COMMONWEALTH OF MASSACHUSETTS

Energy Facilities Siting Board

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Petition of IDC Bellingham, LLC, for)

Approval to Construct and Operate a) EFSB 97-5

700-MW Bulk Generation Facility in the)

Town of Bellingham, Massachusetts)

_____)

FINAL DECISION

Jolette A. Westbrook

Hearing Officer

December 21, 1999

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FIGURE 1: SITE MAP

LIST OF ABBREVIATIONS

Abbreviation	Explanation
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.
ANP Blackstone Decision	ANP Blackstone Energy Company, EFSB 97-2/98-2 (1999)
Bellingham	Town of Bellingham
Bellingham parcel	156 acre parcel in Bellingham where the proposed facility would be located
Berkshire Power Decision	Berkshire Power Development, Inc., 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

Cabot Power Decision Cabot Power Corporation, 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

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

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

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

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

NEA Decision Northeast Energy Associates, 16 DOMSC 335 (1987)

NCI National Cancer Institute

NEPCo New England Power Company

NEPOOL New England Power Pool

NHESP Natural Heritage and Endangered Species Program

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

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

Sithe Mystic Decision Sithe Mystic Development LLC, 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 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

On November 18, 1997, IDC filed with the Siting Board[4] 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 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 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

C. Status of this Review

On November 5, 1999, IDC filed a letter ("IDC Letter")[(13)] with the Siting Board stating that the possibility exists that the Company may have to change turbine manufacturers (Exh. IDC -33). Specifically, IDC stated that it is possible that Siemens-Westinghouse may be unable to meet its previous performance representations for the 501G gas turbine (id.). IDC stated that if that is the case, the Company "is committed to incur the necessary cost and effort to identify a different turbine manufacturer who will be able to meet the commitments which IDC has consistently made throughout the permitting process" (id.). Further, IDC requested that the Siting Board not wait until after the turbine issue is resolved before issuing a Tentative Decision (id. at 2). In support, IDC asserted that if this matter is resolved a delay would prove to be unnecessary and if the Company does have to change the turbine manufacturer the Siting Board already has in place a mechanism to deal with project changes after the issuance of a Siting Board decision (id.).

In response to the IDC Letter, comments were filed by CCOB ("CCOB Response")[(14)], Kathleen Johnson ("Johnson Response") and Joan Eckert ("Eckert Response").[(15)] CCOB, Ms. Johnson and Ms. Eckert all asserted that the Tentative Decision in this case should not be issued until IDC has determined which turbine will be used (CCOB Response at 1; Johnson Response at 1-2; Eckert Response at 1). Specifically, these Intervenors asserted that many of the environmental impact analyses reviewed in this proceeding were dependent on representations made by IDC that Westinghouse 501G turbines will be used for the proposed project (CCOB Response at 1; Johnson Response at 1-2; Eckert Response at 1). Further, the Intervenors 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 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 Sting 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 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-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 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 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.).

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 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 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 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 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, § 69J¼; 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.

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 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-attainment[(39)] or unclassified for the six criteria pollutants: sulfur dioxide ("SO_2"), fine particulates ("PM-10"), oxides of nitrogen ("NO_x"), carbon monoxide ("CO"), ground level ozone ("O_3") 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 SO_2, PM-10, NO_x, CO, and Pb, the entire Commonwealth of Massachusetts is in "serious" non-attainment for O_3 (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).

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 O_3, 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 O_3 (id.). With regard to NSPS

requirements, the Company indicated that emissions of regulated pollutants NO_x and SO_2 would fall well below NSPS threshold levels (id. at 6.2-7). In addition, the Company noted that the proposed facility would incorporate BACT for SO_2 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 ("CO_2") (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, SO_2 and CO_2 emissions (Exh. IDC-1, at 2-33 to 2-39).

The Company stated that its proposed facility would incorporate BACT for CO, PM-10, SO_2, 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, 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 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 SO_2, NO_x, and CO_2 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 SO_2, NO_x and CO_2 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 SO_2 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 CO_2 emissions (Exh. IDC-1, at 2-39). The Company's displacement analysis for CO_2 showed that the emission savings the facility may obtain by displacing older facilities would be 63 percent of the proposed facility's CO_2 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 SO_2, 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 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 SO_2, 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 NO_2, SO_2, 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/m^3 for 24-hour average and 0.09 ug/m^3 for annual average (id.). The Company demonstrated that the results were within the MDEP established TEL and AAL for ammonia of 100 ug/m^3 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 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 SO_3 as well as NO_2, which could adversely affect the ability to remove NO_x and SO_3 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 combusters and SCR for NO_x 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 CO_2 and asserted that the CO_2 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 CO_2 brokers the approach of directly acquiring CO_2 offsets, and noted that one specific option it has considered is acquisition of CO_2 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 CO_2 mitigation requirement, it should have the flexibility either to make a monetary contribution of $1.50 per ton to offset 1 percent of its CO_2 emissions, or to offer a specific CO_2 mitigation plan at the appropriate time to offset 1 percent of its CO_2 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 CO_2 emissions from other facilities, which would contribute to the minimization of CO_2 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 CO_2 emissions of 8,902,510 tons in New England, or 57 percent of the proposed facility's emissions of CO_2 in New England over the 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 CO_2 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 CO_2 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, SO_2, 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 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 NO_2, SO_2, 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-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 determine the levels of NO_x control that constitute BACT and LAER for this facility(57) 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 CO_2 -- 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 CO_2 emissions that required generating facilities to make a monetary contribution, within the early years of facility operation, to one or more cost-effective CO_2 offset programs, with such program(s) to be selected in consultation with the Siting Board staff. Dighton Power 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 CO_2 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 CO_2 mitigation plan to offset 1 percent of its CO_2 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 CO_2 emissions, the Siting Board's CO_2 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 CO_2 mitigation, as they investigate and develop CO_2 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 CO_2 offset approaches that are significantly more cost-effective than the benchmark level of $1.50 per ton, the Siting Board's CO_2 mitigation requirement would result in offsetting significantly more than 1 percent of facility CO_2 emissions. The Siting Board has encouraged previous applicants to pursue the most cost-effective offset approaches, which would provide maximum CO_2 offsets consistent with our mandate. See Berkshire Power Decision, 4 DOMSB at 370-371, 373. While an increased level of CO_2 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 CO_2 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 CO_2 emissions over 20 years of operation.[(61)] If the Company in consultation with the staff of the Siting Board selects a CO_2 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 CO_2 emissions with a cost commitment of less than $745,402. Based on projected maximum annual CO_2 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 CO_2 offsets through a total contribution of $745,402[(62)] to be paid in five annual installments during the first five years of facility operation, to a cost-effective CO_2 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 CO_2 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 CO_2 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 CO_2, 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 CO_2 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 CO_2 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 CO_2. At $1.50 per ton, this yields an additional first year offset contribution of $5249 to the CO_2 offset program or programs designed to offset facility emissions.[(65)]

Accordingly, the Siting Board finds that, with implementation of the foregoing NO_x and CO_2 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 system[(66)] and would have to truck sewage offsite (id.). IDC stated that in Case 1, it would use portable 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 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 rate[(70)] for the Town of 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:

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 data[(71)] 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 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 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 mgy, and that the NEA plant has used up to 207 mgy 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 mgy 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 withdrawals would have no significant impact on private wells, Well 5[(76)] 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 mgy without any perceptible impacts on yields from other wells (id.). Accordingly, IDC concluded that the possible withdrawal of an additional 9.87 mgy 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 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 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 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).

- 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 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 preparation[(84)]; 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 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 CO_2 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 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 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. 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 CO_2 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 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 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 CO_2 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 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 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 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 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 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 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-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

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 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 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 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 testimony(112) 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.

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} nosie 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 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 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 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 ammonia[(115)] 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 level[(117)] 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 ppm (Exh. RR-EFSB-33).[(118)] This then confirmed that 10 ppm[(119)] and 50 ppm[(120)] 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).

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 Department[(123)] and the Local Emergency Planning Committee[(124)] (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 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.

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, 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-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).[(133)] IDC indicated that, during the construction period,[(134)] 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.).[(135)] 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 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).[(136)]

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).[(137)] 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).[(138)] 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 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 [(139)] 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;[(140)] 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 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 Bellingham[(141)] 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 Fields[(142)]

This Section describes the electric and magnetic field impacts of the proposed facility and 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).[(143)] 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).[(144)] The Company performed field measurements that indicated that EMF levels at the eastern edge of the 336 line ROW currently average 4.7 milligauss ("mG") (Exh. IDC-2, at 5.9-37).[(145)] 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).[(146)]

The Company stated that BECo has indicated that its 336 line probably would need to be 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,[(148)] 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,[(149)] 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).[(150)] 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;[(151)] (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 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,[(152)] 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 CO_2 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).[(153)] 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).[(154)] 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.).[(155)]

The Company indicated that with regard to the land abutting the Bellingham parcel:

(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).[(156)]

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 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).[(157)] CCOB/BPA explained that this locational advantage reduces connection cost for developers (id. at 4). CCOB/BPA asserted that the 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).[(158)] 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.).[(159)] The Beauchamps noted that the Mendon parcel abuts their two properties, as the portion 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.[(160)] 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 CO_2 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 0.01) in Medway.[(161)] 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).

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: SO_2, PM-10, NO_2, CO, O_3, 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.).[(162)]

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 NO_2 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, SO_2 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.).[(163)]

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 NO_2, SO_2, PM_{10} and 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 SO_2, NO_x, and CO_2 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 - SO_2, PM-10, NO_2, CO, O_3, 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, SO_2, PM_{10}, 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.).[(164)]

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 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.

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.[(165)]

M. Conclusions

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

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

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

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

In Section III.E, the Siting Board has found that 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 L_{90} 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.[(166)]

B. Analysis

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.(167)

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 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:

- In order to minimize CO_2 emissions, the Siting Board requires the Company to provide CO_2 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 CO_2 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 CO_2 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 CO_2 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 CO_2 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 CO_2 offset program or programs to be selected upon consultation with the Staff of the Siting Board.

- 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.

- In order to minimize noise impacts, the Siting Board directs the Company to implement additional noise mitigation that would limit L_{90} noise increases at receptor R-4 to 5 dBA.

- 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.

- 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.
- 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:

- 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.

- 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.

- 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.

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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).

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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).

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.

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")

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 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.

13. So that the record in this case is clear relative to the project IDC has proposed and the project that the Siting Board is approving, we hereby move into evidence the November 5, 1999 IDC Letter addressed to Jolette Westbrook, Hearing Officer and signed by John A. DeTore as Exhibit IDC-33.

14. CCOB's Response was submitted by the President of CCOB. CCOB had informed the Siting Board in a previous letter that its attorney would be unavailable until after November 17, 1999. Therefore, in its Response, CCOB requested that a Tentative Decision not be issued until after its attorney has had an opportunity to respond to the IDC Letter.

15. Comments were also submitted by East Acres, an interested person in this proceeding.

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).

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.

18. See comments from Sithe New England, April 15, 1999, at 3.

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).

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.

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).

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).

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).

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 re-zoning, single ownership of the site, and railroad access.

33. The Company noted that it is more expensive to build a gas interconnect that an electric interconnect (Tr. 3, at 327).

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).

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.

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.

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).

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").

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)

43. To illustrate that a sub-GEP stack height would not represent a threat to health, the Company showed that while SO_2 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).

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 SO_2, 10 percent for NO_x and 17 percent for CO_2 (Exhs. EFSB-EA-42; EFSB-EA-43).

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).

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.).

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).

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).

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 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 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.

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 NOx 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.

59. Previously, the Siting Board required project proponents to commit to a specific program of CO_2 mitigation, such as a tree planting or forestation program, designed to offset a percentage of facility CO_2 emissions within the early years of facility operation. See Berkshire Power Decision, 4 DOMSB 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 CO_2 offsets, or use of a range of monetary values, or a greater or sole use of a non-monetary basis, in determining the appropriate level of CO_2 mitigation. Future applicants are put on notice that the Siting Board may seek to develop evidence relating to the appropriateness of the review standards set forth in the Dighton Power Decision or other reviews, and separately that the Siting Board may adjust its existing monetary standard to account for inflation or other similar minor changes based on the passage of time. Sithe-Mystic Development LLC, EFSB 98-8, at 29 (1999) ("Mystic Decision").

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 calculated total CO_2 emissions and offset requirements in future siting cases.

62. The contribution is based on offsetting one percent of facility CO_2 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-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 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).

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).

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. EFSB-EW-64; EFSB-EW-65; EFSB-EW-66).

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.).

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.

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).

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 EOEA 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).

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).

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.

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).

84. The Company stated it would try to eliminate or minimize the need for disposing of fill.

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).

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).

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 theses scenarios, plume visibility ranged form 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.).

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 CO_2 plant (Tr. 1, at 53). Rather, the plume at the IDC facility would be wispy and variable in nature (id.).

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).

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.

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.

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).

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).

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).

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).

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.).

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).

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.

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).

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).

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.

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 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.

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).

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).

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).

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).

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.

126. The record shows that the length of the construction shift is 8.5 hours, incorporating ½ hour for lunch (Tr. 2, at 222).

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).

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.).[(132)]

132. 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 a.m. travel, and would drop from LOS C to LOS E during p.m. travel, and (2) the northbound approach to the Hartford Avenue/Depot Street intersection would drop from LOS C to LOS D during p.m. travel (Exh. EFSB-ET-3-S3). - -

133. 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).

134. The Company indicated that its analysis of construction-related traffic assumed an 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).

135. 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).

136. 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).

137. 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).

138. 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).

139. 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.

140. 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.

141. 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.

142. 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").

143. 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.

144. 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).

145. 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).

146. 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.)[(147)]

147. The Company noted that increases in EMF would be proportional to increases in line current (Exh. IDC-2, at 5.9-3).

148. 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 magnetic field levels.

149. IDC stated that the site was rezoned from Agricultural/Suburban to Industrial in May, 1997 (Exh. IDC-1, at 6.5-8).

150. The Town of Bellingham has six zoning designations: Agricultural; Suburban; Residential; Multifamily Dwelling; Business; and Industrial (Exh. EFSB-EL-8).

151. 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, berylillium, mercury, vinyl chloride or radio nuclides, shall be permitted only if granted a special permit (Exh. EFSB-EL-8, at 22).

152. 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.).

153. 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).

154. 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).

155. 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.).

156. 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 outside of the radius since the actual designation on the assessors map was difficult to decipher (Tr. 2, at 150-151).

157. 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).

158. 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.).

159. 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 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.).

160. 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.

161. The term statistically significant at p 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).

162. 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).

163. 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.

164. 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).

165. 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).

166. 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.

167. 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).