

COMMONWEALTH OF MASSACHUSETTS  
Energy Facilities Siting Board

In the Matter of the Petition of	)	
Montgomery Energy Billerica Power Partners, LP	)	
for Approval to Construct a 348 MW	)	
Peaking Power Generation Facility in the	)	EFSB 07-2
Town of Billerica, Massachusetts	)	
	)	

FINAL DECISION

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Presiding Officer  
March 3, 2009

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## ABBREVIATIONS

16-acre site	16.04 acres within 134-acre Baker Commodities parcel
<u>1985 MECo/NEPCo Decision</u>	<u>Massachusetts Electric Company/New England Power Company</u> , 13 DOMSC 119 (1985)
7Q10	lowest 7-day average flow anticipated in a 10-year period
AAL	Allowable Ambient Level
AIHA	American Industrial Hygiene Association
ALOHA	Areal Locations of Hazardous Atmospheres
<u>ANP Blackstone Decision</u>	<u>ANP Blackstone Energy Company</u> , 8 DOMSB 1 (1999)
BACT	Best Available Control Technology
BELD	Braintree Electric Light Department
<u>Braintree Decision</u>	<u>Braintree Electric Light Department</u> , EFSB 07-1/ DTE/D.P.U. 07-5 (2008)
<u>Brockton Decision</u>	<u>Brockton Power, LLC</u> , 10 DOMSB 157 (2000)
Btu/kWh	British thermal units per kilowatt-hour
BWG	Billerica Watchers Group
CAIR	Clean Air Interstate Rule
cfs	cubic feet per second
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
Company	Montgomery Energy Billerica Power Partners LP
dBA	A-weighted decibels
DOMSB	Decisions and Orders of Massachusetts Energy Facilities Siting Board
DOMSC	Decisions and Orders of Massachusetts Energy Facilities Siting Council
EFSB	Energy Facilities Siting Board
EMF	electric and magnetic field(s)
<u>Enron Decision</u>	<u>Enron Power Enterprise Corporation</u> , 23 DOMSC 1 (1991)
ERPG	Emergency Response Planning Guidelines
GEP	Good Engineering Practice
G.L. c.	Massachusetts General Laws chapter

gpd	gallons per day
I-495	Interstate-495
ICNIRP	International Commission on Non-Ionizing Radiation Protection
<u>IDC Decision</u>	<u>IDC Bellingham LLC</u> , 9 DOMSB 225 (1999)
ISO-NE	Independent System Operator of New England
kV	kilovolts
kV/m	kilovolts per meter
L <sub>90</sub>	sound level exceeded 90 percent of time
lbs/mmBtu	pounds per million British thermal units
lbs/MWH	pounds per megawatt-hour
LNG	liquefied natural gas
LOS	Level of Service (traffic grade at an intersection)
MassDEP	Massachusetts Department of Environmental Protection
MBTA	Massachusetts Bay Transportation Authority
MBTA railway line	Massachusetts Bay Transportation Authority Lowell commuter line
MDPH	Massachusetts Department of Public Health
MEB	Montgomery Energy Billerica Power Partners LP
MEPA	Massachusetts Environmental Protection Act
mG	milligauss
MMBtu	million British thermal units
MMBtu/hr	million British thermal units per hour
MVA	megavolt-amperes
MW	megawatts
MWh	megawatt-hours
NAAQS	National Ambient Air Quality Standards
NH <sub>3</sub>	ammonia vapor
<u>Nickel Hill Decision</u>	<u>Nickel Hill Energy, LLC</u> , 11 DOMSB 83 (2000)
NO <sub>2</sub>	nitrogen dioxide
NO <sub>x</sub>	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System



NSPS	New Source Performance Standards
NSR	New Source Review
PILOT	payment in lieu of taxes
PM <sub>2.5</sub>	particulates 2.5 microns or smaller
PM <sub>10</sub>	particulates 10 microns or smaller
ppm	parts per million
PSD	Prevention of Significant Deterioration
psi	pounds per square inch
RGGI	Regional Greenhouse Gas Initiative
ROW	right-of-way
SCR	Selective Catalytic Reduction
SILs	Significant Impact Levels
<u>Sithe Edgar Decision</u>	<u>Sithe Edgar Development, LLC</u> , 10 DOMSB 1 (2000)
<u>Sithe Mystic Decision</u>	<u>Sithe Mystic Development, LLC</u> , 9 DOMSB 101 (1999)
Siting Board	Energy Facilities Siting Board
SO <sub>2</sub>	sulfur dioxide
SO <sub>x</sub>	sulfur oxides
<u>Southern Canal Decision II</u>	<u>Southern Energy Canal II, L.L.C.</u> , 12 DOMSB 155 (2001)
SPCC	Spill Prevention, Control and Countermeasure Plan
Tennessee	Tennessee Gas Pipeline Company
TEL	Threshold Effects Exposure Limit
tons/yr	tons per year
TPS	Technology Performance Standards
µg/m <sup>3</sup>	micrograms per cubic meter
ULSD	ultra-low sulfur diesel oil
USEPA	United States Environmental Protection Agency
<u>U.S. Gen Decision</u>	<u>U.S. Generating Company</u> , 6 DOMSB 1 (1997)
VOCs	volatile organic compounds
WWTP	Billerica Wastewater Treatment Plant
WHO	World Health Organization

Pursuant to G.L. c. 164, § 69J¼, the Massachusetts Energy Facilities Siting Board (“Siting Board”) hereby APPROVES, subject to the conditions set forth below, the petition of Montgomery Energy Billerica Power Partners, LP to construct a 348-megawatt dual-fueled simple-cycle electric generation facility at the proposed site in Billerica.

I. INTRODUCTION

A. Description of the Proposed Facility, Site, and Interconnections

Montgomery Energy Billerica Power Partners LP (“MEB” or “Company”) has proposed to construct a dual-fueled simple-cycle electric generation facility with a nominal gross electrical output of 348 megawatts (“MW”) in Billerica, Massachusetts (“MEB project” or “proposed facility”) (Exhs. EFSB-G-4; EFSB-A-15(S) at 1-1; Tr. 1, at 17).<sup>1</sup> The Company would use natural gas as the primary fuel, and would use ultra low sulfur diesel oil (“ULSD”) only when natural gas is unavailable (Exh. MEB-1, at 4-13).

MEB is seeking approval from the Massachusetts Department of Environmental Protection (“MassDEP”) to operate the proposed facility for up to 2300 hours per year, including a maximum of 200 hours per year of operation on oil (Exhs. EFSB-G-8; EFSB-A-15(S) at App. A2, p. 4 of 9). However, the Company stated it anticipates a normal total of 800 to 1200 hours of facility operation per year (Tr. 2, at 278). MEB has projected that it would not normally operate except between 9:00 a.m. and 8:00 p.m., based on patterns in the electricity market and corresponding to times when New England load may exceed 20,000 MW (Tr. 1, at 62-65, 68).

MEB stated that the proposed facility would be located on 16.04 acres (“16-acre site”) of a 134-acre parcel owned by Baker Commodities, which operates an animal rendering facility (Exh. EFSB-G-4(1), at 1-1R). The 16-acre site, shown on Figure 1, is located west of Billerica Avenue, on Town Farm Lane in North Billerica (Exh. EFSB-G-11). MEB indicated that the 16-acre site is bounded to the north and west by undeveloped land; by a landfill to the northwest;

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<sup>1</sup> In its original petition filed on February 21, 2007, the Company proposed to construct a 480 MW dual-fueled generating facility in the same location as the proposed facility (Exh. MEB-1, at 1-1). On June 13, 2007, the Company amended its petition requesting approval to construct a 348 MW dual-fueled facility (Exh. MEB-1, at 1-1rev).

by Jack's Used Auto Parts, an automobile junk yard, to the south; by the Billerica Wastewater Treatment Plant ("WWTP") to the southeast; and by the Massachusetts Bay Transportation Authority ("MBTA") Lowell commuter line ("MBTA railway line") to the east (Exh. MEB-1, at 1-6, fig. 1.3-2). Beyond the Baker Commodities property to the west is the Concord River. The Company indicated that the former Reardon warehouse, a vacant former liquor wholesaler, is located to the east, across the MBTA railway line from the 16-acre site (Tr. 2, at 292).<sup>2</sup> The Company's maps indicate that the closest residential areas are approximately 500 feet to the east and 1600 feet to the west of the 16-acre site (Exhs. EFSB-A-15(1) at fig. 5-1; EFSB-RR-20).

The proposed facility would include six 58-MW Rolls-Royce 60 aeroderivative WLE gas turbines, each equipped with an inlet air filter and an 80-foot tall, 12-foot diameter exhaust stack (Exhs. MEB-1, at 4-57rev; EFSB-A-15(S) at 1-1, 2-1, 2-2). Each turbine would be situated within a weather enclosure (Exh. EFSB-N-1). The facility would control the emission of nitrogen oxides ("NO<sub>x</sub>") partly by injecting water into the turbines and further by use of ammonia in a Selective Catalytic Reduction ("SCR") system (Exh. MEB-1, at 4-13). The six turbines would also each have an oxidation catalyst, for control of carbon monoxide ("CO") and volatile organic compounds ("VOCs"), and a Continuous Emissions Monitoring System (Exh. EFSB-A-15(S) at 2-1, 2-2, 4-3, 4-7, 4-8). Ancillary equipment would include a 500,000-gallon oil tank, a 750,000-gallon water storage tank for general service and fire protection, a 500,000-gallon water storage tank for NO<sub>x</sub> control, a 250,000-gallon wastewater holding tank, two 18,000-gallon tanks for aqueous ammonia,<sup>3</sup> three 140 megavolt-ampere ("MVA") 13.8-to-115 kilovolt ("kV") step-up transformers, auxiliary transformers, six lube oil cooling skids, a building to serve administrative and storage functions, and a series of one-story control buildings (Exhs. MEB-1, at 1-6; EFSB-A-15(S), at 6-11; EFSB-RR-21; Tr. 1, at 33-37).

MEB stated that the proposed facility would interconnect with a 115-kV power line that

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<sup>2</sup> A subsequent visit by Siting Board staff to the site suggested that part of the former Reardon warehouse building is now partly or occupied.

<sup>3</sup> At the Siting Board meeting of October 2, 2008, the Company indicated that, while it had originally proposed two 24,000 aqueous ammonia storage tanks for the proposed facility, it was revising its proposal to reduce the size of each ammonia tank to 18,000 gallons (see October 2, 2008 Siting Board Meeting Tr. at 116).

would extend 0.2 miles southward to National Grid's Line J 162, which would be reconductored in order to transmit power from the MEB project to the Tewksbury 22 substation located 2.7 miles to the east (Exh. EFSB-G-1(S) at 2-7 and fig. 2-4). The interconnection would traverse the property of Jack's Used Auto Parts located adjacent to the project site (id. at 2-7). The Company stated that the proposed facility would also be interconnected to an existing Tennessee Gas Pipeline Company ("Tennessee") 24-inch gas pipeline that is located on the site (id.). The existing pipeline would be re-routed within the site to accommodate the proposed facility layout (id.). The proposed interconnection point is five miles south of the interconnection of the Tennessee pipeline with the Maritimes and Northeast Pipeline and the Portland Natural Gas Transmission System; the Company indicated that the proposed facility would thereby be able to access gas from Distrigas in Everett, from proposed marine terminals off Gloucester, from Nova Scotia, from western Canada, and from the midwestern United States (id.).

Initially, MEB stated that it was pursuing the use of Billerica WWTP effluent as the primary water source, with Town of Billerica water as back-up; this proposal was subsequently modified to use Town of Billerica water as the principal source of water until scheduled construction work at the Billerica WWTP is complete (Exhs. EFSB-G-1(S) at 2-4; EFSB-W-15, at 2, 3; Tr. 1089-1090).<sup>4</sup> Water would be used for NO<sub>x</sub> air emissions control, for inlet evaporative cooling, for washing, for domestic use, and for fire protection (Exh. EFSB-G-1(S) at 2-4). A 750,000-gallon tank would store water for general service and fire protection (id.). Some water would be demineralized by various processes and stored in a 500,000-gallon tank for NO<sub>x</sub> control and other uses (id. at 2-5). Wastewater would be returned to the Billerica WWTP or trucked off site (id.).

The Company indicated that construction traffic would come from the Woburn Street interchange on Interstate 495, travel two-thirds of a mile south on Woburn Street, and use the existing Baker Commodities entrance to access the site (Exh. EFSB-G-1(S) at 13-1). After construction, heavy vehicles would arrive by the same route, while personal vehicles would also

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<sup>4</sup> According to the estimation of Abdul Alkhatib, Director of Public Works for the Town of Billerica, the WWTP would be operational with tertiary treatment in 2010 (Tr. 9, at 1253-1254); see Section IV.C, below.

arrive via Town Farm Road, which is located an additional half mile south of the Baker Commodities entrance on Woburn Street, which becomes Billerica Avenue in Billerica (*id.*).

B. Procedural History

On April 24, 2007, the Siting Board conducted a public comment hearing in Billerica. In accordance with the direction of the Presiding Officer, MEB provided notice of the public comment hearing and adjudication.

The Siting Board granted the petition to intervene filed by Ernest Linek, who resides less than 1/3 mile from the proposed facility, and the Joint Petition to Intervene filed by the Billerica Watchers Group and twenty-two individual residents of Billerica, Tewksbury, and Pepperell, some of whom are members of the Billerica Watchers Group (collectively, “BWG”).<sup>5</sup> The Billerica Watchers Group is a group of individuals from Billerica and surrounding communities, who are interested in local issues including town development and infrastructure (BWG Petition to Intervene at 3). The Siting Board also granted limited participant status to Colleen Cunningham, a resident of Billerica. The Siting Board denied the petitions to intervene filed by Wallace Lafayette and Karen and Peter Brekalis.

The Siting Board initially conducted seven days of evidentiary hearings, commencing on October 23, 2007 and ending on November 27, 2007. MEB presented the testimony of the following witnesses: Joseph Fitzpatrick, Chief Executive Officer, DG Clean Power, LLC; Edward Liston, Executive Vice-President, DG Clean Power, LLC; Theodore Barten, Managing Principal, Epsilon Associates, Inc; A.J. Jablonowski, Senior Consultant, Epsilon Associates, Inc.; Robert O’Neal, Epsilon Associates, Inc., who testified on noise measurement and modeling; Michael Howard, Epsilon Associates, Inc., who testified on wetlands; Elizabeth M. Hendrick, Senior Air Quality Meteorologist at Epsilon, who testified as to technology performance standards, and air quality impacts; and Peter A. Valberg, Gradient Corporation, who testified on health effects, including health effects from electric and magnetic fields (“EMF”). BWG presented the following expert witness: Maureen Barrett, AERO Engineering Services, who

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<sup>5</sup> On May 23, 2008, Marti Mahoney, an individual member of BWG filed a notice of her withdrawal from the proceeding.

testified as to air quality, health and safety issues; and the following lay witnesses: Kenneth McPhillips, Edward A. Bunker, Donald Gadbois, Donald MacDonald, and Jeanne Landers.<sup>6</sup> The Company and BWG filed initial and reply briefs.

On May 23, 2008, the Siting Board staff issued its first bench memorandum setting forth the issues for the Board to consider at its meeting scheduled for May 29, 2008. On May 23, 2008, BWG filed a motion to reopen evidentiary hearings on virtually all of the environmental issues of record in the proceeding.<sup>7</sup> The Presiding Officer granted, in part, and denied, in part, BWG's motion to reopen hearings. Specifically, the Presiding Officer granted BWG's request to reconvene the hearing to address the issues associated with the Company's decision to use municipal water rather than water from the Billerica WWTP as the source for water for the proposed facility, and the issues associated with any alternative to truck water to the proposed facility (Presiding Officer Ruling, June 19, 2008). With respect to all other environmental issues identified in BWG's motion to reopen hearings, the motion was denied (*id.*). The Presiding Officer scheduled an evidentiary hearing for July 9, 2008 to address those issues related to the Company's decision to use municipal water.

On June 26, 2008, BWG filed a motion to reverse the June 19, 2008 Presiding Officer Ruling to limit the scope of the reopened hearing as described above. The Presiding Officer denied BWG's motion at the July 9, 2008 hearing.

On July 3, 2008, BWG filed a motion requesting issuance of subpoenas to Mr. Abdul Alkhatib, Director of Public Works for the Town of Billerica, and to the MassDEP, Water Management Act Section: (1) to testify at the July 9, 2008, hearing or at a hearing which the Siting Board would convene on a later date; and (2) to bring to the hearing certain documents related to the source of water for the proposed facility.

On July 11, 2008, in accordance with GL 30A, § 12, and 980 CMR §§ 1.04(2)(a) and

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<sup>6</sup> BWG also submitted pre-filed testimony of Rui Vieira and of Charles H. and Susan Hanlon. BWG withdrew this pre-filed testimony since these individuals were not available for cross-examination at the evidentiary hearings (Tr. 7, at 1065-1066).

<sup>7</sup> In light of BWG filing a motion to re-open hearings, the Siting Board cancelled its May 29, 2008 meeting to discuss the May 23, 2008 bench memorandum.

1.09(5), the Presiding Officer issued the two subpoenas duces tecum for the witnesses to appear at a hearing scheduled for July 17, 2008. In response to the subpoena, Mr. Alkhatib appeared at the July 17, 2008 hearing to address questions related to the water resources for the facility. Counsel for MassDEP, however, filed a Motion to Quash the subpoena on the grounds that the subpoena was unduly burdensome and overly broad, and would require several weeks to gather and certify the documents requested by BWG (MassDEP Motion to Quash at 2-3). On August 1, 2008, the Presiding Officer granted the MassDEP Motion to Quash (Presiding Officer Ruling, August 1, 2008). Following the evidentiary hearings on July 9 and July 17, 2008, the Presiding Officer allowed parties to submit a single round of supplemental briefs on the limited issues considered at the July 9 and July 17, 2008 hearings (Presiding Officer Memorandum, August 5, 2008). On August 12, 2008, the Company and BWG each submitted a supplemental brief. In addition, without leave of the Presiding Officer, BWG submitted a response to MEB's supplemental brief.<sup>8</sup> The record of the total of nine days of evidentiary hearings contains approximately 866 exhibits, consisting primarily of responses to information requests and record requests.

The Siting Board staff issued a second bench memorandum on September 26, 2008. The Siting Board met on October 2, October 23, and November 13, 2008, to consider MEB's petition. At the meeting of November 13, 2008, the Siting Board, by a unanimous vote, directed Siting Board staff to draft a Tentative Decision approving, with conditions, MEB's petition (November 13, 2008, Siting Board Meeting Tr. at 43-49).

### C. Jurisdiction and Scope of Review

MEB filed its petition to construct the proposed facility in accordance with G.L. c. 164, § 69J¼. Pursuant to G.L. c. 164, § 69J¼, no applicant shall commence construction of a "generating facility" unless a petition for approval of construction of that generating facility has

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<sup>8</sup> Since the schedule for submitting Supplemental Briefs did not provide for submission of rebuttal briefs and BWG made no request to do so, the Presiding Officer did not consider the arguments contained in BWG's "Response to Supplemental Brief" filed on August 19, 2008.

been approved by the Siting Board. Pursuant to G.L. c. 164, § 69G, a jurisdictional “generating facility” is defined as “any generating unit designed for or capable of operating at a gross capacity of 100 megawatts or more, including associated buildings, ancillary structures, transmission and pipeline interconnections that are not otherwise facilities, and fuel storage facilities.” Because the proposed facility is capable of operating at a gross capacity of 100 MW or more, it is a “generating facility” requiring Siting Board approval under G.L. c. 164, § 69J¼.

In accordance with G.L. c. 164, § 69J¼, before approving a petition to construct a generating facility, the Siting Board must determine that the applicant has met five requirements. First, the Siting Board must determine that the applicant’s description of the site selection process used is accurate (see Section II, below). Second, the Siting Board must determine that the applicant’s description of the proposed generating facility and its environmental impacts are substantially accurate and complete (see Section IV, below). Third, the Siting Board must determine that the proposed generating facility will minimize environmental impacts consistent with the minimization of costs associated with mitigation, control, and reduction of the environmental impacts (see Sections IV.B through IV.J, below.) Fourth, the Siting Board must determine that plans for construction of the proposed generating 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 Board (see Section IV.K, below). Finally, if the expected emissions from the proposed generating facility do not meet the applicable technology performance standard, the Siting Board must determine, based on a comparison with other fossil fuel generating technologies, that the proposed generating facility on balance contributes to a reliable, low-cost, diverse regional energy supply with minimal environmental impacts (see Section IV, below). Braintree Electric Light Department, EFSB 07-1/D.T.E./D.P.U. 07-5, at 76 (2008) (“Braintree Decision”).

## II. SITE SELECTION

### A. Standard of Review

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



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

The Siting Board also is required to determine whether a proposed facility provides a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost. G. L. c. 164, § 69H. To accomplish this, G. L. c. 164, § 69J¼ requires the Siting Board to determine whether "plans for the construction of a proposed facility minimize the environmental impacts consistent with the minimization of costs associated with the mitigation, control, and reduction of the environmental impacts of the proposed generating facility."

G. L. c. 164, § 69J¼. Site selection, together with project design and mitigation, is an integral part of the 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. Company

MEB stated that it identified five sites for evaluation (Exh. MEB-1, at 2-4). The five sites were: (1) the Rivet Parcel, a 20-acre parcel in Billerica; (2) a 4-acre Middleton Electric Light Department site near a substation off Route 114 in Middleton; (3) five lots totaling 154 acres on Capitol Avenue, north of Main Street (Route 38) in Tewksbury; (4) a former Western Electric site in North Andover; and (5) the Baker Commodities parcel in Billerica (*id.* at 2-4, 2-5). The Company explained that the sites it evaluated were all in or near the Merrimack Valley area of northeastern Massachusetts because (1) no new generation had been constructed in this area for 20 years; (2) over 40% of the Boston area's peak load is supplied through the Tewksbury Substation; (3) other regions considered had significant transmission constraints; and (4) the selected area would have good access to gas to be supplied by new liquified natural gas

(“LNG”) projects on the Atlantic coast (Exh. EFSB-SS-7).

For evaluation of each of the sites, the Company used three general selection criteria: (1) consistency with development objectives; (2) environmental impacts; and (3) community issues (Exh. MEB-1, at 2-2). Within each of these categories, the Company developed a number of sub-criteria (id.). Comparative ratings of the sites were qualitatively graded, with no differential weighting of the criteria or sub-criteria (Exh. EFSB-SS-2).

With respect to consistency with development objectives, the Company stated that it evaluated sites for land availability, proximity to electric load, availability of natural gas, electric transmission (including proximity to lines, need for transmission facility construction, and ability to serve more than one load region), availability of water, and compatibility with existing and planned land uses (Exh. MEB-1, at 2-2, 2-3).

With respect to environmental impacts, MEB stated that it considered air quality, water consumption, wastewater, wetlands, noise, land use, historical and cultural resources, visual impacts, traffic, solid and hazardous waste, safety, and EMF (id. at 2-3). The Company asserted that environmental impacts would be minimized by locating a facility at a site with the following attributes: no sensitive air quality receptors in the immediate vicinity; an unstressed water resource; wastewater discharge options that would not affect sensitive receptors; a mostly upland construction setting; a properly zoned location surrounded by industrial uses; ready access to interstate highways; a location that does not affect historical and cultural resources; distant from sensitive noise and visual receptors; no existing hazardous waste issues; adequate police and fire protection; and the availability of established electric transmission corridors (Exh. EFSB-SS-6).

With respect to community issues, MEB evaluated the compatibility of facility development with local community uses and considered the ability to acquire needed permits in a timely manner (Exh. MEB-1, at 2-3). MEB stated that it sought industrially zoned parcels with sufficient supporting utility infrastructure, and evaluated sites positively if there were no immediately abutting residences (id.). MEB stated it attempted to screen out parcels near schools or hospitals and also parcels where a facility would constitute a significant visual feature (id.).

MEB indicated that while each of the five candidate sites fulfilled some of its criteria, four of the sites had various deficiencies (id. at 2-7). MEB indicated that the Rivet Parcel in

Billerica has good access to infrastructure, but land availability, land use compatibility, environmental impacts, and community issues were negative factors (*id.*). MEB indicated that the Middleton Electric Light Department site also has good access to infrastructure, but does not meet the Company's requirement for land area (*id.*). The Company indicated that the Capitol Avenue site in Tewksbury has good access to infrastructure, but environmental impacts would be a negative factor; also, the identified site includes three or four parcels, one of which is not zoned industrial and one of which is in commercial use, and the necessary parcels would be difficult to aggregate (*id.*; Tr. 2, at 186, 194-196). MEB indicated that the North Andover site also has good access to infrastructure, but a facility would be highly visible from a dense residential area, and also stated that the land is not available for the project (Exh. MEB-1, at 2-7; Tr. 2, at 196).

The Company stated that it met with various town officials regarding possible site locations in several towns.<sup>9</sup> Relative to the Middleton site, MEB stated that it met with the Town Manager and the Town Electric Light Department Manager in 2005/2006 (Exh. EFSB-SS-3). Regarding the Tewksbury site, the Company updated information that had been obtained in meetings in the 1990s (*id.*). MEB indicated that it met with Billerica officials, neighboring town officials, and the Billerica legislative delegation in 2006 and 2007 (*id.*). MEB stated that it was encouraged to pursue the proposed project by Billerica town officials, and did not receive similar encouragement from Billerica with regards to the Rivet site or from other towns with regards to the other three sites (Tr. 2, at 198-200).

According to MEB, the Baker Commodities site rated "positive" for all of the Company's criteria (Exh. MEB-1, at 2-7). The 16-acre site at Baker Commodities has industrially-zoned land around its entire periphery (Exh. EFSB-LU-1). There is an existing 24-inch high pressure pipeline at the site, operating at 700 pounds per square inch ("psi") (Exh. MEB-1, at 1-13). An existing electric transmission line corridor is 0.2 miles south of the site (*id.* at 1-12, 1-13). The site is close to the Town of Billerica WWTP, and there is an existing city water line on the Baker Commodities parcel, both available as sources of water (*id.* at 1-13, 1-14). MEB indicated

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<sup>9</sup> There is no indication that the Company met with North Andover officials regarding the Western Electric site.

that the proposed facility would occupy almost the entire 16-acre site (Exh. EFSB-RR-3). The Company stated that there are 269 residences within one-half mile and 1614 residences within one mile of the MEB project (Exh. EFSB-LU-4). The Company indicated that the closest residence is 700 feet from the nearest facility structure on the proposed site (Exh. EFSB-LU-5). With respect specifically to existing contamination, an issue raised in BWG's initial brief, MEB argues that the record shows that Phase I and Phase II evaluations found no contamination in the area proposed for construction (MEB Reply Brief at 57, citing Exh. EFSB-G-1(S), App. I).

MEB asserted that the Baker Commodities site: (1) is available; (2) is proximate to electric load; (3) is close to a natural gas pipeline; (4) is close to electric transmission lines; (5) has an adequate water supply; (6) has compatible existing and planned uses; and was scored "positive" on (7) environmental issues and (8) community issues based on discussions with town officials in mid-2006 (Exhs. MEB-1, at 2-7; EFSB-SS-4). Based on its analysis, MEB selected the Baker Commodities site as preferable for development (Exh. MEB-1, at 2-7).

### C. Intervenor

BWG maintained that there should be no power plant construction within a 30-mile radius of Billerica (Exhs. EFSB-G-2(S)(4); MEB-15). BWG argues that the list of alternative sites and the environmental criteria that were used to select the site are "based on hearsay and untenable legal statements" (BWG Initial Brief at 51-52; BWG Reply Brief at 23-24). BWG argues that the Company has not adequately addressed the issues of environmental protection, public health, and public safety in its site selection process (BWG Brief at 54).

In its petition to intervene, BWG alleged that the proposed facility would be located within 1.5 miles of an elementary school and would pose a serious health hazard to the community (BWG Petition to Intervene at 5). BWG further alleged that there are three home daycare facilities for children within one-half mile of the proposed facility; in its reply brief, BWG urged the Siting Board to focus on the Company's omission from its site selection process of "the numerous amount of licensed day care centers in very close proximity of this proposal" (id. at 6-9; BWG Reply Brief at 24).

Under the rubric of site selection, BWG expressed concern about the possibility that Jack's Used Auto Parts may have contaminated soil and groundwater (BWG Brief at 53-54). In order to "protect the health, public safety, and environmental impacts which will be at risk from the inconclusive studies presented", BWG requests "that further comprehensive soil and groundwater testing be conducted by an independent third party before [the proposed facility is] considered for permitting" (id. at 53).

D. Analysis

MEB has presented a site selection process which shows that the Baker Commodities site has a number of advantages for power plant construction, compared to four other potential sites in northeastern Massachusetts that were identified by the Company. The Company described the suitability of the Baker Commodities site and the four other sites with respect to a number of criteria concerning existing infrastructure and land uses that could influence environmental and community impacts. The Siting Board notes that the Company provided information on the five sites, based on site visits, environmental analyses specific to each site, and consideration of economic factors and reliability.

BWG has identified a number of issues that may be worthy of particular consideration in a site selection process, including the likelihood of existing site contamination and distances to sensitive receptors. As discussed in Section IV, below, indications are that the site is not contaminated, and any contamination that might exist at Jack's Used Auto Parts is not likely to affect the site. Distance to residential or sensitive receptors would be a reasonable element of site selection criteria; the record shows that the Company did consider, in a qualitative way, whether sites were close to visual and noise receptors, but did not include distance to receptors as a separate criterion. However, the Siting Board notes that the absence of the more thorough consideration is not sufficient to warrant that the Siting Board withhold findings set forth in the standard of review regarding the Company's site selection process.<sup>10</sup> The Company could have presented a more detailed process, but the Company was able to show that the process it used led

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<sup>10</sup> The Siting Board considers such issues in more detail in its review of environmental impacts in Section IV, below.

to a location with some advantages relative to other sites. The absence of a 30-mile exclusion zone is also not sufficient to warrant that the Siting Board withhold findings set forth in the standard of review regarding the Company's site selection process.<sup>11</sup>

Further with respect to the presence of sensitive receptors in the general area, the Siting Board notes that, in heavily populated eastern Massachusetts, most power plants are located in areas that have these kinds of sensitive receptors, and that steps to mitigate impacts on nearby receptors including the use of pollution controls and stacks to limit and disperse emissions are typically required. We note that the site itself has little buffer,<sup>12</sup> but the site is surrounded by industrially zoned properties.

Overall, the proposed site has advantages over other sites that were considered. The Baker Commodities site is located at or close to connections to gas, the electric grid, water, and transportation. However, as described in Section IV.E, below, the Company does not control most of the land that would provide a buffer for the proposed facility. Moreover, the Company did not include the availability of buffer as a sub-criterion for evaluating the environmental impacts at each of the potential sites. In previous cases, except for proposals to add generation on an existing power plant location, applicants generally have included availability of buffer as a

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<sup>11</sup> The Siting Board cannot conclude a priori that an entire region such as the Merrimack Valley is an unsuitable location for any type of generating facility. Nickel Hill Energy Decision, 11 DOMSB 83, at 16 (2000) ("Nickel Hill Decision").

<sup>12</sup> Many previous proposed projects in suburban areas have included buffer areas that were under the control of the project owner. See, for example, IDC Bellingham, LLC, 9 DOMSB 225, at 341-343 (1999) ("IDC Decision"); ANP Blackstone Energy Company, 8 DOMSB 1, at 196-197 (1999) ("ANP Blackstone Decision"); Eastern Energy Corporation, 22 DOMSB 188, at 300-303 (1991). The 16-acre Billerica project site does not have such buffer areas under the Company's control except for a small area on the west of the site (see Exhs. EFSB-RR-2; EFSB-RR-3). The absence of a controlled buffer zone has ramifications with respect to noise, visual impacts, and safety, each discussed in Section IV, below. Compared to sites in prior petitions, the 16-acre site is relatively small. The Siting Board has accepted two free-standing power plants on smaller sites, a 6.8-acre site in Milford and a 5.2-acre site in Everett. Milford Power, 23 DOMSB 1, at 3 (1991); Cabot Power Corporation, 7 DOMSB 233, at 50 (1998). Several other projects located at existing power plants and cogeneration applications at industrial facilities were also small. Otherwise, sites have been larger, predominantly 30 acres or more.

named site selection criterion. See, e.g., ANP Blackstone Decision, 8 DOMSB 1, at 92; U.S. Generating Company, 6 DOMSB 1, at 97 (1997) (“U.S. Gen Decision”). We note, in this case, that the proposed facility would be a peaking unit with limited expected run time, and potentially smaller scale for its MW size. The proposed facility’s scant buffer does not automatically invalidate the site, or the analysis to select it. However, as indicated in Section IV below, mitigation of impacts to immediate neighbors of the Baker Commodities site is an issue.

The record for the present case shows that the Company provided a description of its selection process and the objectives it used for evaluating potential sites. The record indicates that the Company’s proposed site has a number of attributes which would help to minimize the environmental impacts of a generating facility, including proximity to available water and to electric, gas, and sewer infrastructure, the existing visual buffers, and its industrial neighbors. However, the record also shows that MEB would need to further minimize, through design or mitigation, some of the environmental impacts that the proposed project would likely have in its vicinity. Environmental impacts and their mitigation are discussed in Sections IV.B through K, below. The record shows that location of the proposed project at the proposed site would provide broad advantages and entailed no broad disadvantages, compared to at least some other available sites identified by the Company. Accordingly, the Siting Board finds that the Company’s site selection process accurately described the environmental, reliability, regulatory and other considerations, and resulted in the selection of a site that contributes to the minimization of environmental impacts and the costs of mitigating, controlling, and reducing such impacts.

### III. TECHNOLOGY SELECTION

The Siting Board’s Technology Performance Standard (“TPS”) requires a proponent to prepare an analysis of alternative fuel technologies if the project does not meet a published set of emissions criteria.

#### A. Standard of Review

G. L. c. 164, § 69J¼ requires the Siting Board to promulgate technology performance standards for generating facility emissions. These technology performance standards are to be

used solely to determine whether a petition to construct a generating facility shall include information regarding fossil fuel generating technologies other than the technology proposed by the petitioner. G. L. c. 164, § 69J¼. If the expected emissions of the facility do not meet the technology performance standards in effect at the time of filing, the petitioner must include in its petition a description of the environmental impacts, costs, and reliability of other fossil fuel generating technologies, and an explanation of why the proposed technology was chosen. Id. The Siting Board must then determine whether the construction of the proposed generating facility on balance contributes to a reliable, low-cost, diverse regional energy supply with minimal environmental impacts. Id.

B. Company

MEB presented a comparison of facility emissions to the TPS criteria and a review of alternative technologies. The Company discussed its decision to build a peaking unit (Section III.B.2, below), and provided a comparison of peaking technologies (Section III.B.3, below).

1. Technology Performance Standard

The proposed project would exceed three of the Siting Board's TPS, as shown in Table 1:



<b>TABLE 1. Proposed Facility vis a vis Technology Performance Standard</b>		
<b>Pollutant <sup>1</sup></b>	<b>TPS Criterion</b>	<b>Project Emission Rate <sup>2</sup></b>
	<b>lbs/MWH</b>	<b>lbs/MWH</b>
SO <sub>2</sub>	0.021	0.028
NO <sub>x</sub>	0.120	0.102
Particulate (and PM <sub>10</sub> )	0.081	0.086
CO	0.077	0.104
VOC	0.035	0.029

1. Criteria pollutants shown. Non-criteria pollutants all meet TPS numerical criteria.

2. Projected emission at 100% load at 59 degrees Fahrenheit, using gas as fuel.

Sources: Order on Rulemaking, 7 DOMSB 1, at 16; Exh. MEB-1rev, at 3-4, 3-5; EFSB-A-19; Tr. 3, at 334-335.

Therefore, the Company is required to evaluate alternative fossil fuel technologies (Exh. MEB-1, at 3-5). MEB accordingly presented a comparison of the proposed project and other fossil fuel technologies with respect to costs, environmental impacts, reliability, and contribution to diversity (id.).

## 2. Peaking Loads, Capacity Need, and Ready Reserves

MEB stated that there is a need in New England for peaking facilities, asserting that new peaking facilities are needed for economic, diversity, system reliability, and environmental purposes (Exh. MEB-1, at 3-7). According to the Company, peak load in New England is now 75% higher than average load, up from 54% in 1980 (id.). However, the proportion of regional capacity met by peaking facilities has decreased in the past decade (id.). For 2007, the total peaking capacity in the region was only 3061 MW, less than 10% of the total rated capacity of 31,052 MW (id. at 3-14). More than half of the 3061 amount is pumped storage hydropower (id.). The proposed project would increase New England peaking capability by 9% (id. at 3-15rev). If available, baseload units can be used to meet peak needs, but peak loads occur too infrequently to justify the higher capital expenditure associated with construction of baseload units (id. at 3-13).

MEB indicated that there is a need for units with shorter start-up times than baseload units (id. at 3-12). The Company stated that individual turbines of the proposed project would each reach full power output within 7 to 10 minutes of dispatch (Exh. EFSB-A-15(S) at 2-2; Tr. 3, at 441). The Company stated that peaking units with short start-up times can serve the non-spinning reserve markets for a range of load conditions, and can serve as readily available back-up for units that run more continuously (Exh. MEB-1, at 3-12, 3-13). The Company asserted that combined-cycle units can provide operating reserves, but only when they are producing less than full power (id. at 3-15). In addition, MEB asserted that there is a need for peaking quick-start units that can run on oil if gas is in short supply (id. at 3-16). MEB stated that while the proposed project would have this type of flexibility, it would not have black-start capability; it could not start itself in a blackout (Tr. 1, at 171).

MEB stated that there is a long-term annual need for 500 MW of additional capacity in New England, due to anticipated load growth of 1.9% per year, estimated by the independent transmission system operator of New England ("ISO-NE") (Exh. MEB-1, at 3-9). The Company cited a draft ISO-NE resource adequacy analysis from July 2006, indicating that additional capacity resources will be needed in the region by 2009, if not sooner, depending in part on availability of additional imports from surrounding regions (id.). The Company cited ISO-NE forecast of a need for 1553 MW of new capacity in 2008, absent emergency tie-ins to neighboring regions, climbing to 2415 MW in 2009 (id.). The Company stated that a peaking facility typically has a shorter lead time than a combined-cycle technology, because it would have less local environmental impact, and it would use modular construction (id. at 3-18). As an example, the Company stated that a peaking facility can be constructed in one year, compared to two years required for a combined-cycle facility (id.). According to the Company, the one year difference is a decided advantage, given the immediacy of regional capacity need (id.).

MEB asserted that ISO-NE has essentially been forced in the last five to ten years to execute contracts which essentially have nothing to do with the market, noting that there's been a shortage of quick-start, peaking-type resources in New England that are strategically located (Tr. 2, at 284-285). MEB stated that there are existing units that are old, inefficient, and expensive and that cannot survive in the modern market because of their cost structure – some of them have even sought to retire or deactivate – but cannot be retired, because they're needed for

system reliability (*id.* at 286). As a result, according to MEB, ISO-NE has written a large number of reliability must-run agreements with these older plants to keep them up and running (*id.*). MEB further asserted that some of these old reliability must-run units cannot start quickly, so they are started on Monday morning and shut down Friday night, even though they might only be needed for six hours during the week (*id.*). Citing a need to reduce reliance on reliability must-run contracts for older unit capacity, the Company stated that ISO-NE “is encouraging people like us, who are more efficient, more competitive, to enter the market, so slowly but surely they can wean themselves and their consumers off these high-cost, essentially corporate socialism contracts that are in place today” (*id.* at 284-285).

MEB stated that while peaking units have inferior heat rates compared with new baseload combined-cycle facilities, peaking units have lower capital costs, which can be recovered by a combination of revenues from energy markets during peak hours and ancillary services (Exh. MEB-1, at 3-13). MEB stated that solar, wind, and typical biomass facilities are not capable of providing quick start peaking power (*id.*). MEB stated that peaking power can be provided by fossil fuel powered units, including reciprocating engines, frame units, and aeroderivative jet turbines, and by pumped storage hydroelectricity (*id.* at 3-18, 3-19). The Company stated that it decided to propose a dual-fuel fired peaking facility due to several factors: (1) a need in New England for peaking facilities; (2) a need in New England for quick-starting capability to ensure system reliability; (3) market demand for operating reserves and installed capacity; (4) recent predominance of non-dual fuel capable capacity additions; (5) the overall low proportion of peaking facilities in New England; and (6) the relatively short lead time for building a peaking facility (*id.* at 3-7 to 3-18).

### 3. Selection Among Peaking Technologies

MEB indicated that, for the amount of power generation desired, the Billerica site is not conducive for pumped storage hydroelectric generation, nor for reciprocating engines for electric power generation; reciprocating engines also have higher air emissions (Exh. MEB-1, at 3-18, 3-19, 3-22). The Company provided a detailed comparison of frame units versus aeroderivative units (*id.* at 3-20 to 3-23). As an initial matter, the Company stated that aeroderivative units are generally smaller (in size, weight, and capacity) and also have cooler exhaust, compared to

frame units (id. at 3-22). Each technology has some benefits relative to the other, as described below.

MEB indicated that frame units have a significant capital cost advantage over aeroderivative turbines, with a total installed cost of \$550 to \$650 per kilowatt (“kW”), compared to \$950 to \$1050 per kW for aeroderivative turbines, consistent with the general cost advantage of peaking units (id.). In addition, frame units do not require a high-pressure external fuel compressor (id.). Aeroderivative turbines, on the other hand, have a slightly lower (more efficient) heat rate (8100 to 9200 Btu/kWh for aeroderivative turbines versus 9000 to 10,400 Btu/kWh for frame units) (id.). The Company indicated that aeroderivative turbines are more versatile, with 10-minute start times, costing only \$300 per start, and minimal required run times (versus 30-minute \$8000 starts and 4-hour minimum run times), and facilities with aeroderivative turbines can be constructed more quickly (id. at 3-21, 3-22). In addition, the Company indicated that aeroderivative turbines have a smaller footprint and shorter stacks (id. at 3-22). According to the Company, either type of peaking plant can be constructed to run on both natural gas and distillate oil; using a combination of air pollution technologies, aeroderivative turbines can meet stack emission limits using either gas or oil (id. at 3-20, 3-22). The Company stated that it selected dual-fuel aeroderivative technology as appropriate for system needs and the 16-acre site (id. at 3-23).

### C. Intervenor

BWG asserted that the proponent has dismissed, without explanation, alternatives such as renewable energy or load mitigation to satisfy ISO-NE’s recommendations (Exh. BWG-MB at 1-2). BWG concludes that “upgrading transmission systems and incorporating conservation efforts are the solution to high peaking periods (BWG Reply Brief at 74). According to BWG, the Company has engaged in “cherry picking” from ISO-NE statements to support MEB’s claim that there is a need for peaking facilities in the area (BWG Reply Brief at 77).

BWG argues that the proposed plant would require approximately 30% more natural gas than a combined cycle facility (BWG Reply Brief at 2). BWG thus argues that the efficiency of simple-cycle designs is lower than the efficiency of the most efficient combustion turbine designs (BWG Brief at 28).

D. Analysis

The facility proposal does not meet the TPS numerical criteria. See 980 CMR 12.00 et seq. Therefore, G. L. c. 164, § 69J¼ requires the Company to provide information regarding other fossil fuel generation technologies. The Siting Board has, in the past, approved peaking plants, which are not expected to meet the TPS numerical criteria. See Braintree Decision; Sithe West Medway Development LLC, 10 DOMSB 275 (2000).<sup>13</sup> The record shows that, compared to baseload plants, peaking plants have a smaller physical size and footprint and have less construction impacts, per MW of capacity, but some operational impacts are greater per MWh of power produced. Thus, peaking plants have a smaller scale than baseload plants of the same capacity, but emit more air pollutants per unit of power produced. Compared to baseload plants, peaking plants are less expensive to build per MW of capacity, but more expensive to operate per MWh of power generated.

The record shows that existing peaking capacity is well below the margin between peak and off-peak load in New England. The Siting Board recognizes the value of peaking capacity generally, and the flexibility afforded by dual-fuel capability in particular, with respect to its contribution to the reliability and cost-effectiveness of New England's electric system. The record shows that peaking facilities can provide capacity with fast start-up times and an ability to handle system contingencies and peak electricity needs, and may do so at a capital cost that is low enough to justify their limited use.

Among peaking generation technologies, the evidence suggests that aeroderivative turbines, such as the proposed units, have some advantages over frame units. While the cost to construct would be higher than for a frame unit, the proposed facility would be better able to serve as a back-up supply, due to the quick-start capability of aeroderivative turbines. For a peaking unit, the ability to run for only a short time, and to avoid idling while in reserve, could help to minimize environmental impacts from operations such as noise and air quality impacts. The comparatively small size of the units would minimize long-term environmental impacts of the facility such as land use and visual impacts.

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<sup>13</sup> Of these approved peaking plants, the West Medway facility was not constructed, while the Braintree facility was just recently approved.

The record shows that MEB has provided an explanation supporting construction and operation of a quick-start, dual-fueled simple-cycle generation facility given near- and longer-term market considerations, including a number of advantages associated with MEB's decision to propose using aeroderivative turbines at the 16-acre site.

Accordingly, based on our review of record evidence regarding potential reliability and diversity benefits associated with the operation of dual-fuel peaking capacity, the Siting Board finds that construction of this project, including the selection of aeroderivative single-cycle peaking technology, contributes on balance to a reliable, low-cost, diverse, regional energy supply with minimal environmental impacts.<sup>14</sup>

#### IV. 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 several areas prescribed by its statute, including air quality, water resources, wetlands, solid waste, visual impacts, noise, local and regional land use, and cumulative health, and determines whether the applicant's description of these impacts is accurate and complete. G. L. c. 164, § 69J¼.<sup>15, 16</sup>

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<sup>14</sup> The Siting Board notes that MEB provided significant information regarding the region's forecasts of energy and peak capacity demand, and the potential growth of reliability must-run agreements within the New England region. The Siting Board notes that sources of such information are stale, and have been supplanted more recently by forecasts that present a different conclusion. However, given the Siting Board's findings in this section, based upon reliability and diversity benefits of dual-fuel peaking generation, we need not and do not address the issues related to regional demand forecasts and reliability must-run contracts.

<sup>15</sup> G.L. c. 164, § 69J¼ includes "radiation impacts" in the list of generating facility impacts (continued...)

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 baseline air quality conditions, emissions and impacts of the proposed facility, and compliance with existing regulations. The plant's turbines would be primarily gas-fired, with no more than 2300 hours of operation per year, total, and with oil used as fuel no more than 200 hours per year (Exhs. EFSB-A-3; EFSB-A-15(S), App. A). Combustion controls and an oxidation catalyst would be used to control carbon monoxide ("CO") and volatile organic compounds ("VOCs"); selection of natural gas and ultra-low sulfur diesel ("ULSD") as fuels would control sulfur oxides ("SO<sub>x</sub>") and particulates; and water

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<sup>15</sup> (...continued)  
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.

<sup>16</sup> The Siting Board also reviews in this decision the environmental impacts of the proposed project with regard to traffic, safety, and EMF.

injection and selective catalytic reduction (“SCR”) with ammonia would control nitrogen oxides (“NO<sub>x</sub>”) (Exhs. EFSB-A-15(1) at 4-1 to 4-10; EFSB-G-1(S) at 5-10).

1. Applicable Regulations

MEB indicated that the principal air quality regulatory programs that apply to a new facility are: the National Ambient Air Quality Standards (“NAAQS”), U.S. Environmental Protection Agency (“USEPA”) Prevention of Significant Deterioration (“PSD”) and New Source Review (“NSR”) requirements, and New Source Performance Standards (“NSPS”) for criteria pollutants; these programs are administered by the MassDEP and the USEPA (Exh. MEB-1, at 4-3). All areas of the country are classified as “attainment,” “non-attainment,” or “unclassified” with respect to NAAQS for the criteria pollutants nitrogen dioxide (“NO<sub>2</sub>”), sulfur dioxide (“SO<sub>2</sub>”), lead, CO, ground level ozone, and particulate matter; particulate matter has two sets of standards – one for particles with a diameter of 10 microns or less (“PM<sub>10</sub>”) and one for particles with a diameter of 2.5 microns or less (“PM<sub>2.5</sub>”) (*id.* at 4-3 to 4-5).<sup>17</sup> The Company indicated that PSD requirements apply to any new source emitting more than 250 tons per year of any one of five criteria pollutants (“major source”) (Exh. EFSB-A-15(1) at 3-2); NSR only applies to relevant emissions of criteria pollutants exceeding certain emission thresholds in a non-attainment area (Exh. EFSB-A-15(1) at 3-3); and NSPS apply to pollutants on the basis of process or source category (*id.* at 3-6 to 3-7). According to the Company, neither PSD nor NSR applies to the project (Exh. MEB-1, at 4-5, 4-6). The Company stated that the NSPS for stationary combustion sources larger than 10 million British thermal units per hour (“MMBtu/hr”) applies to the project (*id.* at 4-6).

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<sup>17</sup> The Company indicated that the MassDEP has adopted several of these NAAQS limits, as well as a 1-hour guideline for NO<sub>2</sub>, as Massachusetts Ambient Air Quality Standards (Exh. EFSB-A-15(1) at 3-1).



MEB stated that to obtain the required Air Plan Approval from the MassDEP, Best Available Control Technology (“BACT”)<sup>18</sup> must be applied for each regulated pollutant (id. at 4-7). The Company stated that VOC and NO<sub>x</sub> emissions are regulated as precursors to ozone (id. at 4-6). The Company stated that, under the Acid Rain Program, the USEPA allocates SO<sub>2</sub> emission allowances to existing power plants and requires new plants to purchase allowances for their SO<sub>2</sub> emissions (Exh. EFSB-A-15(1) at 3-4). In addition, the MassDEP has a policy regarding allowable 1-hour ambient concentrations of NO<sub>2</sub>, for new major sources or modifications of existing sources (Exh. MEB-1, at 4-8).

## 2. Baseline Air Quality

MEB indicated that it assessed background pollutant concentrations using recent data from the closest MassDEP air quality monitoring stations for each pollutant: stations in Lawrence (for SO<sub>2</sub>), Chelmsford (for PM<sub>10</sub>), Haverhill (for NO<sub>2</sub>), and Lowell (for CO); these stations are located 5 to 27 kilometers from the site (Exh. MEB-1, at 4-10 to 4-12). Background concentrations are shown in Table 2:

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<sup>18</sup> MEB stated that BACT is a standard that balances emission control benefits with costs; it is based on the maximum degree of reduction of any regulated air contaminant which the MassDEP determines, on a case-by-case basis, is achievable taking into account energy, environmental, and economic impacts (Exh. MEB-1, at 4-7).

<b>TABLE 2. Background Concentrations of Criteria Pollutants</b>				
<b>Pollutant</b>	<b>Averaging Period</b>	<b>Monitoring Location</b>	<b>Representative Background <sup>a</sup></b>	<b>NAAQS</b>
			<b>µg/m<sup>3</sup></b>	<b>µg/m<sup>3</sup></b>
Nitrogen dioxide (NO <sub>2</sub> )	Annual <sup>a</sup>	Haverhill	18.5	100
Carbon monoxide (CO)	8-hour <sup>b</sup>	Lowell	2.7	9
	1-hour <sup>b</sup>	Lowell	3.8	35
PM <sub>10</sub>	Annual <sup>c</sup>	Chelmsford	17	50
	24-hour <sup>d</sup>	Chelmsford	34	150
PM <sub>2.5</sub>	Annual <sup>e</sup>	Lawrence	10.5 <sup>h</sup>	15
	24-hour <sup>e</sup>	Lawrence	29.0 <sup>h</sup>	35
Sulfur dioxide (SO <sub>2</sub> )	Annual <sup>f</sup>	Lawrence	10	80
	24-hour <sup>g</sup>	Lawrence	55	365
	3-hour <sup>g</sup>	Lawrence	135	1300

(Exhs. MEB-1, at 4-5, 4-10 to 4-12; EFSB-A-9)

- a. Highest annual average concentration, among 2004, 2005, 2006.
- b. Highest of the second-highest concentrations in a year, among 2003, 2004, 2005.
- c. Highest annual average concentration, early 2005 to 2006.
- d. Fourth highest concentration measured since early 2005.
- e. Highest among values provided for 2004, 2005, 2006.
- f. Highest annual average concentration, among 2000, 2001, 2002.
- g. Highest of the second-highest concentrations in a year, among 2000, 2001, 2002.
- h. Middlesex County is designated as unclassified, and treated as in attainment, for PM<sub>2.5</sub>.

MEB stated that Billerica is designated as being in attainment or is unclassified, and treated as being in attainment, for SO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, CO, and lead (Exh. EFSB-A-15(1) at 3-2). The Company stated that the entire Commonwealth, including the Billerica area, is currently classified as a “serious” non-attainment area for the 1-hour ozone standard and in “moderate” non-attainment for the 8-hour ozone standard (Exh. EFSB-A-15(1) at 3-2).

### 3. New Facility Emissions, Impacts, and Compliance

Evidence in the proceeding includes the Air Plan Approval Application submitted to the MassDEP on October 15, 2007 (Exh. EFSB-A-15(1)). MEB set forth the maximum potential annual emissions for the project, based on the limited hours of operation proposed; provided a BACT analysis, through which the air pollution control technologies were selected; and provided air pollutant dispersion modeling for NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>10</sub>, and CO (*id.*). The Company stated that it submitted an air modeling protocol to the MassDEP, and that the protocol was approved (Tr. 4, at 378-379). The Company used the AERMOD model for its air plan application (Exh. EFSB-A-15(1) at 5-10). In response to comments from BWG and/or the Town of Billerica, the Company supplemented its evaluation of pollutant dispersion by using the CALPUFF model (Exh. BWG-A-38(S)(1)).

MEB indicated that it seeks air permitting approval from the MassDEP for as high as 2300 hours per year, in order to obtain the operational flexibility for the facility to operate during any sustained periods of exceptional summer demand (Tr. 2, at 278-279). The Company calculated its maximum potential annual emissions, based on 2300 hours of operation, for NO<sub>x</sub>, CO, VOC, PM<sub>10</sub>, ammonia, and SO<sub>2</sub> (Exh. EFSB-A-15(1) at 2-3, 2-5). These calculated emissions would be set as air permit limits. As noted in Section I.A, above, however, the Company expects that it will normally operate significantly fewer hours per year. The Company asserted that, with a heat rate of approximately 10,000 Btu/kWh, the proposed project would be ahead of most existing peakers in the queue, but behind baseload and combined cycle plants accounting for about 21,000 MW in New England, so that, based on the economics, the facility would typically run 800 to 1200 hours per year (Tr. 1, at 61-69). Requirements for continuous emissions monitoring would be set by the MassDEP, but the Company indicated that it expected to install the Continuous Emissions Monitoring System to test for NO<sub>x</sub>, CO, and ammonia (Exh. EFSB-A-2). The CO monitor would directly measure CO, and would reflect general combustion characteristics (*id.*).

According to the Company, the project is subject to neither PSD review nor NSR, due to its low annual emissions relative to the criteria for these regulatory programs

(Exh. EFSB-A-15(S) at 3-2 to 3-3). Maximum annual emissions, along with NSR and PSD criteria, are shown in Table 3:

<b>TABLE 3. MEB Project vs. Emissions Criteria</b>			
<b>Pollutant <sup>a</sup></b>	<b>Maximum Potential Emissions <sup>a</sup></b>	<b>NSR Threshold Criteria <sup>b</sup></b>	<b>PSD Significant Emission Rate <sup>c</sup></b>
	<b>tons/yr</b>	<b>tons/yr</b>	<b>tons/yr</b>
Carbon dioxide (CO <sub>2</sub> )	428,775	N/A	N/A
Nitrogen oxides (NO <sub>x</sub> )	44	50	250
Carbon monoxide (CO)	42	N/A	250
Volatile organic compounds (VOC)	13	50	250
PM <sub>10</sub>	41	N/A	250
Sulfur dioxide (SO <sub>2</sub> )	11	N/A	250
Ammonia (slip)	25	N/A	N/A
Sulfuric acid (H <sub>2</sub> SO <sub>4</sub> )	9	N/A	N/A

N/A Not applicable; see (b) and (c) below.

- Potential to emit from new units at 2300 hours per year (Exhs. EFSB-A-13; EFSB-A-15(1) at 2-3, 2-5, 4-1).
- Non-attainment New Source Review (“NSR”) applies only in areas designated non-attainment for the relevant pollutants; in Billerica, NSR thresholds would apply only to VOC and NO<sub>x</sub> as ozone precursors; note that the proposed facility would be below the thresholds for a serious non-attainment area (Exh. EFSB-A-15(1) at 3-3).
- Prevention of Significant Deterioration review is required for each criteria pollutant that meets PSD significance criteria; note that the project is projected to be below these criteria (Exh. EFSB-A-15(1) at 3-2).

Notwithstanding the inapplicability of PSD and NSR to the project, MEB indicated that it is required to conduct a BACT analysis for the MassDEP, in accordance with 310 CMR 7.00 (id. at 4-1). MEB stated that it proposes the following with respect to BACT: the use of natural gas and ULSD for fuel to control SO<sub>2</sub> and PM<sub>10</sub> emissions; the use of a low-NO<sub>x</sub> combustor, water injection, and ammonia-based SCR for NO<sub>x</sub> control; and the use of combustion controls and an oxidation catalyst to control both VOCs and CO (id. at 4-1 to 4-10). Based on these controls, the Company projected stack emission concentrations that it commits will not be exceeded; these concentrations correspond to the annual emission rates shown in the above table. The control methods and the concentrations, in parts per million (“ppm”) by volume, as

presented in the evidentiary record, are shown in Table 4:

<b>TABLE 4. BACT Emissions Summary for MEB Project</b>					
<b>Pollutant</b>	<b>On Natural Gas</b>		<b>On ULSD</b>		<b>Control Method</b>
	<b>ppm</b>	<b>lb/mmBtu</b>	<b>ppm</b>	<b>lb/mmBtu</b>	
NO <sub>x</sub>	3.0 <sup>a</sup>	0.0091	5.0	0.0091	Water injection & Selective Catalytic Reduction
CO	5.0	0.011	5.0	0.012	Combustion controls & Oxidation catalyst
VOC	2.5 <sup>a</sup>	0.0031	4.5 <sup>a</sup>	0.0059	Combustion controls & Oxidation catalyst
PM <sub>10</sub> /PM <sub>2.5</sub> Particulate	N/A	0.01	N/A	0.035	Fuel selection
SO <sub>2</sub>	N/A	0.003 <sup>b</sup>	N/A	0.0017 <sup>b</sup>	Fuel selection

(Exhs. EFSB-A-15(1) at 3-3, 3-4, 4-1)

N/A Not applicable; these pollutants are not measured on a volume-to-volume basis.

- a. At the Siting Board meeting of November 13, 2008, the Company indicated that, while it had originally proposed the emissions listed, it was revising its proposal to reduce the volumetric gas-fired NO<sub>x</sub> limit from 3.0 ppm to 2.5 ppm (at 15% oxygen); to reduce the gas-fired VOC limit for gas from 2.5 to 2 ppm (at 15% oxygen); and to reduce the ULSD-fired VOC limit from 4.5 ppm to 2.5 ppm (at 15% oxygen). See November 13, 2008, Siting Board Meeting Tr. at 35-36. These changes are not reflected in the evidentiary record, nor are they understood to be reflected in Tables 1 and 3, above, and Table 5, below.
- b. Calculated for natural gas with a sulfur content not exceeding 1 grains of sulfur per 100 standard cubic feet, and ULSD fuel with a sulfur content of 0.0015 percent. The sulfur content of natural gas is considerably lower than 1 grain per 100 standard cubic feet, but the fuel quality is not specifically controlled by the Company, so a conservative value was used (Tr. 1, at 10; Tr. 3, at 330-332).

MEB indicated that it used the AERMOD dispersion model<sup>19</sup> approved by the USEPA, supplemented with the CALPUFF model,<sup>20</sup> to evaluate projected ambient air quality impacts for its proposed project (Exhs. EFSB-A-15(1) at 5-10; EFSB-A-38(S)). Using the proposed facility's potential emissions at their maximum limits, the Company modeled their dispersion using actual historical meteorological data, along with building and stack configurations and digitized local topographic information (Tr. 3, at 320-328). Meteorological data from 2000 through 2004 at Lawrence Municipal Airport, located 20 kilometers northeast of the Baker Commodities site, was used for the modeling (Exh. EFSB-A-15(1) at 5-3, 5-4). AERMOD predicts concentrations based on a model in which turbulence causes pollutants to disperse into a Gaussian distribution laterally across a straight-line downwind track of the plume from each stack (Tr. 3, at 326-328). As a result, the Company indicated that AERMOD is not able to model dispersion under calm conditions (id. at 400-401; Exh. BWG-A-37). Hours with reported wind speeds of less than 1 meter per second were omitted from the AERMOD calculation of maximum and average conditions (Exhs. EFSB-A-15(1) at 5-4; BWG-A-38; Tr. 3, at 446-447). CALPUFF was designed to be able to evaluate dispersion under calm and other conditions (Exh. BWG-A-38(S)). The Company stated that in this case, the CALPUFF model results are generally comparable to the AERMOD model results (Exh. BWG-A-38(S)(1)). As the proposed stack heights are lower than the "Good Engineering Practice" ("GEP") formula stack height of 32 meters (105 feet), building downwash effects were considered in the air modeling (Exh. EFSB-A-15(1) at 5-10).

As part of its evaluation, MEB compared the modeled dispersed facility emission concentrations to Significant Impact Levels ("SILs") defined by the USEPA and the MassDEP for criteria pollutants (id. at 5-11 to 5-18). Among the criteria pollutants, modeled 24-hour PM<sub>10</sub> concentrations ranged up to 7.82 micrograms per cubic meter ("µg/m<sup>3</sup>"), exceeding the

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<sup>19</sup> Gaussian models such as the AERMOD model do not calculate concentration estimates during hours of calm winds because of the nature of the mathematics in the model (Tr. 3, at 398).

<sup>20</sup> While AERMOD is a steady-state plume model, the CALPUFF model is a non-steady state puff model that simulates the effects of time-varying meteorological conditions on pollution transport. [http://www.epa.gov/scram001/dispersion\\_prefrec.htm](http://www.epa.gov/scram001/dispersion_prefrec.htm)

SIL of  $5 \mu\text{g}/\text{m}^3$  on a few days at some locations within 5 km of the facility (id.). For non-criteria pollutants, the Company compared the modeled dispersed facility emission concentrations to Allowable Ambient Levels (“AALs”) and Threshold Effects Exposure Limits (“TELs”) established by the MassDEP (id. at 5-18 to 5-19). Among the non-criteria pollutants, MEB indicated that none exceeded TELs or AALs (id.). Based on the comparisons of both criteria and non-criteria pollutants, MEB predicted that only particulates from the facility would exceed SILs, AALs, or TELs (id.).

As a follow-up analysis to the calculation of a dispersed facility particulate emission concentration in excess of the 24-hour SIL for  $\text{PM}_{10}$ , the Company modeled the addition of particulates from the facility to the maximum measured 24-hour background concentration ( $42 \mu\text{g}/\text{m}^3$ ) from the Harrison Avenue monitor in Boston plus particulates that would be emitted from (1) facilities with the potential to emit 100 tons per year of particulates within 10 km of the facility and (2) facilities with the potential to emit 1000 tons per year of particulates within 20 km of the facility – a total of twenty-one emitters (id. at 5-7 to 5-13; Tr. 3, at 322). For the times and locations that the SIL is exceeded by the facility, the total modeled  $\text{PM}_{10}$  ranged from 47.5 to  $51.6 \mu\text{g}/\text{m}^3$ , which is lower than the NAAQS of  $150 \mu\text{g}/\text{m}^3$  (Exh. EFSB-A-15(1) at 5-16 to 5-18).<sup>21</sup>

Modeled impacts of the proposed facility on ambient air are shown in Table 5:

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<sup>21</sup> MEB also projected that the maximum contribution of  $\text{PM}_{2.5}$  from the facility, when combined with the monitored background concentration, would result in a total fine particulate impact of  $30.7 \mu\text{g}/\text{m}^3$  on a 24-hour average, and  $9.79 \mu\text{g}/\text{m}^3$  on an annual average, each less than the respective NAAQS of  $35 \mu\text{g}/\text{m}^3$  and  $15 \mu\text{g}/\text{m}^3$  (Exh. EFSB-A-15(1) at 5-12).

<b>TABLE 5. MEB Project Emissions Impacts <sup>a</sup></b>						
<b>Pollutant</b>	<b>Averaging Period</b>	<b>Project Maximum Concentration</b>	<b>SIL</b>	<b>Maximum Cumulative Impact</b>	<b>NAAQS</b>	<b>Comparison</b>
		<b>µg/m<sup>3</sup></b>	<b>µg/m<sup>3</sup></b>	<b>µg/m<sup>3</sup></b>	<b>µg/m<sup>3</sup></b>	
NO <sub>2</sub>	Annual	0.037	1	-		Below SIL
CO	1-Hour	10.8	2000	-		Below SIL
CO	8-Hour	5.7	500	-		Below SIL
Particulate (PM <sub>10</sub> )	24-Hour	7.82	5	50.8 <sup>b</sup>	150	Exceeds SIL but w/in NAAQS
Particulate (PM <sub>10</sub> )	Annual	0.05	1	-		Below SIL
Particulate (PM <sub>2.5</sub> )	24-Hour	2.83 <sup>d</sup>	NFS	30.7 <sup>c</sup>	35	w/in NAAQS
Particulate (PM <sub>2.5</sub> )	Annual	0.05	NFS	9.79 <sup>c</sup>	15	w/in NAAQS
SO <sub>2</sub>	3-Hour	2.08	25	-		Below SIL
SO <sub>2</sub>	24-Hour	0.76	5	-		Below SIL
SO <sub>2</sub>	Annual	0.011	1	-		Below SIL

(Exh. EFSB-A-15(S) at 5-11, 5-12).

NFS No federal standard; because no Federal SIL is established for PM<sub>2.5</sub>, MEB added project ambient impacts to measured background levels.

- Annual average impacts are based on 2100 hours on natural gas and 200 hours on oil.
- Project plus monitored background plus modeled interactive sources. For the highest modeled cumulative impact for PM<sub>10</sub>, the project impact component was 5.95 µg/m<sup>3</sup>.
- Project plus monitored background.
- 98<sup>th</sup> percentile modeled concentration (Exh. BWG-A-54).

#### 4. Offsets and Allowances

MEB stated that it would secure allowances for the SO<sub>2</sub> it emits from existing power plants (Exh. EFSB-A-15(1) at 3-4). MEB indicated that it would be subject to the NO<sub>x</sub> monitoring, reporting, recordkeeping, and allowance trading requirements of the Clean Air



Interstate Rule (“CAIR”), which was scheduled to be implemented in Massachusetts in January 2009 for power generation facilities with a capacity above 15 MW, for ozone season (May to September) NO<sub>x</sub> emissions; MEB indicated that CAIR would supersede the NO<sub>x</sub> budget program (id. at 3-5 to 3-6).

MEB asserted that Massachusetts now has comprehensive regulation of carbon dioxide (“CO<sub>2</sub>”) from power plants through the Regional Greenhouse Gas Initiative (“RGGI”), which applies CO<sub>2</sub> regulation to all power generation facilities 25 MW and larger (Exh. MEB-1, at 4-19). RGGI requires that CO<sub>2</sub> emitted by subject facilities be matched with “allowances” and/or “offsets” of the same nominal amount (Exh. EFSB-A-12). The proposed facility would be subject to RGGI (Exhs. EFSB-A-12; EFSB-A-23). Referring to the Siting Board policy on CO<sub>2</sub>, MEB asserted that the policy filled a regulatory gap in Massachusetts that no longer exists (Exh. MEB-1, at 4-20). Furthermore, MEB asserted that the Siting Board policy on CO<sub>2</sub> is now pre-empted by RGGI (id.). MEB stated that the annual CO<sub>2</sub> emissions of the proposed project would be approximately 428,775 tons per year, and that the facility would comply with all CO<sub>2</sub> requirements imposed by the MassDEP under Massachusetts regulation (id.; Exh. EFSB-A-13).

##### 5. Intervenor

BWG offered expert testimony on the issue of air quality (see Exh. BWG-MB). BWG contends that the Company’s view of a required BACT analysis is too narrow (BWG Brief at 27). Citing the high pollutant emissions per unit of power produced by peaking plants, BWG requests that the maximum annual hours the project would be allowed to run be reduced from 2300 hours to approximately 800 to 1000 hours, which is the Company’s estimate of annual operations, further contending that 2300 hours per year exceeds typical peaking plant operation (id. at 28, 30). BWG further asserted that the Siting Board should limit the proposed facility’s operation to daytime hours, i.e., 9:00 a.m. to 5:00 p.m., when such peaking requirements are expected to occur (Exh. BWG-MB at 1). Further, BWG asserted that, in order to reduce PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub>, and CO emissions of the proposed facility, the Company should “commit to oil-fired emission rates that are the equivalent to gas-fired emission rates or commit to the combustion of natural gas exclusively” (id. at 6).

In addition, BWG seeks a lower NO<sub>x</sub> limit than proposed in the record, 2.5 ppm rather

than 3.0 ppm, referencing a facility in California for which 2.5 ppm NO<sub>x</sub> was named (BWG Brief at 31, citing Exh. EFSB-MB-7). Also, BWG argued that the Company should re-run its air modeling with a number of technical changes, including using an air intake structure height of 53 feet, rather than 50.4 feet; using meteorological data from Hanscom Field in Bedford, rather than Lawrence Municipal Airport meteorological data; including interactive sources for PM<sub>2.5</sub>; and changing its characterization of the surface characteristics of surrounding land (BWG Brief at 32-34; Exh. EFSB-A-15(S) at 5-9).

## 6. Analysis

The record shows that natural gas is the expected primary fuel of the proposed facility and that ULSD would be used at the proposed facility when oil is used as a substitute for natural gas, thereby limiting emissions of SO<sub>2</sub> and particulate matter. The record shows that combustion control and an oxidation catalyst would control emissions of VOCs and CO. The record shows that NO<sub>x</sub> would be controlled by temperature regulation with water injection and SCR using ammonia. Further, the record indicates that emissions from the proposed facility would not cause local or regional air quality to worsen significantly, as compared to ambient conditions and established air quality standards. Based on modeling analyses, ambient impacts would not cause an exceedance of the NAAQS. However, the MassDEP Air Plans Approval process will further evaluate compliance with air regulations.

The modeled ambient air impacts for the facility were calculated for the proposed 80-foot stack height, which would result in less visual impact than the GEP stack height of 105 feet. MEB's analysis shows most facility emission concentrations well below SILs, and combined background and facility emission concentrations below NAAQS. The proposed 80-foot stack height contributes to minimizing air quality impacts consistent with the minimization of visual impacts (see Section III.E, below).

The record shows that the proposed facility would have the potential to emit 431,650 tons of CO<sub>2</sub> per year. In previous cases, the Siting Board has required mitigation of CO<sub>2</sub> emissions. Because, the recently promulgated Massachusetts RGGI regulations would apply to the proposed Billerica facility, however, the mitigation of emissions that would occur under the prospective RGGI regulations for generation sources would fulfill the intent of the Siting Board's offset

requirement. Since the Massachusetts RGGI regulations have now been implemented, the Siting Board is not requiring a back-up plan for CO<sub>2</sub> offsets.

With respect to BWG's request to further limit the hours of operation, the Siting Board does not conclude that doing so would produce environmental benefits, but finds that it could increase electricity costs. Specifically, limiting the hours of operation of this facility would necessarily require operating or increasing the operation of another plant in the region. Since facilities are for the most part dispatched in the region in order of increasing costs, this could lead to an increase in wholesale electricity costs. Further, given the preponderance of older, less efficient units used for peak load dispatch in New England, the Siting Board finds it at least as likely as not that the operation of alternative generation when the proposed facility's output is restricted would increase, rather than decrease, emissions.

BWG has argued that MEB should be required to perform additional analyses for its air impacts analysis, and that NO<sub>x</sub> emissions should be reduced. Specifically, BWG has argued that NO<sub>x</sub> emissions should be limited to 2.5 ppm, rather than 3.0 ppm, that the air modeling needs to be rerun for a possible discrepancy of 3 feet in the height of a neighboring building, that PM<sub>2.5</sub> interactive source analysis should be required, and that air dispersion modeling should be run using Bedford, rather than Lawrence meteorological data. The record in this case does not warrant the Siting Board's requiring a reduction of NO<sub>x</sub> stack emission concentrations from 3.0 ppm to 2.5 ppm. However, we note that the Company has subsequently stated that it would commit to meeting 2.5 ppm. The Siting Board is also not persuaded that the other suggested changes warrant additional modeling. The MassDEP, as part of its air plans review, will review the Company's air modeling procedures, and will determine the levels of NO<sub>x</sub> control that constitute BACT. The Siting Board notes that the MassDEP's determination of BACT 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. While further refinements may be required by the MassDEP, the project, as currently proposed, represents a reasonable overall balance of feasibility, cost, and environmental protection. Accordingly, the Siting Board finds that the air quality impacts of the proposed facility would be minimized.

C. Water Resources and Wetlands Impacts

In this section, the Siting Board addresses the water-related impacts of the proposed facility including: (1) the water supply requirements and related impacts on water supply systems and on surface and subsurface water levels and flow volume; and (2) the water-related discharges from the facility, including wastewater and stormwater discharges, and their related impacts; and (3) wetlands impacts.

1. Water Supply

MEB indicated that water would be used at the proposed facility for a number of purposes: for injection to achieve evaporative cooling of the combustion turbine inlet air in order to increase output when ambient temperatures are high; for injection into the combustion turbines for NO<sub>x</sub> control; for washing turbines and equipment; for domestic type use; and for fire protection (Exh. MEB-1, at 1-9).

MEB described four potential sources of project water: (1) treated effluent from the adjacent Town of Billerica Wastewater Treatment Plant (“WWTP”); (2) Town of Billerica municipal water; (3) site groundwater; and (4) water delivered by truck (*id.* at 1-9; Tr. 8, at 1085). MEB originally stated that it would use WWTP effluent as its primary source of water, and that it would use the Billerica municipal water supply as a backup (Exh. MEB-1, at 4-25, 4-26). The Town of Billerica, however, now is planning to undertake modifications to its WWTP over the next few years to improve its effluent characteristics, with operational changes projected to be completed sometime in 2010 (Exh. EFSB-W-15, at 2, 3; Tr. 7, at 1093; Tr. 9, at 1251, 1252). As a result, MEB decided to postpone use of WWTP effluent as a water source until the WWTP modifications are complete, and to rely on Billerica municipal water until that time (Exh. EFSB-W-15, at 3; Tr. 9, at 1252, 1253).

The Company estimated water consumption for a 6-hour operating day as 180,000 gallons per day (“gpd”), with a maximum of 720,000 gpd for continuous operation (Exhs. MEB-1, at 4-27rev; EFSB-W-4; Tr. 2, at 248). According to a letter from the Billerica Department of Public Works to MEB, Billerica could supply up to 60 million gallons per year of municipal water for process use for the proposed facility, as a backup source (Exh. EFSB-W-4(1)). As plans developed to require municipal water as the lead source of water for a period,

MEB and the Town of Billerica arrived at a revised figure of 40 million gallons per year of municipal water for the facility (Exh. EFSB-W-15, at 3, 4).<sup>22</sup> This corresponds to approximately 1500 hours per year of operation, less than the maximum proposed (id. at 4; see Section I.A, above). The Company also would be restricted to taking no more than 180,000 gpd during the months of June to October (id.).

In recent years, municipal water use in Billerica has been running at approximately 1,800 million gallons per year (id. at 6; EFSB-W-15(5) at 10). The current water withdrawal permits from the MassDEP allow the municipal system to use 1,949.1 million gallons per year from the Concord River basin through 2011 (Exh. EFSB-W-15, at 7). The Company indicated that it would finance and cause to be installed measures designed to conserve 40 million gallons per year of municipal water, if municipal water is provided as the principal source of water prior to completion of WWTP modifications (id. at 7, 8).

Pre-treatment of water would vary, depending on the source and eventual use of the water at the facility. Pre-treatment of WWTP effluent would depend on the composition of the wastewater (id. at 9). Water for use in the turbines would be de-mineralized, using filtration and ion exchange units, then stored in a 500,000-gallon tank (Exh. MEB-1, at 1-9). The ion exchange units would be regenerated off site (id.). Water for general housekeeping and for fire protection would be from the municipal water service, and stored in another 500,000-gallon tank (id.). Drinking water for staff would be delivered in bottles; additional water would also be held in chemical toilets or the equivalent (id.).

With respect to the current plan for using municipal water supply, the Billerica Department of Public Works had indicated that sufficient water is available for its use (Exh. EFSB-W-4(1)). MEB stated that in the event that water were unavailable from the municipal supply, during the time before the Company turned to WWTP effluent, 20 truck deliveries per day would supply the maximum rate of 180,000 gpd (Exh. EFSB-W-15, at 11). However, according to the Company, the on-site water tank is sufficiently large to hold water for multiple days, should municipal water be temporarily unavailable (id.).

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<sup>22</sup> The figure of 40 million gpd does not include water that may be used at the site by the Billerica Fire Department (Exh. EFSB-W-15, at 10).

Mr. Alkhatib, the Director of Public Works for the Town of Billerica,<sup>23</sup> stated that in this particular instance, the Billerica Board of Selectmen would be the authority granting a water contract (Tr. 9, at 1331-1332). The Company indicated that it has consulted with the Board of Selectmen, but has not reached a final agreement (Tr. 8, at 1136-1137). The Company has proposed, in consultation with the Town of Billerica and its consultants, to mitigate the use of Billerica municipal water by paying for water saving measures elsewhere in the Billerica system (id. at 1121, 1144; Exh. EFSB-W-15, at 8). According to the Company, such measures could include installation of water saving showerheads, sealing of leaking pipes, or other activities, but the actual selection of measures would not occur until after the contract for water was signed (Exh. EFSB-W-15(5); Tr. 8, at 1145). The water saving measures would be designed to save 40 million gallons per year, which is the maximum use allotted to the project, and would be approved by the Town of Billerica and its consultants (Tr. 8, at 1121). The Company asserted that by reducing water and hot water consumption, the Company's water saving measures would have associated cost and energy savings benefits for residents, as well (id. at 1232; Exh. EFSB-W-15).

The Company indicated that it would pay the Town of Billerica at least twice as much for municipal water as for WWTP effluent (Exh. EFSB-W-15, at 8, 9). In addition, the Company agreed to finance and implement the 40 million gpd conservation measures as well as capacity improvements on the Town's water distribution system required to serve the site (id. at 9, 11). At the same time, the Company would incur higher pre-treatment costs using WWTP effluent, compared to using municipal water (id. at 9). The Company indicated that it expected it would have adequate incentives to switch back to WWTP effluent as its primary source after the WWTP modifications were complete, provided that the physical layout of the WWTP modifications allow a connection (Tr. 8, at 1090 to 1092; Tr. 9, at 1341). In addition, the Director of the Billerica Department of Public Works, Mr. Alkhatib, indicated that the Town of Billerica would also be interested in switching the power plant to using WWTP effluent (Tr. 9, at 1256-1257).

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<sup>23</sup> As noted in Section I.B, above, Mr. Alkhatib was subpoenaed on behalf of BWG. Mr. Alkhatib represented neither MEB nor BWG.

The Company indicated that flow from the Billerica WWTP averages 4.4 million gpd into the Concord River, for which the estimated 7Q10<sup>24</sup> is 20.8 million gpd and the lowest monthly flow in 70 years was 16 million gpd at the gauging station<sup>25</sup> (Exhs. MEB-1, at 4-23; WG-W-1; EFSB-W-15(2)). As noted above, the Company indicated that project's maximum water use is 180,000 gpd, and the maximum discharge is 30,000 gpd; in combination, the project would reduce Concord River flow by about 1% during low flow conditions (Exh. EFSB-W-15, at 8; Tr. 2, at 224-227). The Company stated that net effects on the flow of the Concord River would be the same, regardless of whether municipal water or WWTP effluent is used as the primary water source for the project (Exh. EFSB-W-15, at 8). In either case, the Company asserted that the decrease in flow would not be expected to result in negative impacts to the Concord River flow (Exh. EFSB-W-15(2)).

## 2. Wastewater and Stormwater Discharge

According to a letter from the Billerica Department of Public Works to MEB, Billerica can accept up to 7 million gallons per year of process wastewater from the proposed facility (*i.e.*, averaging 20,000 gpd) (Exh. EFSB-W-4(1)). With use of municipal water, MEB and the Town of Billerica have determined that the maximum wastewater discharge to the WWTP would be 30,000 gpd (Exh. EFSB-W-15, at 4).

MEB stated that although the facility's process wastewater would generally be clean enough to dispose of directly to the Concord River, the Company would instead discharge it to the Billerica WWTP (Tr. 1, at 93-95). However, the Company did not identify any specific changes in water quality of the river that would ensue (*see* Exh. BWG-W-4; Company Reply Brief at 26). The Company stated that it intends to apply for an industrial sewer connection permit for process wastewater discharge (Exh. WG-W-2). The Company stated that the

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<sup>24</sup> The 7Q10 is a statistic representing the lowest seven-day average flow anticipated to occur on a river at an average frequency of once in 10 years (Exh. EFSB-W-15(2)).

<sup>25</sup> The Concord River gauging station is 3 miles downstream of the WWTP and the site and the gauging station is 5 miles downstream of the Billerica water intake; the 7Q10 at the site was estimated to be 18.9 million gpd (Exh. EFSB-W-15(2)).

temperature of the water would be approximately the same as when taken from the WWTP (Tr. 2, at 251). The Company stated that the Billerica WWTP can handle the facility's wastewater except during periods of high flow in the town, such as rainy periods, so during these periods, the Company would hold effluent in a wastewater holding tank for later release to the WWTP (Tr. 1, at 93-95). According to the Company, the holding tank is sized to hold the effluent from several days of normal operation (id.).

MEB stated that concrete containment areas would be installed under and around electrical equipment and tanks housing fuels and oils, with runoff from these areas directed to oil/water separators (Exh. EFSB-W-9). With respect to the National Pollutant Discharge Elimination System ("NPDES"), MEB stated that it would operate under the general permit for stormwater (Exh. EFSB-W-10). According to the Company, the facility would have 7.5 acres of impermeable surfaces, including buildings, concrete slabs, and the access road (Exh. EFSB-W-8). The Company would manage runoff from these surfaces with recharge basins and vegetated infiltration swales (id.). A retention pond would be constructed towards the west end of the facility (Exh. EFSB-W-11(1)). The Company stated that the retention pond would be of sufficient volume that calculated run-off from the facility as a whole would not exceed natural run-off from the site, in either a 2-year, a 10-year, or a 25-year storm event (Tr. 2, at 222-223).

### 3. Wetlands

The project would eliminate all or most of an isolated 0.4-acre wetland characterized by the Company as a pit created by excavation (Exhs. MEB-1, at 4-30; EFSB-G-1(S) at 9-7). The Company argues that this wetland is locally protected but not subject to state protection (Exh. MEB-1, at 4-28 to 4-30, fig. 4.4-1; Company Brief at 46). The Company proposes to replicate the filled wetland in an area to the north of the site (Exhs. MEB-1, at 4-30; EFSB-G-1(S) at figs. 9-1, 9-2; Tr. 1, at 23).

MEB indicated that there are two additional wetland areas immediately to the north of the proposed facility – one classifiable as bordering vegetated wetland, and one classifiable as isolated vegetated wetland (Exh. MEB-1, at 4-29, 4-30, fig.4.4-1). The proposed project would extend into the 100-foot buffer zones of these two wetlands (id.). Work in the area would include relocation of the existing natural gas pipeline, and construction of a retaining wall to



support the area of the turbines (id. at 4-31). To mitigate any impacts, the Company would install erosion and sedimentation controls between the limits of work and the adjacent wetlands, and use temporary sedimentation basins to control any material eroded by storm water (id.). The Company indicated that it would use standard protective measures to avoid causing contamination of the site (id. at 4-26).

MEB conducted Phase I and Phase II Environmental Site Assessments of the 16-acre site (Exh. EFSB-G-1(S), App. I). The Phase I Assessment included a visual inspection of the property, interviews with selected individuals, a review of historical information such as aerial photographs and fire insurance maps, and a computer search of selected federal and state environmental databases (id. at App. I, 1-2). The Phase I Assessment identified, as possible sources of contamination, automobiles staged on the property, an above-ground storage tank located nearby at Jack's Used Auto Parts, and a 4.4-acre landfill on the Baker Commodities property located north of the 16-acre site (id. at App. I, 4-5, 5-2, 9-1). The Phase II Assessment was conducted to evaluate potential soil and groundwater contamination from the automobiles and the above-ground storage tank (id. at iv). Five soil borings were advanced on May 17, 2007, in an area of the 16-acre site close to Jack's Used Auto Parts (id. at App. I, 3-2, fig. 2). One soil sample was collected from each of the five soil borings; three borings were converted to wells and groundwater was collected from each of the three wells; samples were analyzed for volatile organic compounds and petroleum hydrocarbons (id. at App. I, 3-2 to 3-4). Petroleum hydrocarbons were detected in two shallow soil samples (to 20 ppm), and 4-isopropyltoluene was detected in one shallow soil sample (at 3.3 ppm); concentrations were well below the most applicable MassDEP reportable concentrations (id. at App. I, 5-2). The Company ascribed these results to minor surficial spills and stated that its Phase II evaluation for potential existing site contamination found no existing contamination in the area of facility construction (id. at App. I, 6-1; Tr. 1, at 138, 161-162).

#### 4. Intervenor

BWG argues that removal of 180,000 gpd of water flow would have a detrimental effect on the Concord River (BWG Brief at 18). BWG highlighted some of the historical, cultural, recreational, and poetic attributes of the Concord River (Tr. 6, at 967-970, 996-998). BWG

expressed concern that there is no agreement in place between the Town of Billerica and the Company with respect to water usage (BWG Brief at 22, citing Tr. 2, at 233).

With respect to wastewater, BWG challenged, as an alleged discrepancy, Company testimony that wastewater returned to the Billerica WWTP would have “approximately” the same temperature as water taken from the WWTP, versus Company testimony that “it does not have an elevated heat level” (BWG Brief at 21).

With respect to using municipal water as the primary source, BWG made a number of arguments. BWG argues inter alia that mitigation of impacts remains undeterminable and that the Company has not secured an appropriate water resource, has not presented evidence that a “reasonable mind” might accept as adequate to meet the burden of proof, and has not properly addressed the Concord River as “Waters of the United States” (BWG Supplemental Brief at 4, 8). BWG claimed that the facility may be subject to MassDEP permitting under the Water Management Act, contrary to Company statements (id. at 7, 9). Furthermore, BWG argues that contractual issues have not been finalized and that traffic issues cannot “be accurately addressed until a legally tenable water resource is secured” (id. at 10-14). Also, BWG advocated for restrictions on truck deliveries, and for entering into the record a detailed site plan with an accurate scale (id. at 15). BWG argues that “complete and accurate studies” of the Company’s proposed conservation and water mitigation programs should be conducted prior to the Company and the Town of Billerica entering into an contractual agreement for water for the proposed facility (see BWG Supplemental Brief at 12).

BWG raised concerns about wetlands related to the potential for adverse effects from existing soil contamination, and for contamination of drinking water (BWG Brief at 44-47). In its response to the Company’s Initial Brief, BWG argues that “MEB has failed possibly intentionally or unintentionally to submit documentation to proficiently respond to the capricious, arbitrary, and legally untenable statements asserted by the Company” (id. at 56).

## 5. Analysis

Power plant proposals which included the use of recycled municipal wastewater as the primary facility water supply have been reviewed in cases of facilities proposed for Milford, Charlton, and Brockton. Enron Power Enterprise Corporation, 23 DOMSC 1, at 142-179 (1991)

(“Enron Decision”) ; U.S. Gen Decision, 6 DOMSB 1, at 118-124; Brockton Power, LLC, 10 DOMSB 157, at 28-40 (2000) (“Brockton Decision”). The Milford plant was a baseload plant located near the headwaters of the Charles River. Its water uptake was identified as 1.35 cubic feet per second (“cfs”) (0.87 million gpd) at a point where the defined “low flow condition” of the Charles River was 3 cfs (1.9 million gpd). Enron Decision at 142. Considering the reduction in stream flow volume at issue in the Milford case, the Siting Board reviewed modeling analysis of river flow, water quality, and aquatic impacts and imposed restrictions on plant operation during low water flow. Enron Decision at 142-179. The Charlton plant was to have an estimated maximum use of up to 2.8 million gpd. U.S. Gen Decision at 118. The Brockton plant was to use up to 1.65 million gpd. Brockton Decision at 29. The Charlton and Brockton facilities did not have water usage restrictions imposed by the Siting Board.

For the Billerica project, typical consumption would be 180,000 gpd (based on 6 hours of operation per day), which is substantially less than the above cases and approximately 1% of the lowest flow of the Concord River. Whether municipal supplies or WWTP effluent is used, most of the water used by the plant would be released into the atmosphere through the stacks, rather than being returned to the Concord River watershed. However, based on the record, it is not evident that, under foreseeable conditions, this diversion of water would have any observable effect on the flow of the Concord River. Likewise, it is not evident that the wastewater stream returned to the Billerica WWTP would cause problems with WWTP operation or with water quality downstream of the WWTP. In addition, the record shows that stormwater flows would be managed to provide for separation of spilled oil and infiltration of runoff from impermeable surfaces.

If water mitigation projects agreed to by the Company, the Town, and the Town’s consultants work as designed, 40 million gallons of water per year would be saved in Billerica, which is likely to be more than the amount of water used by the project, for which the 40 million gallon figure is a maximum. The Siting Board directs the Company to file a notice of project change with the Siting Board if the Company anticipates using more than 40 million gallons per year of municipal water. The project would pay standard rates for the use of that water to the Billerica Department of Public Works, but the total revenues of the town for water use could be partly offset by the amount to which the water mitigation project lowers other customer billings.

The record shows that the water mitigation program would not be designed or implemented prior to any Siting Board approval of the generation project. However, the program design would be finalized before any construction. Therefore, the Siting Board directs the Company, prior to construction, to make a compliance filing showing (a) that the Company has executed water supply contracts with the Town of Billerica for the water volume described in the record, and (b) that consumption of Billerica municipal water, other than water for domestic use and for fire protection, will be mitigated by Company programs designed to save 40 million gallons per year, based on estimated savings from planned measures as set forth in an agreed plan. The Siting Board also directs the Company to file a notice of project change with the Siting Board if the Company is unable to execute a water-supply agreement with the Town of Billerica.

The record indicates that both the Billerica Department of Public Works and MEB would like to revert to the original plan of using WWTP effluent, once the WWTP reconstruction is finished. However, reversion to the use of WWTP effluent is not assured. The Siting Board agrees that use of WWTP effluent would be preferable, once WWTP reconstruction is completed. In order to minimize impacts on potable water supplies, the Siting Board directs that the Company revert to the use of WWTP effluent as the primary source of water for the project within one year of the completion of WWTP reconstruction. The Siting Board directs the Company to file a notice of project change with the Siting Board, if such timely reversion is not effected for any reason.

The record shows that trucking water to the site would generally be unnecessary. The record also shows that the Company would prefer to use water delivered by pipe from the Town of Billerica. Delivery by truck is not expected under normal conditions.

While the record does not indicate the precise temperature of water that would be returned to the Billerica WWTP, it does indicate that the water that is returned to the WWTP would not have been used for cooling. The temperature of water used for washing surfaces may vary with changes in soil and ambient temperatures; however, this would normally also be the case for municipal sewage and there is no indication in the record that temperature variation of wastewater from the facility would adversely affect the Billerica WWTP.

The record indicates that only minor localized existing contamination was found near

Jack's Used Auto Parts. The record indicates that the wetland to be eliminated would be replicated. The record indicates that the Company would use standard measures to minimize its impacts on other wetlands in the area, and that the Company will comply with other agency requirements. Based on the record in this case, no additional wetland mitigation measures would be required, beyond those which the Company identified as necessary to comply with wetland regulations.

The Siting Board has evaluated the impact of the proposed plant on water quality and flow in the Concord River, the impact of the proposed plant on municipal water and wastewater facilities, stormwater impacts, and the impact of the proposed facility on wetlands. In conjunction with its evaluation, the Siting Board has established four conditions – one requiring documentation of water supply mitigation, one requiring reversion to use of WWTP effluent, one requiring a project change filing if the Company anticipates using more than 40 million gallons per year, and one requiring a project change filing if the Company is unable to settle a water supply agreement for municipal water. Based on the record, surface water impacts, municipal system impacts, stormwater impacts, and wetlands impacts would be modest, and further mitigation is not warranted. Accordingly, the Siting Board finds that, with the implementation of the above conditions with respect to water supply, the water resources and wetlands impacts of the proposed facility would be minimized.

D. Solid Waste

1. Company

MEB did not itemize solid wastes that would result from facility construction; however, MEB asserted that construction waste material would be recycled “when possible”, while the remainder would be transported to an approved solid waste facility (Exh. EFSB-SW-1). MEB stated that spent SCR and oxidation catalysts would be returned to the manufacturers for metals reclamation (Exh. EFSB-SW-4). Demineralizer regeneration would also occur off site (*id.*). The Company indicated that there would be no accumulation of ash from burning fuel (Exh. EFSB-SW-2). The Company stated that there would be a small waste stream associated

with on-site material repair and replacement, amounting to less than 5 tons per year (id.). The Company committed to placing recycling containers throughout its facilities (Exh. EFSB-SW-3).

## 2. Analysis

The record shows that MEB would arrange for proper disposal of solid wastes generated by construction of the proposed facility, including recycling where feasible. The record shows that solid wastes generated by operation and maintenance of the proposed facility would be relatively minimal, and would likely amount to 5 tons of solid wastes per year for off-site disposal.

The Siting Board notes that the proposed facility is a peaking facility that will be primarily gas-fired, thus likely to produce less solid waste than a comparable peaking or a base unit primarily fired with oil or other combustible fuel. Furthermore, backup oil firing will not generate bottom ash, and the Company will truck demineralizer resins off site for regeneration.

The Siting Board notes that the Company's commitment to recycle, where possible, solid waste from construction, maintenance, and operation of the proposed facility would contribute to minimizing the solid waste impacts of the proposed facility. However, the Siting Board seeks to remain informed regarding the plans and effectiveness of recycling efforts. Therefore, in order to minimize solid waste impacts, the Siting Board directs the Company, prior to the commencement of operation, to provide to the Siting Board a recycling plan, and to report on the Company's recycling rate for construction debris and its anticipated recycling rate for operational wastes. Accordingly, the Siting Board finds that, with implementation of the above recycling condition, the solid waste impacts of the proposed facility would be minimized.

## E. Visual Impacts

### 1. Company

The proposed facility would include six 80-foot high, 12-foot diameter stacks (Exh. MEB-1, at 4-57rev). The heights of three ancillary transmission towers would be on the order of 100 feet (Exh. EFSB-G-1(S) at 7-2). Other structures, such as storage tanks, would be 53 feet tall or less (id. at 7-1; EFSB-RR-21; Tr. 1, at 11). The facility location is currently

largely wooded, and these woods extend at least a short distance beyond the site boundary in most or all directions (Exhs. EFSB-RR-2(1); EFSB-RR-12(1)).

The Company asserted that the existing wooded margins would provide screening for the proposed facility (Exh. EFSB-RR-20). However, the woodland buffers are not within the control of the Company (Exh. EFSB-V-1). Maps and photographs indicate that there is a 20-foot wide strip of mixed mature woodland located between the 16-acre site and the nearby MBTA railway line, on land owned by PanAm Railways, and that this strip is critical for maintenance of visual screening as it is located between the project site and residential neighbors to the east and southeast of the site (Exhs. EFSB-RR-12; EFSB-RR-17). The Company stated that this PanAm Railways strip is “likely” to remain in place indefinitely (Exh. EFSB-RR-20). However, MEB did not propose to implement any activity to protect the vegetation on this parcel.

MEB stated that a plume would be sometimes visible from the facility, especially during cold weather (Tr. 2, at 273). On the other hand, the Company asserted that residents would not see the proposed facility, and that, if residents did look hard to see the facility, visual impacts would be limited (*id.* at 270, 274-275). MEB provided photographs from several vantage points, with a computer aided indication of the facility showing that the facility would not be visible from the photo vantage points, under the conditions reflected in the photos.<sup>26</sup> One photo from Billerica Avenue to the southeast, for example, indicates that small deciduous second-growth vegetation near Billerica Avenue blocks views towards the facility in leaf-on conditions (Exh. EFSB-G(S) at fig. 7-3).

Subsequent to questioning from Mr. Linek, BWG, and Siting Board staff, however, the Company described three potential landscaping visibility mitigation plans. In the first plan, the Company would contact owners of residential properties to the east of Billerica Avenue that are largely devoid of trees, and would propose planting of evergreen trees between residences and the facility; exact locations and species selection would depend on landowner preferences and horticultural suitability (Exh. EFSB-RR-20). In the second plan, the Company would obtain

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<sup>26</sup> The precision of these photo simulations is not clear. One such photo (Exh. MEB-1, at fig. 4.11-7) appears to show that the visible horizon would extend under the facility. The Company elected not to perform a balloon visibility demonstration that was requested by BWG (Tr. 2, at 276).

easements to ensure that existing vegetation would remain on property between the MBTA railway line and Billerica Avenue, south of Town Farm Lane (opposite the former Reardon warehouse) (id.). According to the Company, this option could include planting evergreen trees at irregular intervals determined in the field to provide the most effective screening from specific residential sight lines (id.). This second plan evolved into a 3-year option agreement to acquire the property directly, which the Company would exercise if the project goes forward (Exh. EFSB-RR-24). As a third plan, the Company described an option of planting a single row of conifers along part of the eastern edge of the site (Exh. Linek-RR-1). The Company's plans do not indicate, however, that there is unused space between its development and the adjoining woodland, in which such a row of conifers would be established (id.).

According to MEB, three types of lights are proposed for the facility for normal outdoor use: 250-watt high-pressure sodium vapor streetlights, pointing down from 30 feet above the ground; 150-watt high-pressure sodium vapor floodlights, pointing outwards from 20 feet; and 100-watt wall packs installed at 12 feet above the ground (Exh. EFSB-V-6).

## 2. Intervenor

BWG introduced photographs indicating that to the southeast there is only limited vegetative screening between the location of the proposed facility and some residences (Exhs. BWG-2(A-H); EFSB-RR-12). BWG argues that MEB “maneuver[ed] around the facts through selective wording, vague submissions, [and] omissions,” and submitted photographs taken from locations immediately behind vegetation, so that in the photographs, the facility is screened by vegetation in the foreground, thereby under-representing the visual impact of the proposed project from nearby locations that are not directly behind vegetation (BWG Reply Brief at 59-60). BWG also maintains that the visual impacts of the proposed facility are “questionable and highly subjective to change” in light of the Company's testimony that it would describe its site layout drawing as 85% final (BWG Brief at 50, citing Tr. 1, at 50).

## 3. Analysis

In prior generating facility decisions, the Siting Board has required proponents to mitigate visibility of the facility and the associated stack by providing selective tree plantings



and other reasonable mitigation upon request (by property owners or local officials) in all residential areas within a set distance up to one mile from the proposed stack location. IDC Decision, 9 DOMSB 225, at 63-66; Nickel Hill Decision, 11 DOMSB 83, at 78. In some previous cases, the Siting Board has required off-site mitigation, such as provision of selective measures on request or other specific mitigation plans, focused on specific nearby residential areas. Braintree Decision at 33-34; Nickel Hill Decision at 78. Cases in which the Siting Board required mitigation focused on specific areas include (1) sites not warranting wide-area (i.e., 360-degree) mitigation given pre-existing extent of heavily urbanized or industrial development including pre-existing power plant use in some direction, Braintree Decision at 33-34; Sithe Mystic Development, LLC, 9 DOMSB 101, at 49-50 (1999) (“Sithe Mystic Decision”); Sithe Edgar Development, LLC, 10 DOMSB 1 (2000) (“Sithe Edgar Decision”), at 11-12; and (2) sites warranting added or specific mitigation in particular directions based on openness or other sensitivity of areas to visibility impacts. U.S. Gen Decision, 6 DOMSB 1, at 139-141; ANP Blackstone Decision, 8 DOMSB 1, at 182-183.

The MEB facility is physically smaller and shorter than some of the baseload facilities which the Siting Board has reviewed for visual impacts. Therefore, far-field visual impacts are likely to be minor, if any. The record in the present case demonstrates that there could be only limited visual screening between the facility and the closest neighbors to the southeast. While the Company provided an option for off-site mitigation on residential properties, on an upon-request basis, space constraints may limit the effectiveness of such screening. Nearer the site, a critical piece of screening is existing woodland controlled by PanAm Railways. It is unclear whether the Company could obtain an easement to ensure that vegetative screening is preserved on this strip. Accordingly, the Siting Board directs the Company to pursue discussions with PanAm Railways to obtain an easement for the life of the MEB project, to maintain existing vegetation immediately east of the plant. The Company shall report to the Board on the results of discussions with PanAm Railways with respect to vegetation on that property, by providing the Siting Board a progress report on April 1, 2009, and every three months thereafter, pending resolution. The Siting Board also directs the Company to plant two staggered rows of spruce trees, no shorter than 10 feet, each, along the east side of the 16-acre site. In addition, the Siting Board directs the Company to acquire the optioned parcel located east of the MBTA railway

line, south of Town Farm Lane, and west of Billerica Avenue. The Company shall plant evergreens as set forth in the Company's description of visual mitigation options, using spruce trees, shall maintain the existing trees and added plantings, and shall refrain from removing any healthy trees that mitigate or could mitigate visual impacts.

Consistent with Siting Board precedent concerning the minimization of visual impacts, the Siting Board also directs the Company to provide, as requested by individual property owners or appropriate municipal officials, 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 roadways up to one-half mile from the site where residents experience changed views. 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 owners of property within one-half mile of the site, prior to the commencement of construction; (3) may limit requests for mitigation measures from local property owners and municipal officials to a specified period ending no less than six months after initial operation of the facility; (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 also directs the Company to maintain the good appearance of the facility, including the stacks, and on-site landscaping, for the life of the project.

Accordingly, the Siting Board finds that with the implementation of the three above-described visual mitigation conditions, the visual impacts of the proposed project would be minimized.

F. Noise Impacts

1. Company

MEB measured existing sound levels in the vicinity of the proposed facility at several locations. Ambient sound levels were measured over various lengths of time up to seven days (Exh. EFSB-A-15(S) at 6-6). For its analysis, the Company first derived from the measured data hourly  $L_{90}$  noise levels as an indicator of background noise over the daily cycle.<sup>27</sup> In order to avoid unusually quiet hourly periods that may have occurred during seven days of continuous monitoring, the Company then selected the  $L_{90}$  sound level for the one hour that was exceeded by 90% of the hourly  $L_{90}$  measurements taken over one week (“10<sup>th</sup> percentile  $L_{90}$ ”), to represent ambient background for the Company’s analysis (Exh. MEB-1, at 4-51). The Company asserted that this statistic represents a conservative estimate of the typical background sound levels during the quietest night-time periods (id.).

The Company modeled the propagation of noise from the proposed facility. The noise modeling is based on noises generated by facility equipment, incorporating several noise mitigation measures. These measures include “base noise control packages” for the inlet filters and for the generator, additional silencers for the stacks, increased steel thickness and additional silencers for the SCR housing, and a ten-foot sound wall extending through much of the site (Exhs. EFSB-A-15(S) at 6-16, 6-17; EFSB-RR-3). For the closest residents, the proposed 10-foot sound wall would reduce noise from the turbines, SCR housing, and lube oil skids, but the wall would not block noise from the stack tips or from the transformers (Tr. 1, at 56-57; Exh. EFSB-RR-16(1)). The noise propagation model incorporated effects of distance, topography, building reflections, atmospheric attenuation, and ground attenuation (Exhs. EFSB-A-15(S) at 6-12; EFSB-N-10). The noise model assumed no absorption of facility noise by vegetation and full reflection, i.e., zero attenuation, by the surface of the Concord River (id.; Tr. 1, at 123).

Combining ambient noise data with modeled facility noise propagation, the Company estimated increases in sound levels from facility operation at specific receptor locations. According to the Company’s modeling, noise impacts would be high in adjacent undeveloped land zoned for industry (Exhs. MEB-1, at 4-59rev; EFSB-A-15(S) at 6-15, fig. 6-9). The noisiest

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<sup>27</sup>  $L_{90}$  noise is the sound level exceeded for 90% of each hour, and is used to represent background, or baseline ambient sound level.

locations would be along the edges of the site, with facility noise projected to be 66 A-weighted decibels (“dBA”) and 64 dBA along the north and south property lines, respectively (Exh. EFSB-A-15(S) at 6-15). This would create increases of 28 dBA and 26 dBA, respectively, above ambient levels, using night-time  $L_{90}$  measurements as the baseline (id.). The Company argues that the MassDEP limit on off-site noise increases, 10 dBA, is intended to protect sensitive neighboring receptors and residences, and suggests that there would be no purpose served by enforcing the limit at the project property line (Company Brief at 54).

Among residential receptors, MEB identified the neighborhood to the southeast as the primary area of concern (Tr. 1, at 42-43). In this area, operational facility noise would be approximately 45 dBA (Exh. EFSB-A-15(S) at 6-20). Noise increases would be greatest if the facility operated at night, but according to MEB, electricity market conditions are such that night-time operations would be rare (Tr. 1, at 104-105, 108, 111). Using the 10<sup>th</sup> percentile  $L_{90}$  as the metric for background noise, MEB identified 41 dBA as the night-time ambient background noise level at the nearest residence to the southeast (Exh. EFSB-A-15(S) at 6-5, 6-15). The Company projected that night-time sound levels would increase 5 dBA above the 10th percentile  $L_{90}$  of 41 dBA and 7 dBA above the lowest nighttime  $L_{90}$  of 39 dBA (id. at 6-19, 6-20). In other words, the noise of the proposed facility would increase  $L_{90}$  noise levels by 5 dBA or less for 90% of ambient conditions; the up to 10% of hours with higher impacts would be limited to night-time periods, when ambient noise levels are lowest. However, normally the facility would not operate at night due to lower demand for electricity (Exh. MEB-1, at 4-60).<sup>28</sup>

For a perspective on interpreting the noise figures, the Company referred to guidelines issued in 1999 by the World Health Organization (“WHO”) which suggest that limiting residential outdoor noise levels to 45 dBA at night and 55 dBA during the day helps to limit sleep interference, activity interference, and annoyance (Exh. BWG-N-3; BWG-N-3(1), at 65;

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<sup>28</sup> Information provided by the Company (Exh. EFSB-A-15(S), fig.6) indicates that the lowest  $L_{90}$  over one week of measurement was approximately 39 dBA, that the 10th percentile  $L_{90}$  was 41 dBA, and that the lowest daytime (9:00 a.m. to 8:00 p.m.)  $L_{90}$  was 43 dBA at 11 Town Farm Lane (“Location 3”). Staff calculate that the addition of a 45 dBA facility noise to baselines of 39 dBA, 41 dBA, and 43 dBA would create total sound levels of approximately 46 dBA, 46 dBA, and 47 dBA, which would represent increases of 7 dBA, 5 dBA, and 4 dBA, respectively, subject to rounding error.

Tr. 1, at 87-90). The Company also provided a copy of the 1974 USEPA document entitled “Information on Levels of Environmental Noise Requisite to Protect Health and Welfare with an Adequate Margin of Safety”. The latter document identified a day-night level of 55 decibels for outdoor sound levels in residential neighborhoods, when a 10-decibel penalty is incorporated for nighttime noise, as a level that would avoid interference with speech and other activities (Exh. EFSB-N-15(1)).

MEB discussed additional mitigation options, beyond those measures described above which it proposes to adopt. Most of the additional mitigation options target specific equipment sources (Exh. EFSB-N-14, at 1-2). According to the Company, each of the options targeting specific sources would have little effect on the total amount of noise because noise from operation of the proposed facility would be from a combination of several sources of comparable noise volume (Tr. 1, at 56-57). Specific additional noise mitigation options described by the Company include additional air inlet silencers, costing \$1.3 million, and a combustion turbine mitigation package, costing \$4 million (Exh. EFSB-A-15(S) at 6-20). Each of these mitigation options would decrease noise impacts by up to but not more than 1 dBA (id. at 6-19, 6-20). The only identified additional mitigation that would reduce noise impacts by at least 3 dBA would be to enclose the facility in a large building, at a cost of \$25 million; the Company asserted that this measure would be unwarranted (id.). A sound wall higher than the proposed ten-foot wall could help block noise from multiple equipment sources (id. at 6-18). However, the Company asserted that a 20- or 30-foot wall would add construction difficulties and, at \$500,000 to \$900,000, respectively, would not be warranted (id. at 6-20). Similarly, the Company stated that surrounding the transformers with sound walls on all sides would impinge on equipment access (Tr. 1, at 43-44).

As noted above, the proposed height of the generator sets is roughly 10 feet, the main transformers and fin-fan coolers would be roughly 13 feet high, the SCR housings up to 26 feet high, and the stacks each about 80 feet tall (Exh. EFSB-N-17). The Company acknowledged that even increasing the height of the sound wall to 12 or 15 feet would reduce lines-of-sight between some noise producers and some residential areas (Tr. 1, at 55-56). The Company also acknowledged that, as a rule of thumb, noise is transmitted according to line of sight (id. at 54). In addition, the Company indicated that the design and the material used for the sound wall

would affect the degree to which the wall would absorb sound (Tr. 4, at 511-515). The Company indicated that a potentially suitable sound wall can be built with acoustical sandwich panels between columns, at least one side of which may be perforated metal (id.). Wooden walls tend to reflect, rather than absorb, sound (id. at 513-514). As modeled by the Company, however, reduction of facility noise from sound wall height and material changes would be slight – less than one decibel, even using sound absorbent materials (Exh. EFSB-RR-16(1)). The Company stated that building the wall to 15 feet, instead of 10 feet, would cost an incremental \$250,000 (Exh. EFSB-RR-6).

With respect to construction noise, the Town of Billerica has standard regulations on exterior noise that may be exceeded by construction noise only within specified limits (Tr. 1, at 47). Noisy construction, including the operation of heavy equipment at construction sites in Billerica is limited to 7:00 a.m. to 6:00 p.m., Monday through Saturday, except holidays (id. at 45-47; Exhs. WG-N-3(S)(1); EFSB-RR-5). Within the allowed period for construction noise, noise from non-impact devices may not exceed 70 dBA and construction noise from impact devices may not exceed 90 dBA (Exhs. WG-N-3(S)(1); EFSB-RR-5; Tr. 1, at 45-47). The Company stated that there are no provisions in the town by-laws to provide any exemption from these limits (Exh. EFSB-RR-5; Tr. 1, at 45-47). The Company stated that its construction noises would not exceed 70 dBA at the closest residential property (Tr. 1, at 48-52). The Company stated that it might need to extend the pouring of concrete later than 6:00 p.m.; however, it did not consider concrete pouring as operation of heavy equipment (id. at 47-50). The Company stated that its “common sense” interpretation of the Town of Billerica’s standard noise limits is that the limits apply only to residential areas, and in that context indicated that noise from that concrete pouring would be within the noise limits set by Billerica (id.).<sup>29</sup>

## 2. Intervenor

BWG argues that trying to match up residential receptors with the monitoring locations used by the Company in Table 6-1 of the September 11, 2007, Draft Environmental Impact Report “becomes a bizarre and complicated comparison” (BWG Brief at 25). BWG further

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<sup>29</sup> The Company anticipates no steam blows (Exh. EFSB-N-12).

argues that the noise modeling should take into account the reflectiveness of land surfaces and the Concord River, both liquid and frozen, and also take into account a reduction in the amount of vegetation that would absorb sound from the facility (*id.*). BWG also questions the accuracy of the Company's modeling results. For example, BWG maintains that "any simple-minded person can surmise" that the Company's calculation of a noise reduction from 100 dBA at the proposed facility to 43 dBA at a residential receptor located 3000 feet from the proposed facility is impossible (*id.*, citing Tr. 1, at 124).

BWG asserted that the proponent and its engineers have ample experience to be capable of designing sound absorption walls on all sides of the facility without causing equipment access issues and requests the Company to address BWG's noise concerns (*id.* at 26). Absent 20-foot sound absorbing walls "on all sides", BWG requests in its Reply Brief either a noise bond of no less than \$500,000, or funds with which BWG could employ a noise consultant (BWG Reply Brief at 66).

### 3. Analysis

In prior decisions, the Siting Board has reviewed the noise impacts of proposed generating facilities for general consistency with applicable governmental regulations. Braintree Decision at 35; Southern Energy Canal II, L.L.C., 12 DOMSB 155, at 64 (2001) ("Southern Canal Decision II"); Altresco-Pittsfield, 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. Braintree Decision at 35; Southern Canal Decision II at 64; Sithe Mystic Decision, 9 DOMSB 101, at 54.

In Billerica, operations of the facility would increase  $L_{90}$  sound levels at the property line by up to 28 dBA, which significantly exceeds the 10-dBA MassDEP standard. Increases would be larger if based on the quietest hour, rather than the 10<sup>th</sup> percentile  $L_{90}$  hour the Company assumed for its analysis. The record shows that the Company is requesting a waiver from the MassDEP 10-dBA limit on neighboring industrial properties. The record does not indicate whether the MassDEP would agree to waive the 10-dBA limit for all neighboring parcels on which the limit would be exceeded; however, the Siting Board notes that the MassDEP often grants such waivers.

As part of reviewing whether projects meet the Siting Board's "minimum environmental impact" standard, the Siting Board has also considered the significance of expected off-site noise increases which, although lower than 10 dBA, may adversely affect existing residences or other sensitive receptors. In cases where measured background noise levels at the most affected residential receptors were neither unusually noisy nor unusually quiet, the Siting Board has accepted or required facility noise mitigation sufficient to hold residential  $L_{90}$  increases to 5 to 8 dBA. Braintree Decision at 40-43; IDC Decision, 9 DOMSB 225, at 76; Berkshire Power Development, Inc., 4 DOMSB 221, at 167. For residential receptors to the southeast, the sound increase would be approximately 7 for the quietest hour  $L_{90}$  and 5 dBA for the 10<sup>th</sup> percentile  $L_{90}$ .<sup>30</sup> In the case of a peaking plant, night-time measurements arguably are less material. Therefore, it may be appropriate to also use a low or the lowest daytime  $L_{90}$  for comparison purposes. Daytime sound levels would increase by approximately 4 dBA over the quietest hour.

In prior decisions, the Siting Board has also reviewed the cost of additional mitigation when a facility would cause an appreciable increase in ambient sound levels. In Charlton, the Siting Board required a reduction in noise increase from 10 dBA to 7.5 dBA, at an estimated cost of \$1 million. U.S. Gen Decision, 6 DOMSB 1, at 152-159. In Taunton, the Siting Board required a reduction in noise increase due to railyard activities from 10 dBA to 8 dBA. Silver City Energy Limited Partnership, 3 DOMSB 1, at 391. In Bellingham, the Siting Board required a reduction of the night-time increase of a proposed facility from 8 dBA to 5 dBA at one receptor at a cost of \$1.4 million. IDC Decision at 79-81. More recently, the Siting Board did not require mitigation costing \$1,075,000 that would have provided up to 2 dBA of night-time noise reduction calculated for a peaker likely to operate during the day. Braintree Decision at 41.

With respect to operational noise mitigation, the Siting Board considered requiring the Company to augment its sound wall proposal by increasing the height of the east-west part of the

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<sup>30</sup> The 5 to 8 dBA and 10 dBA benchmarks are each relative to background ambient noise levels, which are naturally variable. In the present case, the proponent measured existing sound levels for a full week, which is more than some previous proposals; to use the very lowest hourly  $L_{90}$  from a week's worth of measurements gives a very conservative benchmark. Excluding the lowest 10% of  $L_{90}$ s (i.e., the 16 quietest hours during the week), as was done by MEB, results in a less conservative benchmark.



sound wall, for example to a height of 15 feet, which would cost \$250,000. According to the sound modeling, the benefit of such a sound wall height augmentation would be slight, even using absorbent materials. Therefore, the Siting Board accepts the noise mitigation as proposed by MEB, including the ten-foot sound barrier wall. Accordingly, the Siting Board directs the Company to construct a ten-foot noise abatement wall at the site as described by the Company.

With respect to construction noise, the record shows that noise from the operation of heavy equipment by the Company is limited, by Billerica bylaw, to 7:00 a.m. to 6:00 p.m., Monday through Saturday, excepting holidays. During these times, construction noise from impact devices may not exceed 90 dBA, and noise from machinery may not exceed 70 dBA. The record shows that the Company has committed to keeping construction noises at no more than 70 dBA at the closest residential property.

The Siting Board directs the Company to confine noisy construction activities to weekdays only, to the extent practicable. Specifically, the Company may engage in any construction activities Monday through Friday, during daylight hours, not earlier than 7:00 a.m. and not later than 6:00 p.m. Further, the Siting Board directs the Company to limit any necessary weekend construction to Saturdays, between the hours of 8:00 a.m. and 6:00 p.m., to the extent practicable. Further, it is important that an outreach plan is in place to communicate with the area residents in the event, although infrequent, of planned construction events outside of normal business hours. Consequently, the Siting Board directs the Company, in consultation with the Town of Billerica, to develop an outreach plan for the proposed facility. The outreach plan should lay out the procedures to be used to notify the public in particular locations about the scheduled start, duration, and hours of construction outside of normal business hours, and should include information on complaint and response procedures and contact information.

Accordingly, the Siting Board finds that, with the implementation of the noise abatement wall condition, the condition limiting construction hours, and the outreach condition, the noise impacts of the proposed facility would be minimized.

#### G. Safety

This Section describes the safety impact of the proposed project with regard to site security, materials handling and storage, and emergency response.

### 1. Site Security

MEB stated that the proposed project would be fenced and gated, with a ten-foot (minimum) chain-link fence around equipment, topped with barbed wire (Exhs. MEB-1, at 4-69; EFSB-S-6). MEB stated that the proposed project would be visited by personnel during the times that it is likely to operate, and also when fuel is delivered (Tr. 1, at 153). As proposed by the Company, the facility would be supervised by personnel working out of the L'Energia facility in Lowell, who would remain off-site when the facility was not in operation (*id.*).<sup>31</sup> In addition, the Company stated that video cameras would be installed which the Billerica Police Department would be able to monitor (Exh. MEB-1, at 4-69). In response to questioning from BWG, the Company stated that it would not commit to financially supporting a full-time Town of Billerica employee at the facility for the purpose of monitoring operations (Tr. 1, at 153-154).

### 2. Materials Handling and Storage

The proposed project would include two 24,000-gallon storage tanks to store 19% aqueous ammonia, which would be delivered by truck, for control of nitrogen oxide emissions (Exhs. EFSB-S-1; BWG-S-3).<sup>32</sup> Each of the tanks would be located within a full capacity concrete dike in order to contain leakage or major tank spills (Exh. EFSB-S-1). MEB described the use of 19% aqueous ammonia and the dike as two levels of safety (Tr. 1,

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<sup>31</sup> At the Siting Board meeting of October 2, 2008, the Company indicated that, while it had originally proposed remote site monitoring, it was revising its proposal to garner a security detail for the site (October 2, 2008 Siting Board Meeting Tr. at 126). The Company now proposes the engagement, during non-operating periods, of a security firm "to have personnel nearby the facility, either driving the area or essentially watching it from [discreet] locations, so that they're watching that plant morning, noon, and night." (*id.* at 127).

<sup>32</sup> At the Siting Board meeting of October 23, 2008, the Company indicated that, while it had originally proposed two 24,000 aqueous ammonia storage tanks for the proposed facility, it was revising its proposal to include two 18,000-gallon aqueous ammonia storage tanks, as noted above in Section I.A. At the same meeting, the Company indicated that it would be willing to put a structure around the ammonia tanks, consistent with the Siting Board's requirement in the Braintree Electric Light Department case (October 23, 2008, Siting Board Meeting Tr. at 23). See Braintree Decision at 51.

at 148-149). A third safety provision is that the Company would keep buoyant spheres inside the dike in order to reduce evaporation in the event of a major spill (*id.*).

MEB used the USEPA's Areal Locations of Hazardous Atmospheres ("ALOHA") model to estimate the maximum one-hour averaged concentrations at the nearest public receptors for a contingency release of aqueous ammonia (Exh. EFSB-S-3(1)).<sup>33</sup> The Company performed ammonia dispersion modeling for a worst-case scenario that (1) both tanks collapse into the secondary containment dike, (2) the air is moving toward the residences, and (3) prevailing weather conditions are worst for dispersal (*id.*). The Company characterized complete tank failure as a very unlikely event, and the worst case atmospheric conditions as very conservative (*id.*). The Company also performed ammonia dispersion modeling for the scenario that (1) both tanks collapse into the secondary containment dike, (2) the air is moving toward the residences, and (3) prevailing weather conditions are conservative but not the worst possible;<sup>34</sup> the Company characterized the latter atmospheric conditions as consistent with other USEPA off-site consequence guidance (*id.*). Modeling results were compared to the Emergency Response Planning Guidelines ("ERPGs") put forth by American Industrial Hygiene Association ("AIHA"). The ERPG definitions, and the distances<sup>35</sup> to which a plume might exceed the ERPGs is shown in Table 8:

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<sup>33</sup> If released, the aqueous ammonia would release ammonia vapor ("NH<sub>3</sub>" or "ammonia") into the air.

<sup>34</sup> For the worst case scenario, a wind speed of 1.5 meters per second and class "F" atmospheric stability were assumed; for the alternative scenario, a wind speed of 3 meters per second and class "D" atmospheric stability were assumed (Exh. EFSB-S-3(1)).

<sup>35</sup> The Company also modeled the distance which could be reached by a concentration of 200 ppm, which the USEPA considers a concentration below which nearly all individuals could be exposed for one-half to one hour without any serious health effects. The modeled distance was 200 yards (versus 233 yards for the 150 ppm Level 2 ERPG) (Exh. EFSB-S-3).

<b>TABLE 8. Ammonia Dispersion Modeling, Worst Case &amp; Alternative Releases</b>				
<b>ERPG Level</b>	<b>NH<sub>3</sub> Conc.</b>	<b>ERPG is considered to be the highest concentration below which . . .</b>	<b>Maximum Plume Radius at Listed Concentration</b>	<b>Locations Inside Circle with Listed Radius</b>
ERPG-1	25 ppm	nearly all individuals could be exposed for up to one hour without experiencing other than mild, transient adverse health effects or without perceiving a clearly defined objectionable odor	Worst-case: 602 yards Alternative case 192 yards	ERPG-1 level could reach several residences if wind is NW (under the worst case scenario)
ERPG-2	150 ppm	nearly all individuals could be exposed for up to one hour without experiencing irreversible or other serious health effects, or symptoms which could impair an individual's ability to take protective action	Worst-case: 233 yards Alternative case 75 yards	ERPG-2 level could reach abutting commercial and industrial buildings (under the worst case scenario)
ERPG-3	750 ppm	nearly all individuals could be exposed for up to one hour without experiencing or developing life-threatening health effects	Worst-case: 100 yards Alternative case 32 yards	ERPG-3 level could reach access road or railroad tracks (under the worst case scenario)

(Exhs. EFSB-S-8; EFSB-S-8(1))

Concentrations of ammonia at the nearest residences could exceed the AIHA Level 1 ERPG of 25 ppm; concentrations exceeding the Level 2 ERPG of 150 ppm could extend off site but not as far as the residences; concentrations exceeding the Level 3 ERPG of 750 ppm could extend a short way off site, onto the road access to Jack's Used Auto Parts to the south, onto the MBTA railway line tracks to the east, or onto portion of wooded area within the Baker Commodities property to the north, depending on the wind direction (Exh. EFSB-S-7).

MEB asserted that use of (1) dilute aqueous ammonia, (2) a full capacity dike, and (3) floatable spheres, in combination, is a safe and sound means to store ammonia (Tr. 1, at 150). MEB stated that use of a double-walled tank might reduce the already small risk of a spill, but noted that use of a double-walled tank makes it difficult to perform periodic non-destructive testing of tank integrity (*id.*). MEB stated that installation of a double-walled tank would result in a \$200,000 increase in the cost of the storage system (Exh. EFSB-S-4). The Company

acknowledges that the use of a double-walled tank affords an additional increment of containment, but its position was that the increased cost of the double-walled tank is not warranted (id.; Tr. 1, at 150-151).

The project would include a 500,000-gallon tank for fuel oil storage (Exh. MEB-1, at 1-18). The oil storage area would be provided with secondary containment designed to hold the contents of the fuel oil storage tank in the event of a spill (id. at 4-67). The Company stated that the facility would have a fuel unloading dock with pipes that send the oil to the tank and from the tank to the turbines, all within a spill containment area (Tr. 1, at 157). The Company indicated that a Spill Prevention, Control and Countermeasure Plan (“SPCC”) would be prepared prior to delivery of any oil, and that the SPCC plan would be maintained on site for inspection (id. at 156). The Company stated that the oil storage tank would be inspected in accordance with requirements of the USEPA’s SPCC rule at 40 CFR 112 (Exh. BWG-S-4). The Company stated it would inspect oil storage dikes in accordance with standards of the American Petroleum Institute (Tr. 1, at 158).

### 3. Emergency Response

MEB stated that its response to an emergency would be coordinated with local police and fire officials through the community Emergency Response Plan (Tr. 3, at 438-440). MEB indicated that it had consulted with the Billerica Fire Department with respect to developing these plans, and stated that the Fire Department cited a need for site-specific training relevant to ammonia spills and oil tank fires (Tr. 1, at 95-97). At the request of the Fire Department, the facility will include a foam suppression system as the means to extinguish a fuel oil tank fire (Exh. EFSB-RR-9). MEB stated that in addition to having available its own trained personnel, and local police and fire officials, it would contract with an on-call hazardous materials cleanup firm, and noted that a Regional Hazmat Team trained to handle chemical spills is available as back-up (Exh. EFSB-S-5). The Company stated that it expects it would provide training to local emergency personnel, but that decisions about preparation, and decisions about response in the event of an actual emergency, would be within the purview of the local departments (Tr. 3, at 438-439).

#### 4. Intervenor

BWG expressed concern about the safety risks associated with the remote operation of the proposed power plant (Tr. 7, at 1003). According to BWG, the Company should have on-site personnel to monitor and respond to potential hazards such as chemical spills, accidental discharges to the river, or “any predictable or unknown worst case scenarios” (*id.*). Members of BWG maintain that the Town of Billerica does not have the necessary manpower, equipment, emergency plans, or training for its employees to deal with the hazards associated with a power plant (*see, e.g.* Tr. 7, at 1003).

BWG argues that the Company’s use of 19% aqueous ammonia creates a “hair-splitting distinction” versus more-highly-regulated 20% aqueous ammonia, and that the Company should be required to submit to the USEPA a Risk Management Plan that would be required for storage of a similar amount of 20% aqueous ammonia (BWG Brief at 41). In addition, BWG advocated for additional ammonia spill scenario modeling, including potential off loading and traffic-related incidents (Exh. BWG-MB at 7). In its reply brief, for the first time, BWG requests that a “very substantial” financial bond be negotiated and secured prior to issuance of any permit (BWG Reply Brief at 68).

#### 5. Analysis

Originally, the Company stated that the proposed facility would be at times monitored by personnel from a nearby generating facility. The Company subsequently represented at the October 2, 2008, Siting Board meeting that it would maintain security personnel at and in the vicinity of the site. This arrangement goes further than the original plan to help ensure plant security. As a result, the Siting Board directs the Company to maintain site security personnel on a continuous basis at or around the site. Remote electronic monitoring alone, as originally proposed by the Company, does not satisfy this condition.

The record shows that MEB would store and handle oil and chemicals in accordance with applicable public safety standards and that it would have in place secondary systems to contain chemical spills or releases. In order to facilitate accurate and effective emergency response planning procedures, the Siting Board directs the Company to prepare and submit to the Billerica Fire Department, or other appropriate agency, a risk management plan that evaluates potential

ammonia exposures under the scenario of a release during off-loading. The record also shows that an SPCC plan has not yet been developed. Therefore, the Siting Board also directs the Company to develop an SPCC plan.

The record shows that MEB would store 48,000 gallons of aqueous ammonia in two single-walled storage tanks. As noted above, the Company subsequently modified its proposal to limit aqueous ammonia storage to two 18,000-gallon tanks.

The record shows that, in the event of a worst-case release of aqueous ammonia from both tanks, ammonia vapor concentrations above the Level 2 ERPG (150 ppm) could reach an adjacent workplace. Concentrations above the Level 3 ERPG (750 ppm) could extend off site, in a worst-case scenario. While the Siting Board recognizes that the possibility of a catastrophic spill is remote, reducing the risk of public exposure is beneficial. In several previous cases, parties have evaluated or accepted an enclosure of their ammonia tank(s). See Brockton Decision, 10 DOMSB 157, at 61; IDC Decision, 9 DOMSB 225, at 82; ANP Blackstone Decision, 8 DOMSB 1, at 165; ANP Bellingham Energy Company, 7 DOMSB 39, at 151.

In a recent case, the Braintree Electric Light Department (“BELD”) performed similar ammonia dispersion modeling, showing that the Level 2 ERPG could be exceeded at BELD’s administration offices, where members of the public come to pay their bills and arrange for electric and cable service. Braintree Decision at 46, 51. BELD had maintained that the increased cost of a structure to enclose the aqueous ammonia storage tank was not warranted; however, the Siting Board found that the use of a building enclosure surrounding the proposed ammonia tank was reasonable based on the facts in that case, and required BELD to enclose the ammonia tank. Id. at 51. In the present case, MEB initially had posited that the risk did not warrant the incremental cost of using a double-walled tank, estimated to be \$200,000; the Company subsequently indicated that it would enclose the aqueous ammonia tank with a building. As the circumstances of this case are broadly similar to those of the Braintree Decision,<sup>36</sup> the Siting Board directs the Company to construct a building that would enclose its

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<sup>36</sup> In the Braintree Decision, the Siting Board noted that the cost of an enclosure was not prohibitive or unreasonable in comparison to the total cost of the project and was justified to provide an adequate level of safety to the public. The Siting Board therefore found  
(continued...)

aqueous ammonia tanks. The Siting Board also directs the Company, prior to facility operation, to file a report with the Siting Board confirming approval by the Billerica Fire Department and the Billerica Police Department of safety and security plans for the MEB facility.

Accordingly, the Siting Board finds that, with the implementation of the above conditions requiring preparation of an SPCC plan, full-time security personnel, and an enclosed ammonia storage tank, the safety impacts of the proposed project would be minimized.

#### H. Traffic

##### 1. Company

Traffic associated with the facility is expected to arrive from Interstate 495 (“I-495”) by way of the Woburn Street interchange, which is Exit 37 (Exh. MEB-1, at 4-63). Access during construction and heavy deliveries during facility operation would proceed south on Woburn Street for approximately two-thirds of a mile to the Baker Commodities entrance at Woburn Street (*id.*). Personal vehicles would arrive by the same route or continue on Woburn Street, which becomes Billerica Avenue in Billerica, turn right onto Town Farm Lane, and access the facility from Town Farm Lane (*id.* at 4-63, 4-64, fig. 1.3-1; EFSB-T-1(1)). Woburn Street is a minor arterial roadway, approximately 24 feet wide in the vicinity of the project, providing one lane in each direction (Exh. EFSB-T-5(S)(1) at 3). MEB characterized the local roadway system as well-suited for project traffic (Exh. MEB-1, at 4-63, 4-64). Construction lay down and construction worker parking would be within the Baker Commodities property (Exhs. MEB-1, at 4-64; EFSB-T-2).

According to MEB, facility construction would require approximately 185 workers for much of the construction period (Exh. MEB-1, at 4-64). During peak construction, approximately 200 vehicles, transporting a total of 250 workers, would enter the facility Monday through Friday at 7:00 a.m and depart no later than 5:30 p.m. (*id.*; Exh. EFSB-T-4). The Company stated that trucks delivering construction materials would be spread throughout the

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<sup>36</sup>

(...continued)

that the use of a building enclosure surrounding the proposed ammonia tank was reasonable based on the facts in the case. Braintree Decision at 51.



workday, except during high use days such as during the pouring of foundations (Exh. MEB-1, at 4-64). Delivery of large equipment would not be during peak rush hour traffic, and would be coordinated with local officials (id.).

MEB estimated that during normal operation of the facility (i.e., gas firing), the maximum monthly number of vehicle trips to the site would be 180, including one truck delivery per day (Exh. EFSB-T-4). On-site staff would be limited to approximately 10 people for equipment maintenance (Exh. MEB-1, at 4-64). When the facility is operating on a high rate of ULSD firing (i.e., 100 hours per month), the Company has estimated that there would be 290 fuel oil deliveries per month (id.). The Company stated that the traffic impacts during operation of the facility, including truck deliveries during full load oil operation of 6 hours per day, would be significantly less than during construction, as there would be no full-time employees at the facility (Exh. EFSB-G-1(S) at 13-1).

The Company conducted a traffic study for the construction phase of the project (Exh. EFSB-T-5(S)(1)).<sup>37</sup> Traffic flow at intersections is expressed in terms of delay times, and graded levels of service (“LOS”) (where LOS A is best and LOS F is worst). The traffic study showed that the projected average waiting times would become longer at the Woburn Street / I-495 intersection during the construction period. The specific changes in projected LOS and the changes in expected average waiting times that would occur during construction of the proposed project are shown in Table 9:

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<sup>37</sup> Further, the Company expects that construction would have less impact on the evening rush hour, because construction work is expected to normally finish at 3:30 p.m. (Exh. EFSB-T-5(S)(1) at 3).

<b>TABLE 9. Projected Changes in Intersection Level of Service (Weekday)</b>			
<b>Turning Movement</b>		<b>LOS &amp; time, without project</b>	<b>LOS &amp; time, during construction</b>
Southbound I-495 to Woburn Street southbound	Morning peak	F (over capacity)	F (over capacity)
	Midday peak	F (108 sec)	F (133 sec)
Woburn Street northbound to Southbound I-495	Morning peak	A	A
	Midday peak	A	A
Northbound I-495 to Woburn Street northbound	Morning peak	F (218 sec)	F (776 sec)
	Midday peak	F (54 sec)	F (61 sec)
Northbound I-495 to Woburn Street southbound	Morning peak	F (51 sec)	F (349 sec)
	Midday peak	B (12 sec)	B (12 sec)
Woburn Street northbound to Northbound I-495	Morning peak	A	A
	Midday peak	A	A
Woburn Street southbound to Northbound I-495	Morning peak	A	A
	Midday peak	A	A
Woburn Street N/S to Baker Commodities driveway	Morning peak	A	A
	Midday peak	A	A
Baker Commodities driveway to Woburn Street	Morning peak	D (26 sec)	F (55 sec)
	Midday peak	B (13 sec)	B (14 sec)

(Exh. EFSB-T-5(S))

Southbound I-495: Interstate traffic from Lawrence or toward Westford/Marlboro

Northbound I-495: Interstate traffic from Marlboro/Westford or toward Lawrence

Southbound Woburn Street: Traffic from Lowell or toward North Billerica

Northbound Woburn Street: Traffic from North Billerica or toward Lowell

The Company stated that it would manage traffic through the placement of uniformed traffic control officers at intersections as needed (Exh. MEB-1, at 4-64). Specifically, based on the traffic study, the Company has agreed to place uniformed officers at the Woburn Street/I-495

interchange during peak construction and, if needed, at the entrance to Baker Commodities (Exh. EFSB-T-5(S)).

2. Intervenor

BWG takes issue with the Company's traffic study because it does not include traffic impacts during the operation of the facility (Reply Brief at 60, citing Tr.1, at 172). BWG argues that the Company has not accounted for the possibility that it may not have a secure source for water supply and water disposal, which could result in a need for diesel-fueled tanker trucks to deliver 720,000 gallons of water per day during operation of the proposed facility (BWG Brief at 49). BWG also expresses safety-related concerns with respect to the transportation of hazardous materials, such as ammonia and diesel fuel, during operation of the facility (id. at 43, citing Tr. 1, at 151-153).

3. Analysis

In the record is a study of traffic at the intersection of I-495 and Woburn Street in Lowell, along the primary route to the site, which showed that during the morning peak hours, more traffic already attempts to travel through the intersection than it has the capacity to handle. This situation most severely affects traffic coming off of I-495, from either direction, and making left turns onto Woburn Street. Traffic related to the proposed project would make this bad situation worse, especially during facility construction.

The record shows that, in response to the results of its traffic study, the Company developed a plan to address traffic concerns during the construction phase of the proposed facility, consisting of using uniformed traffic control officers at intersections, as needed. The record shows that MEB has identified primary and back-up water supplies, and so it is not likely that water would need to be trucked to the site. With respect to oil truck deliveries during operation of a facility, the Siting Board has, in previous cases, directed applicants to avoid peak traffic hours for such deliveries. Sithe Edgar Decision, 10 DOMSB 1, at 102; Brockton Decision, 10 DOMSB 157, at 71. The record shows that the I-495/Lowell Street intersection is already overloaded at hours of peak traffic. Consequently, the Siting Board directs the Company to limit oil deliveries to off-peak hours. The Siting Board directs the Company to limit delivery of water

by truck to the facility to a maximum of 20 round trips per day.

Accordingly, the Siting Board finds that, with implementation of the above condition on oil delivery timing, the traffic safety impacts of the proposed facility would be minimized.

I. EMF

1. Company

MEB indicated that there is a de-energized National Grid transmission line, the J-162 line, extending east to west, 0.2 mile south of the site; the J-162 line is on the north side of an existing transmission corridor occupied by four other transmission lines (Exhs. MEB-1, at 4-65 to 4-66, fig. 1.3-1; EFSB-E-1(1) at fig. 2-1; Tr. 4, at 573-575). The existing J-162 line would be bifurcated adjacent to the site, and larger replacement wires would be strung on the existing poles, extending east 2.7 miles to the line's point of interconnection at Tewksbury 22 substation (Exh. MEB-1, at 1-13; Tr. 4, at 573-574). From the bifurcation point, the new wires also would extend off the corridor to connect with the proposed facility, crossing in the area of Jack's Used Auto Parts (Exhs. EFSB-LU-1(1); EFSB-LU-9(1)).

The Company provided a 2005 aerial view of the interconnect line route along the National Grid corridor, indicating the route traverses areas of predominantly residential land use (Exh. EFSB-07-2, fig. 4.13-1). Some nearest residences on the north side of the corridor apparently are 50 feet, or somewhat less than 50 feet, from the right-of-way edge ("edge-of-ROW"); by and large, however, where the corridor passes by neighborhoods on its north side, residences are more than 50 feet from the edge-of-ROW (*id.*). The Company indicated that there are no residences in the immediate vicinity of the off-corridor line segment (Exhs. EFSB-LU-1(1); EFSB-LU-9(1)).

MEB provided information with respect to sources of electromagnetic fields ("EMF") associated with operation of its electric interconnection. The Company modeled electric and magnetic fields along the line between the proposed facility and the National Grid transmission corridor, as well as along the transmission corridor. For the transmission corridor, MEB's modeling included EMF from existing lines, based on the maximum historic peak load recorded for the transmission line adjacent to the currently de-energized line, and on the peak loads recorded on the same historic date for the other parallel lines (Exh. EFSB-E-1(1) at 10).

The Company presented EMF modeling results for both edges of the affected right-of-way, with and without operation of the facility, showing electric field strengths in kilovolts per meter (“kV/m”) and magnetic field strengths in milligauss (“mG”). These predictions are shown in Tables 10 and 11:

<b>TABLE 10. Projected Edge of Right-of-Way Electric Field Strengths</b>			
<b>Location Modeled for Ground-Level EMF</b>		<b>Electric Field, without project</b>	<b>Electric Field, with project</b>
		<b>kV/m</b>	<b>kV/m</b>
Line from corridor to facility, 50 feet from centerline	East side	(no transmission)	0.2
	West side	(no transmission)	0.2
Multiline transmission corridor, edge-of-ROW	North side	0.06	0.3
	South side	2.2	2.2

(Exh. EFSB-E-1(1) at 12, 16)

<b>TABLE 11. Projected Edge of Right-of-Way Magnetic Field Strengths</b>			
<b>Location Modeled for Ground-Level EMF</b>		<b>Magnetic Field, without project</b>	<b>Magnetic Field, with project</b>
		<b>mG</b>	<b>mG</b>
Line from corridor to facility, 50 feet from centerline	East side	(no transmission)	40
	West side	(no transmission)	40
National Grid transmission corridor, edge-of-ROW	North side	13	63
	South side	74	73

(Exh. EFSB-E-1(1) at 12, 16)

MEB also presented graphs of magnetic field modeling results for the National Grid corridor, showing variation in field strength by location both within the overall right-of-way and up to 100 feet outside the north edge-of-ROW (Exh. E-1(S)(1), at 14-15). One graph shows that

magnetic field during operation of the facility would change with distance from the interconnect line, declining from as much as 400 mG or more at some points directly under the line, to somewhat over 50 mG at points along the north edge-of-ROW, to less than 20 mG at points 50 feet from the north edge-of-ROW (id. at 15).

MEB stated that EMF can be minimized by optimizing the orientation of the phases on parallel transmission lines (Tr. 4, at 582-583). The electric field from one line can partially cancel the field from another line, and likewise for magnetic fields (id.). For all of the lines on this corridor, conductors are horizontally arrayed with identical phase arrangements (id.). Given likely power flow patterns for the corridor, electric current on the proposed interconnect and the nearest adjacent line would run in opposite directions most of the time; specifically, output from the proposed generating facility would be running toward Tewksbury substation, while most of the time electric current in the adjacent line runs away from Tewksbury substation (id.). As a result of the prevailing power flow pattern, the matching phase arrangements on these lines would be beneficial for canceling magnetic fields (id.). However, the parallel transmission lines also are fairly far apart, so a significant degree of cancellation is difficult to achieve (id.).

## 2. Analysis

In a previous review of proposed 345 kV transmission line facilities, the Siting Board accepted edge-of-ROW levels of 1.8 kV/m for electric field and 85 mG for magnetic field. 1985 MECo/NEPCo Decision, 13 DOMSC 119, at 228-242. In later reviews of proposed electric facilities, the Siting Board has compared estimated EMF impacts to the edge-of-ROW impacts accepted in the 1985 MECo/NEPCo Decision, and as applicable considered whether based on such comparison estimated EMF impacts are unusually high. Braintree Decision at 60; CELCo Kendall Decision, 12 DOMSB 305, at 347-349; Sithe Mystic Decision, 9 DOMSB 101, at 181-183; Hingham Municipal Lighting Plant, 14 DOMSC 7, at 28 (1986).

The Siting Board did not conclude, in the 1985 MECo/NEPCo Decision or any later review referencing that decision, that an edge-of-ROW magnetic field of 85 mG is a level above which harmful effects would necessarily result. Sithe Mystic Decision, 9 DOMSB 101, at 181. Rather, the Siting Board has held that the edge-of-ROW magnetic field level of 85 mG serves as

a benchmark of a previously accepted impact along a 345 kV transmission right-of-way in Massachusetts, not as a limit of acceptable impact.<sup>38</sup> Id.

At the same time, the Siting Board in previous decisions has cited transmission line applicants' recognition that some members of the public are concerned about magnetic fields, and on this basis has found reasonable those applicants' proposed use of design features that would reduce magnetic fields at low additional cost or no additional cost. See, e.g., CELCo Kendall Decision, 12 DOMSB 305, at 349; New England Power Company, 4 DOMSB 109, at 148 (1995). In a previous transmission line review, the Siting Board directed the applicant to consult with local officials, and make a compliance filing, regarding use of cost-effective measures to reduce EMF exposure of students at a school along the route and, if reasonably feasible, reduce magnetic field to 10 mG at the school. CELCo Kendall Decision, 12 DOMSB 305, at 349.

In generating facility cases, the Siting Board has reviewed EMF in the context of possible impacts along interconnecting power lines. Braintree Decision at 61; Sithe Mystic Decision, 9 DOMSB 101, at 181-182; Silver City Decision, 3 DOMSB at 353-354. The Siting Board has held that, as part of pursuing interconnection plans that require upgrades to the regional transmission system, generating facility applicants should work with transmission providers to seek inclusion of practical and cost-effective designs to minimize magnetic fields along affected rights-of-way. Braintree Decision at 61 ; Sithe Mystic Decision, 9 DOMSB 101, at 181-182; Silver City Decision, 3 DOMSB at 353-354.

Here, the record shows that electric and magnetic fields along the short stretch of transmission line from the facility to the existing corridor would be well below the levels previously found acceptable by the Siting Board, and that there are no residences along this segment. The record further shows that on the south side of the existing corridor to Tewksbury,

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<sup>38</sup> Among past cases, for example, the Siting Board has approved petitions for: a generating facility that, with proposed interconnection plans, was expected to result in a magnetic field level at a residence along an interconnecting transmission line of up to 110 mG; and an underground transmission line that was expected to result in an in-street magnetic field level of up to 124 mG. Sithe Mystic Decision, 9 DOMSB 101, at 181. CELCo Kendall Decision, 12 DOMSB 305, at 348.

the existing edge-of-ROW electric field exceeds the 1.8 kV/m benchmark, and the existing maximum magnetic field of 74 mG approaches the 85 mG benchmark; however, the proposed facility would result in essentially no change in these existing EMF levels. The record shows that, on the north side of the corridor, edge-of-ROW EMF levels would increase several fold; the electric field increase to 0.3 kV/m would remain well within the 1.8 kV/m benchmark but the magnetic field increase – from 13 mG to 63 mG – would approach more closely the previously accepted 85 mG benchmark.

While including a several-fold increase in edge-of-ROW magnetic fields to levels of as much as three-quarters of the benchmark, the facility's EMF impacts also reflect the effect of parallel line phase arrangements that already provide some cancellation of EMF. The record also shows that maximum magnetic fields, including those on the more affected north side of the corridor, would decrease rapidly with added distance from the edge-of-ROW, declining to under 20 mG at 50 feet from that edge.

Nonetheless, more complete interconnection plans based on the final interconnection study remain undetermined. Because the proposed project would contribute to higher power flows on area transmission lines, the Siting Board seeks to remain informed about MEB's interconnection plans and any associated transmission upgrades as they may relate to EMF impacts.

Accordingly, the Siting Board directs the Company to keep the Siting Board informed as to the progress and the outcome of the Company's interconnection plans and on designs for any transmission upgrades, as well as any measures incorporated into transmission upgrade designs to minimize magnetic field impacts at such time as the Company reaches final agreement with all transmission providers regarding interconnection. The Siting Board finds that, with implementation of the above EMF informational condition, the EMF impacts of the proposed facility would be minimized.

#### J. Land Use

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



### 1. Company

MEB stated that the site for the proposed facility is in an industrial zone of Billerica and that a variety of uses are approved within this industrial zone, exclusive of residential uses (Exhs. EFSB-RR-4; EFSB-RR-4(1); Tr. 1, at 25-30). As explained in Section IV.E, above, the 16-acre Billerica project site does not have buffer areas under the Company's control except for a small area on the west (see Exhs. EFSB-RR-2; EFSB-RR-3). MEB indicated that there are industrial and commercial uses north, east, and south of the site, mixed with forested areas to the north and south (Exh. MEB-1, at 4-37, fig. 1.3-2, fig. 4.2-1). MEB indicated that there are residential areas located further from the site, but within one-half mile (id.).

The Company indicated that there are no endangered species that have been identified in the immediate area of the proposed site, and that no impact to historical or archaeological resources is anticipated as a result of the MEB project (Exhs. EFSB-LU-9; EFSB-LU-10).

### 2. Analysis

The record shows that the 16-acre site is within an area zoned for industrial use. The record shows that the areas immediately surrounding the proposed site are predominantly industrial and undeveloped. The Siting Board concludes that the construction and operation of the proposed facility is compatible with immediately surrounding uses.

The site proposed by the MEB has scant buffer that would be under the control of the Company. However, in Section IV.E, above, the Siting Board has included a condition that would require the Company to exercise an available option to obtain control of one nearby buffer area. The exercise of this option will somewhat increase the amount of buffer that would be under MEB's control. In prior cases, the Siting Board has considered the adequacy of site buffering and proposed mitigation to limit impacts of proposed facilities. See, for example, U.S. Gen Decision, 6 DOMSB 1, at 182; ANP Blackstone Decision, 8 DOMSB 1, at 183. The Siting Board has accepted at least three free-standing power plants on smaller sites, including a 13.2-acre site in Brockton, a 6.8-acre site in Milford, and a 5.2-acre site in Everett. Brockton Decision, 10 DOMSB 157, at 1; Enron Decision, 23 DOMSB 1, at 1; Cabot Power Corporation, 7 DOMSB 233, at 1, 50 (1998). Several other projects located at existing power plants and cogeneration applications at industrial facilities also were on small subareas within a

larger plant property. Otherwise, sites have been larger, predominantly 30 acres or more. Many previous proposed projects in suburban areas have included buffer areas that were under the control of the project owner. See, for example, IDC Decision, 9 DOMSB 225, at 1, 66, fig. 1; Dighton Power Associates, 5 DOMSB 193, at 1 (1997); Eastern Energy Corporation, 22 DOMSB 188, at 179 (1991).

The limited extent of the controlled buffer has ramifications with respect to noise, visual impacts, and safety, each of which is evaluated in previous sections. Impacts and mitigation are comparable to projects with larger sites, providing controlled on-site buffer.

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

#### K. 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 substances over various pathways, as well as possible effects on human health unrelated to substances (e.g., EMF or noise effects). The Siting Board considers these effects in the context of existing background conditions, existing baseline health conditions, and, when appropriate, likely changes in the contributions of other major emissions sources. Braintree Decision at 65; Massachusetts Municipal Wholesale Electric Company, EFS 07-6 (2008) at 59; Sithe Mystic Decision, 9 DOMSB 101, at 189.

The analysis of the health impacts of a proposed generating facility is necessarily closely related to the analysis included in sections above of specific environmental impacts which could have an effect on human health and any necessary mitigation measures. This section: (i) 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; (ii) describes any existing health-based regulatory programs governing these impacts; and (iii) considers the impacts of the proposed facility in light of such programs.

### 1. Baseline Health Conditions

The Company provided a summary of asthma prevalence and cancer incidence study findings for neighboring towns, available from the Massachusetts Department of Public Health (“MDPH”) (Exh. EFSB-H-2). Reported pediatric asthma prevalence in Billerica, Chelmsford, and Tewksbury was lower than the state average, while Lowell had rates higher than the state average (id.). Compared to state averages, asthma hospitalization rates were lower in Billerica and Chelmsford, and higher in Tewksbury and Lowell (id.). The Company characterized these individual municipal rates as being clustered around the statewide average (Tr. 3, at 349).

Cancer incidence in Billerica, using data from 1999-2003, varied from statewide rates as follows: elevated liver cancer in females, prostate cancer in males, and lung cancer; and below average lymphoma in females (id.).<sup>39</sup> Cancer incidence in Chelmsford varied from statewide rates as follows: elevated female uterine cancer, and male esophageal, larynx cancer and multiple myeloma; and below average female breast cancer and male skin and prostate cancers (id.). Cancer incidence in Tewksbury varied from statewide rates as follows: elevated lung cancer and female colon cancer (id.). Cancer incidence in Lowell varied from statewide rates as follows: elevated male lung and larynx cancer, female leukemia, and oral cavity / pharynx cancer in both sexes; and below average male prostate and testicular cancers, female breast cancer, and skin cancers (id.).

### 2. Criteria Pollutants

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<sup>39</sup> There appears to be a discrepancy between information provided by the Company and information on the website cited by the Company. Please note also that the Massachusetts Cancer Registry report for 2001-2005 is now available. The 2001-2005 data show elevated leukemia, liver, and oral/pharynx cancer in females, and elevated lung cancer in both sexes in Billerica, compared to statewide rates; elevated thyroid cancer in males in Chelmsford; elevated lung and bladder cancer in females, and elevated liver cancer in males in Tewksbury; and elevated male liver, lung, larynx, and oral/pharynx cancers, elevated female cervical cancer, and below average male prostate and testicular cancers, female breast cancer, and skin cancers in Lowell, all compared to statewide rates.  
<http://www.mass.gov/?pageID=eohhs2topic&L=3&L0=Home&L1=Government&L2=Departments+and+Divisions&sid=Eeohhs2>

The USEPA regulates the emissions of six criteria pollutants under NAAQS: SO<sub>2</sub>, particulate matter, NO<sub>2</sub>, CO, ground-level ozone, and lead (Exh. MEB-1, at 4-70). The NAAQS consist of primary standards and secondary standards, of which the primary standards are designed to protect public health. MEB stated that the USEPA primary NAAQS for the criteria pollutants are designed to be protective of human health, including the health of children and other sensitive subgroups, with an adequate margin of safety (id.; Exh. EFSB-1, at 301-317; Tr. 3, at 318-319). The Company stated that the USEPA included in its evaluations clinical studies of people with chronic obstructive pulmonary disease, asthma, and heart disease (Exh. EFSB-1, at 310-312). The Company stated that the project would meet USEPA health-based standards (Exh. EFSB-H-3).

As described in Section IV.B.2, above, Middlesex County is a non-attainment area only for ozone (Exh. EFSB-A-15(1) at 3-2). MEB stated that the proposed project would therefore be subject to NSR for VOCs and/or NO<sub>x</sub> if it were a major source, but that it would be a minor source of these pollutants (id. at 3-3). As described in Section IV.B.4, above, total regional NO<sub>x</sub> emissions are capped (id. at 3-6). MEB stated that the proposed facility also would produce less emissions than the thresholds for the criteria pollutants for which Middlesex County is in attainment (Exh. EFSB-A-15(1) at 3-2; see Table 3, above). As described in Section IV.B.1, above, the Company is nonetheless required to obtain from the MassDEP approval under the BACT standard, which balances emission control benefits with costs (Exh. MEB-1, at 4-6, 4-7; see Table 5, above).

### 3. Air Toxics

Potentially hazardous air pollutants commonly, known as “air toxics” and also described as non-criteria pollutants, include organic compounds, metals, ammonia, and sulfuric acid (Exh. EFSB-A-15(S) at 5-18, 5-19). According to the Company, the USEPA has determined that minor sources of hazardous air pollutants from combustion turbines do not pose a health risk (Exh. MEB-1, at 4-70). MEB modeled ambient air impacts of 19 hazardous air pollutants from the facility, based on USEPA emission factors for turbines firing oil and natural gas, and its AERMOD dispersion modeling, and compared these values to MassDEP ambient air guidelines

(Exh. EFSB-A-15(S) at 5-18, 5-19).<sup>40</sup> The Company indicated that modeled 24-hour and annual average concentrations would be within the MassDEP guidelines for AALs and TELs (*id.*).

#### 4. Discharges to Ground and Surface Waters

MEB stated that the Town of Billerica WWTP, to which project wastewater would be discharged, operates under an NPDES permit (Tr. 3, at 250). MEB indicated that the Town of Billerica would accept the MEB facility's process wastewater in accordance with an industrial sewer connection permit (Exh. WG-W-2; *see* Section IV.C.2, above). The Company asserted that the effluent would be clean enough to discharge directly to the Concord River, as noted in Section IV.C.2, above, although the constituents of effluent from the proposed facility to the Billerica WWTP were not specifically described in the proceeding (Tr. 1, at 93-95).

MEB stated that concrete containment areas would be installed under and around electrical equipment and tanks housing fuels and oils, with runoff from these areas directed to oil/water separators prior to discharge, as described in Section IV.C.2, above (Exh. EFSB-W-9). MEB stated that it would operate under an NPDES general permit for stormwater (Exh. EFSB-W-10). The Company would manage runoff from proposed project surfaces with recharge basins and vegetated infiltration swales (Exh. EFSB-W-8).

#### 5. Handling and Disposal of Hazardous Materials

In Section IV.G, above, the Siting Board reviewed MEB's plans for storage and handling of hazardous materials, including 19% aqueous ammonia, ULSD, and limited amounts of industrial chemicals for facility maintenance and operation. Section IV.G sets forth MEB's plans for minimizing and responding to accidental releases of oil or other hazardous materials. Section IV.G also describes potential health effects of exposure to ammonia vapor.

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<sup>40</sup> The MassDEP regulates air toxics through the establishment of AALs and TELs to based on potential carcinogenic and non-carcinogenic effects from exposure to ambient air. Braintree Decision at 68-69.

## 6. Noise

As discussed in Section IV.F, above, WHO has issued guidelines suggesting that limiting outdoor noise levels to 55 decibels during the day and 45 decibels at night help to limit sleep interference and annoyance (see Exh. BWG-N-3(1)). The 1974 USEPA document “Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety” similarly states that “undue interference with activity and annoyance will not occur if outdoor levels are maintained at an energy equivalent of 55 dB and indoor levels at 45 dB” (Exh. EFSB-N-15(1) at 4). MEB’s projections indicate that operational noise would contribute approximately 45 dBA to outdoor sound levels in the closest residential neighborhood (Exh. EFSB-A-15(S) at 6-20).

## 7. EMF

As discussed in Section IV.I, above, the power from the proposed facility would be transmitted to a substation in Tewksbury along an existing transmission line corridor. Electric fields and magnetic fields on the north side of the right-of-way would increase from 0.06 kV/m to 0.3 kV/m and 13 mG to 63 mG, respectively. Electric fields and magnetic fields on the south edge-of-ROW would remain approximately unchanged at 2.2 kV/m and 74 mG, respectively. The EMF levels on the north side of the corridor are consistent with levels accepted by the Siting Board for edge-of-ROW levels of 1.8 kV/m and 85 mG.

MEB described a variety of EMF research initiatives undertaken from approximately 1980 to the present, within the United States and around the world (Tr. 4, at 576-578). The Company stated that a number of public-health agencies have looked at the issue of whether power-line electric and magnetic fields may affect health (id.). According to MEB, the attention has focused primarily on the magnetic-field component, because the initial epidemiological studies had reported a statistical correlation between what were assumed to be magnetic-field levels and risks of certain diseases such as childhood leukemia (id.). MEB stated that, following the initial epidemiological study in 1978 or 1979, a variety of research programs was initiated to try to determine if the statistically apparent association reflected a biologically valid association (id.). MEB stated that, to date, the biological assessment of effects of electric and magnetic fields has not found support for there being a causal link (id.). Research continues in this area

(id.). The people investigating biophysical mechanisms in animal studies have not found a biological basis for the statistical associations (id.). However, due to the statistical associations, some level of concern continues to exist (Tr. 4, at 576-578).

MEB stated that a number of agencies have proposed guidelines for EMF exposures. The Company singled out the work of the International Commission on Non-ionizing Radiation Protection (“ICNIRP”), and stated that the ICNIRP has been formally recognized by WHO (Exh. MEB-1, at 4-71). ICNIRP concluded that there was not evidence of adverse health effects below continuous exposure levels of 833 mG (id.; Tr. 4, at 576-578). The Company asserted that 833 mG is a level which exceeds levels to which the public would be exposed in a transmission line environment (Exh. MEB-1, at 4-71 ; Tr. 4, at 576-578).

#### 8. Intervenor

BWG maintains the Company has not presented “any form of cumulative health impact studies” (BWG Reply Brief at 72). BWG asserts on brief that the applicant should secure a “health bond” for residents within a 12-mile radius of the proposed facility to be used for insurance deductibles for asthma and lung related illnesses, air conditioners for the elderly with health issues, and emergency care (BWG Brief at 57). BWG suggests that the health bond be effective for the duration of any Payment in Lieu of Taxes (“PILOT”) agreement with the Town of Billerica (id.).

#### 9. Analysis and Conclusions

The record evidence described in Section IV.K.1, above, shows that asthma rates appear to be higher than the state average in Lowell, and lower than average in Billerica and Chelmsford. Cancer incidence in the area as a whole does not appear to be markedly different from statewide trends, although there are some variations from town to town. The Siting Board concludes that adherence to health-based standards would be health protective.

The record shows that air quality standards are set by the USEPA and the MassDEP for criteria pollutants to protect sensitive populations. The record shows that the proposed project will be required to meet MassDEP BACT requirements. The record shows that these air quality standards would continue to be met in the area of the facility, with the exception of ozone.

The record shows that the proposed project would not be a major source of ozone, and that its emissions of NO<sub>x</sub>, an ozone precursor, would be within a regulatory cap. Altogether, the proposed limitations on emissions of criteria pollutants are expected to be health protective. The Siting Board notes that the approach of the BACT program is consistent with the Siting Board mandate to minimize both the environmental impacts and costs of proposed generating facilities. The Siting Board gives great weight to expected compliance with USEPA and MassDEP air quality programs as an indicator of whether the health impacts of a proposed facility would be minimized. The record shows that criteria pollutants are well-regulated to protect health, and that the project would comply with regulations for criteria pollutants. Consequently, the Siting Board finds that the health risks of the proposed facility related to criteria pollutant discharges to air at the MEB project would be minimized.

The record shows that, in the judgement of the USEPA, air toxics as emitted by combustion turbines do not pose a significant health risk. The record also shows that the MEB project would comply with the AALs and TELs for air toxics set by the MassDEP to be protective of health. Consequently, the Siting Board finds that health effects of the proposed facility related to non-criteria pollutant discharges to air would be minimized.

The record does not identify any potential for humans to be exposed to any harmful contaminants that might be discharged from the proposed facility to ground and surface waters. In Section IV.C, above, the Siting Board found that the environmental impacts of the proposed facility would be minimized with respect to water resources. Consequently, the Siting Board finds that health effects of the proposed facility related to discharges to ground and surface waters would be minimized.

With respect to a potential release of ammonia, the Siting Board has determined that ammonia concentrations exceeding the health-based Level 2 ERPG of 150 ppm could extend, in a worst-case scenario, to an adjacent workplace, and concentrations exceeding the health-based Level 3 ERPG of 750 ppm could extend off the site. Accordingly, to minimize the risk to public health posed by on-site ammonia storage, the Siting Board in Section IV.G has directed MEB to enclose the ammonia storage tank to mitigate the impacts of any potential ammonia spill. The Siting Board found in Section IV.G that the safety impacts of the proposed project would be



minimized. Consequently, the Siting Board finds that the health effects of the proposed facility related to handling and disposal of hazardous materials would be minimized.

Daytime noise from the facility would be 10 dBA less than WHO guidelines for limiting annoyance and sleep disturbance and similarly within USEPA guidelines. As discussed in Section IV.F, the project would rarely operate at night, and comparison to the WHO daytime guidelines suggests that annoyance and sleep interference would not likely result from facility noise. Also, in Section IV.F, the Siting Board found that the noise impacts of the proposed facility would be minimized. Consequently, the Siting Board finds that health effects of the proposed facility related to noise would be minimized.

The Siting Board has found that although some epidemiological studies suggest a correlation between exposure to magnetic fields and childhood leukemia, there is no evidence of a cause-and-effect relationship between magnetic field exposure and human health. Southern Energy Kendall, LLC, 11 DOMSB 255, at 120-121 (2000); Nickel Hill Decision, 11 DOMSB 83, at 134; Sithe Mystic Decision, 9 DOMSB 101, at 88-89. The record shows that ICNIRP has identified 833 mG as a magnetic field strength below which there is not evidence of adverse health effects. The proposed project would not lead to an exceedance of this level anywhere along transmission lines, and would not exceed the Siting Board's edge-of-ROW precedent of 85 mG. Consequently, the Siting Board finds that health effects of the proposed facility related to EMF would be minimized.

Consequently, the Siting Board finds that there is no evidence that the proposed facility would exacerbate existing public health problems in the communities surrounding the proposed facility.

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

#### L. Conclusions on Environmental Impacts

Based on the information in Sections IV.B through IV.K, above, the Siting Board finds that MEB's description of the proposed project and its environmental impacts is substantially accurate and complete.

In Section IV.B, the Siting Board has found that, with implementation of the CO<sub>2</sub> mitigation condition, the air quality impacts of the proposed facility would be minimized.

In Section IV.C, the Siting Board has found that with the implementation of the conditions with respect to water supply, the water resources and wetlands impacts of the proposed facility would be minimized.

In Section IV.D, the Siting Board has found that, with implementation of the recycling condition, the solid waste impacts of the proposed facility would be minimized.

In Section IV.E, the Siting Board has found that, with the implementation of the three visual mitigation conditions, the visual impacts of the proposed project would be minimized.

In Section IV.F, the Siting Board has found that, with the implementation of the noise abatement wall condition, the condition limiting construction hours, and the outreach condition, the noise impacts of the proposed facility would be minimized.

In Section IV.G, the Siting Board has found that, with the implementation of the conditions requiring preparation of an SPCC plan, full-time security personnel, and an enclosed ammonia storage tank, the safety impacts of the proposed project would be minimized.

In Section IV.H, the Siting Board has found that, with implementation of the condition on oil delivery timing, the traffic safety impacts of the proposed facility would be minimized.

In Section IV.I, the Siting Board has found that, with implementation of the EMF informational condition, the EMF impacts of the proposed facility would be minimized.

In Section IV.J, the Siting Board has found that the land use impacts of the proposed facility would be minimized.

In Section IV.K, 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, MEB's plans for the construction of the proposed generating facility would minimize

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

## V. CONSISTENCY WITH THE POLICIES OF THE COMMONWEALTH

### 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 are consistent with current health and environmental protection policies of the Commonwealth and with such energy policies of the Commonwealth as are adopted by the Commonwealth for the specific purpose of guiding the decisions of the Siting Board. The health and environmental protection policies applicable to the review of a generating facility vary considerably depending on the unique features of the site and technology proposed; however, they may include existing regulatory programs of the Commonwealth relating to issues such as air quality, water-related discharges, noise, water supply, wetlands or riverfront protection, rare and endangered species, and historical or agricultural land preservation. Therefore, in this section, the Siting Board summarizes the health and environmental protection policies of the Commonwealth that are applicable to the proposed facility and discusses the extent to which the proposed facility complies with these policies.<sup>41</sup>

### B. Analysis

In Sections II through IV, above, the Siting Board has reviewed the process by which MEB sited and designed the proposed facility, and the environmental and health impacts of the proposed facility as sited and designed. As part of this review, the Siting Board has identified a

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<sup>41</sup> 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 facility's compliance with 980 CMR § 12.00 is discussed in Section IV, above.

number of Commonwealth policies applicable to the design, construction, and operation of the proposed facility. These are briefly summarized below.

As discussed in Section IV.B, above, the MassDEP, in conjunction with the USEPA, extensively regulates emissions of criteria and non-criteria pollutants from new sources such as the proposed facility. MEB has demonstrated that it expects to comply with all applicable MassDEP and USEPA standards.

As discussed in Section IV.C, above, the MassDEP, in conjunction with the USEPA, regulate various wastewater discharges as well as construction in wetlands and waterway areas. MEB has demonstrated that it expects to comply with MassDEP and USEPA standards for water discharges and for work in wetlands and waterway areas.

As discussed in Section IV.F, above, MEB has maintained that it will limit increases in off-site noise caused by operation of the proposed facility to less than 10 dBA at the nearest residences and property lines, and has represented that it will seek a waiver from MassDEP for noise increases on adjacent non-residential properties, consistent with MassDEP policy 90-001, which limits such increases to 10 dBA.

As discussed in Section IV.J, above, the record indicates that the proposed project is not likely to adversely impact endangered species or historical and archaeological resources. MEB has thereby demonstrated that it expects to comply with policies of the Massachusetts Natural Heritage and Endangered Species Program and the Massachusetts Historical Commission.

Accordingly, based on its review above, the Siting Board finds that plans for 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 for the specific purpose of guiding the decisions of the Siting Board.

## VII. DECISION

The Siting Board's enabling statute directs the Siting Board to implement the energy policies contained in G.L. c. 164, §§ 69H-69Q to provide a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost. G.L. c. 164, § 69H. Section 69J¼ requires that, in its consideration of a proposed generating facility, the Siting Board review inter alia the site selection process, the environmental impacts

of the proposed project, and the consistency of the plans for construction and operation of the proposed project with the environmental policies of the Commonwealth.

In Section II, above, the Siting Board has found that, with the implementation of the condition relative to acquiring additional site buffer, MEB's description of the site selection process it used is accurate, and that the site selection process resulted in the selection of 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 IV, above, the Siting Board has found that with the implementation of listed conditions relative to water resources, solid waste, visual, noise, safety, traffic, and EMF impacts, MEB's plans for the construction of the proposed generating facility would minimize the environmental impacts of the proposed project consistent with the minimization of costs associated with the mitigation, control and reduction of the environmental impacts of the proposed project.

In Section V, above, the Siting Board has found that the plans for the 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.

Accordingly, the Siting Board finds that, upon compliance with the conditions set forth in Sections IV.C, IV.D, IV.E, IV.F, IV.G, IV.H, and IV.I, above, and listed below, the construction and operation of the proposed project 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 Montgomery Energy Billerica Power Partners LP to construct a 348 MW generating facility in Billerica, Massachusetts, subject to the following conditions:

- A. The Siting Board directs the Company, prior to construction, to make a compliance filing showing (a) that the Company has executed water supply contracts with the Town of Billerica for the water volume described in the record, and (b) that consumption of Billerica municipal water, other than water for domestic use and for fire protection, will be mitigated by Company programs

designed to save 40 million gallons per year, based on estimated savings from planned measures as set forth in an agreed plan.

- B. The Siting Board directs the Company to file a notice of project change with the Siting Board if the Company anticipates using more than 40 million gallons per year of municipal water.
- C. The Siting Board directs the Company to file a notice of project change with the Siting Board if the Company is unable to execute a water-supply agreement with the Town of Billerica.
- D. The Siting Board directs that the Company revert to the use of WWTP effluent as the primary source of water for the project within one year of the completion of WWTP reconstruction. The Siting Board directs the Company to file a notice of project change with the Siting Board, if such timely reversion is not effected for any reason.
- E. The Siting Board directs the Company, prior to the commencement of operation, to provide to the Siting Board a recycling plan, and to report on the Company's recycling rate for construction debris and its anticipated recycling rate for operational wastes.
- F. The Siting Board directs the Company to pursue discussions with PanAm Railways to obtain an easement for the life of the MEB project, to maintain existing vegetation immediately east of the plant. The Company shall report to the Board on the results of discussions with PanAm Railways with respect to vegetation on that property, by providing the Siting Board a progress report on April 1, 2009, and every three months thereafter, pending resolution.

- G. The Siting Board directs the Company to plant two staggered rows of spruce trees, no shorter than 10 feet, each, along the east side of the 16-acre site.
- H. The Siting Board directs the Company to acquire the optioned parcel located east of the MBTA railway line, south of Town Farm Lane, and west of Billerica Avenue. The Company shall plant evergreens as set forth in the Company's description of visual mitigation options, using spruce trees, shall maintain the existing trees and added plantings, and shall refrain from removing any healthy trees that mitigate or could mitigate visual impacts.
- I. The Siting Board directs the Company to provide, as requested by individual property owners or appropriate municipal officials, 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 roadways up to one-half mile from the site where residents experience changed views. 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 owners of property within one-half mile of the site, prior to the commencement of construction; (3) may limit requests for mitigation measures from local property owners and municipal officials to a specified period ending no less than six months after initial operation of the facility; (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.

- J. The Siting Board directs the Company to maintain the good appearance of the facility, including the stacks, and on-site landscaping, for the life of the project.
- K. The Siting Board directs the Company to construct a ten-foot noise abatement wall at the site as described by the Company.
- L. The Siting Board directs the Company to confine noisy construction activities to weekdays only, to the extent practicable. Specifically, the Company may engage in any construction activities Monday through Friday, during daylight hours, not earlier than 7:00 a.m. and not later than 6:00 p.m. Further, the Siting Board directs the Company to limit any necessary weekend construction to Saturdays, between the hours of 8:00 a.m. and 6:00 p.m., to the extent practicable.
- M. The Siting Board directs the Company, in consultation with the Town of Billerica, to develop an outreach plan for the proposed facility. The outreach plan should lay out the procedures to be used to notify the public in particular locations about the scheduled start, duration, and hours of construction outside of normal business hours, and should include information on complaint and response procedures and contact information.
- N. The Siting Board directs the Company to maintain site security personnel on a continuous basis at or around the site. Remote electronic monitoring alone, as originally proposed by the Company, does not satisfy this condition.
- O. The Siting Board directs the Company to prepare and submit to the Billerica Fire Department, or other appropriate agency, a risk management plan that evaluates potential ammonia exposures under the scenario of a release during off-loading.
- P. The Siting Board directs the Company to develop a Spill Prevention, Control and Countermeasure Plan.



- Q. The Siting Board directs the Company to construct a building that would enclose its aqueous ammonia tanks.
- R. The Siting Board directs the Company, prior to facility operation, to file a report with the Siting Board confirming approval by the Billerica Fire Department and the Billerica Police Department of safety and security plans for the MEB facility.
- S. The Siting Board directs the Company to limit oil deliveries to off-peak hours.
- T. The Siting Board directs the Company to limit delivery of water by truck to the facility to a maximum of 20 round trips per day.
- U. The Siting Board directs the Company to keep the Siting Board informed as to the progress and the outcome of the Company's interconnection plans and on designs for any transmission upgrades, as well as any measures incorporated into transmission upgrade designs to minimize magnetic field impacts at such time as the Company reaches final agreement with all transmission providers regarding interconnection.

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 Montgomery Energy Billerica Power Partners LP, or its successors in interest, 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. Montgomery Energy Billerica Power Partners LP or its successors in interest are

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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Selma Urman  
Presiding Officer

Dated this 3<sup>rd</sup> day of March, 2009

APPROVED by the Energy Facilities Siting Board at its meeting of February 12, 2009, by the members and designees present and voting. **Voting for** approval of the Tentative Decision **as amended:** Ann Berwick (Acting EFSB Chair/Designee for Ian A. Bowles, Secretary, Executive Office of Energy & Environmental Affairs); Rob Sydney, (Designee for Philip Giudice, Commissioner DOER); James Colman (Designee for Laurie Burt, Commissioner, Department of Environmental Protection); Paul J. Hibbard, Commissioner DPU; Tim Woolf, Commissioner DPU ; and Dan Kuhs, Public Member.

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Ann Berwick, Acting Chair  
Energy Facilities Siting Board

Dated this 12<sup>th</sup> day of February, 2009

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).

