surrounding areas (Exh. IDC-3, at Figs. 4.3-4 to 4.3-17). The Company stated that its identification of potential sensitive receptors

took place in two phases, first using USGS maps in conjunction with consideration of potential new development, and then conducting a tour of the area around the site (Exh. EFSB-EV-3).

Within areas identified as potentially having views of the proposed facility, the Company selected 13 visual receptor points on the basis of land use, proximity to the site and potential impacts (Exhs. IDC-1, at 6.7-2 to 6.7-5; EFSB-EV-3; Tr. 1, at 38). The Company incorporated two additional visual receptor locations at the request of Siting Board staff and an intervenor (Exhs. EFSB-EV-17R; EFSB-EV-27; RR-EFSB-2).⁸⁵ IDC asserted that it tried to show a representative number of views that would allow a reviewer to ascertain what the views of the stack might be from other areas surrounding the proposed facility (Tr. 1, at 38).

The Company presented photographs of existing views looking toward the proposed site under a range of seasonal conditions (Exhs. IDC-3, at Figs. 4.3-4 to 4.3-17; RR-EFSB-1). For each photograph, the Company then developed a computer-generated perspective of the proposed facility as it would appear at that specific location, and superimposed the perspective on the associated photograph (Exhs. IDC-1, at 6.7-5).

The Company asserted that the proposed facility would be screened from view in most directions and that, at those locations where the facility would be visible, its effect generally would be limited by surrounding land uses, vegetation and distance (Exh. EFSB-EV-17R, at 6). IDC asserted that the most affected viewsheds would be where views of the upper portion of the stack and the upper portion of the air-cooled condenser are unobstructed by any intervening vegetation (*id.* at 4). The Company stated that the tallest existing buildings in the proximity of the proposed site are the NEA Bellingham facility, with a 190-foot stack, and the abutting CO₂ facility, with a 150-foot absorber column (Exh. EFSB-EV-18). IDC estimated that the highest other industrial (or commercial) building in the vicinity would be 30 to 50 feet (Tr. 1, at 43).

The Company explained that the visual analyses conducted for the proposed project were

⁸⁵ The Company's analysis included views from 13 representative viewsheds (Exhs. IDC-1, at 6.7-2 to 6.7-4; IDC-2, at 5.6-2; EFSB-EV-17R). A fourteenth viewshed, located near the north end of Depot Street, was identified by an intervenor and incorporated into the analysis (Exhs. IDC-3, at 4.3-1; EFSB-EV-17R). A fifteenth viewshed, located along Grove Street, north of Depot Street was identified by Siting Board staff and incorporated into the analysis (Exh. RR-EFSB-2).

updated to reflect use of a relocated single stack, including views based on both the Company's preferred 190-foot stack and the GEP 225-foot stack (Exhs. EFSB-EV-17R; EFSB-EV-20).⁸⁶ The Company indicated that the most direct views of the proposed facility and stack would be from: (1) the south side of Hartford Avenue in the area of the Varney Sand and Gravel operation; (2) the south side of Hartford Avenue at the 345 kV right-of-way ("ROW"); (3) the Mennonite Church parking lot on Route 140 in Mendon; (4) near the intersection of Route 140 and Bellingham Street in Mendon; and (5) a location to the west of Depot Street, north of the railroad crossing (Exh. EFSB-EV-17R at 2 to 4).⁸⁷ The record also indicated that the stack would be visible from north of the intersection of Grove Street and Hartford Avenue (Exh. RR-EFSB-2 (att.)). The record indicated that the stack, whether 190 feet or 225 feet in height, would be visible to some degree from ten viewsheds, but that at seven of those viewsheds the GEP 225-foot stack would be more intrusive, based on the extra 35 feet of exposed stack height (Exh. IDC-3, at Figs. 4.3-4 to 4.3-17). These seven viewsheds encompassed views from Hartford Avenue, Route 140 in Mendon, Rose Avenue Extension, Arbend Circle, and Depot Street (*id.*).

The Company asserted that the views of the proposed facility and stacks from the Box Pond Road and Box Pond Drive residential areas would be screened by the forest to the north of Box Pond Road (Exh. EFSB-EV-2; EFSB-EV-11; Tr. 1, at 9-10). IDC explained that from the Box pond area under defoliate conditions, there may be limited views of the stacks through the screen of pine branches and vertical tree trunks (Exh. EFSB-EV-11). The Company indicated that other residential neighborhoods represented by viewsheds at Charlesgate in Hopedale and Rose Avenue Extension southeast of the site, would have partial views of the stack through light tree cover, while the Arbend Circle neighborhood in Wethersfield would have a full view of the stack during both foliate and defoliate conditions (Exh. EFSB-EV-17R at 3 to 5; Tr. 1, at 65-66). The Company asserted that there would be no "bright, clear" views of the stack through the trees

⁸⁶ The Company's original proposal for a 1,035 MW facility included three 250-foot stacks (Exh. IDC-3, at 2-1).

⁸⁷ The Company stated that the south side of Hartford Avenue at the 345 kV ROW and the Mennonite Church parking lot on Route 140 in Mendon, both would have views of the HRSG and air-cooled condenser as well as the stack (Tr. 1, at 47).

along Route 140 in Mendon, between Barnes Road and Hartford Avenue (Tr. 1, at 50).⁸⁸

However, the Company noted that the facility would be visible through the trees from Barrows Road in Mendon during defoliate conditions (id. at 12 to 13).

IDC identified two viewpoints, the steps of Bellingham Town Hall and the parking lot of the Mennonite Church in Mendon, from which it would be possible to see both the proposed facility stack and the NEA stack (Exh. RR-EFSB-1; Tr. 1, at 40). The Company acknowledged that there may be other points from which both stacks would be visible (Tr. 1, at 40). Ms. Johnson stated that the NEA stack is visible from her residence, located on Arbend Circle in the Wethersfield neighborhood (id. at 67).

The Company also analyzed the meteorological and operating conditions under which visible exhaust plumes likely would emanate from the main stacks of the proposed facility (Exhs. EFSB-EV-22; EFSB-EV-22-S; EFSB-EV-22-S2). The Company indicated that over the course of a year, a plume would be visible considerably less than 25 percent of the time, and that further, for much of this time the backdrop would be gray skies due to bad weather and twilight, lessening the visibility of the plume (Tr.1 at 52-53). IDC explained that it used the FOG model to model plume visibility, but altered the model's assumptions regarding plume temperature (Exh. EFSB-EV-22-S2).⁸⁹ The Company stated that its plume visibility analysis determined how often a plume could be visible during the daylight hours of 7:00 AM to 8:00 PM (id.; Exh.

⁸⁸ The Company indicated that viewshed 4 (along Route 140 north of Hartford Avenue) was most representative of the homes and businesses in and around the intersection of Route 140 and Hartford Avenue (Exh. ECK3-VI-3). The Company further asserted that a potential viewshed at the intersection of Route 140 and Bates Road was determined to have no view due to a thickly forested area located close to Route 140 (id.).

⁸⁹ The Company explained that the FOG model assumes that plume temperature equals the ambient temperature, while the Company assumed that plume temperature would vary as a mix of stack exit temperature and ambient air temperature (Exh. EFSB-EV-22-S2). The Company modeled four temperature scenarios which varied the mixture of plume and ambient air temperatures (id.). Under these scenarios, plume visibility ranged from less than one percent of the time to 25 percent of the time, as compared to 50 percent visibility projected using the unadjusted FOG model (id.). The model projected only minor differences in the frequency of plume visibility for the 190-foot and 225-foot stacks (id.).

EFSB-EV-22-S). IDC indicated that the analysis excluded those daylight hours where the plume would exist but would not be noticeable due to meteorological conditions such as rain, fog, low level clouds, or obscure sky conditions (Exhs. EFSB-EV-22-S; EFSB-EV-22-S2).

The Company asserted that the plume from the proposed facility would be different from the plumes from the existing NEA Bellingham facility and its accompanying CO₂ facility (Exh. EFSB-EV-22-S2).⁹⁰ Further, the Company asserted that based on distance, location, and wind direction, the IDC visible plume could overlap with the NEA visible plume only 11 percent of the year, of which 5.5 percent would be during daylight hours (id.). In addition, IDC asserted that the visible NEA plumes could overlap with the IDC plumes only two percent of the year, of which one percent would be during daylight hours (id.).

The Company indicated that it had reviewed the Massachusetts Landscape Inventory ("MLI"), and had determined that no distinctive or noteworthy landscapes would be affected by the proposed facility (Exh. EFSB-EV-14). The Company noted that the project site is more than nine miles from any area designated as a distinctive or noteworthy landscape in the MLI (id.).

The Company stated that all facility structures would be painted a neutral color to minimize the visual impacts of the proposed facility (Tr. 1, at 22). The Company explained that in selecting the final color(s) for the proposed facility, it would (1) consult with the Town of Bellingham, (2) respond to design issues via the site plan review process, and (3) rely on the design experience of its engineering, procurement, and construction ("EPC") contractor (id. at 26; Exh. EFSB-EV-15). IDC noted that it anticipated that a lighter stack color would minimize visual intrusiveness (Tr. 1, at 28).

With respect to exterior lighting, the Company stated that the primary purpose of its lighting plan is to provide safe working conditions and access to facility structures (id. at 19). The Company stated that it would attempt to minimize the visual impact of exterior lighting in its final lighting design by using fixtures that would be oriented downward and hooded, with no

⁹⁰ For comparison purposes, the Company indicated that the plume associated with the proposed facility would not be a clear, strong, saturated plume which presents itself as a billowing cloud, such as the plume generated by the existing NEA CO₂ plant (Tr. 1, at 53). Rather, the plume at the IDC facility would be wispy and variable in nature (id.).

unnecessary illumination (Exh. EFSB-EV-9; Tr. 1, at 19). The Company also stated that it anticipates that navigational lighting would be required on the facility stacks regardless of whether the final stack height is 225 or 190 feet (Tr. 1, at 20). IDC explained that the Federal Aviation Administration ("FAA") requires navigational lighting on objects exceeding 200 feet and may also require lighting for structures lower than the 200 feet height, as it did for the nearby ANP Bellingham facility which has proposed a stack height of 190 feet (Exh. EFSB-EV-21; Tr. 1, at 20).⁹¹ The Company has filed a Notice of Proposed Construction or Alteration with the FAA, requesting that it be permitted to use medium intensity, non-flashing white and red obstruction lights on the stack (Exh. EFSB-EV-21(S) and (att.)). Further, the Company stated that its application for a Special Permit from the Town of Bellingham would address issues of light and glare (Exh. RR-EFSB-10).⁹²

The Company stated that it would mitigate visual impacts through the use of a single stack and the selection of neutral colors for the facility and indicated that it did not give extensive consideration to off-site mitigation (Exh. EFSB-EV-16; Tr. 1, at 21-22). IDC explained that its landscape plan would focus on the entrance to the proposed facility in the area of Depot Street and asserted that since it would be maintaining a 300-foot treed buffer around the facility, other landscaping would be unnecessary (Tr. 1, at 63). The Company stated that it would provide a landscaping plan to the Town in conjunction with its site plan submission (*id.* at 21, 63).

The Company also indicated that it would be willing to work with residents and the Town to provide reasonable off-site mitigation to address legitimate visual impact issues (Tr. 1, at 24). IDC explained that it would be willing to plant trees upon request if it determined that the plantings would block a clear view of the stack (*id.* at 23). With regard to the condition imposed

⁹¹ IDC noted that the proposed facility is closer to the Hopedale Airport than the ANP Bellingham facility (Tr. 1, at 20).

⁹² IDC indicated that the request for approval would be pursuant to Section 3230 of the Bellingham Zoning By-law, which addresses light and glare (Exh. RR-EFSB-10). Section 3230 of the Bellingham By-law states that an exterior lighting plan may be required where compliance with the stated requirements is not apparent (Exh. EFSB-EL-8, at Section 3230).

by the Siting Board on previous proposals concerning off-site mitigation, IDC indicated that it is concerned about assuming permanent responsibility for maintenance of off-site tree plantings, noting for example that it should be up to the homeowners to water trees as necessary (*id.* at 25). IDC also noted that it considers a one-mile radius for off-site mitigation to be extreme, but stated the Company would address real visibility problems out to that distance (*id.* at 24).

The Conservation Commission suggested that as a condition to approval, the Siting Board require IDC to retain a landscape architect to review both the post-construction visual impacts of the facility and any temporary alterations that would be required for equipment storage, material lay down, and temporary employee parking and to recommend a planting scheme to visually screen these areas from viewers on or along Depot Street (BCC Brief at 3).

2. Analysis

The record demonstrates that the proposed facility would be somewhat screened from view in most directions as a result of its proposed wooded buffer. The Company's analysis indicates that, at the majority of viewshed locations, views of the facility likely would be limited to the upper portions of the stack as seen above existing trees. From most viewpoints, these impacts would be greater with the GEP 225-foot stack than with IDC's preferred 190-foot stack. However, the viewshed analysis does indicate the potential for visual impacts along sections of Hartford Street, areas off Route 140, and in nearby residential areas located primarily to the east of the proposed site. In addition, at least two locations may have views of both the existing NEA stack and the proposed IDC stack. The record indicates that the only other structures approaching the height and bulk of the proposed facility are the NEA Bellingham facility and its abutting CO₂ plant.

The Company's analysis of plume visibility for the proposed facility indicates that visible exhaust plumes of varying lengths would be present with operation of the facility. The plumes would be visible from a wider area than the facility structures themselves but would likely be wispy.

With regard to the general appearance of the facility and related structures, the Company has indicated that it will seek input from its EPC contractor and local officials on issues such as

building color, the effect of nighttime lighting at the site, and other related aesthetic concerns during the site plan review, in order to resolve such issues in a mutually satisfactory manner.

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. ANP-Blackstone Decision, EFSB 97-2, at 143-144; ANP-Bellingham Decision, EFSB 97-1, at 128; Berkshire Power Decision, 4 DOMSB at 395. Here, the Company has expressed some reservations concerning the scope of any Siting Board requirement for off-site mitigation, suggesting that (1) requests for mitigation at residential properties should be limited to legitimate visibility problems, and (2) the Company should not be given permanent responsibility for maintaining tree and shrub plantings.

In prior decisions, the Siting Board has consistently mandated that off-site mitigation of visual impacts reflect reasonable requests by affected residents or 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. The Siting Board also has consistently required that developers be responsible for ensuring the establishment of viable plantings. A developer's responsibility to replace plantings clearly is not permanent, but is limited to a period of a few years following planting.⁹³

Consistent with Siting Board precedent concerning the minimization of 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 within one mile of the proposed facility, as requested by individual property owners or appropriate municipal officials.

In implementing this requirement, the Company: (1) shall provide shrub and tree

⁹³ The Siting Board agrees that in the case of plantings provided for individual homeowners, it is reasonable for the developer and homeowner to arrange that the homeowner be responsible for watering established plantings.

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 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.

The Siting Board notes that there are a limited number of locations in the vicinity of the proposed facility from which both the IDC and NEA stacks may be visible. The Siting Board encourages IDC to refine its off-site plantings for these areas, to best address the overall visual impacts of both facilities, upon request.

Accordingly, the Siting Board finds that, with the implementation of the foregoing condition, the environmental impacts of the proposed facility with a stack height of 190 feet at the proposed site would be minimized with respect to visual impacts.⁹⁴

G. Noise

1. Description

The Company asserted that the proposed facility was designed to meet state and local noise standards protective of the local community (Exh. EFSB-EA-8-R3, at 7-1). The Company stated that the noise impacts resulting from the operation of the proposed facility would: (1) be below the MDEP ten-decibel limit on increases from new noise sources, as detailed in MDEP Policy 90-001 ("MDEP Standard"); and (2) be well below the 65 dBA limit set in the Town of

⁹⁴ If the final design for the facility includes a GEP or other stack height significantly greater than 190 feet, IDC shall notify the Siting Board so that the Siting Board may decide whether to further inquire into and evaluate the appropriate balance between visual impacts, other environmental impacts and cost.

Bellingham's noise ordinance (*id.* at App. D(1) at 9;⁹⁵ Exh. EFSB-EN-1).

To define the noise impacts of the proposed project, the Company provided analyses of existing noise levels in the vicinity of the proposed site and the expected changes in noise level resulting from construction and operation of the proposed facility (Exhs. EFSB-EN-22-R2; EFSB-EA-8-R3, Section 7 and App. D(1)). To establish existing background noise levels, the Company conducted surveys at ten noise measurement locations ("NML") at various distances and directions from the proposed site, including: (1) on the north end of the Barrows Road cul-de-sac in Mendon, overlooking Box Pond on the west side of the Charles River, representative of some of the closest residences to the west southwest of the site; (2) approximately 200 feet north of the intersection of North Main Street and Bates Road in Mendon, representative of residences to the west of the site; (3) off Hartford Avenue in Bellingham at a pull-off to the east of the Charles River, representative of residences along Hartford Avenue to the north of the site; (4) near the intersection of Hartford Avenue and Depot Street on a gas pipeline easement, representative of residences to the northeast of the site; (5) near the intersection of Depot Street and the Conrail line, representative of the eastern property line; (6) eastern property boundary along Depot Street, 300 feet north of Box Pond Road; (7) near Box Pond Road on the site's southern boundary, representative of the residences between Box Pond Road and Box Pond; (8) near Box Pond Road where it turns to the southwest, representative of the southern site boundary and the closest residences to the southwest of the site; (9) near Box Pond Road, further southwest, in the vicinity of a cluster of residences; and (10) along Taunton Road at the edge of the Wethersfield neighborhood, representative of the closest residences to the east of the site (Exh. EFSB-EA-8-R3, at 7-2 to 7-4).⁹⁶ After it acquired the Mendon parcel, the Company added an eleventh NML, designated as PL-4A, which represented a point on the expanded western

⁹⁵ The noise analysis contained in the PSD/NSR Air Plans -- designated EFSB-EA-8-R3 -- is contained in Section 7, and App. D. App. D consists of two distinct reports, Noise Impact Analysis, which we designate D(1), and IDC Bellingham Power Project Analysis of Noise Control Alternatives, which we designate D(2).

⁹⁶ The Company noted that it had initially identified NML-10 as located on Nason Street, which turns into Taunton Street (Company Initial Brief at 77).

property line closest to the plant equipment (Exh. EFSB-EN-48). The Company indicated that PL-4A replaced R-1 and PL-4 (Exh. EFSB-EA-8-R3, App. D(1) at 10).

For each NML, the Company provided a set of noise measurements from 20-minute sampling periods taken during the months of July and August, intended to represent daytime and nighttime periods for both weekday and weekend conditions (Exhs. IDC-1, at 6.8-2 to 6.8-3; EFSB-EN-3; IDC-3, at 4.4-7 to 4.4-16). The Company indicated that existing nighttime L_{90} levels at the residences range from 34 dBA to 40 dBA (Exh. IDC-3, at 4.4-7 to 4.4-16; Tr. 7, at 742). The Company's data indicated that the quietest ambient noise measurements were taken during the day at some NMLs, and during the night at others (Exh. IDC-1, at 6.8-7 to 6.8-16).⁹⁷ The Company stated that nighttime ambient noise levels generally are lower than daytime levels, since fewer people are engaged in noise producing activities at night, and that it had no explanation for the unusual results of its noise monitoring (Exh. EFSB-EN-36; Tr. 7, at 796). In addition, at staff's request, the Company conducted further noise monitoring at NML 2, NML 8, and a location on the expanded Mendon property line, designated as PL-4A, to reflect conditions without deciduous coverage (Exh. EFSB-EN-48).⁹⁸ The Company asserted that since the supplemental monitoring data produced results that were within the range of normal variations in ambient levels, the original ambient measurements were reliable and accurate (id.; Company Initial Brief at 80).

The Company's noise monitoring logs identified the NEA facility as a component of

⁹⁷ The L_{90} levels recorded during the summer 1998 monitoring ranged from (1) 35 to 44 dBA near Box Pond, (2) 34 to 45 dBA west of the site in Mendon, (3) 36 dBA to 41 dBA along Depot Street, and (4) 38 dBA to 41 dBA at Wethersfield (Exh. IDC-3, at 4.4-7 to 4.4-16; Tr. 7, at 742). Of the ten NMLs, the quietest ambient levels were recorded during (1) the daytime monitoring period for five locations; (2) the nighttime period for two locations; and (3) for both daytime and nighttime periods for three locations (Exh. IDC-3, at 4.4-7 to 4.4-16).

⁹⁸ The NML most affected by the supplemental measurement is NML-8, located south of the proposed facility along Box Pond Road (Exh. EFSB-EN-48). The original measurements demonstrated a nighttime ambient of 39 dBA and a daytime ambient of 36 dBA, while the supplemental measurement demonstrated a nighttime ambient of 35 dBA and a daytime ambient of 36 dBA (id.; Exh. IDC-3, at 4.4-14).

background noise at all but one of the noise monitoring locations (Exhs. IDC-3, at 4.4-7 to 4.4-16; EFSB-EA-8- R3, at 7-6 to 7-15; Tr. 7, at 874). Other identified sources of background noise included traffic, insects, birds and aircraft (Exh. EFSB-EA-8- R3, at 7-6 to 7-15).

To analyze the noise impacts of facility operation, the Company estimated daytime and nighttime facility noise, and combined facility and background noise, at five residential receptors and four property line receptors (*id.* at App. D(1) at 9 to 47). The five residential receptors included: (R-2) - Closest residences east of the site, on Nason Street; (R-3) - Closest residence southeast of the site, located on the south side of Box Pond Road; (R-4) - Closest residence to the site, located southwest of the site along the bend in Box Pond Road; (R-5) - Barrows Road in Mendon; and (R-6) - Closest residence west of the site, on Route 140 in Mendon (*id.* at 10). The four property line receptors included: (PL-1A) - Northwestern property line; (PL-2) - Northern corner of the site at Depot Street; (PL-3) - East side of Depot Street; and (PL-4A) - West property line located in Mendon (*id.*). The Company argued that its noise impact model produced conservative results because it did not reflect several factors that reduce noise, including meteorological conditions, such as temperature lapse conditions and propagation upwind from the source; vegetative screening; and ground or foliage absorption (Exh. EFSB-EA-8-R3, App. D(1) at 47; Tr. 7, at 758).

Based on its modeling results, the Company indicated that operation of the proposed facility would result in daytime L_{90} increases at residential receptors of from 1 to 7 dBA, and nighttime L_{90} increases of from 1 to 8 dBA (Exh. EFSB-EA-8-R3 at App. D(1) at 47; Tr. 7, at 742).⁹⁹ The Company indicated that the greatest impacts would be at receptor R-4, located southwest of the site on Box Pond Road (Exh. EFSB-EA-8-R3, App. D(1) at 47; Tr. 7, at 742). At this receptor, nighttime L_{90} noise levels would increase by 8 dBA from the current level of 35 dBA, and daytime L_{90} levels would increase by 7 dBA (*id.*). The Company indicated that daytime and nighttime noise increases at the property lines of the proposed site would range from

⁹⁹ The Company indicated that an increase of three dBA generally is recognized as the threshold of noticeability for a community area near a new noise source, although an increase lower than three dBA can be perceptible, as one decibel is the acoustic difference limit (Exh. EFSB-EA-8-R3, App. D(2) at 7; Tr. 7, at 826, 854).

3 to 8 dBA, with the largest increases at PL-1A (8 dBA), PL-3 (7 dBA), and PL-2 (6 dBA) (Exh. EFSB-EA-8-R3, at App. D(1) at 47; Tr. 7, at 742). At all other residential and property line receptors, noise increases would be from 1 to 4 dBA (Exh. EFSB-EA-8-R3, at App. D(1) at 47; Tr. 7, at 742).

IDC also provided estimated day-night sound levels (“ L_{dn} ”), with and without the proposed facility, at the residential and property line receptors (Exh. EFSB-EN-3R).¹⁰⁰ Based on the Company estimates of existing L_{dn} , noise levels at two receptors are above the USEPA’s 55 dBA threshold: R-6 (60 dBA) and PL-3 (56 dBA); facility noise would increase estimated L_{dn} noise by 1 dBA at PL-3, and would not affect estimated L_{dn} noise at R-6 (Exhs. EFSB-EN-3R; EFSB-EN-48). IDC stated that existing L_{dn} levels at the other receptors ranged from 48 to 53 dBA (Exhs. EFSB-EN-3R; EFSB-EN-48).

The Company stated that the proposed facility was designed to mitigate noise impacts to the surrounding community (Exh. EFSB-EA-8-R3, App. D(1) at 49). The Company stated that its final acoustical design for the proposed facility would include the following noise mitigation technologies or an equivalent to achieve noise control objectives: (1) muffling of the gas turbine inlets, including a two-stage inlet silencer and lagging of the inlet air ducts; (2) noise barrier walls or equivalent on all sides of the main and auxiliary transformers; (3) quiet air cooled condensers; (4) noise barrier walls for the water/glycol fin-fan coolers; (5) enclosure of turbines, generators, pumps, compressors and the HRSG in buildings; (6) muffling of the gas turbine exhaust streams, and enclosure of the exhaust flues in a common stack; (7) acoustic louvers, if necessary, in the ventilation air intake openings in buildings; (8) silencers on roof fan vents where required; (9) noise barriers and/or enclosures on turbines, generators, pumps and the gas turbine exhaust expansion joints; and (10) the purchase of the Mendon parcel as additional buffer land (*id.* at App. D(2) at 9-10). The Company noted that the purchase of the Mendon parcel eliminates the possibility that residences will be built in the future on that parcel, in close

¹⁰⁰ IDC acknowledged that continuous monitoring would provide a better basis for determining L_{dn} levels than the Company’s 20-minute monitoring data, and indicated that the L_{dn} computations were presented as the best estimates that can be developed from existing data, and not as representative figures (Tr. 7, at 745, 755).

proximity to the proposed facility (Tr. 8, at 1030).

As part of its PSD/NSR Air Plans Application, IDC provided two alternatives for additional noise mitigation: (1) an alternative that would limit the noise increases from the proposed facility to 5 dBA at all receptors, at an additional cost of approximately \$2.66 million ("Alternative 1"); and (2) an alternative that would limit noise increases from the proposed facility to 4 dBA at all receptors, at an additional cost of approximately \$8.08 million (Alternative 2) (Exhs. EFSB-EA-8-R3, App. D(2) at 10-12; EFSB-RR-37).¹⁰¹ The Company explained that, because Alternative 1 focused on noise control for receptors to the north, east, and the south, improvements would also be realized at PL-2 and R-3 (Exh. EFSB-EA-8-R-3, App.(D)2 at 10).

In response to requests from Siting Board staff, the Company provided a variation of Alternative 1 that would reduce facility noise at R-4, located along Box Pond Road to the south of the proposed facility, and thereby limit the noise impact from the proposed facility to 5 dBA at all residential receptors, at a cost of \$1,419,800 ("R-4 alternative") (Exhs. EFSB-RR-37; EFSB-RR-64; Tr. 7, at 815-820). Although, the R-4 alternative would primarily benefit locations to the south of the proposed facility, some of the noise mitigation technologies employed should reduce noise impacts in all directions (Exhs. EFSB-EA-8-R3, at App.(D)2 at 10-12; EFSB-RR-37; EFSB-RR-64).

IDC indicated that it would be required to conduct noise compliance monitoring as a condition of its PSD/NSR Air Plan approval (Exh. TM2-N-10). In addition, the Company indicated that it had made a commitment to the Bellingham Board of Selectmen to conduct a periodic post-construction noise monitoring program, using a protocol to be developed by noise experts with input from the Board of Selectmen and directly affected residents (Exh. EFSB-RR-

¹⁰¹ The Siting Board notes that the Company was asked to provide information on additional noise mitigation and the associated costs for an additional one to three decibel reduction in total facility noise impacts to the south and west of the facility (Exh. EFSB-EN-42). The response referenced the information contained in the PSD/NSR Air Plans, as described above (*id.*).

43; Tr. 8, at 995-999).¹⁰²

With respect to construction noise, the Company provided estimates of maximum levels of noise on site during construction, and estimates of resultant construction noise at the closest residence, located approximately 1,000 feet southwest of the proposed facility footprint (Exh. EFSB-EA-8-R3, App. D(1) at 14 -16). The Company indicated that the maximum levels of construction noise, which would occur during the excavation and finishing phases of construction, would be 63 dBA at this residence (*id.* at 16). The Company stated that it would minimize construction noise by (1) complying with Federal regulations limiting truck noise; and (2) ensuring that construction equipment manufacturers' normal sound muffling devices are used and are kept in good repair throughout the construction period (Exh. EFSB-EA-8-R3).¹⁰³ The Company also stated that it would attempt to minimize noise from pile driving if any pile driving were required for the project (Tr. 7, at 778).

The Company noted that cleaning and testing of the facilities' systems would require steam blows during the final stages of construction and plant commissioning (Exhs. EFSB-EN-44; TM-N-6).¹⁰⁴ The Company stated that silencers would be used to muffle the sound of steam blows, that the steam blows would not occur at night, and that the surrounding communities would be notified in advance of the date of the steam blows (Exh. EFSB-EN-43; Tr. 7, at 791 - 792).

2. Theriault Study

¹⁰² IDC noted that it had not committed to any specific time frame for developing and implementing the noise monitoring protocol (Tr. 8, at 1001).

¹⁰³ IDC noted that there are special measures that also can be used to mitigate construction noise, such as noise barriers and alternative construction techniques; however, IDC argued that this site does not warrant such measures due to its distance from sensitive receptors (Tr. 7, at 781 -782).

¹⁰⁴ The Company stated that the steam and/or air blows would take place over approximately four days per unit, and that each steam blow would last between 10 to 30 minutes, with 30 minutes to two hours between steam blows (Exh. TM-N-6).

Before it withdrew from this proceeding, the Town of Mendon retained a noise consultant, Michael D. Theriault of Michael D. Theriault Associates, Inc., who conducted an ambient sound level survey from January 29, 1999 to January 31, 1999, at two additional residential locations in Mendon ("Location 1" and "Location 2") set back from Route 140 toward the proposed site (Exhs. TM-MT, at 9; EFSB-TM-4a).¹⁰⁵ Mr. Theriault stated that NML-2, used by the Company to represent the nearest residential property potentially abutting the facility in the Town of Mendon, might not accurately represent that property since the property is 1500 feet from NML-2 and is shielded from existing distant noise sources by a slight valley (Exh. TM-MT at 8).¹⁰⁶ He also stated that the Company's measurements, taken from the roadway edge, may not be representative of the background levels relevant for assessing noise impacts from the proposed facility because the proposed facility noise would emanate from the rear of the residences (*id.* at 8).

At Location 1, Mr. Theriault took six 20-minute measurements between 2:00 a.m. and 4:00 a.m. on January 30 and 31, 1999, while at Location 2 measurements were derived from continuous monitoring over a 40-hour period (*id.* at 9; Exh. TM-N-18 at 2). Mr. Theriault stated that the lowest recorded L_{90} measurements were 26.8 dBA at Location 1 and 28 dBA at Location 2 (Exh. TM-MT at 9). Mr. Theriault stated that if the ambient sound level at the nearest residential location, R-1, were assumed to be 28 dBA, consistent with his measurements, at least three dBA of additional noise mitigation would be required to bring the predicted plant sound level at this location (41 dBA) into compliance with the MDEP Standard, which would limit noise levels to 38 dBA (*id.* at 10).

As discussed in Section I.B above, the Town of Mendon withdrew from this proceeding

¹⁰⁵ Mr. Theriault provided a map that indicated that Location 1 and Location 2 are set back approximately 400 and 800 feet, respectively, from Route 140 (Exh. TM-N-18, at 3).

¹⁰⁶ The Siting Board notes that receptor R-1, which is the receptor Mr. Theriault refers to as the nearest residential receptor, represents vacant, residentially-zoned land which is part of the Mendon parcel to be acquired by IDC as additional buffer.

prior to hearings and did not present Mr. Theriault for cross-examination.¹⁰⁷ IDC's witness, Mr. Keast, presented an alternative analysis of the 18 nighttime hours monitored by Mr. Theriault which suggested that nighttime L_{90} levels at Location 2 fall between 30 and 31.5 dBA (Exh. EFSB-RR-65). Mr. Keast stated that, assuming this ambient noise level, total ambient and facility noise at receptor R-6 (the nearest existing residence in Mendon) would be between 34.7 dBA and 35.3 dBA, resulting in a nighttime L_{90} increase at that receptor of between 3.8 and 4.7 dBA (*id.*).

3. NEA Noise

The Company provided correspondence dated February 26, 1999 from Northeast Energy Associates, LP to the MDEP with regard to an Enforcement Conference conducted by MDEP on February 2, 1999 (Exh. EFSB-RR-67A). The letter described the recommendations prepared by Tech Environmental, Inc. as part of a November 1998 noise analysis prepared for NEA (*id.*).¹⁰⁸ The letter also argued that the results of a DEP noise survey, taken on July 15, 1998, show full compliance with DEP's noise policy (*id.* at 5).

Attached to the letter was a draft Administrative Consent Order requiring NEA to: (1) install an acoustical blanket on the high pressure steam line to mitigate the sound emitted from

¹⁰⁷ The Company argues that because IDC did not have the opportunity to cross-examine Mr. Theriault, his testimony and information responses constitute hearsay (Company Brief at 84-85). The Company states that, on cross-examination, it would have sought to demonstrate that: (1) Mr. Theriault's noise analysis is incompatible with Massachusetts regulatory requirements and past practice; (2) the noise measurement locations were inappropriately selected and not reasonably likely to provide accurate representations of facility noise impacts; and (3) Mr. Theriault's data has not been demonstrated to be reliable, since the measuring equipment was left unattended, and the exact location of the NMLs is not known (Company Initial Brief at 85).

¹⁰⁸ The objectives of the November 1998 study were listed as: (1) identify the principal sources of tonal sound; (2) recommend control measures to reduce tonal noise along Box Pond Road; (3) oversee the installation of noise mitigation; and (4) document the reduction achieved after mitigation (Exh. EFSB-RR-67B).

the high pressure steam line located on the Box Pond side of the NEA plant;¹⁰⁹ (2) install an acoustical blanket and pipe lagging to mitigate the sound emitted from the cluster of outside gas pipelines next to the HRSG building;¹¹⁰ and (3) institute and enforce procedures to keep all doors closed during facility operation (*id.*). IDC argues, however, that there is no basis upon which to conclude that NEA's noise output will be reduced, and that it is not reasonable to assume that noise from NEA determines the ambient noise levels near the proposed IDC plant (Tr. 7, at 859; Company Brief at 86).

In response to questions from the Siting Board staff, Mr. Keast estimated the level of noise that would emanate from the NEA plant toward the Box Pond area, under the hypothesis that: (1) a pre-NEA background L_{90} noise level of 36 dBA was used to determine the maximum allowable limit for noise emanating from the NEA plant;¹¹¹ and (2) the plant just met this maximum allowable noise limit under the MDEP standard at its property line compliance point near Box Pond Road (Tr. 7, at 862 to 876). Mr. Keast stated that given these assumptions, NEA plant noise on Box Pond Road, 1200 feet from the center of the NEA plant, would be 46 dBA (*id.* at 871). Mr. Keast used a commonly accepted noise attenuation rule to estimate that the NEA plant noise would decrease to 40 dBA or less at a distance of 2400 feet from the NEA plant, and to 34 dBA or less at a distance of 4800 feet from the NEA plant (*id.*). When asked whether it was plausible that noise from the NEA plant could have been detected at nearly all the NMLs in IDC's noise survey if the NEA plant's noise emissions were consistent with the MDEP standard at the time of the survey, Mr. Keast testified that a trained observer might indeed have

¹⁰⁹ The February 26, 1999 correspondence stated that Tech Environmental, Inc. ("TEI") anticipated that this measure would reduce the sound source pressure level by 12 dBA, a 94 percent reduction in sound energy from the source (Exh. EFSB-RR-67A).

¹¹⁰ The February 26, 1999 correspondence stated that TEI anticipated that this measure would reduce the sound source pressure level by 10 dBA, a 90 percent reduction in sound energy from the source (Exh. EFSB-RR-67A).

¹¹¹ 36 dBA represents the quietest background L_{90} noise level measured by NEA at Box Pond Road prior to installing the NEA plant. The measurement was taken at 36 Box Pond Road, in the vicinity of noise measurement locations used in the present proceeding (Exh. EFSB-EN-52).

been able to detect noise from the NEA plant at a distant NML based on its spectral characteristics (id. at 877-878).

4. Intervenor Positions

CCOB/BPA argued that, if IDC's Petition is approved, the Siting Board should condition such approval on (1) a requirement that IDC implement additional noise mitigation as described in this proceeding, and (2) a requirement that IDC implement a rigorous noise monitoring program negotiated with the Town and with residents of the affected communities (CCOB/BPA Initial Brief at 14). CCOB/BPA argued that the cost of additional noise mitigation would be minimal in light of the savings to the Company from building the proposed facility near to electric and natural gas infrastructure (id. at 9). CCOB/BPA also argued that noise limitations stricter than the general rule are appropriate since the community has been sensitized to noise from the NEA facility, and stated that limiting such increases to 7 dBA above ambient would be reasonable (id. at 9). In addition, CCOB/BPA asserted that the Company's projected plant noise levels are not based on warranted performance, and have no reliable basis (CCOB/BPA Initial Brief at 9; CCOB/BPA Reply Brief at 3).

CCOB/BPA argued that rigorous monitoring of the noise impacts of the facility will be necessary in light of the record of the existing NEA facility (id.). CCOB/BPA alleged that the NEA facility produces unacceptable noise levels due to operating and design flaws and argued that since the NEA facility and the IDC project now have common owners, noise from the NEA plant is within the applicant's control (id. at 9; CCOB/BPA Reply Brief at 3). CCOB/BPA asserted that NEA, without admitting a violation of the law, has conceded the need to reduce noise at its plant (CCOB/BPA Initial Brief at 9).

Ms. Eckert asserted that IDC's ambient noise measurements are not accurate or reliable (Eckert Reply Brief at 3-4). She asserted that the Theriault study shows ambient noise levels six dBA lower than those measured by IDC, and argued that noise mitigation beyond that proposed by IDC is therefore appropriate (Eckert Initial Brief at 1-2; Eckert Reply Brief at 3).

The Beauchamps asserted that IDC's ambient noise measurements have been exaggerated in order to ease compliance with noise guidelines (Exh. EFSB-BEA-2; Beauchamp Brief at 2).

The Beauchamps pointed to the lower ambient noise measurements taken by Mr. Theriault as reason to require further mitigation (*id.*). In addition, the Beauchamps suggested that a third party analysis of the disparity between the measurements taken by IDC and by Mr. Theriault would be appropriate (Exh. EFSB-BEA-2). Further, the Beauchamps disputed IDC's estimate of ambient noise at their property, arguing that the measurements were taken on a busy roadway rather than at the back of the property (Beauchamp Brief at 3).

The Beauchamps asserted that the noise from the existing NEA facility is a nuisance at their residence and has caused sleep disruptions (Exh. EFSB-BEA-2, at 2). They noted that this lack of sleep is particularly detrimental to Mrs. Beauchamp, who has been diagnosed with Fibromyalgia (*id.* at 2). Finally, the Beauchamps alleged that the noise increases that would be created by the operation of the proposed facility would affect their sleep, act as a nuisance, contribute to noise pollution and prevent the comfortable enjoyment of their property (*id.* at 3).

Ms. Johnson asked the Siting Board to consider the cumulative noise effects of other power plants being built in the area, including the ANP Bellingham and Blackstone projects (Johnson Initial Brief at 5). Ms. Johnson also asked the Siting Board to give serious consideration to Mr. Theriault's noise monitoring results (*id.*).

5. Analysis

In past decisions, the Siting Board has reviewed the noise impacts of proposed facilities for general consistency with applicable government regulations, including the MDEP's 10 dBA standard. Mystic Decision, EFSB 98-8, at 54 (1999); ANP Blackstone Decision, EFSB 97-2/98-2 (1999), at 153; 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. Mystic Decision, EFSB 98-8, at 54 (1999); ANP Blackstone Decision, EFSB 97-2/98-2 (1999), at 153; Northeast Energy Associates, 16 DOMSC 335, at 402-403.

Here, IDC has presented an analysis of the noise impacts of the proposed facility based on background noise monitoring at ten locations surrounding the proposed site. The intervenors have argued that IDC's noise monitoring data, and therefore its analysis of noise impacts, are

suspect for two reasons. Ms. Eckert, the Johnsons, and the Beauchamps all argued that the disparity between IDC's noise monitoring results and those of Mr. Theriault suggests that IDC's monitoring overstates ambient noise – in other words, they argued that IDC's monitoring results for some reason do not accurately reflect ambient noise levels. CCOB/BPA does not challenge the accuracy of IDC's noise monitoring results, but argued that the ambient levels reflect unacceptable noise levels at the existing NEA Bellingham plant, which NEA has committed to correcting. The Siting Board addresses these issues separately.

As discussed above, Mr. Theriault's testimony¹¹² focused on the likely noise impacts from the facility at "the nearest residential property potentially abutting the facility in the Town of Mendon" (IDC's receptor R-1). He pointed out that this property was located 1500 feet from IDC's NML-2 and was shielded from distant noise sources by a slight valley. He therefore took noise measurements at two locations which he felt more accurately represented conditions at receptor R-1, and found them to be significantly lower than the levels measured by IDC at NML-2. The Siting Board notes that receptor R-1 represents the undeveloped but residentially zoned Mendon Parcel, which the Company now intends to acquire and keep as undeveloped buffer. Thus, the issue of whether measurements taken at NML-2 accurately reflect conditions at receptor R-1 is moot.

The question of whether Mr. Theriault's numbers are inconsistent with, and cast doubt upon the accuracy of, IDC's noise monitoring results remains of interest. In this regard, the Siting Board notes that Mr. Theriault specifically selected his noise monitoring locations to reflect ambient noise conditions very different from those at IDC's NML-2, seeking more shielded locations set back from Route 140 in an area to the north of NML-2 and at a greater distance from the NEA plant. Thus, Mr. Theriault's measurements are lower than IDC's by design, and do not cast doubt upon the accuracy of IDC's measurements.

¹¹² The Siting Board notes that Mr. Theriault's testimony is unsworn and that he was unavailable for cross-examination with regard to the assumptions and techniques underlying his testimony. We therefore can place only limited weight on the evidence which he presented. Nonetheless, for the sake of completeness and to respond to issues raised by intervenors, we review it here.

The intervenors also suggest that Mr. Theriault's monitoring numbers should be used for purposes of determining compliance with MDEP noise control policies, presumably for residences represented by receptor R-6. The record indicates that NML-2 and receptor R-6 both are located along Route 140, while Mr. Theriault's Location 1 and Location 2 are set back from Route 140, away from traffic noise. The Siting Board therefore concludes that ambient noise conditions at receptor R-6 are more similar to those at NML-2 than to those at Location 1 or Location 2. At the same time, we recognize that a location set back from Route 140 may be more appropriate for assessing noise impacts in the back yards of some affected residences. However, Mr. Theriault's receptor locations are 400 to 800 feet from Route 140, and thus represent conditions in back portions of the deeper residential lots, rather than at the rears of residences in the vicinity of receptor R-6. In addition, the Company calculated that the nighttime L_{90} noise at residences represented by Receptor R 6 would increase from 3.8 to 4.7 dBA, using its own estimate of existing L_{90} noise derived from Mr. Theriault's measured nighttime noise at Location 2. This result is consistent with the maximum noise increase of 5 dBA that the Company expects at all residential receptors, excepting receptor R-4.

With respect to noise from the NEA facility, the record shows that NEA has, from time to time, left turbine building doors open, thus creating unnecessary noise. In addition, the record indicates that the current owners of the NEA plant have instituted inspection policies that should ensure that doors remain closed, and also have agreed to muffle noise from the high pressure steam line and at gas pipelines and valves, which were emitting high-pitched noises. These steps should reduce somewhat the general noise from the NEA facility.

The record also suggests that one identified cause of unnecessary noise from the NEA plant – open doors – is intermittent, and that this noise was not necessarily present when IDC took its noise measurements.¹¹³ However, the muffling of the steam lines, gas pipelines and

¹¹³ In fact, the record suggests that the Company's measurements taken at NML-6, NML-7, NML-8, and NML-9 (the noise monitoring locations in the Box Pond area near the NEA plant) are at levels that would be expected if the NEA plant were operating in compliance with the MDEP 10 dBA noise standard. The estimates in the record of hypothetical noise
(continued...)

valves likely would reduce ambient noise levels to a limited extent. The Siting Board therefore concludes that future ambient noise levels (*i.e.*, noise levels with a quieter NEA plant, but without the IDC plant) in the Box Pond area may be slightly less than those monitored by IDC.

IDC's noise impact analysis indicates that L_{90} noise increases at property lines would range from 3 dBA to 8 dBA, well within the MDEP limit of 10 dBA. The analysis also indicates that daytime and nighttime L_{90} increases would be 4 dBA or less at all residential receptors except receptor R-4, which represents the closest residence to the proposed site, on a bend in Box Pond Road. At receptor R-4, the maximum daytime L_{90} increase would be 7 dBA, and the maximum nighttime increase would be 8 dBA. The Siting Board notes that the actual increase at this receptor could be slightly higher if ambient noise levels are reduced due to changes at the NEA plant. The Siting Board also is generally concerned about the impacts of the proposed facility on residences along Box Pond Road, which will be sandwiched between two major noise sources approximately half a mile apart. The Siting Board believes that it is important to take all cost-effective measures to limit noise increases in this area, particularly since the proposed site was rezoned from residential to industrial in order to accommodate this project.

The Siting Board has accepted increases of 8 dBA or more at residential receptors in the past, but only after considering whether cost-effective alternatives existed for additional mitigation. 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. In this proceeding, the Company has identified a noise mitigation alternative — the R-4 alternative — which would reduce L_{90} increases at receptor R-4 to 5 dBA at a cost of approximately \$1.4 million. The noise mitigation measures which make up this alternative generally reduce noise to the south of the plant, and should reduce noise increases at the other residences along Box Pond Road to levels at or below the 3 dBA threshold of noticeable noise. The R-4 alternative should

¹¹³

(...continued)

impacts from the NEA plant along Box Pond Road, which are assumed levels of the highest permissible plant noise along Box Pond Road consistent with a pre-NEA ambient noise level of 36 dBA, exceed IDC's measurements of ambient noise levels in similar locations.

also reduce noise impacts to the west and south-west of the plant, along parts of Route 140 in Mendon.

While the cost of the R-4 alternative is not insignificant, the Siting Board previously has recognized that a larger facility can, in general, support larger expenditures for mitigation of environmental impacts, where such expenditures are cost-effective. ANP Blackstone Decision, EFSB 97-2/98-2, at 157 n.137. Here, in light of the uncertainty regarding future ambient noise levels and our concern about the residences along Box Pond Road, the Siting Board finds the R-4 alternative to be cost-effective. Consequently, the Siting Board directs IDC to implement additional noise mitigation that would limit L_{90} noise increases at receptor R-4 to 5 dBA.

The record indicates that IDC will be required by MDEP to conduct compliance noise monitoring after the facility begins operation, and that IDC also has committed to the Bellingham Board of Selectmen to conduct a periodic post-construction monitoring program.¹¹⁴ However, the Siting Board notes that IDC has not set forth a schedule for implementing a noise monitoring program, and further that the noise compliance monitoring required by MDEP as part of the PSD/NSR Air Plan approval typically involves only the first year of operation. Therefore, the Siting Board directs the Company in consultation with the Bellingham Board of Selectmen and MDEP to develop a noise compliance monitoring protocol and baseline noise measurements, taken on a schedule chosen in consultation with MDEP, that allow for the implementation of an on-going periodic noise monitoring program to begin within six months of the commencement of commercial operation. IDC shall submit a copy of the noise compliance monitoring protocol to the Siting Board prior to the commencement of commercial operation. In the process of developing this protocol the Company, the Board of Selectmen and MDEP should provide to the intervenors in this proceeding an opportunity to comment on their proposed protocol. The Siting

¹¹⁴ In a recent conditional air plan permit for a generating facility issued on or about April 16, 1999, MDEP set forth technical requirements for noise monitoring and the following minimum requirements pertaining to the timing of said monitoring: (1) monitoring shall be for one day per month for 12 months after commencement of commercial operation; (2) monitoring shall commence within 30 days of commercial operation; and (3) monitoring shall be for a continuous time period of 24 hours per day (Exh. IDC-12, at 13).

Board notes that this combination of compliance and ongoing periodic monitoring provides an appropriate means of verifying that the proposed facility meets applicable noise limits and that its noise impacts are consistent with representations made in this record.

The Siting Board finds that, with the implementation of above mitigation, the environmental impacts of the proposed facility with respect to operational noise would be minimized.

With respect to construction noise impacts, the Siting Board finds that adherence to the Company's proposed construction practices concerning truck and machinery noise, combined with the proposed mitigation of steam release events, would minimize construction-related noise impacts.

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 noise.

H. Safety

This Section describes the safety impacts of the proposed facility with regard to overall safety, materials handling and storage, fogging and icing, and the Emergency Response Plan.

IDC stated that to help insure safety at the proposed facility it would comply with federal, state, and local regulations in its design, construction and operation activities (Exh. EFSB-ES-7). IDC stated that the proposed facility would be designed with control system surveillance and tripping schemes capable of shutting down the facility if necessary (Exh. CCOB-ES-7). Further, the Company indicated that, when operational, the facility would be equipped with automatic gates and remote-monitored television cameras, and that the control room would be staffed 24 hours per day, 365 days per year (*id.*). With regard to construction, the Company stated that it would install a construction fence around the site, and employ on-site security guards (Tr. 6, at 712-713).

1. Materials Handling and Storage

IDC indicated it would store aqueous ammonia¹¹⁵ on site in a 40,000 gallon tank surrounded by a 110 percent capacity concrete dike (Exhs. EFSB-ES-1-R; EFSB-EA-8-R3, at 6-35). The Company also agreed to construct a containment building enclosing the diked area and the dikes, but noted that the building would be vented in order to prevent pressure buildup (Exhs. RR-EFSB-33; EFSB-ES-25; Tr. 6, at 640). IDC stated that the ammonia tank would be equipped with a remote sensor gauge that would monitor the level of ammonia and trigger an alarm in the event that amounts fell to an unacceptable level (Exh. EFSB-ES-1R). The Company stated that the transfer of ammonia from delivery vehicles would occur within a bermed unloading area (id.).

The Company provided an off-site consequence analysis of a worst-case spill of the entire ammonia tank, both with and without the containment building (Exh. EFSB-EA-8-R3, at 6-35 to 6-38).¹¹⁶ Without the containment building, concentrations would be at or above the toxic endpoint level¹¹⁷ of 200 ppm up to a point approximately 317 feet from the ammonia tank, while the closest fence line and property boundary are located approximately 1500 feet to the south (Exhs. EFSB-EA-8-R3, at 6-38; EFSB-ES-5R). IDC also provided information that modeled the impacts based on total enclosure of the tank in a containment building, such that the worst case concentration at a distance of 138 feet from the ammonia tank building would be 1.30

¹¹⁵ The aqueous ammonia to be used in the proposed facility's's SCR system is 19 percent ammonia in water (Exhs. EFSB-ES-1R; EFSB-EA-8R3, at 6-35).

¹¹⁶ The analysis was performed using the Offsite Consequence Analysis Guidance, developed by USEPA as part of the 1990 CAA Title III Risk Management program (Exh. BEA3-S-3S).

¹¹⁷ 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 nearly all individuals, could be exposed for up to one hour without experiencing serious or irreversible health effects or symptoms that could impair an individuals ability to take corrective action (Exhs. EFSB-ES-5R; BEA-3-S-3S at 5).

ppm (Exh. RR-EFSB-33).¹¹⁸ This then confirmed that 10 ppm¹¹⁹ and 50 ppm¹²⁰ concentrations could occur only at points within 138 feet of the ammonia tank building (*id.*). The Company stated that the maximum hour ground level concentration at the closest residence under a worst-case catastrophic spill with the containment building would be 0.49 ppm (*id.*).

The Company stated that the aqueous ammonia would be delivered in standard tanker trucks with a capacity of 6,500 to 7,000 gallons, at an average of five truckloads a week (Exh. EFSB- ES-1-R). The Company asserted that the tankers are practically impenetrable and are designed to withstand impacts from a similarly sized truck (Exh. BEA3-S-3S). IDC indicated that the delivery schedule would be set to avoid nighttime deliveries, peak hours of travel, and school bus schedules (*id.*; Tr. 6, at 697-698, 702-703).¹²¹

CCOB/BPA asserted that all residents along town streets between the highway and the plant are at risk of an accidental ammonia spill, with the potential for respiratory distress and the exacerbation of existing respiratory illnesses (CCOB/BPA Initial Brief at 3). CCOB/BPA noted that the Company plans to deliver, on average, one tanker truck of aqueous ammonia per business day, and that an accidental truck rupture and spill is possible (*id.* at 10). CCOB/BPA further asserted that the use of high volumes of ammonia constitutes a significant health and safety hazard to residents and travelers on roadways in the vicinity of the proposed plant due to the high likelihood of icing on the roadways (Exh. CCOB-AB-1, at 9).

¹¹⁸ The model used by the Company did not provide estimates of concentrations at distances less than 138 feet (Exh. RR-EFSB-33).

¹¹⁹ The Company stated that 10 ppm is the level of perceptibility as detectible through the use of sensitive instrumentation measuring pulmonary function in asthmatics (Exh. RR-BEA-1; Tr. 6, at 625, 709).

¹²⁰ The Company noted that 50 ppm is the odor threshold for ammonia, and that at 50 ppm a person could experience discomfort in the form of tearing and sore-throat irritation (Exh. RR-BEA-1; Tr. 6, at 722).

¹²¹ The Company stated that it would direct the supplier to avoid the following delivery times: 6:30 a.m. to 8:30 a.m.; 2:30 p.m. to 3:30 p.m.; and 4:30 p.m. to 6:30 p.m., as well as weekends (Exh. BEA3-S-3S).

2. Fogging and Icing

IDC asserted that since its air cooled system does not have a saturated exhaust air flow and/or drift, there is no potential for fogging or icing from the proposed facility (Exh. EFSB-ES-23). The Company explained that the release of water vapor from an elevated stack does not lead to fogging and icing; it asserted that such concerns are associated with wet cooling towers with short stacks and greater water use (Exh. EFSB-ES-23; Tr. 6, at 676).

3. Emergency Response Plan

The Company indicated that it would develop a facility-specific Emergency Response Plan ("ERP") and a Spill Prevention, Control and Countermeasure Plan ("SPCCP")¹²² to address all on-site emergencies in coordination with the Bellingham Fire Department¹²³ and the Local Emergency Planning Committee¹²⁴ (Exhs. EFSB-ES-5; CCOB2-G-2S; BEA2-S-3). IDC explained that the SPCCP and ERP plans would be combined in one document consisting of two parts, a construction emergency response plan and an operation plan (Tr. 6, at 669, 709). In addition, the ERP would contain procedures for providing adequate notice to area residents and Town officials with regard to public safety actions (Exh. EFSB-ES-21). IDC stated that the Company and its EPC contractor would coordinate with Town officials to incorporate the existing NEA Bellingham facility into IDC's ERP and would coordinate with NEA to have IDC incorporated into NEA's ERP (Exh. EFSB-ES-7). The Company stated that the final plan would

¹²² IDC stated that the SPCCP would address aqueous ammonia, sulfuric acid, and caustic deliveries (Tr. 6, at 709).

¹²³ The Company stated that the Bellingham Fire Department has a hazardous response trailer, which is equipped to deal with the releases of petroleum products (Exh. RR-EFSB-32). The Company explained that the fire department does not have equipment to respond to ammonia releases, and has deemed such equipment unnecessary given the facility's proposed use of aqueous, rather than anhydrous ammonia, and the existence of the Regional Hazardous Material Response Program (*id.*).

¹²⁴ The Local Emergency Planning Committee reviews the emergency response information submitted by facilities in the local community and is responsible for the preparation and maintenance of local district emergency response plans (Exh. EFSB-ES-22).

not be completed until detailed design and construction planning for the proposed project begins (Exhs. CCOB2-G-2S; BEA2-S-3).

The Conservation Commission noted that measures should be taken to allay community fears relative to physical safety due to the construction and operation of the proposed project (BCC Brief at 4). Therefore, the Conservation Commission suggested that as a condition of approval, the Siting Board require the Company to develop, in conjunction with the Bellingham Fire and Police Departments and fire and police departments in surrounding communities, an emergency response mutual aid plan to address contingencies that may arise from the operation and construction of the proposed facility (id.).

The Beauchamps asserted that the Company has not provided any comprehensive emergency and safety plans (Beauchamp Brief at 3). The Beauchamps questioned IDC's assumption that the local authorities would have the resources and expertise to handle a catastrophic event at the IDC facility or simultaneous events at other facilities in the area (id.). CCOB/BPA noted that the Company has not yet developed an emergency response plan, and that IDC intends to rely on public aid and the mutual aid of other communities in the event of simultaneous emergencies at two or more plants (CCOB/BPA Initial Brief at 10).

4. Analysis

The record demonstrates that aqueous ammonia would be properly managed, stored, and transported in accordance with applicable public and occupational safety and health standards. The Company's modeling results demonstrate that in the event of a worst-case release of ammonia, ammonia concentrations would be at or below 1.3 ppm at 138 feet or beyond, well below both the toxic endpoint of 200 ppm and the 10 ppm threshold for perceptibility. Thus, even a worst case ammonia spill would not affect the safety of any person beyond the site boundary. CCOB/BPA argued that safety risks from the use and storage of ammonia could be eliminated entirely by requiring the use of NO_x control technologies that do not require ammonia. However, as discussed in Section III.B. above, the record does not demonstrate that

such technologies are commercially available at the present time.¹²⁵ The Siting Board therefore concludes that IDC has taken all steps that are feasible at this time to minimize the safety risks from ammonia.

With respect to chemical storage and handling, the record demonstrates that the Company has designed facilities for the proposed project to avert spills of hazardous materials. 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 notes that concerns have been raised regarding the number of power plants in the Bellingham area and the ability of the Bellingham Fire and Police Departments (1) to respond to simultaneous emergencies at more than one facility, and (2) to coordinate with other communities without specific guidelines. Therefore, the Siting Board directs the Company to: (1) complete the construction section of its emergency response plan and file it with the Towns of Bellingham and Mendon before construction begins in order to cover possible contingencies related to construction accidents; (2) have trained personnel and equipment ready to address construction-related contingencies; (3) work with the Local Emergency Planning Committee to conduct an inventory of the equipment available and the ability of Bellingham and cooperating communities to respond to operational emergencies at the proposed facility either alone, or in conjunction with a simultaneous emergency at another major commercial or industrial facility in the area; and (4) based on the inventory, agreed upon by the Local Emergency Planning Committee, provide to the Town of Bellingham and to other towns that would provide emergency assistance to Bellingham, an appropriate share based on the number of other industrial uses that could place similar demands on communities' emergency response capabilities of the equipment and/or resources necessary to handle such an event.

¹²⁵ As discussed above in Section III. b, the Siting Board recognizes that it is possible that MDEP may require zero ammonia technologies as part of its air permitting process in the event that such technology becomes commercially available for a facility of this size. In that case, the above issue concerning ammonia safety would not be applicable to the proposed facility.

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

The 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 103). In support of its assertion, the Company provided traffic volume data for existing traffic conditions, and modeled future traffic conditions, with and without the proposed facility (Exhs. IDC-1, at 6.9-1, Table 6.9-1; EFSB-ET-3-S3). The Company's analysis examined the expected traffic flows and impacts that would result from both facility construction and operation (Exh. ET-S-S3). The Company stated that the traffic counts used in its analysis were done in 1997 and that a three percent annual growth factor was used to capture the increase in traffic associated with commercial growth in the area (Tr. 1, at 108). IDC asserted that access to the proposed site is very good (*id.* at 106).

The Company indicated that existing peak commuter traffic periods in the vicinity of the proposed site are from 8:00 a.m. to 9:00 a.m., and from 5:00 p.m. to 6:00 p.m. (Exh. IDC-1, at 6.9-1). IDC stated that it is committed to having virtually all of its construction traffic arrive between 6:00 a.m. and 7:00 a.m., and depart between 2:30 p.m. and 3:30 p.m. (Exh. EFSB-ET-3-S3; Tr. 1, at 113-114; Tr. 2, at 220-221).¹²⁶ The Company explained that it intended to stagger the arrival and departure of workers within the designated hours through shift scheduling (Tr. 1,

¹²⁶ The record shows that the length of the construction shift is 8.5 hours, incorporating ½ hour for lunch (Tr. 2, at 222).

at 113-114). The Company indicated that construction would not ordinarily take place during the night or on weekends, with the exception of procedures that require continuous activity and inside work such as electrical contracting (Exh. IDC-1, at 6.9.9; Tr. 1, at 75-77).

IDC stated that the primary route to the site for construction worker traffic would be via I-495 (Exit 18), to Route 126 west, to Hartford Avenue to Depot Street, and then south on Depot Street to the proposed site (Exh. IDC-1, at 6.9-9).¹²⁷ The Company provided a model timetable for construction of the proposed facility, and indicated that the most intensive construction activity at the site would occur during months nine to twenty of the planned 24 month construction schedule (Exh. IDC-3, at 4.5-3).¹²⁸ The Company stated that up to 500 construction workers could be employed on the site at any one time during the peak months of construction (Exh. EFSB-ET-3-S2).

The Company identified two key roadway intersections that might be affected by construction-related traffic, and presented a comparison of expected levels of service ("LOS")¹²⁹ at those intersections with and without the proposed facility (Exhs. IDC-1, at 6.9-1 to 9-3; EFSB-

¹²⁷ The Company anticipated that 70 percent of construction traffic would arrive following the primary route, 20 percent of the traffic would come north through Bellingham Center, traveling up Depot Street from the south, and 10 percent would arrive from the west via Hartford Avenue, and then travel south on Depot Street (Exh. IDC-1, at 6.9-9). IDC stated that it expected that workers would travel home along the same routes (*id.*). IDC postulated that in the unlikely case that its model under-predicted traffic congestion, and the controls at Hartford Avenue/Depot Street were inadequate, then more of the traffic exiting onto Depot Street would travel south (Tr. 1, at 80).

¹²⁸ IDC also testified that months eight through seventeen would have the most workers on site (Tr. 1, at 84).

¹²⁹ The Company stated in an LOS analysis, that traffic conditions on roadways and at intersections are represented by the letters A to F on the LOS scale, 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-ET-12).

ET-S3). These two intersections were: (1) Hartford Avenue/Depot Street,¹³⁰ to the northeast of the proposed site; and (2) Depot Street/North Main Street (Bellingham Center), to the southeast of the proposed site (Exh. IDC-1, at 6.9-1 and Fig. 6.9-1).

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 100 percent of the workers would arrive at the designated hours of 6:00 a.m. to 7:00 a.m. ("morning arrival time") and depart between 2:30 p.m. to 3:30 p.m. ("afternoon departure time") (Exh. EFSB-ET-3-S3).¹³¹ The Company indicated that currently the Hartford Avenue/Depot Street intersection operates at LOS C for afternoon departure time, north and southbound, through Depot Street, and at LOS A or B for all other movements (Exh. EFSB-ET-3-S3).¹³² IDC indicated that, during the construction period,¹³³

¹³⁰ North of the intersection of Hartford Avenue/Depot Street, Depot Street becomes Grove Street (Exh. IDC-1, at Fig. 6.9-1).

¹³¹ The Company noted that, to provide a conservative estimate of the impacts of construction-related traffic impacts, it is customary to use existing peak-hour traffic for background and to add on plant-related traffic, even if plant traffic is scheduled to be off-peak (Tr. 2, at 212). The Company presented an alternative analysis using existing peak hour traffic volumes to represent existing conditions for the hours of arrival and departure (Exh. ET-3-S2). This analysis assumed 70 percent of the construction workers would arrive during these peak traffic conditions (*id.*). However, the analysis only provided results for four of the eight movements (*id.*). Based on this incomplete analysis, IDC concluded that the Hartford Avenue/Depot Street intersection would operate at LOS D at morning peak time, northbound, and LOS C at morning peak, southbound, and for the other two movements the LOS is B, assuming the use of a traffic control officer (*id.*). The Company indicated that the Depot Street/North Main Street intersection would continue to function at LOS A or B, with the exception of west-bound movements during the afternoon peak (*id.*). The west-bound movement, which currently operates at an LOS C, would drop to an LOS D during the construction period (*id.*).

¹³² The Company indicated that the Hartford Avenue intersection currently operates at LOS C for both the morning and afternoon peak, northbound, and for the morning peak, southbound; and LOS D for the afternoon peak, southbound (Exhs. EFSB-ET-3S; EFSB-ET-3-S2).

¹³³ The Company indicated that its analysis of construction-related traffic assumed an
(continued...)

northbound traffic through this intersection would experience LOS C during both the morning and afternoon departure times, and southbound traffic would experience LOS C during the morning arrival time; the LOS for all other movements through this intersection would be LOS A or B, assuming the use of a traffic control officer (id.).¹³⁴ The Company indicated that the Depot Street/North Main Street intersection currently exhibits minimal delays with a rating of LOS A or B during the morning and afternoon departure hours, and stated that the intersection would continue to function at these same levels during the construction period, with the exception of westbound movements during the afternoon departure time, which would operate at LOS C (id.).

The Company stated that it proposes to mitigate construction traffic impacts at the Hartford Avenue/Depot Street intersection by scheduling shift changes so as to avoid local peak traffic periods, and by arranging with state and local authorities to provide uniformed officer controls at that location during the morning and afternoon shift changes (Exh. EFSB-ET-5; Tr. 1, at 84). IDC noted that it plans to work with the Bellingham Police Department to prepare a comprehensive traffic control strategy for the entire construction period (Tr. 1, at 217). IDC noted that, due to the location of the proposed site, it did not anticipate that workers would choose to travel through residential neighborhoods in order to reach the site (id. at 104). However, the Company stated that it would discuss with Bellingham officials possible measures to discourage construction workers from using residential side streets (id.).

With respect to site access, the Company provided a traffic analysis of the site entrance during construction without officer control, showing that the morning site ingress would operate at LOS A and afternoon site egress would operate at LOS B (Exh. EFSB-ET-3-S3). The Company indicated that it would review traffic needs at the site entrance and provide a traffic

¹³³ (...continued)
occupancy rate of 1.11 workers per vehicle, with expected ride-sharing, and noted that the allowance for ride-sharing was conservative (Exh. IDC-3, at 4.5-3).

¹³⁴ Without the use of a traffic control officer, (1) the southbound approach to the Hartford Avenue/Depot Street intersection would drop from LOS B to LOS D during the morning arrival time, and would drop from LOS C to LOS E during the afternoon departure time, and (2) the northbound approach to the Hartford Avenue/Depot Street intersection would drop from LOS C to LOS D during the afternoon departure time (Exh. EFSB-ET-3-S3).

control officer if warranted (Tr. 2, at 214).

The record shows that four Bellingham school buses travel along Hartford Avenue and Depot Street between 6:50 a.m. and 8:00 a.m., four more buses travel on Depot Street between 7:00 a.m. to 7:15 a.m., and another bus stops at Depot Street and North Main Street at 8:00 a.m. (Exh. EFSB-ET-4). The return route times for all Bellingham school buses fall between 2:00 p.m. and 2:50 p.m. (*id.*). In addition, the Mendon School system runs one mini-bus along Hartford Avenue at 8:05 a.m. and again at 3:15 p.m. (Exh. RR-EFSB-7). IDC indicated that it would consider school bus schedules during traffic planning in order to avoid conflicts with construction traffic (Tr. 1, at 115-116).¹³⁵

The Company indicated that, in addition to traffic generated by construction worker trips, vehicle round-trip construction traffic would generally include 10-20 deliveries daily, with between 22 and 27 delivery vehicle round trips daily during the five-month peak construction period (Exh. IDC-3, at 4.5-9).¹³⁶ The Company stated that deliveries of very large equipment and plant components would be scheduled for off-peak periods and that the Company would coordinate such deliveries with state and local officials (Exhs. IDC-3, at 4.5-9; EFSB-ET-15; Tr. 1, at 101-103). IDC indicated that it would instruct its vendors to travel to and from the proposed site via I-495 (Exit 18) to Hartford Street to Depot Street (Exh. EFSB-ET-15).¹³⁷ The Company stated that its contractors would not begin detailed evaluations of heavy equipment transport until the equipment has been ordered and the shipping schedule has been established by its EPC contractor (Tr. 1, at 102-103). IDC asserted that its EPC contractor would be responsible for delivering the loads to the proposed site and implementing appropriate measures, such as

¹³⁵ IDC asserted that both Hartford Avenue and Depot Street have good visibility and that construction workers obey school bus laws very carefully (Tr. 1, at 89).

¹³⁶ The Company stated that in assessing impacts, it conservatively assumed that five delivery round-trips would occur during each of the morning and afternoon peak hour periods (Exh. IDC-3, at 4.5-9).

¹³⁷ The Company explained that although the above route is its preferred route, the final routing will be established by the EPC contractor based on the logistics of the equipment components (Exh. EFSB-ET-15).

road improvements, to address heavy loads on the local delivery route(id.).

The Company stated that once the facility is fully operational, 18 employees would be on site in three shifts over a typical 24-hour period (Exh. EFSB-ET-3-S3). The Company stated that, once operational, the proposed facility would have insignificant impacts on local traffic conditions (Exh. IDC-1, at 6.9-13).

2. Analysis

The Company's primary traffic analysis ¹³⁸ demonstrates that there would be minimal changes in LOS classification at the Hartford Avenue/Depot Street intersections as a result of either the construction or the operation of the proposed facility, assuming the use of a control officer during the construction period. During the morning arrival time, two approaches would drop from LOS B to LOS C, which is considered acceptable, while all others would remain at LOS A or B. The Siting Board notes that these analyses reflect the Company's commitment to: (1) schedule shift changes to occur outside of the identified local peak traffic hours;¹³⁹ and (2) coordinate with state and local authorities to place a uniformed officer control at the Hartford Avenue/Depot Street intersection during periods of maximum flow of construction traffic. The

¹³⁸ The Siting Board notes that IDC revised its traffic analyses a number of times during the course of this proceeding, sometimes without clear explanation of its reasons for doing so. The Siting Board urges petitioners to submit complete and coherent traffic studies, including an LOS analysis, as part of their petitions in order to assist staff in reviewing the traffic impacts of proposed projects.

¹³⁹ The Siting Board notes, that the Company's analysis differs from other traffic studies reviewed by the Siting Board, in that its baseline traffic counts reflect traffic during the morning and afternoon travel times, rather than the morning and evening peak traffic periods. In this case, the Company's proposed times for construction worker arrival and departure (6:00 a.m. to 7:00 a.m. and 2:30 p.m. to 3:30 p.m., respectively) differ significantly from the actual peak commuter hours in the vicinity of the proposed project (8:00 a.m. to 9:00 a.m. and 5:00 p.m. to 6:00 p.m.); the Siting Board therefore concludes that the Company's analysis provides a reasonably accurate assessment of likely construction traffic impacts. In cases where construction shift changes fall closer to, or overlap with, local peak commuting hours, developers should present a traffic analysis that also addresses traffic counts for the peak traffic periods.

Siting Board agrees that such efforts would be consistent with those proposed and accepted in previous reviews of generating facilities. The Company's analysis and its proposal to implement traffic control at only one intersection also is based on the premise that 80 percent of the workers would travel to the site from the north and depart using the same route, thus avoiding Bellingham Center and possible construction worker traffic associated with ANP Bellingham. The Company has noted that there is the potential for additional traffic impacts in areas south of the site if actual construction traffic routing differs from these projections.

The record indicates that with the exception of one school bus route, workers will be arriving prior to the scheduled morning school bus traffic. However, because the afternoon school bus route is scheduled to run from 2:00 p.m. to 2:50 p.m. on Depot Street and Hartford Avenue, school bus traffic would likely coincide with the departure of the construction workers at 2:30 p.m. to 3:30 p.m. Given the number of workers expected to be traveling along these routes, the Company should take steps to control project related traffic in order to help protect school children exiting from the buses, and to minimize the potential increase in traffic congestion associated with project-related traffic along the school bus route. Adjustments to the release rates for construction workers between 2:30 p.m. and 2:50 p.m., and perhaps the direction of their travel on Depot Street may be effective in mitigating potential conflicts; to determine appropriate adjustments, the Company must coordinate project-related traffic with precise Depot Street bus route schedules.

The Company plans to schedule delivery of very large equipment and plant components for off-peak hours and intends to coordinate such deliveries with the appropriate state and local officials. Although the Company has identified a likely route for such deliveries, it has not yet determined whether road improvements would be needed to accommodate deliveries of very large plant components. If significant improvements are needed, additional traffic impacts could result from the road work.

Based on the above, the Siting Board directs IDC to work with its EPC contractor and the

Town of Bellingham¹⁴⁰ to develop and implement a traffic mitigation plan which addresses scheduling and any necessary roadway construction or improvements. This plan should: (1) to the extent practicable, address scheduling of arrivals and departures of construction-related traffic, including but not limited to construction labor, deliveries of materials, equipment, and plant components, so as to avoid daily peak travel periods in affected areas; (2) include steps to minimize traffic impacts associated with any roadway modifications, or other improvements, that may be required to effect delivery of large plant components; (3) include steps to minimize conflict with school bus schedules; (4) include the provision of a traffic control officer at the Hartford Avenue/Depot Street intersection for a minimum of the nine to eleven months designated as peak on-site construction; (5) include an arrival schedule of between 6:00 a.m. to 7:00 a.m. and a departure schedule of between 2:30 p.m. and 3:30 p.m. for construction workers; and (6) establish protocols allowing IDC to coordinate with the appropriate municipal authorities to identify and implement any traffic control measures, in addition to the traffic control officer at Hartford Avenue/Depot Street, needed to mitigate traffic impacts at the access road and the Depot Street/North Main Street intersection.

With respect to traffic impacts during facility operation, the Company has demonstrated that no adverse traffic conditions would result from operation of proposed facility at the proposed site.

Accordingly, the Siting Board finds that, with implementation of the foregoing condition relating to the mitigation of construction-related traffic impacts, the environmental impacts of the proposed facility would be minimized with respect to traffic.

J. Electric and Magnetic Fields¹⁴¹

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

¹⁴⁰ The Siting Board notes that should delivery routes include local roadways in nearby towns other than Bellingham, officials of those municipalities should be consulted in developing the traffic mitigation plan for the project.

¹⁴¹ Electric fields produced by the presence of voltage, and magnetic fields produced by the flow of electric current, are collectively known as electromagnetic fields ("EMF").

potential mitigation.

1. Description

IDC indicated that operation of the proposed facility would produce magnetic fields associated with increased power flows on certain existing transmission lines (Exh. IDC-2, at 5.9-1 to 5.9-2).¹⁴² The Company indicated that the proposed facility would interconnect with the BECo 345 kV 336 line, which occupies BECo's ROW that extends from the Sherman Road substation in Rhode Island to the West Medway substation in Massachusetts (Exh. EFSB-EE-3).

The Company stated that existing electric fields would remain unchanged because BECo does not propose to change the line voltage (Exh. IDC-2, at 5.9-39). The Company noted that existing electric field levels range from 1.0 to 1.2 kV/m at the eastern edge of the ROW at one meter above grade, and that this is 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 BECo 336 line (Exh. EFSB-EE-9).¹⁴³ The Company performed field measurements that indicated that EMF levels at the eastern edge

¹⁴² The Siting Board notes that BECo's and other utilities' existing transmission lines are not ancillary facilities as defined in G.L. c. 164, S 69G. However, in order to conduct a comprehensive analysis of the 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 Sithe Mystic Decision, EFSB 98-8 at 68. ANP Blackstone Decision, EFSB 97-2 at 169-172. 1993 BECo Decision, 1 DOMSB at 148, 192.

¹⁴³ IDC asserted that magnetic fields from motors, generators and transformers would not be significant at the property boundaries because: (1) magnetic fields from motors, generators and transformers decrease faster with distance than magnetic fields from transmission lines (the magnetic field associated with such equipment falls off with the cube of the distance rather than the square of the distance as in the case of transmission lines); and (2) this equipment is located far from the property lines (Exh. EFSB-EE-9; Tr. 9, at 1051).

of the 336 line ROW currently average 4.7 milligauss ("mG") (Exh. IDC-2, at 5.9-37).¹⁴⁴ The Company stated that with the proposed facility on line, the maximum EMF levels at the ROW edge likely would increase to between 35 and 47 mG during the summer and between 49 and 63 mG during the winter (Exh. EFSB-EE-11-R).

In addition, the Company estimated worst case magnetic fields on the 336 line taking into account the operation of the proposed ANP Blackstone facility, which would be interconnected to the 336 line at a point between the IDC project site and the Sherman Road substation (Exh. RR-EFSB-48; Tr. 9, at 1055 to 1056). Under this scenario, the Company predicted that the highest magnetic field levels along the ROW edge north of IDC's proposed interconnect would range from 58 mG at road crossings to 74 mG at the lowest transmission line height (Exh. RR-EFSB-48). The Company stated that the highest magnetic field levels south of the proposed interconnect under the worst case scenario would be 20 mG or less (*id.*). The Company noted that the predicted magnetic field levels are below 85 mG, the level the Siting Board has found acceptable in past cases (Exh. IDC-2, at 5.9-1)

The Company indicated that there are approximately five residences located near the edge of the ROW extending from the IDC interconnect to the West Medway substation, and approximately 14 residences near the edge of the ROW extending from the IDC interconnect to the Sherman Road substation (Exh. RR-EFSB-49).¹⁴⁵

The Company stated that BECo has indicated that its 336 line probably would need to be

¹⁴⁴ The Company noted that magnetic field and electric field values are higher on the eastern edge of the ROW because the eastern edge of the ROW is closer to the transmission lines than the western edge of the ROW (Exh. IDC-2, at 5.9-23).

¹⁴⁵ The Company did not attempt to make specific estimates of magnetic field changes beyond the Sherman Road and West Medway substations (Exh. EFSB-EE-7). Instead, the Company stated that as much as 976 megavolt-amperes could flow northward from the project site and that transmission lines north of the West Medway substation therefore are likely to convey higher levels of current and have potential increases in magnetic fields (*id.*). The Company stated that as much as 264 megavolt-amperes could flow south from the project site (*id.*). The Company stated that increases in magnetic field levels beyond the two substations would depend on how that additional current is distributed among the transmission lines extending from the substations (*id.*).

reconductored to accommodate both the proposed project and the ANP Blackstone project, and that BECo is in the process of conducting an interconnection study (Exh. EFSB-EE-1). The Company stated that it would request BECo to consider the potential magnetic field reductions and costs associated with different electrical phasing arrangements, as well as feasibility, environmental impact and safety implications, in selecting the final design for required upgrades/reconductoring (*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, 13 DOMSC at 228-242. 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 ROW from IDC's proposed interconnect to the West Medway Substation would range between 58 mG at road crossings and 74 mG at the lowest transmission line heights. The levels represent a substantial increase above the existing maximum level of approximately 4.7 mG at the eastern edge of the ROW. The majority of the power from this facility and the ANP Blackstone facility is expected to flow northward. Hence, line current and magnetic field levels south of the proposed interconnect are expected to be approximately 3.7 times lower than north of the interconnect. In addition, the record indicates that transmission lines north of the West Medway Substation are likely to convey higher levels of current and thus have potential increases in magnetic fields.

The Siting Board notes that as the 336 line may be reconductored in the near future,¹⁴⁶

¹⁴⁶ The Siting Board has previously reviewed the EMF impacts of a proposal by ANP for a 580 MW generating facility in Blackstone, which also would be interconnected to the 336 line. ANP Blackstone Decision, EFSB 97-2, at 235. While an interconnection study was already prepared for this facility, the IDC interconnection study must be completed to assess the total transmission line capacity needs and to better understand whether such additional output presents opportunities to design the transmission upgrades to minimize
(continued...)

there is 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. Sithe Mystic Decision, EFSB 98-8, at 71; ANP Blackstone Decision, EFSB 97-2, at 174; 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 336 line.

Given the broad scale of transmission upgrades potentially required for this and neighboring projects, and potential changes in magnetic field levels that could result, the Siting Board wishes to remain informed as to the progress and outcome of transmission upgrade designs related to interconnecting the proposed project. Therefore, the Siting Board directs IDC to provide the Siting Board 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 IDC 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 and habitats, and significant cultural resources.

1. Description

IDC asserted that development of the IDC facility at the Depot Street site is compatible with both existing and planned land uses and zoning (Exh. IDC-1, at 6.5-1).

IDC proposes to construct the proposed facilities in the center of the approximately 156-acre Bellingham parcel, bounded by Depot Street on the northeast, Box Pond Road on the southeast, and the Charles River on the west (*id.* at 6.5-2; Exh. IDC-3, at 3-5). The Company described the Bellingham parcel as flat to gently rolling, predominantly wooded, and traversed by a 345 kV BECo transmission line and a freight rail line (Exh. IDC-1, at 6.5-2). The Company noted that the Bellingham parcel has been logged in recent years, and that much of its hardwood timber has been removed (Exh. EFSB-EL-18). The Company stated that it also has acquired the rights to an abutting 65-acre parcel in Mendon, to the west of the Charles River, for use as additional, permanent undeveloped buffer (Exh. EA-8-R-3, at 2-1; Tr. 2, at 161).

The Company stated that the Bellingham parcel is located primarily in an Industrial District,¹⁴⁷ as designated by the Town of Bellingham Zoning By-law, and that the proposed facility would be an allowed use in an Industrial District (Exhs. EFSB-EL-8).¹⁴⁸ The Company noted that a portion of the site, located from the center of the BECo easement, west to the Mendon border, is zoned suburban and indicated that this area would not be developed (Exhs. EFSB-EL-22; EFSB-EL-25). IDC stated that construction of the proposed facility would require a special permit for: (1) building heights greater than 45 feet; (2) uses having certain air emissions;¹⁴⁹ (3) storage and use of hazardous materials; (4) use of temporary construction structures and the parking of light and heavy construction vehicles on site; (5) earth removal; and (6) use of exterior lighting (Exhs. EFSB-EL-8; RR-EFSB-10). The Company stated that it has

¹⁴⁷ IDC stated that the site was rezoned from Agricultural/Suburban to Industrial in May, 1997 (Exh. IDC-1, at 6.5-8).

¹⁴⁸ The Town of Bellingham has six zoning designations: Agricultural; Suburban; Residential; Multifamily Dwelling; Business; and Industrial (Exh. EFSB-EL-8).

¹⁴⁹ Section 3240 of the Town of Bellingham Zoning By-laws states: any use whose emissions are such as to cause it to be classified as a major new stationary source of air pollution, as defined by the USEPA under the Clean Air Act and any use required to apply to MDEP under 310 CMR 7.00 or to the USEPA under Section 12 of the Clean Air Act for permission to emit asbestos, benzene, beryllium, mercury, vinyl chloride or radio nuclides, shall be permitted only if granted a special permit (Exh. EFSB-EL-8, at 22).

not yet submitted a special permit application or site plan to the Town for review (Exhs. EFSB-EL-5; EFSB-EL-6; Tr. 2, at 199).

IDC stated that construction of the proposed facilities would require clearing 31.5 acres of the Bellingham parcel, including 17 acres for the plant footprint, 12 acres for construction laydown and parking, and 2.5 acres to serve as a storm water basin (Exhs. IDC-3, at 2-2; EFSB-G-11-R; Tr. 2, at 185). The remaining 123 acres of the Bellingham parcel would remain as buffer (Exh. RR-EFSB-9). IDC stated that the plant footprint is not located in an area identified as significant for habitat, although there is identified edge habitat on other portions of the Bellingham parcel, primarily along the BECo easement, the Charles River, interior logging trails, and perimeter roads (Exh. EFSB-EL-18; Tr. 2, at 183-184). IDC stated that it would revegetate approximately 14 of the 31.5 cleared acres, probably with grasses interspersed with trees to create an edge habitat (Tr. 2, at 166-167). The Company stated that it would work with the Bellingham Conservation Commission to develop the revegetation plan, and that it would retain a trained forester to prepare and implement the plan (Exh. EFSB-EL-9-R; Tr. 2, at 167).

IDC stated that in order to protect the Charles River, its associated wetlands, and lands within Mendon to the west across the river, no development would take place west of the BECo transmission line easement (Exh. IDC-3, at 3-6). The Company also stated that it anticipates using the existing electric transmission lines for interconnection and therefore does not foresee significant impacts to trees or vegetation in relation to electric interconnection (Exh. EFSB-EL-10-R). With regard to the gas interconnection, the Algonquin gas mainline is located approximately 700 feet from the southeast corner of the site, and the gas interconnection would travel along an existing Algonquin lateral ROW (Exh. EFSB-G-11-R). The Company indicated that the distance from the Algonquin mainline to the point where the existing Algonquin lateral ROW intersects the eastern site boundary is approximately 2,300 feet (*id.*; Exh. IDC-3, at 3-1). The Company indicated that as with the electric interconnection, the use of an existing ROW for the gas interconnection would limit impacts to trees and vegetation (Exh. EFSB-EL-10-R). IDC further noted that the existing lateral ROW is clear of trees and does not cross any mapped wetlands (Exhs. EFSB-G-11-R; IDC-3, at 3-1).

The Company described the land uses contiguous to the proposed site as mixed industrial,

commercial and residential uses, noting that Depot Street, located to the east, is primarily industrial, while Box Pond Road,¹⁵⁰ located to the south, is residential (Exh. IDC-1, at 6.5-4). The Company stated that the land uses opposite the site along Depot Street consist of a railroad, a natural gas transmission corridor, and an active sand and gravel mine, with the residential Wethersfield neighborhood lying approximately ½ mile away to the east (id.). IDC stated that several light manufacturing businesses, a welding and brazing facility, an engineering firm, the NEA generating facility and CO₂ plant, and two residences are further south on Depot Street (id.). The Company stated that Route 140 is mixed use, consisting of predominately industrial uses south of the Mendon town line, and commercial, industrial and residential uses north of the town line (id. at 6.5-6).¹⁵¹ The Company described the Hartford Street area as primarily residential (id.).

Based on the 1996 land use data available from the MA GIS Office, the Company estimated that 50 percent of the area within a one-mile radius is forest, open or agricultural land and wetlands, 30 percent is devoted to residential uses, and 7 percent is used for industrial/commercial purposes (Exh. EFSB-EL-16).¹⁵² Within a half-mile of the proposed site, the Company estimated that 75 percent of the land is forest, open or agricultural land, and wetlands, 9 percent is devoted to residential uses, and 3.5 percent is used for industrial purposes (id.).¹⁵³

The Company indicated that with regard to the land abutting the Bellingham parcel:

¹⁵⁰ Box Pond Road becomes Box Pond Drive to the southwest of the site (Exh. IDC-1, at 6.5-6). The Company indicated that there are nine residences on Box Pond Road and 15 residences on Box Pond Drive (id.).

¹⁵¹ IDC stated that this area of Route 140 is more commercial and residential than industrial in nature, with a five-lot subdivision located off Route 140 to the east (Exh. IDC-1, at 6.5-6).

¹⁵² The remaining 13 percent of land uses consist of mining (3 percent), major transportation, transmission and gas pipeline ROWs, and water (Exh. EFSB-EL-16).

¹⁵³ The remaining 12.5 percent of land uses consist of mining (3.5 percent), transmission and gas pipeline ROWs, and water (Exh. EFSB-EL-16). In addition, the data indicated that there are no commercial uses within a half-mile of the proposed site (id.).

(1) the south and southwest is zoned agricultural; (2) the north, northwest, and a portion of the areas to the northeast are zoned suburban; (3) in an area to the southeast, across Depot Street, a parcel is zoned industrial (Tr. 2, at 175-178). IDC further indicated that the land abutting the Bellingham parcel, located in Mendon to the west of the Charles River, is zoned residential (id. at 177). Thus, the Company concluded that the abutting zoning is a mix between industrial, agricultural, and residential (id.).

The Company asserted that the proposed project has been sited and designed with consideration of the proximity of residential areas (Exh. TM-LU-4). IDC asserted that the Wethersfield neighborhood, located approximately one-half mile east of the site, would be buffered from the proposed facility by a 100-acre sand and gravel operation and the 50-acre Bellingham Industrial Park (id.). The Company indicated that additional open land, an auto salvage yard, a cable manufacturer, and the existing NEA Bellingham facility are located between the site and homes located along Route 140 to the south (id.). The Company also pointed to sizable tracts of open land located to the north and west of the site (id.).

IDC stated that the closest residence to generating facility is located 824 feet southwest of the proposed facility, along Box Pond Road, measured from a transmission pole which IDC identified as the nearest proposed facility structure (Exh. EFSB-EL-2-R2; Tr. 2, at 145). Further, the Company stated that the closest residence to the site boundary is located 50 feet from the south side of the site, also along Box Pond Road (Exh. EFSB-EL-2). The Company indicated that approximately 800 - 1,080 residences are located within a half-mile, and approximately 1,200 - 1,540 residences are located within a mile, of the Bellingham parcel site boundary (Exh. EFSB-EL-2; Tr. 2, at 152).¹⁵⁴

¹⁵⁴ IDC's witness explained that the Company initially identified residential parcels based on a review of the assessors plat maps, following the assumption that all parcels were residential, unless it was clear that the parcel was owned by a corporation (Tr. 2, at 150). Based on this method, the Company initially estimated that 1,079 residences are located within a half-mile and 1,541 residences are located within a mile of the site boundary (Exh. EFSB-EL-2). IDC asserted that its initial estimate was highly conservative because (1) the methodology used could not provide an accurate count of the actual number of residences, and (2) the half-mile count may have included parcels that fell
(continued...)

The Company indicated that the nearest undeveloped land potentially available for residential development in Bellingham is a single vacant lot located between 36 Box Pond Road and 128 Depot Street, at a distance of 1,290 feet from the proposed entrance road (Exhs. EL-4-R; EFSB-EL-20R). The Company added that the lot appears to be under development (Exh. EL-4-R). In Mendon, the nearest undeveloped land is located to the west of the Mendon parcel, at a distance of 1,395 feet from the southernmost portion of the switchyard (Exh. EFSB-EL-20-R). The Company noted that the Mendon parcel itself is zoned for residential use and could have supported a housing development had the Company not decided to acquire it for buffer (Tr. 2, at 161).

With respect to impacts on wildlife species and habitats at the proposed site, the Company stated that, based on initial consultation with and written confirmation from the Massachusetts Natural Heritage and Endangered Species Program ("NHESP"), there are no known rare plants, animals, or exemplary communities in the vicinity of the proposed site or its interconnects (Exh. EFSB-EL-13 (att.)). The Company reported that the facility footprint would not be located in the Charles River riverfront area, and that IDC would voluntarily maintain a 200 foot buffer from any bordering vegetated wetland or isolated wetland (Exh. KJ-WL-5).

The Company asserted that approximately 123 acres of the 156-acre Bellingham parcel would remain as undeveloped buffer (Exh. RR-EFSB-9). IDC explained that the 123 acres would be located as follows: 25 acres to the west of the BECo transmission ROW; 19 acres comprising the ROW itself; 50 acres to the south, between the proposed plant and Box Pond Road; 17 acres to the north of the proposed plant; and 12 acres between the proposed plant and Depot Street (id.; Exh. EFSB-EL-23). IDC stated that it had an agreement in principle with the Town of Bellingham that significant portions of the property would be dedicated with legal restrictions as conservation/open space (Exh. EFSB-EL-14; Tr. 2, at 159). IDC indicated that the areas most likely to be designated conservation/open space are the land west of the BECo ROW and the land south of the proposed plant (Exhs. EFSB-EL-23; RR-EFSB-9). The Company

¹⁵⁴

(...continued)

outside of the radius since the actual designation on the assessors map was difficult to decipher (Tr. 2, at 150-151).

indicated that the final mechanism for preserving the land would be decided in the subdivision review or special permit process (Exh. EFSB-EL-23).

In addition to the conservation/open space associated with the 156-acre Bellingham parcel, the Company noted that it intended to acquire the 65-acre Mendon parcel to serve as an undeveloped buffer for the proposed facility (Tr. 2, at 161). The Mendon parcel abuts the Bellingham parcel to the west of the Charles River, with a narrow portion running up to and along Hartford Street to the north (Exh. EA-8-R3 at (fig.) 2.1-1). IDC stated that it has signed an option agreement with the owners of the parcel containing language which commits IDC to maintaining the property as undeveloped (Tr. 2, at 157, 162).

The Company asserted that the proposed facility would not have an adverse impact on significant cultural resources (Exh. IDC-1, at 6.6-3). IDC stated that staff of the Public Archaeological Laboratory, Inc. ("PAL") conducted an intensive survey of the site and did not recover any historical or archaeological materials that would be characterized as a significant archaeological resources (*id.*). The Company noted that PAL did not recommend further site investigations as part of the planning of the IDC project (*id.*).

2. Positions of the Parties

CCOB/BPA described Bellingham as a desirable small, quiet, residential community with natural resources, such as Box Pond and the Charles River, in convenient proximity to I-495, a major highway (CCOB/BPA Initial Brief at 2). CCOB/BPA asserted that Bellingham and the surrounding area are carrying a disproportionate share of the environmental burden for electricity production in New England due to their location proximate to both natural gas supply and electric transmission infrastructure (*id.* at 3).¹⁵⁵ CCOB/BPA explained that this locational advantage reduces connection cost for developers (*id.* at 4). CCOB/BPA asserted that the

¹⁵⁵ CCOB/BPA states that if all proposed power plants in the vicinity are built, the region would have eight power plants with a total capacity of over 4,000 MW (CCOB/BPA Initial Brief at 10, *citing* Exh. KJ-W-13). CCOB/BPA calculates that this capacity represents approximately 18.4 percent of New England's 22,000 MW peak load (*id.* at 5).

concentration of power plants in Bellingham and its vicinity degrades the reliability of the New England grid and unfairly burdens residents of one area (id.). Therefore, CCOB/BPA requested that the Siting Board condition approval of the IDC proposed facility on the imposition of a moratorium on siting power plants in or near Bellingham (id. at 14).

Ms. Eckert noted that the Mendon parcel is zoned residential, and asserted that the extension of the IDC site, which is an industrial use, into Mendon is in violation of the Mendon Zoning By-laws (Eckert Initial Brief at 1, 3).¹⁵⁶ Ms. Eckert also noted that IDC's site selection criteria required that the entire site be in a single town or city (Eckert Reply Brief at 1). Ms. Eckert asserted that the IDC facility is not compatible with surrounding land uses since the only other compatible industry is the NEA Bellingham facility (id. at 2). Ms. Eckert further states that the commercial area located along Route 140 consists of small one story buildings, containing auto body repair shops, dog kennels and similar uses (id.). Ms. Eckert noted that, although IDC asserted that the facility will not have an adverse impact on real estate values, ANP has compensated residents in Mendon, Blackstone, and Bellingham who abut the ANP Blackstone and ANP Bellingham facilities (Eckert Initial Brief at 2-3).

The Beauchamps argued that the siting of the facility in this location is inappropriate and that they are being unfairly burdened by the construction of the proposed facility (Exh. BEA-1, at 2; Beauchamp Brief at 2). The Beauchamps noted that they own two parcels on Hartford Avenue in Mendon, to the west of Charles River (Exh. BEA-1 (Att.)). The first is the site of their residence, while the second is used for passive recreation and cannot be residentially developed (id.).¹⁵⁷ The Beauchamps noted that the Mendon parcel abuts their two properties, as the portion

¹⁵⁶ The Town of Mendon, prior to its withdrawal as a party to this proceeding, asserted that since the construction of power plants is prohibited in the town of Mendon, the development of the proposed project would violate the Town of Mendon's Zoning By-law (Exh. EFSB-TM-1). Mendon argued that it was immaterial whether the 65-acre parcel is part of the proposed facility or an adjacent parcel, as it will be an integral part of the development of the IDC facility (id.).

¹⁵⁷ The Beauchamp property is the nearest home in Mendon to the site boundary (consisting of the Bellingham and Mendon parcels) (Exh. RR-EFSB-8). The Beauchamp residence is (continued...)

of the Mendon parcel that stretches to Hartford Avenue falls between their two parcels, in effect making their home part of the new buffer zone (id.; Exh. BEA-1, at 5). The Beauchamps also argued that the extension of the site into Mendon appears to be a violation of the Mendon Zoning By-law (Exh. BEA-1, at 5). The Beauchamps request that if the proposal is approved, the Siting Board include a recommendation for the proponent to come to an agreement with the Beauchamps to provide some relief from the impacts of the facility (id.).

3. 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 use, and with state and local requirements, policies or plans relating to land use, and considers impacts on terrestrial resources including vegetative cover and habitat. Here, the record indicates that the areas immediately surrounding the proposed site are predominantly residential and open land uses, and are residentially and agriculturally zoned. The record further indicates that the area within a one-half mile radius of the proposed site is predominantly forest, open or agricultural land, with 7 percent of the land area given to industrial uses and sand and gravel mining, 9 percent to residential uses, and none to commercial uses.

A portion of the Bellingham parcel was rezoned from agricultural/suburban to industrial approximately 2½ years ago in anticipation of the construction of the proposed facility; thus, the proposed facility is now an allowed use under the Zoning By-laws of the Town of Bellingham.¹⁵⁸

¹⁵⁷ (...continued)
located approximately 1,920 feet from the north-westernmost portion of the Company's proposed switchyard, while the undeveloped parcel owned by the Beauchamps is approximately 1,170 feet from the switchyard (id.).

¹⁵⁸ Ms. Eckert and the Beauchamps both argued that IDC's proposed use of the Mendon parcel as undeveloped buffer would violate the Town of Mendon Zoning By-laws. While the Siting Board does not purport to interpret Mendon's Zoning By-laws, we note that zoning by-laws typically govern the use and development of property, and the record indicates that IDC does not propose either to change the use of, or to develop the Mendon parcel.

The Siting Board notes that although the site is now industrially zoned, it was residentially zoned only three years ago. Therefore, it is likely that most residential development in the vicinity would have taken place based on the assumption that eventual development on the Bellingham parcel would be either residential or consistent with uses allowed in residential zones.

The Siting Board notes that construction of the proposed facility would add to this area a potentially intrusive industrial use with a proposed stack and other facility structures that would be considerably taller and of a different scale than existing structures in the surrounding area, with the exception of the NEA Bellingham facility and CO₂ plant. Further, the construction of the proposed facility would involve the permanent clearing and placement of structures on 17 acres of land. However, in Sections III.F and III.G. the Siting Board has imposed conditions with regard to visual and noise impacts of the proposed facility to limit the impacts and intrusiveness of the proposed industrial use. The Company's development plans also would result in the permanent preservation of approximately 123 acres of the Bellingham parcel and 65 acres of the Mendon parcel in their current undeveloped state. Thus IDC's proposal taken as a whole creates a new industrial use but also contributes to the long-term preservation of the primarily undeveloped character of the area surrounding the proposed facility.

The Siting Board notes that IDC has not yet applied to the Town for the necessary special permit or submitted its plans for site plan review. The Company has indicated that a number of design choices for the proposed facility would be finalized through the special permit and site plan review process, including: (1) the delineation of the areas of the Bellingham parcel to be preserved as conservation land or open space, and the ownership/maintenance agreement of such land; (2) plans relating to stack and building height, storage and use of hazardous materials, parking for construction vehicles, and exterior lighting; (3) the final color schemes for the stack and building; and (4) the landscaping plan. The Company's commitment to dedicating a significant portion of the Bellingham parcel, and all of the Mendon parcel, to serve as conservation land, open space or permanent undeveloped buffer contributes significantly to the minimization of the land use impacts of the proposed facility. Consequently, the Siting Board directs the Company to (1) provide the Siting Board with copies of the special permit application and approval, and the site plan submission and approval; and (2) provide the Siting Board with a

copy of any document (e.g., deed restriction, agreement, etc.) that formalizes the disposition of the Mendon parcel to serve as conservation land, open space or permanent undeveloped buffer.

The Company has adequately considered the impacts of the proposed facility with respect to 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 no such resource impacts are likely to occur as a result of construction or operation of the proposed facility.

The Siting Board notes that CCOB/BPA has asked that approval of the proposed facility be conditioned on a moratorium on the siting of new power plants in or near Bellingham. However, CCOB/BPA has not explained how such a moratorium on future facilities would minimize the environmental impacts of the facility at issue in the instant case; or provided any analysis of the likely effects of such a moratorium. The Siting Board is of the opinion that G.L. c. 164 § 69 J1/4 requires it to consider each application filed with it in accordance with the requirements set forth in the statute, and believes that it therefore does not have the authority to effectively reject petitions before they are filed by imposing such a moratorium. The Siting Board therefore does not impose CCOB/BPA's proposed condition above, because it would not serve to minimize the environmental impacts of the proposed facility, and because it is beyond the Siting Board's statutory authority.

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 pollutants (e.g., EMF or noise effects). These effects are considered in the context of existing background conditions, existing baseline health conditions, and, when appropriate, likely changes in the contributions of other major emissions sources.

The analysis of the health effects of a proposed generating facility is necessarily closely

related to the analysis, in sections above, of specific environmental impacts which could have an effect on human health and any necessary mitigation measures. This section sets forth information on the human health effects that may be associated with air emissions, including criteria pollutants and air toxics, emissions to ground and surface waters, the handling and disposal of hazardous wastes, 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 information from a report published by the Massachusetts Department of Public Health titled Cancer Incidence in Massachusetts 1987-1994 ("Cancer Incidence Report") (Exh. SWM-EFSB-H-2-S (b)). 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.*). The Report did not find any statistically significant deviations from state-wide averages in the Town of Bellingham (*id.*). In regard to the neighboring towns of Blackstone, Mendon, Franklin, Wrentham, Hopedale, Milford and Medway, the Cancer Incidence Report found only one statistically significant deviation from the average: an elevated level of male colon cancer (statistically significant at $p \leq 0.01$) in Medway.¹⁵⁹ However, the Cancer Incidence Report cautioned that the cancer incidence data does not provide proof of the association of individual risk factors with cancer excesses, but rather should be used as a guide for further surveillance and future investigations (*id.*). The Company also provided a report by the U.S. Department of Health and Human Services titled Assessment of Cancer Incidence/Bellingham, Massachusetts 1982-1992 which did not find any statistically significant elevation of cancer rates in Bellingham (Exh. EFSB-H-2-S).

¹⁵⁹ The term statistically significant at $p \leq 0.01$ means that there is at most a one chance in 100 that the excess of observed cancer cases is due to chance alone (Exh. EFSB-H-2-S(b) at 7).

In addition, the Company provided data on asthma hospitalization rates in Massachusetts from the Massachusetts Division of Health Care Finance and Policy that shows hospitalization rates for asthma in the Town of Bellingham are below the statewide average (Exh. EFSB-H-2-S(d)).

2. Positions of the Parties

Ms. Eckert stated that she has Bronchial Asthma and that she was concerned about how the emissions from the proposed facility would affect her health (Exh. ECK-1, at 2). Ms. Eckert also stated that she was concerned about potential hazards associated with the storage and transportation of ammonia (*id.*).

Ms. Beauchamp stated that she suffers from Fibromyalgia, a chronic non-degenerative illness characterized by hypersensitivity throughout the body with symptoms that include chronic muscular pain, resulting in waking up feeling exhausted, memory problems, visual changes, sensitivity to light and noise, difficulty concentrating, intolerance to heat or cold and depression (Exh. BEA-1; Tr. 12, at 1312). Ms. Beauchamp stated that her symptoms are greatly exacerbated by stress and other environmental factors such as temperature changes, noise, or sleep disturbances (*id.*). Ms. Beauchamp stated that she also has concerns over the facilities' potential impact on her daughter, who has asthma (*id.*).

Ms. Johnson stated that she was concerned about the affect of emissions on the physically weakest including the elderly and children (Johnson Brief at 3).

3. Criteria Pollutants

As discussed in Section III. B above, the MDEP regulates the emissions of six criteria pollutants under NAAQS: SO₂, PM-10, NO₂, CO, O₃, and Pb (Exh. IDC-2, at 5.1-4). The Company stated that these air pollutants can cause a variety of respiratory diseases, including bronchitis, pulmonary obstructive disease, and asthma (Tr. 5, at 533).

The Company's witness, Dr. Valberg, provided an overview of how the USEPA determines NAAQS for each criteria pollutants (*id.* at 493 to 494). He indicated that the USEPA assembles separate documents on the health effects of all the criteria pollutants and that during

the process of setting standards, schools of public health, researchers, public interest groups, and regulators all provide comments (id.). Dr. Valberg stated that at the end of that process, the USEPA sets standards that protect all the sensitive subgroups in the population with an adequate margin of safety (id.).¹⁶⁰

The Company asserted that, when a geographical area is in compliance with NAAQS for a particular pollutant, there would be no discernable health effects in that area from that pollutant (id.). The Company provided existing background air quality data from a MDEP monitoring station in Worcester indicating that (1) concentrations of NO₂ are 55 percent of the 1-hour NAAQS standard and less than 50 percent of the annual standard; (2) the highest average concentration of CO is 66 percent of the 8-hour NAAQS standard and (3) the concentrations of Pb, SO₂ and PM-10 are below 50 percent of the NAAQS standard for all averaging periods (Exh. IDC-2, at 5.1-13 to 5.1-15).

The Company indicated that new sources of criteria pollutants, such as the proposed project, may not cause or significantly contribute to a violation of the health-based NAAQS (id. at 5.1-22). The Company stated that the USEPA established SILs in order to determine whether a project needed to conduct cumulative impact modeling, and that the USEPA set the SILs at a level of emissions low enough so that emissions below those levels would not significantly affect modeled ambient air quality (Tr. 5, at 517, 521 to 523). The Company showed that the proposed facility's emissions would be below applicable SILs for all criteria pollutants (id.).¹⁶¹

To assess air impacts of the proposed facility and other existing sources of emissions, the Company conducted cumulative air modeling of the criteria pollutants. The results show that the maximum cumulative concentrations at the location of maximum impact for NO₂, SO₂, PM₁₀ and

¹⁶⁰ The Company stated that while USEPA designed the NAAQS to protect sensitive subgroups, one can not rule out with 100 percent confidence that such health effects could occur (Tr. 5, at 540).

¹⁶¹ Although the project emissions would be below the SILs and the NAAQS do not require the Company to perform cumulative air modeling, the Company has conducted such modeling to comply with testing requirements outlined by MEPA on the Certificate of the Secretary of Environmental Affairs on the ENF for the proposed project.

CO are between 21 and 63 percent of the NAAQS (Exh. EFSB-EA-8-R3, at 6-34). In addition, the data show that IDC's contribution at the point of maximum cumulative impact is less than one percent of the cumulative pollutant concentrations (*id.*). In addition, the Company conducted a back out analysis and asserted that the operation of the facility would result in net reductions of SO₂, NO_x, and CO₂ in Massachusetts of approximately 16,976 tons, 9,643 tons, and 1,113,372 tons respectively (Exhs. EFSB-EA-42; EFSB-EA-43).

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 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 Bellingham area in Norfolk County is presently unclassified or in attainment for NO_x, SO₂, PM₁₀, CO and Pb, and in serious non-attainment for

ozone. In addition, the record shows that: (1) the regional background levels are less than 66 percent of the ambient standard for all pollutants and averaging periods, and (2) that ozone for Massachusetts as a whole is not in compliance with the standard. Thus, the Bellingham area levels of all criteria pollutants except O_3 are well within the standards to protect human health. In addition, the Company stated 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 SO_2 , 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 power plants in the Bellingham area, the cumulative air modeling of the proposed project together with the existing NEA, ANP-Milford, Ocean State Power, and BECo-Medway facilities, plus the proposed IDC, ANP-Bellingham and ANP-Blackstone facilities, shows that the cumulative concentrations for each criteria pollutant were well below NAAQS and that IDC's contribution to the cumulative impact at the location of the greatest pollutant concentration was less than one percent for NO_2 , SO_2 , PM-10 and CO. 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.

4. Air Toxics

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

The MDEP has in place an air toxics program, the primary purpose of which is to protect public health (Tr. 5, at 524). The program sets AALs for a broad range of chemicals through a three-stage process (Exh. IDC-21, at 21 to 24). First, a threshold Effects Exposure Limit ("TEL") which is protective of public health from threshold effects is established (*id.*). Next, a Non-threshold Effects Exposure Limit ("NTEL") is derived (*id.*). Finally, the lower of the TEL and the NTEL is selected as the AAL (*id.*). Where carcinogenicity is the most sensitive effect,

and adequate data are available to derive a cancer unit risk, the AAL is set to correspond to an incremental lifetime risk of developing cancer of one in one million (id.). The Company asserted that AALs and TELs are designed to ensure that contributions from a single source would have an insignificant impact on public health (id.).¹⁶²

The Company provided the Executive Summary of a 1998 study by the USEPA entitled “Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units – Final Report to Congress” (“HAPs Study”) (Exh. EFSB-H-1-S). The HAPs Study assessed emissions of 67 hazardous air pollutants (“HAPs”) from 52 fossil fuel generating units, and used this data to model human inhalation exposures to HAPs from all 684 fossil fuel plants nationwide (id. at ES-2 to ES-4). The HAPs study included a detailed analysis of inhalation exposures and risks for 14 priority HAPs, and conducted multipathway assessments for the four highest-priority HAPs – arsenic, mercury, dioxins, and radio nuclides (id. at ES-6). The HAPs study eliminated gas-fired power plants from its analysis at the screening stage, noting that “[t]he cancer risks for all gas-fired plants were well below one chance in one million ... and no noncancer hazards were identified” (id. at ES-7). Based on the USEPA’s findings, the Siting Board concludes that, in the absence of project-specific evidence to the contrary, the air toxics emissions from a gas-fired generating facility should be considered to have no discernable public health impacts.

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

¹⁶² The Company provided a USEPA report titled Study of Hazardous Air Pollutants Emissions from Electric Utility Steam Generating Units that stated that the cancer risk from gas fired power plants is below one chance in a million (id. at 497).

5. Discharges to Ground and Surface Waters

As stated in Section III. C above, the project would generate approximately 500 gpd of waste water during initial operations, which the Company would store in an onsite holding tank and then transport to a sewage treatment facility. After the Town of Bellingham's Phase III Sewer Project is complete, the Company expects to discharge between 6,575 and 6,083 gpd of process water directly to the town sewers for transport to a sewage treatment center (Exh. IDC-3, at 3-18 to 3-26). The Company identified two water-linked pathways by which substances hazardous to human health could theoretically reach the local population: through storm water discharges and construction dewatering that infiltrate groundwater used to supply potable water, and through wastewater discharges to surface water bodies (Exhs. EFSB-H-3; EFSB-H-4; EFSB-H-5).

The Company asserted that it has minimized impacts to groundwater by its decision to eliminating oil as a backup fuel and has minimized impacts to surface waters by developing a site drainage plan that would retain all runoff from the site for a 100-year storm (Exh. IDC-3, at 5-3 and 3-26 to 3-27). In addition, the Company has stated that it has developed measures to prevent the uncontrolled discharge of chemicals to ground and surface waters including: (1) the use of oil/water separators and neutralization systems for discharges from plant drains in areas of chemical usage; (2) water quality testing prior to batch discharges of wastewater; and (3) the development of Best Management Practices ("BMPs") in conformance with the suggested BMPs contained in the Stormwater Pollution Prevention ("SWPP") Plan and the SPCC/ERP (Exh. EFSB-H-5, at 3). The Company noted that as an additional safeguard, it would monitor wells in place at the site to identify and mitigate potential impacts during contingencies or emergencies (*id.* at 4). The Company asserted that through the use of its BMPs and SPCC/ERP, it would protect the public health and welfare in the event of an accidental discharge (*id.* at 3).

In Section III. C above, the Siting Board determined that construction and operation of the proposed facility would not have an effect on the quality of groundwater adjacent to the facility or have a negative affect on the hydrology of town wells, private wells, wetlands and waterways in the area. The record shows that the Company has minimized the chance of the project contaminating ground or surface waters through both project design and the development

of a series of best management practices to deal with contingencies. In addition, the Company has shown that its process water would be treated by wastewater treatment facilities that must comply with the National Pollutant Discharge Elimination System standards. Consequently, the Siting Board finds that the proposed project poses no health risks related to the contamination of potable groundwater or the disposal of wastewater.

6. Handling and Disposal of Hazardous Materials

As discussed in Section III. E above, the proposed project will use aqueous ammonia (a mixture of 19 percent by weight ammonium hydroxide in water) for NO_x control, and limited amounts of lubricating oils and certain other industrial chemicals for project operation, boiler feedwater treatment and SCR operation (Exhs. EFSB-ES-1; EFSB-ES-4; EFSB-H-5 at 2).

With respect to Ms. Eckert's concern over the transportation and storage of aqueous ammonia, the record in Section III. E above shows the Company has demonstrated that it has in place procedures for the proper handling, storage, and disposal of ammonia and other hazardous materials during construction and operation of the proposed project. In addition, the Company has shown that, in the unlikely event of an ammonia tank failure, concentrations at the fence line would be well below the toxicity threshold established by the American Industrial Hygiene Association and the level of perceptibility for ammonia, that health effects are therefore unlikely to result from an ammonia spill at the site (Exh. EFSB-ES-1, at 3).

In summary, the record shows that the IDC has taken adequate measures to ensure that there would not be a spill of ammonia, and that even if such a spill were to occur, it would not have a negative health affect on abutting property owners. 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.

7. EMF

As discussed in Section III. J above, IDC estimated worst-case magnetic field levels resulting from the operation of the proposed facility ranges from 58 mG at road crossings to 74 mG at the lowest transmission line elevation (Exh. EFSB-EE-11-R). In addition, the record

shows that the Company has agreed to consult with BECo prior to the reconductoring of the transmission lines 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. IDC-2, at 5.9-6 to 5.9-7). 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.). 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. at 5.9-8). The Company indicated that seven states have adopted EMF guidelines which are generally based on levels in existing transmission corridors; the maximum permissible levels for magnetic fields under those guidelines range from 150 mG (for a 230 kV line in Florida) to 250 mG (for a 500 kV, double circuit line in Florida) (id.).

The Company has explained that there is no available laboratory or human data that demonstrates what, if any magnitudes of power line electric and magnetic fields cause human health effects (id. at 5.9-6). To support its point, the Company discussed the findings of a 1997 report by the National Research Council ("NRC Report"), a comprehensive review of research up to that date on the biologic effects of exposure including cellular and molecular studies, studies on whole animals, and epidemiological studies (Tr. 9, at 1076 to 1078). The Company noted that while the animal studies showed effect, they could not be replicated, and that the epidemiological side of the NRC Report concluded that there wasn't sufficient evidence to link electric and magnetic fields specifically to any human health effect (id.). However, the Company

noted that the NRC Report shows that there is a somewhat consistent finding that wire codes, which had been used by some investigators as a surrogate for electric and magnetic field exposure, show a greater degree of consistency in terms of relationship particularly to the childhood cancers (id.).

The Company also provided an update on research published since the NRC Report (Tr. 9 at 1088 to 1090). The Company's witness, Dr. Valberg, discussed two recent epidemiological studies which focused on a link between EMF levels and childhood leukemia (id.). Dr. Valberg indicated that the first study, conducted by the National Cancer Institute ("NCI"), found no correlation between exposure to present-day measured fields of over two mG and leukemia (id. at 1083). He noted that the researchers later regrouped the study data and found statistically significant correlations for some groups with higher levels of exposure, but could not conclude that there was a consistent pattern that would support a dose response effect (id. at 1083-1085). Dr. Valberg also indicated that a recent Canadian study, where field exposure was assessed through monitors in children's backpacks, did not support a relationship between field exposure and leukemia (id. at 1089-1090). Dr. Valberg also noted that two recent animal studies found little or no elevation of cancer rates from exposure to magnetic fields (id. at 1088 to 1089).

Overall, although there are some epidemiological studies which suggest a correlation between exposure to magnetic fields and childhood leukemia, and some evidence of biological response to exposure to magnetic fields in animal studies, there is no evidence of a cause-and-effect association between magnetic field exposure and human health. Thus, the record in this case does not support a conclusion that the EMF levels anticipated as a result of the proposed project would pose a public health concern. Nonetheless, consistent with its policy of encouraging transmission providers to take cost-effective steps to minimize magnetic fields, the Siting Board has required the Company to pursue an interconnection plan that minimizes magnetic fields at nearby residences. Accordingly, the Siting Board finds that the health effects, if any, of magnetic fields associated with the proposed project would be minimized.

8. 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 stated that two federal agencies have established standards to provide protection against hearing loss in humans, including: (1) the USEPA limits with general applicability, of 75 dBA average noise over 8 hours of exposure and 70 dBA average noise over 24 hours of exposure; and (2) the United States Occupational Safety and Health Administration limits with applicability in the workplace, of between 85 dBA and 115 dBA average noise depending on length of exposure and use of protective procedures (Tr. 8, at 930-932). The Company indicated that noise also may produce physiological effects in humans that do not necessarily represent health effects, for example effects on heart rate and the automatic nervous system, and that noise may interfere with sleep or affect sleep patterns (*id.* at 932-936). Mr Keast stated that the USEPA guideline for acceptable outdoor noise of 55 dBA in a suburban residential area is intended, in part, to help prevent adverse noise effects on sleep (*id.* at 936). He explained that, based on typical noise attenuation of walls in residences, the USEPA guideline for outdoor noise corresponds to indoor noise levels of 32 dBA to 40 dBA, which have been shown to represent the threshold for sleep disturbance (*id.*).

The record shows that noise increases at the residences with the mitigation imposed in Section III. G above would be 5 dBA or less. Consequently, the Siting Board finds that health impacts of noise from the proposed project would be minimized.¹⁶³

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.

¹⁶³ With respect to noise levels at the Beauchamp residence, noise levels would comply with EPA's 55 dBA criteria and would increase to 3 dBA, the general level of perceptibility of a noise increase (Exh. RR-EFSB-59).

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 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 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 with a stack height of 190 feet would be minimized with respect to visual impacts.

In Section III.G, the Siting Board has found that with the implementation of conditions requiring additional noise mitigation that would limit L₉₀ noise increases at receptor R-4 to 5 dBA, and the development of a noise compliance noise monitoring protocol, 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 requiring the completion of its emergency response plan and provision of equipment for emergencies, the environmental impacts of the proposed facility would be minimized with respect to safety.

In Section III.I, the Siting Board has found that, with the implementation of the condition requiring IDC to work with its EPC contractor and the Town of Bellingham to develop and implement a traffic mitigation plan, 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 the environmental impacts of the proposed facility would be minimized with respect to land use.

In Section III.L, the Siting Board has found that the cumulative health impacts of the

proposed facility would be minimized.

Accordingly, the Siting Board finds that, with the implementation of the above-listed conditions relative to air quality, visual, noise, 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.¹⁶⁴

B. Analysis

¹⁶⁴ 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 Sections 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.

In Sections II and III, above, the Siting Board has reviewed the process by which IDC 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. IDC has demonstrated that it expects to comply with all MDEP standards.¹⁶⁵

As discussed in Section III.C, above, IDC has demonstrated that it will comply with state wastewater treatment requirements and that it will seek appropriate approvals from MDEP to interconnect with the Town of Bellingham sewer system at the appropriate time.

As discussed in Section III.D, above, IDC has demonstrated that it will comply with the Massachusetts Wetlands Protection Act and River Protection Act by avoiding construction in wetlands, in the 100-foot wetland buffer zone, and within the 200-foot river front area.

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

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

Finally, IDC asserts that its proposed project is consistent with environmental policies set forth in Electric Industry Restructuring Act, insofar as the Act encourages the construction of cleaner new power plants and the use of natural gas as a fuel for power plants through the establishment of Technology Performance Standards and generation performance standards (Company Initial Brief at 120-121). The Siting Board agrees that one of the many objectives of the Electric Industry Restructuring Act was to improve air emissions within the Commonwealth

¹⁶⁵ IDC correctly notes that the air and water qualities policies of the Commonwealth have health-related implications, and that in complying with these policies it also complies with health policies of the Commonwealth (Company Brief at 121).

by substituting new, cleaner power plants for older, oil- and coal-fired plants, and that IDC's proposal is consistent with that objective.

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 that the site selection process resulted in the selection of a site that contributes to the minimization of the 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 the implementation of listed conditions relative to air quality, visual, noise, 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 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 I. C, III. B, III. F, III. G, III. H, and III. I, 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 IDC Development, LLC to construct a 700 MW bulk generating facility in Bellingham, Massachusetts subject to the following conditions:

Prior to the commencement of construction:

- (A) The Siting Board directs the Company to make a compliance filing with the Siting Board regarding the Company's choice of turbines. If there has been no change in the Company's choice of turbine, the Siting Board will expeditiously issue a compliance decision affirming this decision. If the Company's choice of turbine changes, the Siting Board will determine, based on the compliance filing, whether additional discovery and hearings are necessary. If additional proceedings are needed, they will be an extension of this case. Therefore, the parties to this case would be parties to any additional proceedings and the issues in any such additional proceedings would be limited to the issues raised by the changes to IDC's proposal.

During construction and operation of the proposed facility:

- (B) In order to minimize CO₂ emissions, the Siting Board requires the Company to provide CO₂ offsets through a total contribution of \$745,402 to be paid in five annual installments during the first five years of facility operation, plus a contribution of \$5549 in the first year of facility operation as an offset for on-site tree clearing, to a cost-effective CO₂ offset program or programs to be selected upon consultation with the staff of the Siting Board. If the Company in consultation with the staff of the Siting Board selects a CO₂ offset program or

programs with an overall projected cost to the Company of less than \$1.50 per ton, a different cost commitment may be set which will provide offsets for more than 1 percent of facility CO₂ emissions with a cost commitment of less than \$745,402 (not including the additional offsets required above for on-site tree clearing, at a cost of \$5549). Alternatively, the Company may elect to provide the entire contribution within the first year of facility operation. If the Company so chooses, the CO₂ offset requirement would be satisfied by a single first-year contribution, based on the net present value of the five-year amount, to a cost-effective CO₂ offset program or programs to be selected upon consultation with the Staff of the Siting Board.

- (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 generating facility and related facilities 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 consistent with the guidelines specified in Section III. F.2, above.
- (D) In order to minimize noise impacts, the Siting Board directs the Company to implement additional noise mitigation that would limit L₉₀ noise increases at receptor R-4 to 5 dBA.
- (E) In order to minimize noise impacts, the Siting Board directs the Company in consultation with the Bellingham Board of Selectmen and MDEP to develop a noise compliance monitoring protocol and baseline noise measurements, taken on a schedule chosen in consultation with MDEP, that allow for the implementation of an on-going periodic noise monitoring program to begin within six months of

the commencement of commercial operation. IDC shall submit a copy of the noise compliance monitoring protocol to the Siting Board prior to the commencement of commercial operation. In the process of developing this protocol the Company, the Board of Selectmen and MDEP should provide to the intervenors in this proceeding an opportunity to comment on their proposed protocol.

- (F) In order to minimize safety impacts the Siting Board directs the Company to: (1) complete the construction section of its emergency response plan and file it with the Towns of Bellingham and Mendon before construction begins in order to cover possible contingencies related to construction accidents; (2) have trained personnel and equipment ready to address construction-related contingencies; (3) work with the Local Emergency Planning Committee to conduct an inventory of the equipment available and the ability of Bellingham, and cooperating communities to respond to operational emergencies at the proposed facility either alone, or in conjunction with a simultaneous emergency at another major commercial or industrial facility in the area; and (4) based on the inventory, agreed upon by the Local Emergency Planning Committee, provide to the Town of Bellingham and to other towns that would provide emergency assistance to Bellingham, an appropriate share based on the number of other industrial uses that could place similar demands on communities' emergency response capabilities of the equipment and/or resources necessary to handle such an event.
- (G) In order to minimize traffic impacts, the Siting Board directs the Company to work with its EPC contractor and the Town of Bellingham to develop and implement a traffic mitigation plan which addresses scheduling and any necessary roadway construction or improvements consistent with the guidelines specified in Section III. I.2, above.

In addition, the Company must submit the following information to the Siting Board:


- (H) In order to verify that the proposed project's water supply impacts are as set forth in this record, the Siting Board directs the Company to provide the Siting Board with a report at the end of its second year of operation setting forth the facility's monthly water use for the preceding two years. If the proposed facility's water use significantly exceeds the projections in this record, the Siting Board may direct the Company to participate in a water conservation program similar to that funded by ANP as a condition of its approvals, or to develop another cost effective approach to mitigate its water use. ANP-Bellingham Decision, EFSB 97-1, at 120; ANP-Blackstone Decision, EFSB 97-2, at 135.
- (I) The Siting Board directs the Company to provide the Siting Board 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 IDC reaches final agreement with all transmission providers regarding transmission upgrades.
- (J) The Siting Board directs the Company to (1) provide the Siting Board with copies of its special permit application and approval, and the site plan submission and approval; and (2) provide the Siting Board with a copy of any document (e.g., deed restriction, agreement, etc.) that formalizes the disposition of the Mendon parcel to serve as conservation land, open space or permanent undeveloped buffer.

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

In addition, the Siting Board notes that the findings in this decision are based upon the

record in this case. A project proponent has an absolute obligation to construct and operate its facility in conformance with all aspects of its proposal as presented to the Siting Board.

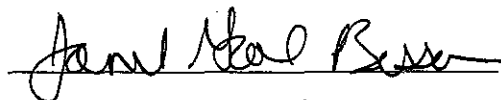
Therefore, the Siting Board requires the Company to notify the Siting Board of any changes other than minor variations to the proposal so that the Siting Board may decide whether to inquire further into a particular issue. The Company is obligated to provide the Siting Board with sufficient information on changes to the proposed project to enable the Siting Board to make these determinations.

A handwritten signature in dark ink, appearing to read "Jolette Westbrook", is written over a horizontal line.

Jolette A. Westbrook
Hearing Officer

Dated this 21st day of December, 1999

APPROVED by the Energy Facilities Siting Board at its meeting of December 17, 1999, by the members and designees present and voting: Sonia Hamel (for Robert Durand, Secretary of Environmental Affairs); W. Robert Keating (Commissioner, DTE); Tom McCullough (for Carolyn Boviard, Director of Economic Development); David O'Connor (Commissioner, Division of Energy Resources); and Janet Gail Besser (Chair, EFSB/DTE).

A handwritten signature in dark ink, appearing to read "Janet Gail Besser", written over a horizontal line.

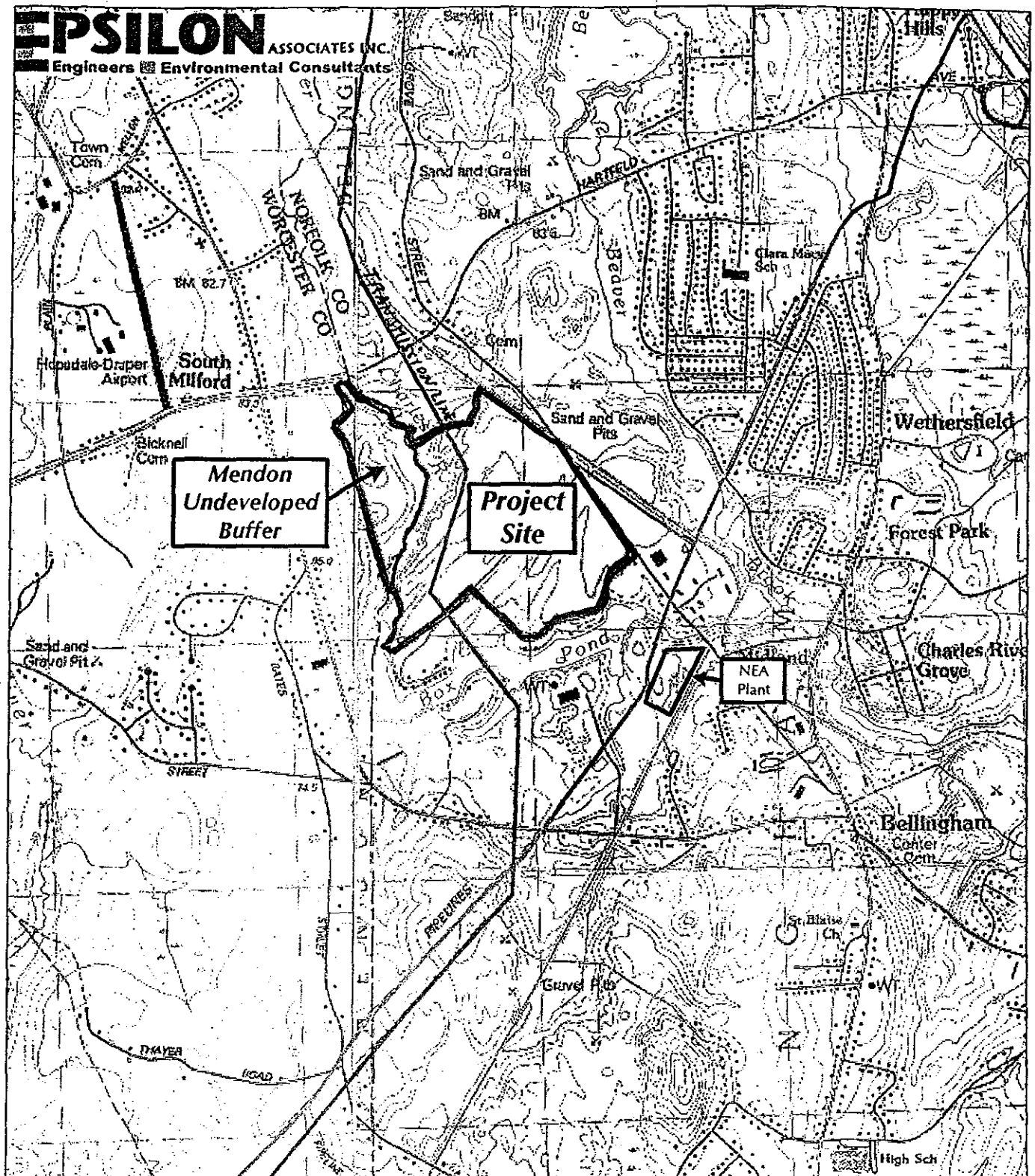
Janet Gail Besser, Chair
Energy Facilities Siting Board

Dated this 21st day of December, 1999

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 MAP



From USGS 7.5 X 15 metric Quads
Uxbridge (1982) and Franklin (1987)
Graphic Scale shows 1 km grid



Topographic Map Showing the Project Site, Gas Pipeline and Transmission Line

