THE COMMONWEALTH OF MASSACHUSETTS
ENERGY FACILITIES SITING BOARD
ONE SOUTH STATION
BOSTON, MA 02110
(617) 305-3525

DEVAL L. PATRICK
GOVERNOR

TIMOTHY P. MURRAY
LIEUTENANT GOVERNOR

MEMORANDUM

TO: Members of the Energy Facilities Siting Board

FROM: Robert J. Shea, Presiding Officer
Enid Kumin, Analyst
Mary Menino, Analyst

DATE: December 4, 2008

RE: EFSB 07-7/D.P.U. 07-58/D.P.U. 07-59, Brockton Power Company LLC

I. BACKGROUND

In accordance with M.G.L. c. 164, § 69J¼, on July 12, 2007, Brockton Power Company LLC ("the Company," or "Brockton Power") filed a petition ("Petition") for approval to construct a 350 megawatt ("MW") dual-fueled (using natural gas and Ultra Low Sulfur Distillate "ULSD" oil) combined-cycle electric generating facility (the "Generating Facility" or "Project") at the Oak Hill Industrial Park located in Brockton, Massachusetts (Exh. BP-1, at 1-1). Oak Hill Way Industrial Park comprises approximately 70 acres in the southeast part of the City of Brockton, bordering on the Town of West Bridgewater (id. at 1-10). The proposed Generating Facility has been proposed to be built on a 13.2 acre parcel located adjacent to the Brockton Advanced Water Reclamation Facility ("AWRF") (id.).[1] This land has been zoned for industrial uses, including electrical generating facilities.

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[1] The Brockton AWRF recycles wastewater (Exh. BP-1, at 1-10). The AWRF recycling process includes primary, secondary, and seasonal tertiary treatment for Brockton's wastewater and that of the surrounding communities of Abington and Whitman (id.).

On July 12, 2007, the Company filed two petitions with the Department of Public Utilities ("DPU"), one requested zoning exemptions pursuant to G.L. c. 40A, § 3 (the "Zoning Exemption Petition," case number D.P.U. 07-58), and one requested permission to construct and operate a transmission line pursuant to G.L. c. 164, § 72 ("Section 72 Petition," case number D.P.U. 07-59). The Chairman of the DPU referred the Zoning Exemption Petition and the Section 72 Petition to the Siting Board for hearing and determination.

Six entities intervened in this case: National Grid, Taunton River Watershed Alliance, Inc. ("TWRA"), the Town of West Bridgewater, the City of Brockton, Custom Blends LLC ("Custom Blends"), and 26 Residents of Brockton and West Bridgewater who have also been referred to as "ACE," an acronym for Alternatives for Communities and Environment. See, Ruling Re Petitions to Intervene and Petitions to Participate dated December 4, 2007. In addition, six persons and entities were admitted as limited participants: Alliance Against Power Plant Location ("AAPPL"), City Councilor Linda Balzotti, City Councilor Thomas Brophy, Senator Robert Creedon and State Representative Geraldine Creedon ("Senator and Representative Creedon") and State Representative Christine E. Canavan. Id.; see also, Ruling Re: AAPPL's Motion to Change from Intervenor to Limited Participant Status and to Withdraw its Pre-filed Testimony dated May 13, 2008.

A total of 20 days of evidentiary hearings were held, commencing on May 19, 2008, and concluding on July 11, 2008. On or before the deadline of August 7, 2008, all the parties (except Custom Blends) as well as the limited participants Senator and Representative Creedon filed initial briefs. Reply briefs were filed by all of the parties that had filed initial briefs.

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, 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's Description and Position

The Company stated that it focused its site selection process on identifying sites where generating facilities had been previously proposed to the EFSB and permitted by the EFSB, but where power plants had ultimately not been built (Exh. BP-1, at 3-2). The Company explained that previously EFSB permitted sites would inherently have sufficient acreage, access to fuel supplies in reasonable proximity, close access to the high voltage transmission grid, appropriate zoning, and ideally cooling water availability (Exh. BP-1, at 3-2). In addition, the Company stated that previously EFSB permitted sites would have had any significant siting issues identified and adequate mitigation measures would have been developed (Exh. ACE-SS-2). The Company also noted that for previously permitted sites there would be considerable data and analysis from which an updated proposal could be efficiently developed (Exh. EFSB-S-11).

Based on its approach, the Company identified four potential previously EFSB-approved sites in eastern Massachusetts as possible sites for the proposed facility (Exh. BP-1, at 3-2): (a) the currently proposed Brockton site in Oak Hill Industrial Park which was the site on which Brockton Power, LLC previously proposed to build a generating station and received EFSB approval in March 2000 (Brockton Power, 10 DOMSB 157 (2000)); (b) the Everett site on which Cabot Power proposed to build a generating plant (initially considered as EFSB 91-101 which was approved in 1994 (Cabot Power, 2 DOMSB 241 (1994)), but subsequently reopened in 1997 as EFSB 91-101A which received EFSB approval in October, 1998) (Cabot Power, 7 DOMSB 233 (1998); (c) the Bellingham site on which IDC proposed to build a generating plant (EFSB 97-5) and received EFSB approval in December 1999 (IDC Bellingham, 9 DOMSB 225 (1999)); and (d) the Dracut site on which Nickel Hill Energy, LLC proposed to build a generating facility and received EFSB approval in November 2000 (Nickel Hill Energy, 11 DOMSB 83 (2000)).

The Company stated that next it investigated and compared relative general attributes of the four sites such as access to fuel supply and 345 kV transmission lines, zoning and existing land use, and cooling water availability (Exh. EFSB-S-11). The Company also considered site availability, but notes that it did so later in the process after it investigated and compared relative general attributes (id.). The Company stated that its "understanding of the Siting Board's site selection standards [post 1997 Electric Restructuring Act] under G.L. c. 164, §J¼ is that backup or alternative sites are no longer required" (id.).

After initial consideration of general attributes, the Company dismissed the IDC Bellingham and the Cabot Everett sites from further consideration on the grounds that these sites were currently unsuitable (Exh. BP-1, at 3-6 - 3-8). In the case of the IDC Bellingham site, the Company noted that the previously EFSB-approved site had subsequently been developed as a Dunkin' Donuts distribution center and that the placement of the distribution center effectively precluded co-siting a generating facility on the property (id. at 3-8). In the case of the Cabot's Everett site, the Company explained that the site belonged to Suez/Tractabel, a direct competitor (id. at 3-6).

With the IDC Bellingham and the Cabot Everett sites eliminated, the Company presented a more detailed comparison of the proposed Brockton site in Oak Hill Industrial Park with the Nickel Hill site in Dracut (Exh. BP-1, at Table 3-1). The Company concluded that the two sites were very comparable, but noted that the Nickel Hill site was significantly more costly (Exhs. BP-1, at Table 3-1; Exh. EFSB-S-4) and that the Nickel Hill property was actively in use as a quarry and not currently for sale (Exh. EFSB-2-2). The Company stated that the quarry activity on the Nickel Hill property had been underway when the site was originally proposed for use as a power plant site in 1999 (Tr. at 1558). The Company did not hold any discussions with the site owner (Brox Industries) regarding the availability or price of land for the power plant (Tr. at 1560-1561). Instead the Company relied upon discussions with other power plant developers and real estate tax assessments to conclude that the Dracut site would be more expensive than the Brockton site and likely unavailable (Tr. at 1560-1562)

The Company stated that it did not consider the proximity of the Brockton site (or alternative sites) to Environmental Justice populations (Tr. at 1540). The Company did provide information stating that the proposed site is not within an EJ area, but that it is within a half mile or less of an EJ area (Exh. COB-SS-1, Attachment). The record shows that the two prevalent wind directions at the proposed site are from the southwest (26% of the time) and northwest (24% of the time) (Exh. BP-4, at Appendix B, Figure 4.2-1). When the wind blows from the southwest, it could direct emissions from the proposed plant over the portion of the Brockton EJ areas to the northeast of the plant (Exhs. COB-SS-1, Attachment; Exh. BP-4, at Appendix B, Figure 4.2-1). The Company explained that it considered that the proposed project would have minimal environmental impact and that the proposed Brockton site was in an industrial zone and would be well-buffered from residential areas (Tr. at 1540-41). The Company also stated that it considered that the proposed project would bring economic benefit to the City of Brockton (Tr. at 1541).

C. Intervenors' Positions on Site Selection

ACE stated that, because Brockton is an environmental justice ("EJ") community, an accurate description of the Company's site selection process should have included a description of environmental justice implications of locating the facility in each of the four sites considered and stated how Brockton Power took environmental justice into consideration in making its site selection (ACE Brief at 58). ACE alleged that the EFSB should reject a site that is inconsistent with the Commonwealth's EJ policy because the EFSB is required to reject petitions in which the plans to construct a facility are inconsistent with the health and environmental protection policies of the Commonwealth (id.).

D. Precedent and Options

The EFSB must determine whether BP has provided an accurate description of the site selection process and whether "plans for the construction of the proposed facility minimize the environmental impacts consistent with the minimization of costs associated with the mitigation, control and reduction of the proposed generating facility" (G. L c. 164, § 69H). Historically, the EFSB has viewed site selection as an integral part of the process of minimizing

the environmental impacts of the energy facility. In the current Brockton petition, however, the range of truly possible sites appears limited in that the Company (a) confined its consideration to sites previously approved by the EFSB; (b) included among the four sites two that were immediately dismissed as being currently unavailable; and (c) for the remaining site (Nickel Hill in Dracut) did not include as part of its review approaching the landowner to learn of the availability or price of that site.[2]

With respect to the site selection process, the EFSB has several options:

1. Conclude that Brockton Power's site selection presentation provides an accurate description of its selection process and thus satisfies the requirements under G. L. c. 164, § 69J¼.
2. Conclude that Brockton Power's site selection presentation was insufficient to demonstrate that its proposed site would minimize environmental impacts.
3. Conclude that a proposed site located in or near an Environmental Justice ("EJ") area requires a petitioner to demonstrate a more thorough and concrete review of the proposed site relative to other available sites. For further discussion of the Massachusetts EJ policy and its requirements see section IV.B, *infra*.

III. ENVIRONMENTAL IMPACTS IN CONTROVERSY

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

[2] Note that in the in the current petition of Massachusetts Municipal Wholesale Electric Company ("MMWEC") before the EFSB, MMWEC also limited its alternative sites to those previously approved by the EFSB but not subsequently built upon. Among the three alternative sites considered by MMWEC were the Brockton and Nickel Hill sites. In the MMWEC case, the Siting Board has directed its staff to write a decision stating that the MMWEC site selection process was reasonable and contributed to minimizing environmental impacts of the proposed facility. However, the Siting Board directed its staff to state that the MMWEC case is unique and that a site selection process limited to previously EFSB-approved sites would more typically not lead to a site selection process that minimizes environmental impacts.

order to make this determination, the Siting Board assesses the impacts of the proposed facility in eight areas prescribed by its statute, including air quality, water resources, wetlands, solid waste, visual impacts, noise, local and regional land use, and health, and determines whether the applicant=s description of these impacts is accurate and complete. G. L. c. 164, § 69J¼.

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

G. L. c. 164, § 69J¼ also 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.

B. Issues

1. Air

a. Company's Description

The Company has proposed to construct a nominal 300 MW gas turbine dual fuel combined cycle generation facility, consisting of a gas turbine and a Heat Recovery Steam Generator ("HRSG") (Exh. EFSB-A-1(S)(1) at 2-4). The project also would be equipped with duct firing (i.e., supplemental firing of the HRSG) (id.). With duct firing in use, the proposed facility would have a potential power output of 350 MW (id.). The Company has calculated potential emissions based on 8,760 hours per year of full-load operation (id. at 2-4, 2-17). Of these 8,760 hours, the Company has calculated potential emissions for 2,000 hours at full load on natural gas while duct firing, 5,320 hours on natural gas at full load without duct firing, and 1,440 hours on ULSD (720 hours with duct firing and 720 hours without duct firing) (id. at 2-1, 2-3).

The proposed project is subject to NAAQS and MAAQS, promulgated by EPA and adopted by MA DEP, respectively (Exh. EFSB-A-1(S)(1) at 3-4 to 3-5). The NAAQS/MAAQS specify concentration levels for criteria pollutants NO2, SO2, PM (PM10 and PM2.5), CO, ozone, and lead for various averaging times and durations of exposure (id.). The NAAQS include primary standards, designed to protect human health, and secondary standards, intended to protect public welfare from adverse effects due to the presence of air pollution, such as damage to vegetation (id.). The project is also subject to Significant Impact Levels ("SILs") set by EPA and MA DEP for purposes of air quality modeling to evaluate potential new emissions sources (id.). Each SIL is a small fraction (1 to 5 %) of the corresponding NAAQS and MAAQS (id.).

On April 25, Brockton Power submitted its Air Plan Approval Application to MA DEP in accordance with 310 CMR 7.02 (Exh. EFSB-A-1(S)(1)). Permitting for the proposed project under the Company's Air Plan Application proposes the equivalent of 7,320 hours of natural gas firing at 100% load and 1,440 hours per year on ULSD at 100% load (with duct firing during 2,720 of these hours, as discussed above) (id. at 2-17). The Company asserted that this approach to permitting would result in regional air quality benefits because it will maximize operating flexibility and allow for the displacement of older, less efficient and higher emitting plants (Exh EFSB-A-1(S)(1) at 2-17). The Company stated that while proposed permitting for the plant would include 8,760 hours of operation, the plant is expected to be a "mid-merit" plant with total operations of approximately 5,000 hours per year (70% of full operation) (id.).

Brockton Power stated that the facility would control emissions to LAER and BACT levels (Exh. EFSB-A-1(S)(1)). To do so, the facility would use water injection and SCR to minimize NOx emissions (Exh. EFSB-A-5; EFSB-A-1(S)(1)); combustion controls and an oxidation catalyst to minimize carbon monoxide ("CO") and Volatile Organic Compound

("VOC") emissions; and "clean" fossil fuels (natural gas and ULSD) to control sulfur dioxide ("SO2") and Particulate Matter/fine Particulate Matter (PM10/PM2.5) emissions (Exh. EFSB-A-1(S)(1) at 2-18). The project is a major source for NOx (potential to emit >50 tpy) and CO (potential to emit >100 tpy). It is a minor source for Hazardous Air Pollutants ("HAPS") because potential emissions are less than 25 tpy for total HAPS and less than 10 tpy for each individual HAP (Exh. EFSB-A-1(S)(1), at 2-18). The Company's "potential to emit" calculations include 1,200 hours of a 60 MMBtu auxiliary boiler operation and 400 unit-hours of black-start generator operation (RR-COB-2, at 3). The auxiliary boiler is designed to keep the HRSG warm when the plant is not operating (id. at 2). The Company expects any MA DEP Air Plan approval for the project to include an enforceable permit condition precluding simultaneous operation of the auxiliary boiler and the gas turbine (id.).

The applicant has provided: the maximum potential annual emissions for the project assuming full year operation on natural gas and ULSD with duct firing on each fuel for some portion of the time, as indicated above; a Best Available Control Technology ("BACT") analysis, through which the air pollution control technologies were selected; and air pollutant dispersion modeling for NO_2, SO_2, PM_{10}, and CO. Brockton Power states that it submitted an air modeling protocol to MA DEP for the proposed project and that MA DEP raised no concerns with respect to air modeling in its comments on the DEIR (Exh. EFSB-G-2(S)(1), at 6; Brockton Power Initial Brief at 47).

The Company conducted air quality modeling for the project using EPA models SCREEN3 and AERMOD (Exh. EFSB-A-1(S)(1) at 6-1). For its AERMOD modeling the Company used five years (2001 to 2005) of National Weather Service meteorological data from Logan Airport, Boston, MA (RR-EFSB-2). The Company asserted that significant gaps in data prevented use of data for five years from an alternative location, Taunton Municipal Airport (RR-COB-7). Refined modeling results presented by the Company show maximum cumulative predicted levels below NAAQS for all modeled pollutants and averaging periods (Exh. EFSB-A-1(S)(1) at 6-10 to 6-13).[3]

The emission rates and dispersion modeling results appear in summary form in the tables below:

[3] It should be noted that large sections of the east coast have been out of standard for ozone. Furthermore, the Company proposed to purchase offsets of 126%, which should improve regional air quality (Company Initial Brief at 38, *citing* Exhs. EFSB-A-1(S)(1), at 8.3.2; EFSB-A-6).

BROCKTON POWER Project Emissions, 250-Foot-High Stack					
Pollutant	Load	Concentration Using Natural Gas	Concentration Using Oil (ULSD)	Annual Max Emissions	Control Method
NO_2/NO_X	60-100% 100%	2.0 ppm w/ duct firing 2.0 ppm w/o duct firing	6.0 ppm w/ duct firing 6.0 ppm w/o duct firing	107 tons/yr	Selective Catalytic Reduction & Water Injection (during ULSD firing)
CO	100% 75% 60%	2.0 ppm w/ df 2.0 ppm w/o df 3.0 ppm w/o df	4.0 ppm w/ df 5.0 ppm w/o df 20.0 ppm w/o df	109 tons/yr	Combustion Controls & Oxidation Catalyst
VOC	75-100% 100% 60%	1.0 ppm w/ df 2.5 ppm w/o df 1.0 ppm w/o df	6.0 ppm w/ df 6.0 ppm w/o df 9.0 ppm w/o df	31 tons/yr	Combustion Controls & Oxidation Catalyst
Particulate ($PM_{10/2.5}$)	100% 100% 75% 60%	.007 lb/MMBtu w/df .005 lb/MMBtu w/o .006 lb/MMBtu w/o .007 lb/MMBtu w/o	.023 lb/MMBtu w/df .026 lb/MMBtu w/o .035 lb/MMBtu w/o .050 lb/MMBtu w/o	85 tons/yr	Fuel Selection (Natural Gas & ULSD)
SO_2	Constant	0.0006 lb/MMBtu	0.0015 lb/MMBtu	7 tons/yr	Fuel Selection (Natural Gas & ULSD)

(Exh. EFSB-A-1(S)(1) at 2-18; Tr. 1, at 29; RR-COB-2).

BROCKTON POWER Project Air Impacts, 250-Foot-High Stack*									
SIL Evaluation					NAAQS Evaluation				
	Averaging Period	Project Maximum Concentration	SIL	% SIL	Project Modeled Concentration (refined)	Monitored Background	Cumulative Impact	NAAQS	% NAAQS
		µg/m³	µg/m³		µg/m³	µg/m³	µg/m³	µg/m³	
NO_2	Annual	0.0325	1	3.3	0.0325	9.4	9.4	100	9.4
CO	1-Hour	7.78	2000	0.4	6.12	4,176	4,182	40,000	10.5
	8-Hour	4.43	500	0.9	3.65	2,668	2,672	10,000	26.7
Particulate (PM_{10})	24-Hour	3.43	5	68.6	1.67	39	40.7	150	27.1
	Annual	0.25	1	25.0	0.25	20.1	20.4	50	40.8
Particulate ($PM_{2.5}$)	24-Hour	3.43**	NFS	NFS	1.15	30.7	31.85	35	91.0
	Annual	0.25**	NFS	NFS	0.25	9.9	10.15	15	67.7
SO_2	3-Hour	0.229	25	0.9	0.9	84	84.2	1,300	6.5
	24-Hour	0.137	5	2.7	2.7	50	50	365	13.7
	Annual	0.00225	1	0.2	0.2	8	8	80	10.0

* Annual average impacts are based on 7,320 hours firing natural gas and 1,440 hours firing ULSD for all pollutants.

** Based on Brockton Power assumption that all PM10 is PM2.5 (for SIL comparison).

NFS No Federal Standard

(Exh. EFSB-A-1(S)(1) at 6-12).

Brockton Power stated that, assuming construction with a 250-foot-high stack, its proposed project would meet all established NAAQS and SILs, including NAAQS promulgated for PM2.5 effective December 2006 (Exh. BP-4, at 5.1-6 to 5.1-7). While no SILs have been adopted for PM2.5, EPA has proposed a number of possible SILs for 24-hour and annual impacts (Tr. 1, at 129). The proposed project's 24-hour PM2.5 impacts would be below two of the three alternatives being considered for the 24-hour SIL (Tr. 1, at 128-130). The project's annual PM2.5 impact is less than all of the alternatives being considered for the annual SIL (id. at 129-130). The Company argued that, in any case, the NAAQS are the relevant standards to consider because the NAAQS, not the SILs, are the applicable air standards for protection of public health (Brockton Power Initial Brief at 48). The Company noted that the City of Brockton does not

currently host any large-scale power plants, nor are there any existing major stationary sources of air pollutants in close proximity to the proposed site (Exh. BP-PAV-1(REB); Tr. 9, at 1,098).

The Company conducted a Good Engineering Practice ("GEP") analysis for stack construction for the proposed facility (Exhs. BP-1, App. C; EFSB-A-1(S)(1) at 5-9). Based on this analysis, GEP stack height for the facility would be 325 feet. The Company used the EPA AERMOD PRIME downwash algorithm to examine the potential air impacts of building a shorter, 250-foot tall stack (Exh. EFSB-A-1(S)(1) at 5-9). According to the Company, its modeling shows that air quality impacts would be below SILs and NAAQs (Exh. EFSB-A-1(S)(1) at 6-1 to 6-13, App. C and App. E).[4]

Comparison of Impacts, 250-Foot vs. 325-Foot Stack Height: NAAQS

Pollutant	Ave. Period	NAAQS ($\mu g/m^3$)	Monitored Backgrnd ($\mu g/m^3$)	250' Stack Total Modeled Concentratn ($\mu g/m^3$)	250' Stack Cumulative Impact ($\mu g/m^3$)	325' Stack Total Modeled Concentrtn ($\mu g/m^3$)	325' Stack Cumulatve Impact ($\mu g/m^3$)	250' Stack % of NAAQS	325' Stack % of NAAQS
NO2	Annual	100	9.4	0.0325	9.43	0.02	9.42	9.43%	9.42%
SO2	3-Hour	1,300	84	0.21	84.21	0.14	84.14	6.48%	6.47%
	24-Hour	365	50	0.06	50.06	0.04	50.04	13.72%	13.71%
	Annual	80	10	0.00225	10.0	0.002	10.00	12.50%	12.50%
PM10	24-Hour	150	42	1.67	43.67	1.55	43.55	29.11%	29.03%
	Annual	50	20.1	0.25	20.35	0.24	20.34	40.70%	40.68%
PM25	24-Hour	35	29.6	1.15	30.75	1.00	30.60	87.86%	87.43%
	Annual	15	10.12	0.25	10.37	0.24	10.36	69.13%	69.07%
CO	1-Hour	40,000	4,176	6.12	4,182	4.12	4,180	10.46%	10.45%
	8-Hour	10,000	2,668	3.65	2,672	2.00	2,670	26.72%	26.70%

Source: Exh. EFSB-G-2(S)(1) at 4.1-4.

[4] The proposed facility would meet NAAQS and SILs with a 325-foot GEP-height stack or a stack of the proposed 250-foot height. The taller stack offers the potential for reduced local air impacts, but with an accompanying increase in cost and visibility at greater distances. Installation of the proposed (250') stack would likely cost $1,100,000. This is $220,000 less than the anticipated $1,320,000 installation cost for a GEP (325') stack (RR-EFSB-28, Tr. at 2620-2621).

Comparison of Impacts, 250-Foot vs. 325-Foot Stack Height: SILs

Pollutant	Averaging Period	NAAQS ($\mu g/m^3$)	Significant Impact Level ($\mu g/m^3$)	250' Stack AERMOD PRIME Maximum Concentratn ($\mu g/m^3$)	250' Stack % of SIL	325' Stack AERMOD PRIME Maximum Concentratn ($\mu g/m^3$)	325' Stack % of SIL
NO2	Annual	100	1	0.0325	3.3%	0.02	2.0%
SO2	3-Hour	1,300	25	0.229	0.9%	0.15	0.6%
	24-Hour	365	5	0.137	2.7%	0.07	1.4%
	Annual	80	1	0.00225	0.2%	0.002	0.2%
PM10	24-Hour	150	5	3.43	68.6%	1.90	38.0%
	Annual	50	1	0.25	25.0%	0.24	24.0%
CO	1-Hour	40,000	2,000	7.78	0.4%	6.41	0.3%
	8-Hour	10,000	500	4.43	0.9%	2.86	0.6%

Source: Exh. EFSB-G-2(S)(1) at 4.1-3.

b. Intervenors' Concerns

The City of Brockton ("City") argues that EPA prefers on-site meteorological data, and that, as such, the Company should have used Taunton data rather than data from Logan airport for its air modeling (City of Brockton Initial Brief at 16-17; Exh. COB-A-9(S)(1) at C.22). With respect to NAAQS, the City of Brockton stated that for most contaminants and averaging periods, using Logan data generated higher results (City of Brockton Initial Brief at 18). The City noted several exceptions to this pattern: using Taunton in lieu of Logan data generated higher (by 45%) contributions of 24-hour PM2.5 (id.). Annual NO2 (0.067 $\mu g/m^3$ at Taunton vs. 0.0325 $\mu g/m^3$ at Logan) and SO2 (0.005 $\mu g/m^3$ at Taunton vs. 0.00225 $\mu g/m^3$ at Logan) concentrations were also higher (RR-COB-7(1) at Table RR-COB-7(b)).

With respect to PM2.5, the City of Brockton advocates that the Siting Board should establish a quantitative value to guide regulatory decisions (COB Initial Brief at 35). The City holds that this would make possible a rebuttable presumption regarding the minimization of environmental impacts from PM2.5 consistent with minimization of costs (id.). The City of Brockton further opines that absent specific and compelling evidence of major visual impacts, stacks should always be set at the full GEP height to minimize ground level pollution impacts (id.). The City argues for giving much greater weight to air quality impacts than to visual or other purely aesthetic impacts (id.).

The City also supports the position of the witness for the Brockton and West Bridgewater Residents ("ACE"), who testified to the need for a health study to evaluate impacts of the project on sensitive subpopulations in Brockton (City of Brockton Initial Brief at 32; Exh. ACE-11; Tr. 9, at 1209 to 1212). Further, ACE argues that, to be complete, air modeling for the proposed facility requires information with respect to confidence intervals about the statistical values used in decision making (ACE Initial Brief at 25).

Limited participants Senator and Representative Creedon jointly argue that emissions of PM2.5 and other pollutants from the facility would have a direct effect on EJ populations in Brockton, and specifically on children attending 5 schools in EJ areas within 1.5 miles of the proposed site.

c. Precedent & Options

The evidence submitted in this case, including a copy of the Company's complete application for air plan approval, including elements such as BACT/LAER analysis and air dispersion modeling, is consistent with that submitted in other power plant cases before the Siting Board. The Siting Board has predominantly evaluated air impacts on a general level, allowing consideration of trade offs (between reliability and environmental impacts, or among environmental impacts), with attention to the comparative impacts of various approaches to emissions reductions, turbine cooling technologies, and stack heights. Proponents have also, in the past, provided CO2 offset proposals. While the Company has provided a CO2 offset proposal in the present case, it is with the expectation that the proposal will be made redundant by application of RGGI rules and regulations.

Issues in controversy in this case include:

(1) how the Siting Board should weigh (a) construction of a GEP-height stack against (b) construction of a lower stack that would still allow the facility to meet SILs and NAAQS;

(2) whether the Siting Board should limit the hours of operation of the facility to no more than 5,000 hours annually (i.e., no more than 70 percent of full operation); and,

(3) how, if at all, the Siting Board should address SILs for PM2.5 at this juncture.

With respect to stack-height, the Siting Board has approved stacks below GEP height, generally in the range of 50 percent to 80 percent of that height. In one case the Siting Board approved a sub-GEP stack height, but later approved a project change for a taller stack that had been required as part of local permitting. See, IDC Bellingham, LLC – Project Change, 12 DOMSB 372, at 389-390 (2001).

Here, the Siting Board has the following options with respect to stack height:

(1) approve a 250-foot stack as achieving the best balance of visual versus air emission impacts;

(2) approve a 325-foot stack (a) specifically, as the best balance of visual versus air emission impacts, or (b) as the upper end of an acceptable range of heights, allowing without further review by the Siting Board any height from 250 feet to 325 feet as may be agreed upon by the Company and approved by local and MADEP/EPA permitting.

With respect to hours of operation, the Siting Board may affirm as part of any proposal the Company's request to operate its proposed facility up to 8,760 hours per year, though it anticipates operating no more than 70 percent of the time in most years. The Siting Board may also wish to consider whether to require more analysis related to what, if any, SILs criteria and related modeling requirements should be applicable for the facility with respect to PM2.5.

2. Water and Wastewater

a. Company's Description

The Company identified four specific water supply requirements for the proposed facility. These include water for: potable needs; the combustion turbine inlet air evaporative cooling system; operation of the HRSG; and, cooling tower "makeup." The Company stated that its preference is to obtain all cooling tower makeup water from the AWRF and water for all other purposes from Brockton city water (RR-EFSB-18; Tr. 5, at 634). The table below, "Company's Anticipated Water Requirements and Proposed Source of Supply," indicates anticipated volumes and source for each water supply requirement.

Company's Anticipated Water Requirements and Proposed Source of Supply*

Purpose	Volume	Source	Notes
Cooling tower makeup	Peak: ~1.9 MGD evaporated (2.3 MGD withdrawn, 0.4 MGD returned to AWRF) on a hot summer day given full-load operation with 12-hours of duct firing Average: ~1.6 MGD evaporated (1.9 MGD withdrawn, 0.3 MGD returned to AWRF) on average annual basis, full-load operation, 12- hrs of duct firing, ambient temperature 59 degrees F.	Preferred: AWRF effluent Alternative: City of Brockton water	1. City water has lower total dissolved solids level, so cooling towers could run at higher cycles of concentration. Makeup requirements using City water would be ~1.75 MGD at peak (hot summer day). 2. At Company's anticipated 70% capacity factor, cooling tower makeup ~1.3 MGD with AWRF water, ~1.2 MGD with City water.
Heat Recovery Steam Generator (HRSG)	~75,000 gpd for HRSG makeup water ~229,000 gpd when ULSD firing for turbine water injection plus HRSG makeup	Preferred: City of Brockton Water Alternative: treated effluent from AWRF with additional pretreatment	Water must be high purity (i.e., demineralized).
Combustion turbine inlet air evaporative cooling system (assumes cooling 12 hrs/day) – maintains combustion turbine power output during hot weather operation	~27,000 gpd	Preferred: City of Brockton Water Alternative: treated effluent from the AWRF, with additional pretreatment	
Potable needs	~1500 gpd	Preferred: City of Brockton water supply system	

*Exhs. BP-4, at 5.8-1 to 5.8-3; EFSB-G-2(S)(1) at 5-3; RR-EFSB-18.

With respect to the adequacy of Brockton city water as a backup source for cooling, the Company stated that the City of Brockton is authorized for Water Management Act withdrawals totaling 11.93 MGD (Exh. EFSB-G-2(S)(1) at 3-2). In addition, City of Brockton has contracted for supplemental water supply from the Inima USA Desalination Plant ("Inima" or "Aquaria"), pending completion of the desalination plant in summer 2008 (Exh. ACE-8; Tr. 8, at 958, 979, 981).[5]

[5] The Company states that the City of Brockton, under its contract with Inima, would have the right to 1.9 MGD in the first year of the 20-year agreement (Exh. ACE-8). The contract requires the City to pay a fixed annual charge per 0.1 MGD of the City's firm commitment, whether or not taken (id.). The City's firm annual commitment increases annually from 1.9 MGD in the first year to 3.81 MGD in the tenth (id.). From Year 11

The Company stated that water from preferred sources for the proposed facility, including AWRF cooling water, would require approximately $750,000 in capital costs (RR-EFSB-1). According to the Company, operating costs would run approximately $687,000 per year using AWRF effluent for cooling water and approximately $3.6 million annually using Brockton city water (id.).

The Company stated that plans for the proposed facility also included: (1) a one-million gallon cooling water storage tank at a cost of $600,000, which would ensure a water supply if the AWRF were temporarily out of service; and, (2) a 265,000 gallon equalization tank at a cost of approximately $275,000 which would enable discharge of wastewater at off-peak periods (Exhs. EFSB-G-2(S)(1) at 1-9; BP-1, at 1-26).

i. Air Cooled Condenser Alternative

The Company stated that it considered an air-cooled condenser (as opposed to wet-mechanical cooling) as an approach to reducing water supply requirements for the proposed facility (Exhs. BP-4, at 4-8 to 4-10; EFSB-A-13). The Company indicated, however, that air-cooling would reduce plant power output, especially in hot weather, and would, in addition, increase the capital costs and physical dimensions of the proposed project (Exh. BP-4 at 4-9). The Company estimated that with an air-cooled condenser, the net plant power output penalty would be approximately 10 MW (id.; Exh. EFSB-A-13). According to the Company, because the loss would most likely occur under high ambient temperature conditions, and therefore high demand for electric power, it would coincide with the hours of peak pricing of electricity (Exh. BP-4, at 4-9). The Company asserted that lower-cost, older, less efficient plants would be run to compensate for the proposed facility's lost capacity (id.). The Company estimated that construction of the proposed facility with an air-cooled condenser would increase capital costs by $17,500,000 (id. at 10). With respect to size, the Company estimated that an air-cooled unit would be 25,000 square feet larger and 56 feet higher than the proposed unit (id.).

ii. Impacts on the Salisbury Plain River

The Company presented analysis changes to minimum flow conditions and downstream water quality in the Salisbury Plain River, and to water withdrawals downstream of the proposed project, resulting from use of the Company's preferred water supply (Exh. BP-4, at 5.8-2 to 5.8-9). On the basis of its analysis, the Company asserts that facility water supply needs could be met without adverse effects on downstream water resources or river flows (Brockton Power Initial Brief at 61).

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through the end of Year 20, the City has the right to purchase 4.07 MGD (id.). The City is entitled to an additional 2.5 MGD beyond the firm commitment in each year of the contract term (id.).

The naturally occurring 7-day low flow with 10-year return frequency ("7Q10") value for the Salisbury Plain River immediately upstream of the Brockton AWRF is approximately 0.4 MGD (Exh. BP-1, at 4-40). The Company stated that, currently, if the minimum AWRF discharge were to occur coincident with the naturally occurring 7Q10, the base flow in the Salisbury Plain River at the AWRF would be 0.4 MGD plus 12.4 MGD,[6] or approximately 12.8 MGD (id. at 4-44). The project is expected to consume recycled water from the Brockton AWRF at the rate of 1.9 MGD on a hot summer day (2.3 MGD withdrawn, 1.9 MGD evaporated, 0.4 MGD returned to the AWRF) (Exh. EFSB-G-2(S)(1), at 5-3). Therefore, with peak consumptive cooling water use, the project would reduce base flow in the Salisbury Plain River at the AWRF from 12.8 MGD to 10.9 MGD.

On an average annual basis, the consumptive use of AWRF water by the proposed project would be 1.6 MGD (1.9 MGD withdrawn, 1.6 MGD evaporated, 0.3 MGD returned) (id.).[7]

Brockton Power asserted that with its proposed cooling water use all principal downstream water resource uses will be protected and preserved (Brockton Power Initial Brief at 67). The Company stated the proposed use will not affect the ability of downstream wastewater treatment plants to comply with effluent guidelines (Exh. BP-1, 4-45 to 4-48). The Company noted that at the closest downstream wastewater discharge plant the 7Q10 is 17.7 MGD, and the proposed removal of 1.9 MGD for the project thus would represent 10.7 percent of that amount (Exh. COB-WR-1). With respect to aquatic uses, the Company stated that to support resident fisheries, Taunton River flows of 0.32 MGD per square mile of tributary area should be maintained (Exh. BP-1, at 4-45 to 4-48). The Company stated that this flow requirement would be 5.4 MGD below the AWRF, and that with the proposed project the minimum flow of 10.9 MGD at this location would meet this requirement (id.; Exhs. EFSB-W-9; COB-WR-1). The Company also stated that during low flow conditions the project would not compromise the flow interests of the Wampanoag Canoe Passage: this use would entail maintaining 2.13 to 12.9 MGD below the AWRF, based on a criterion of 0.13 to 0.77 MGD per square mile of tributary area, in order to maintain downstream river depth and velocity (Exhs. BP-1, at 4-45 to 4-48; COB-WR-1; Brockton Power Initial Brief at 64).

The Company also addressed effects of its water use on the Town of West Bridgewater water supply. With respect to the Town of West Bridgewater's public water supply, the

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6 This is the minimum monthly average discharge from the AWRF between 2002 and 2005 minus proposed project consumption of 1.9 MGD during peak use conditions (Exh. BP-1, at 4-44).

7 The long-term naturally occurring mean annual flow of the Salisbury Plain River immediately upstream of the Brockton AWRF site is approximately 20.6 MGD (Exh. EFSB-W-9). The average annual wastewater discharge from the Brockton AWRF to the Salisbury Plain River is currently 19.4 MGD (id.). The proposed project would reduce the total average annual flow immediately downstream of the AWRF by an average of 1.6 MGD, to 38.4 (id.).

Company argues that the proposed project's use of AWRF effluent will not negatively affect the wells in West Bridgewater that are the source of the Town's water (Exh. TWB-W-3; TWB-W-3(S)). In support, the Company asserted the minimum flow of 10.9 MGD in the Salisbury Plain River below the AWRF would be more than sufficient to meet the Town's authorized withdrawal of 1.53 MGD from wells near the Salisbury Plain River (Exhs. BP-1, at 4-40; TWB-W-3(S)). On the basis of its analysis and comparison, the Company concluded that, even assuming Town wells are supplied solely from infiltration of river water, the proposed facility would not have an adverse impact on the public water supply of the Town of West Bridgewater (Exh. TWB-W-3(S)).

Of significance to meeting flow needs of the downstream uses, the Company noted that, at the AWRF, flow in the Salisbury Plain River is augmented above natural conditions by the treated discharge from the AWRF (Exhs. EFSB-G-2(S)(1) at 3-2; Tr. 8, at 965). The Company explained that of the City's authorized withdrawals of 11.93 MGD for its water supply system, 11.11 MGD are authorized withdrawals from the South Coastal River Basin; when discharged via the AWRF these withdrawals from the South Coastal River Basin represent water volumes imported into the Taunton River Basin that augment river flows above natural conditions (Exhs. EFSB-G-2(S)(1) at 3-2; ACE-3; Tr. 8, at 965).

b. Intervenors' Concerns

ACE argued that the Company has not adequately analyzed the downstream impacts on the Salisbury Plain River of using treated effluent from the Brockton AWRF for proposed facility water supply. ACE emphasized that on an average annual basis, Brockton Power's use of AWRF effluent would reduce the AWRF discharge to the Salisbury Plain River by 8%; on a monthly basis, the reduction might be as much as 13.4% (Exh. BP-4, at 3-2, 5.8-1). ACE further noted that the power plant would have a peak demand for AWRF effluent during summer months, when the discharge from the AWRF would be low and the Salisbury Plain River would be experiencing low flows (id.). ACE emphasized that at times of extreme natural low flow of the Salisbury Plain River, river flow would be reduced by approximately 15% (id. at 5.8-2).

ACE took the position that, although proposed water use would reduce flow by 15% during low flow conditions, Brockton Power has not undertaken any studies of the Salisbury Plain River to determine the impact of potential reductions in the Salisbury Plain River that might result from proposed facility operation. In support of its position that reductions in flow in the Salisbury Plain River might impact stream ecology, ACE cited testimony from a witness for intervenor Taunton River Watershed Association ("TRWA").[8] ACE stated, in addition, that the Company's use of AWRF wastewater would require that two-thirds of the Brockton City Council vote in favor of sale of AWRF discharge to Brockton Power (Tr. 8, at 1044). According

[8] TRWA's witness submitted information with respect to the possible impact of reductions in Salisbury Plain River flow on the tessellated darter (Exhs. TRWA-KC-2, TRWA-KC-3).

to ACE, Brockton Power to date has no agreement with the City of Brockton to use AWRF effluent (id.).

In addition to opposing Brockton Power's use of its preferred water source (e.g., wastewater from the Brockton AWRF), ACE argued against Brockton Power's use of its identified alternative water source, City of Brockton water supply (ACE Initial Brief at 12). According to ACE, Brockton Power's arguments for use of City of Brockton potable water are based on total allowed water withdrawals for Brockton of 11.94 MGD under two Water Management Act Permits, the first for 0.83 MGD from the Taunton River Watershed, and the second for 11.11 MGD from Silver Lake in the South Coastal Watershed (Exh. ACE-3). ACE stated that the City of Brockton operates its potable water system under a water supply declaration of emergency and related administration consent orders that require Brockton not to exceed an average water supply withdrawal of 11.3 MGD (110 percent of "safe yield") (Exhs. ACE-4, ACE-5).

The Town of West Bridgewater asserts that the Company has not completely and accurately described the potential impacts of the proposed facility on the Zone II aquifer that provides the Town's drinking water (TWB Initial Brief, at 5). In support, the Town notes the Company's acknowledgement that its use of AWRF effluent would result in a 15% reduction of AWRF minimum flow during low flow conditions in the Salisbury Plain River, and that the Zone II supplying the Town of West Bridgewater's wells would need to expand laterally within the aquifer to make up the lost river recharge through an expanded area of precipitation recharge (Exhs. TWB-W-3(S) at 7; TWB-W-3(S)(2), EFSB-W-9, at 2; Tr. 20, at 2775 to 2776). The Town argues that the Company's subsequent estimate of expansion of the bounds of the aquifer for recharge are based on out-moded (20-year-old) assumptions, information, and modeling (Tr. 20, at 2775 to 2776). In a related argument, the Town of West Bridgewater maintains that the Company has not completely and accurately described the potential impacts of the proposed facility on Land Under Water Bodies and Waterways (Town of West Bridgewater Initial Brief at 7 to 10; RR-EFSB-21; RR-EFSB-21(1); Tr. 15, at 2083).

c. Precedent & Options

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 (1999). Enron Power Enterprise Corporation (1991), 23 DOMSC 1, at 142-179 ("Enron Decision"); U.S. Gen Decision at 129-135; Brockton Power, LLC (2000), 10 DOMSB 157, at 193-205 ("Brockton Decision").[9]

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).

[9] A Billerica facility presently under Siting Board review in EFSB-07 also proposes to operate with wastewater.

Enron Decision at 142. Considering the reduction in stream flow volume an 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 176-179. The Charlton plant and the Brockton plant were to use up to 2.8 million gpd and 1.65 million gpd, respectively, diverted from wastewater plants or surface intakes, each resulting in up to 10% river flow reduction under low flow conditions. U.S. Gen Decision at 129; Brockton Decision at 194. The Charlton and Brockton facilities did not have water usage restrictions imposed by the Siting Board.

The Siting Board has also previously reviewed power plant proposals with cooling technologies other than wet mechanical cooling, as is proposed in the present case (Exh. EFSB-A-13). Air cooling, for example, is in use at a number of operating combined-cycle plants approved by the Siting Board. ANP Bellingham, 7 DOMSB 39 (1998); Sithe Fore River, 10 DOMSB 1 (2000); ANP Blackstone, 8 DOMSB 1 (1999). In the U.S., air cooling is most frequently used in dry regions such as the west and southwest, and elsewhere when water supply is of concern (Exh. EFSB-A-13). Though it is a reliable and proven technology, air cooling may increase the capital costs and physical dimensions of a power plant and reduce its output or efficiency (id.).

With respect to its consideration of water supply for proposed facility operation, the Siting Board could:

(1) approve the project with use of AWRF;

(2) approve the project with use of AWRF wastewater or, in the alternative, City of Brockton potable water;

(3) require the Company to do additional modeling with respect to impacts on the Salisbury Plain River;

(4) require the Company to evaluate additional mitigation, for example, use of an air-cooled alternative to the Company's proposed water-cooled power plant design and possible shut down under extreme low flow.

3. Wetlands

a. Company=s Description

The Company altered its original facility design with respect to the proposed transmission line to reduce wetlands impacts (Tr. 5, at 640-642).[10] The table below, *Summary of Impacts to Wetland Resource Areas*, catalogues the anticipated wetland impacts associated with the

[10] In the Petition and DEIR the Company proposed that the transmission line run close to the western edge of the Oak Hill Way, abutting undeveloped land. As a result of comments by the Brockton Conservation Commission noting that tree cutting associated

proposed project as altered.

Summary of Impacts to Wetland Resource Areas*

Wetland Resource Area	Wetland Resource Area Impacts	Comments
Bordering Vegetated Wetlands (BVW)	1,800 s.f. (transmission line work) 23 s.f. (water line work)	BVW #4 to be altered during construction of proposed transmission line interconnection, but transmission line support poles located outside BVW. Possible alternation to BVW #2, depending on method used to install water line. (Jacking or directional drill installation will avoid impacts.)
Riverfront Area (Edson Brook)	1,100 s.f. (transmission line work)	Likely impacts to BVW #3 and #4 resulting from proposed transmission line construction. No activities in Salisbury Plain Riverfront Area. Restoration to scrub-shrub habitat.
Bordering Land Subject to Flooding (BLSF)	30 s.f. (temporary/transmission line work) 4 c.f. (permanent fill for 1 transmission line pole)	To compensate for 364 cubic feet of BLSF possibly filled by others over last decade, existing contours and floodplain elevations will be restored to 1998 conditions (per direction of Brockton Conservation Commission).
-Inland Bank -Land Under Water Bodies and Waterways (LUW) -Potential Vernal Pool at Edson Brook	0 0 0	No activities proposed on Bank of Edson Brook or Salisbury Plain River. Waterways to be protected during construction with silt fence and row of hay bales. Avoided by shifting transmission line work to west side of Edson Brook.
Isolated Vegetated Wetland (IVW)	9,000 s.f. (transmission line work)	Tree clearing for transmission line interconnection between proposed substation and National Grid right-of-way. Conversion from forested to scrub-shrub wetland.

*RR-EFSB-13(1).

with the proposed alignment would impact approximately 29,000 square feet of Bordering Vegetative Wetlands ("BVW") and a requirement in the Secretary of Energy and Environment's Certificate on the DEIR directing the Company to evaluate alternative routes that would minimize wetlands impacts, Brockton Power proposed a relocation of the transmission line to the eastern edge of the Oak Hill Way ROW, as well as a modified alignment across the South Brockton LLC parcel. The revised route would reduce impacts to BVW by 27,200 square feet (Exh. EFSB-G-2(S)(1)). The Company adopted the revised route, but noted that it would need to acquire easements from abutters Nutramax and UPS (Tr. at 2588-2589; *see* Sec. III.B.7, *infra*). There is no indication in the record of the extent of these easements. The Brockton Conservation Commission has stated it approves the relocated alignment presented in the FEIR (Tr. at 872).

The Company has submitted an updated summary of wetland resource area impacts, including updates to mitigation timing and cost. The Company indicated that the cost of proposed stormwater management and wetland mitigation measures would likely range from $250,000 to $325,000 (Exh. EFSB G-2(S)(1) at 5-9).

b. Intervenors' Concerns

The City of Brockton and Town of West Bridgewater contend that the Company's use of treated wastewater from the Brockton AWRF qualifies as an impact to Land Under a Water Body and Waterways (City of Brockton Initial Brief at 10-12, 20-22; Town of West Bridgewater Initial Brief at 7-11). The City contends that Bank Under a Water Body and Waterways will also be affected (City Initial Brief at 20-22). Both intervenors argue that the impact source is the reduction in flow in the Salisbury River Plain (City Initial Brief at 10-12; Town Initial Brief at 7-11). The intervenors opine that had the Company described its use of AWRF wastewater correctly (as an alteration of wetland resources), the proposed facility would require an Order of Conditions under the Wetlands Protection Act (G.L. c. 131, § 40) and DEP's wetland regulations at 310 CMR 10.00 (City Initial Brief at 20-22; Town Initial Brief at 7-11). Furthermore, the City notes that the Company's present calculation of likely impacts to wetlands assumes the Company's ability to obtain transmission easements from other nearby property owners (UPS and Nutramax) (Tr. 15, at 2119-2121; City Initial Brief at 11). ACE asserts that construction for the proposed facility may directly or indirectly impact wetlands due to sediment deposited on public roads, construction lay-down areas, and worker parking areas (ACE Initial Brief at 36).

c. Precedent & Options

The Siting Board has not required wetland mitigation different from that which applicants have identified as necessary to comply with wetland regulations.

With respect to its consideration of wetlands impacts associated with construction and operation of the proposed facility, the Siting Board could:

(1) accept the Company's position that it would minimize impacts to wetlands; or

(2) accept the Company's position that it would minimize impacts to wetlands on condition that it consult with the City of Brockton to mitigate any impacts to wetlands from sediment deposition due to activities in construction lay-down or worker parking areas;

(3) condition acceptance of the Company's position that it would minimize impacts to wetlands on evidence of transmission ROW control for further Board inquiry by

(a) reopened record prior to any approval, or

(b) compliance filing with Board determination whether to inquire further.

4. Noise

a. Company=s Description

The Company measured existing sound levels in the vicinity of the proposed facility at six representative community locations (Exh. EFSB-A-1(S)(1) at 7-3 and App. D). The selected locations generally correspond to the nearest sound-sensitive locations in various directions from the site (id.). Both short-term and continuous sound level measurements were made during a 9-day period (id.). The results of the study indicate that the ambient sound levels (L90)[11] in January 2007 ranged from 36 to 42 dBA in the community surrounding the proposed site during the quietest part of the nighttime period (id.).

The Company modeled the propagation of noise from the proposed facility using the 2005 version of the DataKustik Corporation's Cadna/A noise calculation model (Exh. EFSB-A-1(S)(1) at 7-9). The model allows for octave band calculation of noise from multiple noise sources, as well as computation of diffraction around building edges, and multiple reflections off parallel buildings and solid ground areas (id.). The Company based its analysis on calculation of sound levels at nine separate discrete receptors, four property line receptors, one each to the north, south, east and west, and at five residential receptors, including the nearest residences in several directions around the proposed facility location (id.). The Company's modeling assumed noise generated by facility equipment with proposed noise mitigation measures incorporated (Exh. BP-1, at 4-27). These mitigation measures included designing the site layout to face the quietest end of the cooling tower towards residential areas; housing generating equipment in metal clad buildings; adding an evaporative cooler and pulse jet cartridge system to mitigate sound from the gas turbine air inlet filter; using a stack silencer on the turbine exhaust, with additional reduction achieved by exhausting through the HRSG; and enclosing the gas compressors and the circulating cooling water pumps (as necessary) (id.).

The Company also combined ambient noise data with modeled facility noise propagation to estimate increases in sound levels from facility operation (Exh. EFSB-A-1(S)(1) at 7-12 to 7-16). Modeling indicated likely high noise levels along the facility site perimeter, located inside an industrial park (id.). The analysis projected the greatest noise levels at the north and south edges of the facility perimeter: 57 A-weighted decibels ("dBA") and 63 dBA, respectively (Exh. EFSB-A-1(S)(1) at 7-13). With night-time L90 measurements used for a baseline, the projected noise levels would create an increase over ambient levels of 21 dBA at the north edge of the proposed facility site and 27 dBA at the south edge (id.).

[11] L_{90} noise is the sound level exceeded for 90% of each hour, and so tends to represent the background, or baseline ambient sound level.

The Company stated that the MA DEP Noise Policy (Noise Policy DAQC 90-001) limits a source to a 10-dBA increase in ambient sound (L90) as measured at the property line of the proposed project and at the nearest residences (Exh. EFSB-A-1(S)(1) at 7-14). According to the Company, certain projects, including several power plants, have received a MA DEP waiver for sound level increases at the property line above 10 dBA (id.). According to the Company, the projects that have received such a waiver have been in industrially-developed areas (id.). The Company asserts that a waiver would be appropriate in the instant case given the location of the proposed facility in an industrial park where there are no sensitive land uses (id.).

Among residential receptors, the Company identified the neighborhoods to the east and west of the proposed facility site as the primary areas of noise impact concern (Exh. EFSB-A-1(S)(1) at 7-13). The Company emphasized, however, that its modeling indicates that with planned mitigation, the project would increase sound levels at residences no more than 5 dBA during the quietest nighttime hours, and less at other times (Exhs. BP-1, at 4-27; EFSB-A-1(S)(1) at 7-15 to 7-21). Addressing the issue of noise at the closest residences, the Company indicated that to the east, at 71 Appleby Street, operational noise from the proposed facility would be approximately 40 dBA; it would be approximately 43 dBA to the west, at the intersection of Hayward Avenue and Route 28 (Exh. EFSB-A-1(S)(1) at 7-13). The Company stated that the quietest hourly L90 noise at Appleby Street would increase from 36 to 41 dBA, and from 39 to 44 dBA at the Hayward Avenue/Route 28 intersection, i.e., increases of 5 dBA above background noise levels at both locations (id.).

The Company provided a Best Available Noise Control Technology (BANCT) analysis (Exh. EFSB-A-1(S)(1) at 7-17 to 7-20).[12] As part of this analysis, the Company discussed additional mitigation options beyond the measures described above. Most of the additional mitigation options target specific equipment sources (id. at 7-16 to 7-17).[13] The options indicated by the Company are:

(1) The Company could use ATCO Noise Management wall/roof and ventilation systems to reduce the nighttime ambient sound level increases from 5 dBA to 3 dBA at the nearest residences to the proposed facility (Exh. EFSB-A-1(S)(1) at 7-

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12 The Company's BANCT analysis examines the technical feasibility and cost effectiveness of incremental noise control measures (Exh. EFSB-A-1(S)(1) at 7-17 to 7-20).

13 The same turbine installation has many sound sources, which requires a systematic reduction of sound levels from individual contributing sources. Since total sound levels are combined logarithmically, any additional noise control must focus on the highest contributing sources first before moving to lesser contributing sources. For example, further controlling a component that is already 5 dBA quieter than the loudest source will have minimal impact on proposed project sound levels. The location of residential receptors and directionality of some proposed project noise sources are also considered (Exh. EFSB-A-1(S)(1) at 7-16 to 7-17).

18 to 7-19). The additional mitigation would reduce sound levels from the proposed facility's rooftop exhaust fans, HRSG, and steam turbine at a net increased cost of $1,200,000 (id.). The Company asserts that the additional measures would not be cost effective (id.).

(2) The Company could use ATCO Noise Management wall/roof and ventilation systems of a higher grade than the same components in the Company's proposed facility, a cooling tower with greater noise attenuation[14] than the same component in the Company's proposed facility, a gas turbine air inlet filter, and a stack silencer to reduce to zero dBA the nighttime ambient sound level increases at the nearest residences to the proposed facility (id.). The additional mitigation would reduce sound levels from the proposed facility at a net increased cost of approximately $6,500,000 (id.).[15] The Company asserts that the additional measures would not be cost effective (id.).

(3) The Company stated that it has also explored measures to reduce the increase in ambient sound levels at the industrial property lines to 10 dBA or less (id.). The Company asserted that limiting property line ambient sound level increases to no more than 10 dBA would not be possible even with re-orientation of project components on the proposed facility site (id.). Based on its analysis, the Company asserts that the lowest noise cooling tower available (manufactured by SPX Cooling) would not provide sufficient noise attenuation to achieve the targeted sound level reduction (id.).

The Company stated that the location of the proposed project in a commercial area with heavy traffic, along with limits on the Company's hours of construction, would limit noise impacts at residences due to proposed project construction (Exh. EFSB-N-9; Tr. 4, at 467 to 468; Tr. 20, at 2742 to 2745; RR-EFSB-9; RR-EFSB-30). The Company indicated its willingness to limit any Saturday construction at the proposed site to the hours of 9:00 a.m. to 1:00 p.m., subject to negotiation of a labor agreement between the Company and its union workforce (RR-EFSB-30; Tr. 20, at 2742 to 2745).[16] With respect to Monday through Friday construction, the Company indicated that construction would normally occur from 7:00 a.m. to 3:30 or 4:00 p.m., with a 30-minute lunch period, but that to keep to schedule, it might sometimes be necessary to

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[14] The specified cooling tower is the lowest noise model manufactured by SPX Cooling Technologies (Exh. EFSB-A-1(S)(1) at 7-19.

[15] Costs for the described system are as follows: approximately $3,400,000 for the ATCO Noise Management systems, $1,700,000 for the cooling tower, $1,200,000 for the gas turbine air inlet filter, and $240,000 for the stack silencer (Exh. EFSB-A-1(S)(1) at 7-19).

[16] The Company indicated that the labor agreement would also dictate holidays when no work would occur at the proposed project site, most likely New Year's Day, President's Day, Patriot's Day, Memorial Day, the Fourth of July, Labor Day, Columbus Day, Veteran's Day, Thanksgiving, and Christmas (RR-EFSB-9).

extend weekday construction to twelve hours (RR-EFSB-9; Tr. 4, at 457). The Company stated that as a general rule, it would only undertake wiring, pipefitting, and other indoor work when continuing construction after a normal eight-hour weekday shift (id. at 456). An exception to this general rule would be a large concrete pour (id. at 457 to 458). The Company stated that it must complete any large concrete pours in one day (id.). The Company also indicated that it would equip pile drivers and internal combustion engines with vibratory hammers and mufflers, respectively, to minimize the vibration and noise impacts of construction (Exh. EFSB-A-1(S)(1) at 7-21).

b. Intervenors= Concerns

The City of Brockton opines that Brockton Power should implement the first option for additional noise impact mitigation (maximum 3 dBA noise increase at residences) (City of Brockton Initial Brief at 42). The City asserts this option would noticeably reduce noise impacts at residences for a small percentage of the total cost of the proposed project, and that mitigation of residential noise impacts is particularly important given the long life of power plants and the small cost of mitigation relative to total project cost (id.). Furthermore, with respect to construction phase noise impacts, the City states that the Company's proposed construction hour limits, 7:00 a.m. to 3:30 p.m. on weekdays, and 9:00 a.m. to 1:00 p.m. on Saturdays, reflect dialogue with the Siting Board staff during evidentiary hearings rather than discussions with City of Brockton officials (id.). The City asserts that if the Company had applied for Site Plan Approval, noise issues would have been reviewed and addressed by City officials during the site plan review process (id.). The City argues that, absent an opportunity for appropriate City officials to participate in establishing construction work schedules, the City cannot agree that construction noise impacts have been adequately minimized (id.).

ACE opines that the Company erroneously assumes receipt of a noise limit waiver from MADEP at the property line of the proposed project (ACE Initial Brief at 51 to 52). ACE argues that the Salisbury Plain River itself represents a de facto distinct property that is not fully controlled by Brockton Power or the opposite-bank land owner (id.). In addition, ACE argues that uses of the river and land proximate to the river might change, with associated changes in noise sensitivity (id.). ACE asserts that the Company's Petition should therefore include noise mitigation that lowers the noise level at the proposed plant property line adjacent to the Salisbury Plain River such that a waiver from MADEP is no longer required (id.).

c. Precedent & Options

4. In prior decisions, the Siting Board has reviewed the noise impacts of proposed facilities for general consistency with applicable governmental regulations, including the MADEP 10-dBA standard. Southern Energy Canal II, 12 DOMSB 155, at 229. In the present case, facility operations would increase L_{90} sound levels at the property line by up to 28 dBA, which significantly exceeds the 10-dBA MADEP standard. It appears that MADEP gives waivers for exceedances on neighboring industrial properties on a case-by-case basis. We do not know whether MADEP would agree, given the extent of excesses, to waive the standard for all affected neighboring parcels; however, we note

that MADEP often grants such waivers. We also note that MADEP is precluded from issuing a final permit, which would make clear its decision, before the Siting Board issues a decision in the case. G. L. c. 164, § 69J¼.

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 Electric Light Department, EFSB 07-1/ D.T.E./D.P.U. 07-5, at 40- 43 (2008) ("Braintree Decision"); IDC Bellingham, 9 DOMSB at 311 (1999); Berkshire Power Development, Inc. 4 DOMSB 221, at 404. The Siting Board has accepted higher noise increases at residential receptors with unusually quiet background, but only after considering whether cost-effective alternatives existed for additional mitigation. See ANP Blackstone Decision at 172. In Everett, the Siting Board approved a baseload project in a noisy location with modeled residential L_{90} noise increases of 2 dBA. Sithe Mystic Development, LLC, 9 DOMSB 101, at 165 (1999).

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 the project's modeled nighttime noise increase from 10 dBA to 7.5 dBA, at an estimated cost of $1 million (c. 1997). U.S. Gen Decision, at 163-170, 311-314. In Taunton, the Siting Board required a 2 dBA nighttime reduction, from 9-10 dBA to 7-8 dBA, based on estimates that a package of measures costing $501,000 (c. 1994) would reduce the increase by 3 dBA, to 6-7 dBA (additionally, sound wall mitigation of unspecified cost was required to similarly reduce daytime noise increase due to rail activities). Silver City Energy Limited Partnership, 3 DOMSB 1, at 366-369, 412-414. In Bellingham, the Siting Board required a reduction of the nighttime increase of a proposed facility from 8 dBA to 5 dBA at one receptor at a cost of $1.4 million (c. 1999). IDC Decision at 155-159, 314-316. 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 peaking facility likely to operate during the day. Braintree Decision at 41 (2008).

With respect to noise mitigation, the Siting Board has the following options:

(1) accept the noise mitigation as proposed by Brockton Power;

(2) require Brockton Power to augment its proposal by using ATCO Noise Management wall/roof and ventilation systems to reduce to three decibels the nighttime ambient sound level increases at the nearest residences to the proposed facility at a net increased cost of $1,200,000;

(3) require Brockton to consult with the City of Brockton regarding hours of construction;

(4) require the Applicant to reduce the increase in ambient sound levels at the industrial property lines to 10 decibels or less;

(5) require some combination of (2), (3) and (4);

(6) decline to find noise impacts of the proposed project are minimized.

5. Visual

a. Company's Description

The Company submitted a series of photo-simulations of the proposed facility with a 250-foot stack in support of its assertions that a combination of other structures impacting existing vantage points and tree cover will lessen the visual impact of the proposed project (Exhs. BP-1, at 4-86 to 4-102; EFSB-V-3; EFSB-V-6; EFSB-V-7). The Company stated that it would use on-site tree planting to soften views from within the industrial park; however, the height of proposed project structures is such that on-site tree planting would not mitigate more distant views (Exh. EFSB-V-3). The Company indicated its willingness to work with the Siting Board and any affected residents with respect to supplemental visual mitigation measures that would limit views of the top of the HRSG and stack (id.). The Company asserted that the overall visual impact of the proposed project, including its proposed 115 kV overhead transmission line, would be consistent with the industrial and commercial land use activities that characterize the surrounding area (Exh. BP-1, at 4-86).

The Company also submitted information regarding trade-offs between a GEP stack height of 325 feet and the Company's proposed stack height of 250 feet (Exh. EFSB-V-5). Compared to its proposed 250-foot-high stack, the Company's modeling indicates that a 325-foot-high GEP stack would reduce emissions, depending on pollutant, by .002% to 0.5% of NAAQS (id.). The Company's modeling further indicates that its proposed project with a 250-foot-high stack would meet all USEPA/MADEP Significant Impact Levels ("SILS") (id.). The Company asserted that the additional reduction in emissions from use of a GEP stack does not justify a 30 percent increase in stack height (id.).

b. Intervenors' Concerns

The City of Brockton asserted that the proposed facility should be designed with a stack of 325 feet rather than 250 feet, and that a 250-foot stack would not minimize impacts (COB Initial Brief at 25 to 26). The City argues that constructing a stack of GEP height would result in a measurable reduction in ground-level air pollution levels at only a small marginal cost to the proposed project (id.). The City further argues that there is no incremental visual impact to outweigh the air quality improvement associated with a stack of GEP height relative to a 250-foot-high stack (id. at 26).

c. Precedent & Options

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 at 298-300; Nickel Hill Decision at 179. 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 179. 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 159-160 (1999); 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 at 150-152; ANP Blackstone Decision, 8 DOMSB 1, at 196-197.

With respect to visual mitigation in this case, the Siting Board has the following options:

(1) impose a standard Siting Board condition requiring tree planting, upon landowner request to the Company, to reduce visual impacts in the adjacent residential area, within ½ mile (or further, at the Siting Board's discretion);

(2) require construction of a 250-foot GEP stack;

(3) choose both (1) and (2).

6. Safety

a. Company's Description

The proposed project would include a 15,000-gallon welded steel tank, 10 feet in diameter and 25 feet in height, for on-site storage of 19% aqueous ammonia (Exh. BP-4, at 5.5-2 to 5.5-3). A concrete or steel dike surrounding the tank would have 110% of its capacity and would contain leaks of any size, up to and including a major spill (id.). The Company indicated that it would enclose the tank and dike in a building in keeping with recent Siting Board precedent (see BELD at 51), would leak-test the tank before initial plant operations, and would inspect all equipment periodically (Exh. BP-4, at 5.5-2 to 5.5-3; Brockton Power Initial Brief at 106 to 107). A level gauge in the tank would connect to a monitor in the control room of the proposed facility (Exh. BP-4, at 5.5-2 to 5.5-3). Any unusual change in the level of tank contents would activate an alarm and emergency response procedures, including notification of local emergency response agencies (id.). Responders would include Brockton Power plant staff and contracted emergency response personnel (id.).

The Company used the U.S. EPA's ALOHA model to estimate the maximum one-hour averaged concentrations at the nearest public receptors for a contingency ammonia release (Exh. EFSB-HS-3). The Company's modeling shows that predicted concentrations at the nearest property line would be 1.3 parts per million ("ppm"), below the American Industrial Hygiene Association's Level 1 Emergency Response Planning Guideline ("ERPG") of 25 ppm (id.). The predicted ammonia concentration in the event of a catastrophic spill at the nearest residence (1,140 feet to the west) is 0.5 ppm (id.).[17]

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[17] ERPG-1 (25 ppm) is the maximum airborne concentration of ammonia below which nearly all individuals could be exposed for up to 1 hour without experiencing other than mild, transient adverse health effects or without perceiving a clearly defined, objectionable odor. At this level, there may be some odor, but there should be no significant irritation (Exh. EFSB-HS-4).

ERPG-2 (150 ppm) is the maximum airborne concentration of ammonia below which nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms, which could impair an individual's ability to take protective action. There is likely to be strong odor and some eye irritation at this level, but serious health effects are unlikely (id.).

ERPG-3 (750 ppm) is the maximum airborne concentration of ammonia below which all individuals could be exposed for up to 1 hour without experiencing or developing life-threatening health effects. This level may cause severe eye and nasal irritation, but lethality is not expected (id.).

The Company indicates that its SCR system would include a Standard Operating Procedure ("SOP") for handling, transfer, and storage of aqueous ammonia on site (Exh. EFSB-HS-1). A second SOP would be developed for aqueous ammonia deliveries (id.).[18] Development of the SOPs would occur during the detailed engineering and procurement stage of the proposed project (id.). The Company also provided a copy of its Draft Spill Prevention, Control and Countermeasure Plan ("SPCC") for handling of oil delivery, transfer, storage, and removal (Exhs. EFSB-HS-1; BP-4, App. I). In addition, the Company provided a copy of its Draft Emergency Action Plan, which indicates what to do in the event of a fire (Exhs. EFSB-HS-1; BP-4, App. J).

The Company stated that it is fully committed to coordinating well in advance of commercial operations with emergency responders from Brockton and other mutual aid communities to conduct reviews of planned emergency response procedures (Tr. 14, at 1928 to 1930; Brockton Power Initial Brief at 75). The Company stated that it has made good faith efforts to meet with the fire chief of the City of Brockton to discuss the various safety aspects of the proposed project with him (Tr. 15, at 2,021 to 2023). The Company further stated, however, that the fire chief has thus far indicated a general preference to hold such meetings after the proposed project has moved further through the approval process (id.).

b. Intervenors' Concerns

The City of Brockton argued that a complete safety analysis of the proposed project requires the Company and local public safety officials to meet and jointly review project safety issues (Tr. 15, at 2017). The City stated that no such meeting and joint review have occurred (id.). The City asserted that (1) the safety analysis for the proposed project is therefore incomplete and (2) the description of safety issues in the Company's Petition cannot be considered accurate and complete (City's Initial Brief at 22 to 23).

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[18] The Company states that aqueous ammonia delivery procedures will be similar to those for ULSD, as identified in the draft SPCC plan (Exh. EFSB-HS-1).

The Town of West Bridgewater expressed concern about the transportation of aqueous ammonia and ULSD oil through its town limits (TWB Initial Brief at 12 to 14; Tr. at 1824, 2714 to 2731). The Town argues that the Siting Board should condition any approval of the proposed project on transportation of aqueous ammonia and ULSD oil via a route entirely outside the Town of West Bridgewater (TWB Initial Brief at 12 to 14; Tr. at 2719, 2725). The Town further argues that, should trucks transporting aqueous ammonia or ULSD oil violate said condition, Brockton Power should provide compensation to the Town of West Bridgewater (TWB Initial Brief at 13 to 14).

c. Precedent & Options

In a recent case, the Siting Board examined the Applicant's ammonia dispersion modeling and found that enclosure of the Applicant's proposed aqueous ammonia storage tank (1) was warranted and (2) would mitigate potential impacts of on-site aqueous ammonia storage for the proposed facility. Braintree Decision at 46, 50, 51.

With respect to mitigation of potential impacts of on-site aqueous ammonia storage and general safety concerns for the proposed facility, the Siting Board could:

(1) adopt the Company's proposal for use, storage and transportation of 19% aqueous ammonia, as well as transportation of ULSD oil; or

(2) condition an approval of the proposed project on the Company's working with affected towns with respect to delivery routing and other safety issues. The Siting Board's options include:

(a) requiring a route around the Town of West Bridgewater;

(b) requiring a compliance filing setting forth routing of aqueous ammonia and ULSD and/or submission of a final SPCC and SOPs to the Siting Board;

(c) both (a) and (b);

(d) ordering compensation alone or in conjunction with (a), (b) and/or (c).

7. Transmission Line Route and ROW Acquisition

a. The Company Description and Position

In a revision of its original alignment plans in the Petition and DEIR the Company proposed that the transmission line would run close to the eastern edge of the Oak Hill Way right-of-way (that is, along the developed side, close to the facilities of UPS and Nutramax) in order to reduce the impact on Bordering Vegetative Wetlands ("BVW") on the western edge (Exh. EFSB-G-2(S)(1) at 4.3-3). The Company stated that, in order to construct the transmission line on the eastern edge of the Oak Hill Way layout, it would need to obtain easements from two nearby landowners, Nutramax and UPS.[19] The Company provided maps indicating that the line would be located on the eastern edge of a 60-foot utility ROW which would include the paved portion of Oak Hill Way and would apparently overlap the properties of the Nutramax and UPS within their fence lines (id.).

The Company stated that the proposed line would provide a necessary source of transmission in order to serve the region's electricity requirements in a clean, reliable and economic manner (Exh. BP-3, at 3). The Company also stated that the proposed transmission line would meet applicable requirements, including the standards pursuant to G.L. c. 164, § 72 (because the line is needed, would serve the public convenience and is consistent with the public interest), as well as meet the standards of the EFSB under G. L. c. 164 J ¼ (because the line is necessary to provide a reliable power supply with a minimum environmental impact at the lowest cost). The Company further stated that the proposed route of the transmission line (that is the route along the eastern edge of the Oak Hill Way ROW) minimizes the environmental impacts.

The proposed transmission line would be built by Brockton Power, but that once the transmission line, substation and tie-lines were constructed, ownership of these facilities (along with responsibility to operate and maintain the facilities) would be turned over to New England Power Company d/b/a National Grid (National Grid Brief at 5-6).

b. Positions of Intervenors

The City of Brockton states that without knowing whether the Company will succeed in obtaining the easements across the Nutramax and UPS properties required for the preferred route

[19] At the conclusion of the hearings the Company stated that it still needed to obtain easements from Nutramax and UPS (Tr. at 2588-2589). There is no indication in the record of the extent of these easements. The Brockton Conservation Commission is on the record as stating that it opposed the original (DEIR) alignment of the transmission line (Brockton Conservation Commission's Comments on EOEA #14017 dated October 25, 2008), but approves the relocated alignment presented in the FEIR (Tr. at 872).

along the eastern side of Oak Hill Way, it is not possible for the City of Brockton or the EFSB to reach a decision as to whether the proposed transmission line is in the public interest (City of Brockton Brief, at 53). The City of Brockton further advocates that the EFSB should not reach a decision on the transmission line until the easements have been obtained (id.).

New England Power Company d/b/a National Grid ("NEP"), an intervener in the transmission line petition, supports the revised route of the transmission line. NEP noted the route would minimize the impact of the line on bordering vegetative wetlands (NEP Brief at 7-8).

c. Options

The Siting Board has the following options:

1. Approve project including line without further inquiry (a) unconditionally or (b) subject to a reporting compliance condition regarding ROW control

2. Require evidence of ROW control with opportunity for further Board inquiry by (a) reopened record prior to any approval, or (b) compliance filing with Board determination whether to further inquire

8. Electric and Magnetic Field Impacts ("EMF")

a. Company Description and Position

1. EMF Levels

Brockton Power presented analysis of both the electric and magnetic field strengths that would be expected to occur directly under the transmission line at the point of maximum sag in the line and at intervals of 100 feet laterally to either side of that point of maximum sag (DEIR, Appendix G, at 11-12; Tr. Vol. 15 at 2045-2051; Exh. RR-ESFB-31). For the portion of the transmission line route along Oak Hill Way, the Company presented EMF analyses for two possible alignments. The Company initially presented in the Petition analyses of facility impact (including EMF) based on a transmission alignment that would run along the western edge of Oak Hill Way adjacent to a BVW. Under a revised alignment, introduced during the proceeding, the transmission line would run along the eastern edge of Oak Hill Way, which would reduce the impact on BVW by 94%. The revised alignment was developed in response to comments by the Brockton Conservation Commission regarding the required tree cutting and BVW incursion of the originally proposed alignment (Exh. EFSB-G-2(S)(1) at 4.3-3).

In its initial analysis, the Company estimated that magnetic fields (measured at 3 feet off the ground) would reach a maximum of 307 milligauss ("mG") directly under the transmission line at the point of greatest sag, but would fall off rapidly with distance to the range of 25 to 32 mG at intervals of plus and minus 100 feet (DEIR, Appendix G at 12).[20] Based on the map provided in the DEIR Project Description section (Exh.BP-4 at 1-3. Figure 1.2-1), the original alignment appears to be approximately 120 feet from the nearest UPS building. Using the Company's estimate of the fall off in EMF levels as a function of lateral distance from the point of greatest sag in the line (see BP-4, Appendix G at 12), the magnetic field levels at the closest part of the UPS facility across Oak Hill Way would be <25 mG .

Brockton Power then developed magnetic field estimates for the revised alignment of the transmission line, which would place the line along the eastern edge of the Oak Hill Road layout much closer to the abutting industrial enterprises. With the transmission line on the eastern edge of Oak Hill Road, the Company stated that the line would be approximately 70 feet from the nearest UPS structure and the level of magnetic field at that nearest UPS structure would be a maximum of 50 to 60 mG (Tr. at 1739). At staff's request, Brockton Power also analyzed design changes that might lower the magnetic and electric field levels associated with the proposed transmission line in the revised alignment nearer abutters (RR-EFSB-20). Brockton Power's analysis showed that with the use of a delta configuration rather than a vertical array for the line's conductors, greater magnetic field cancellation would be possible and, as a result, magnetic fields under the line at the eastern edge of the Oak Hill Way layout would be between 83 and 107 mG (id.). The use of the delta array would not increase facility capital costs (id.). According to Brockton Power, use of an underground design for the transmission line would not result in lower magnetic or electric fields compared to an overhead delta design, but would increase costs substantially (id.). The Company agreed to revise the conductor design (from vertical to delta) to produce a greater cancellation effect on magnetic fields (Company Initial Brief at 117).

2. Health Impacts of EMF

Regarding the potential detrimental health impacts of EMF, the Company indicated the impact of exposure to EMF on human health is a debated topic among health experts (RR-ACE-13). The Company maintained that there is no scientific data to support the establishment of health-based maximum exposure levels to either electric or magnetic fields (Company Initial Brief at 111).

Brockton Power's expert, Dr. Peter Valberg, claimed that no definitive causal link between exposure to higher EMF levels and negative impacts on human health has been proven

[20] By contrast, measurements along a nearby existing National Grid ROW with a 115 kV transmission line peaked at 10 mG (id.).

(Tr. 15, at 2068-2072). Dr. Valberg explained that there have been some epidemiological studies in which proximity to transmission lines has been statistically associated with higher rates of cancer (especially childhood leukemia) (id.). However, Dr. Valberg asserted that the statistical associations reported have been weak and inconsistent across studies (id. at 2069-2070) and that it is possible that other factors in the lives of the population (e.g. socio-economic or age of housing stock) could explain the correlations. Dr. Valberg pointed out that studies on adult workers on transmission lines do not show a correlation between exposure to EMF and risk for cancer (id. at 2071).

In 1992 the U.S. Congress authorized a joint study on the health impacts of electric and magnetic fields by the National Institute of Environmental Health Science ("NIEHS"), the National Institute of Health ("NIH") and the Department of Energy. In 1999, the NIEHS submitted its report to Congress in which it concluded

> *"The scientific evidence suggesting that ELF-EMF exposures pose any health risk is weak. The strongest evidence for health effects comes from [epidemiological] associations observed in human populations with two forms of cancer: childhood leukemia and chronic lymphocytic leukemia in occupationally exposed adults. . . In contrast, the mechanistic studies and the animal toxicology literature fail to demonstrate any consistent pattern across studies. . .No indication of increased leukemias in animals have been observed . . . Virtually all of the laboratory evidence in animals and humans and most of the mechanistic work done in cells fail to support a causal relationship between ELF-EMF at environmental levels and changes in biological function or disease status. The lack of consistent, positive findings in animal or mechanistic studies weakens the belief that this association is actually due to ELF-EMF, but it cannot completely discount the epidemiological findings. The NIEHS concludes that because of . . . weak scientific evidence . . . exposure may pose a leukemia hazard. In our [NIEHS's] opinion, this finding is insufficient to warrant aggressive regulatory concern . . . The NIEHS does not believe that other cancers or non-cancer outcomes provide sufficient evidence of a risk to currently warrant concern.* (Current Status of Scientific Research, Consensus and Regulation Regarding the Potential Health Effects of Power-Line Electric and Magnetic Fields (EMF), January 2006, a report prepared for the State of Connecticut Siting Council by Gradient Corporation[21] siting "NIEHS Report on Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields, 1999", at 9-10).

[21] Brockton Power's witness on the topic of EMF was Dr. Peter Valberg, who is a principal at Gradient Corporation. Mr. Valberg prepared the report to the Connecticut Siting Council which is quoted above.

Only seven states have set guidelines or definitive limits on electric fields and two states have limits on magnetic fields (BP-1, at 4-114). Note that after reviewing

State	Magnetic Field	Electric Field
Florida	Maximum at edge of ROW: 200 mG (for 500 kV, single circuit), 250 mG (for 500 kV double circuit and 150 mG (for 230 kV)	Maximum within ROW: 10 kV/m (for 500 kV), 8 kV/m (for 230 kV). Limits at edge of ROW 2 kV for new lines
Massachusetts	Maximum levels have not been set, but a guideline of 85 mG at edge of ROW has been established[22]	Maximum levels have not been set, but a guideline of 1.8 kV/m at edge of ROW has been established [22]
Minnesota	None set	8 kV/m maximum in ROW
Montana	None set	7 kV/m in ROW at road crossings, 1 kV/m at edge of ROW in residential areas
New Jersey	None set	3 kV/m at edge of ROW
New York	200 mG at edge of ROW	11.8 kV/m in ROW, 1.6 kV/m at edge of ROW
North Dakota	None set	9 kv/m maximum in ROW
Oregon	None set	9 kV/m maximum in ROW

the report prepared by Gradient quoted above, the Connecticut Siting Council ("CSC") decided not to adopt a numerical maximum limit for either electric or magnetic fields (Exh. RR-ACE-14). In fact, the CSC concluded that "the weight of evidence indicates that exposure to electric fields, beyond levels traditionally established for safety, does not cause adverse health effects" (see attachment to Exh. RR-ACE-14 entitled "Electric Transmission Lines in Connecticut," December 14, 2007, at 1). The CSC prepared a Best Practices Manual which focuses on ways to reduce magnetic fields when building or replacing transmission lines.

b. Position of Other Intervenors

NEP supports the use of the delta configuration because it believes that the delta configuration achieves the best balance of minimizing costs and environmental impacts (NEP

[22] In the particular case of a 345 kV Massachusetts Electric Company transmission line, the EFSB approved an edge of ROW electric field level of 1.8 kV/m and a magnetic field level of 85 mG (Massachusetts Electric Company, 13 DOMSC 119, 228-242).

Brief at 9-11). None of the other intervenors advanced a position on projected EMF levels or the proximity of the lines to the parking areas and buildings belonging to Nutramax and UPS.

c. Precedents and Options

In a previous review of proposed 345 kV transmission line facilities, the Siting Board accepted edge of ROW levels of 1.8 kV/meter for 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. 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 ROW in Massachusetts, not as a limit of acceptable impact. Id. 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.

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 ROWs. 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 the following options:

1. Approve the proposed facilities with the revised transmission alignment and delta configuration as proposed/agreed by Brockton Power.

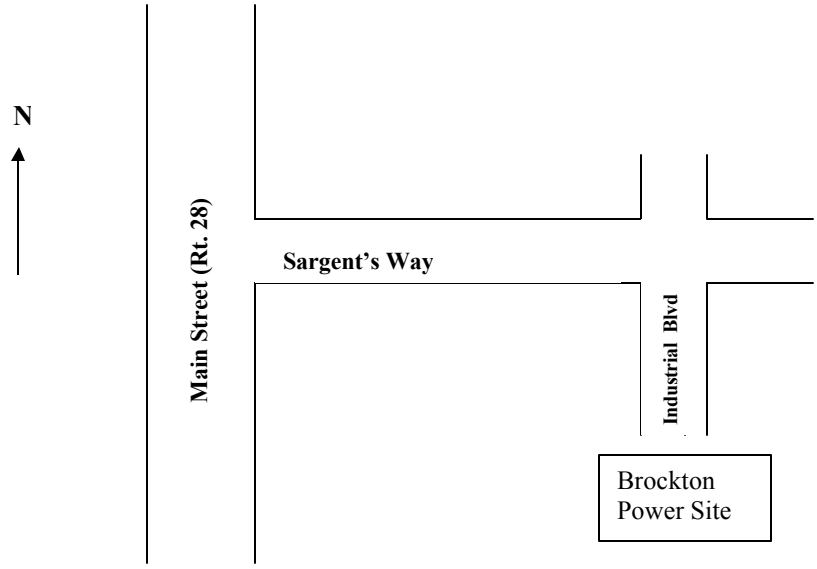
2. Require (a) pursuit of a different alignment and/or design to further minimize EMF; and (b) submittal of a compliance filing to address the requirement in (a).

9. Traffic Impacts

A. Company Description and Position

Traffic approaching the proposed site on Industrial Boulevard in Oak Hill Industrial Park is expected to come either from Main Street (Rt. 28) or Sargent's Way. In 1998, when a generating facility was proposed for this same site in Oak Hill Industrial Park, the intersection of Main Street and Sargent's Way was governed by a flashing light (yellow for traffic on Main Street and red for traffic on Sargent's Way). As a result of the traffic study carried out in connection with the 1998 power plant proposal, the intersection of Main Street and Sargent's Way was upgraded to become a fully signalized intersection (Exh. BP-1, at 4.66). Counts of existing traffic at the Main Street/Sargent's Way intersection conducted in May of 2007 during peak morning and evening construction hours[23] (6:00-7:00 AM and 3:00-4:00 PM) confirmed the findings of the 1999 traffic study that the majority of the traffic would enter and exit Sargent's Way from the south on Main Street, presumably headed to/from Routes 24 and I-495 (Exh. BP-4, at 5.6-2). May 2007 counts indicated that 851 vehicles during the peak morning construction hour and 1,716 vehicles during the peak afternoon construction hour passed through the Main Street/Sargent's Way intersection, with the majority of the traffic north or south bound through traffic on Main Street (id.).

[23] The peak hours refer to the projected peak hours for construction-generated traffic.



Brockton Power estimated that traffic associated with the plant's 24-month construction period would increase peak hour vehicle counts by 305 vehicles during morning peak hour and 232 vehicles during afternoon peak hour (Exh. BP-1, at 4-68). Brockton Power estimated the impact of the construction traffic on the Main Street/Sargent's Way intersection in terms of grades of Level of Service (LOS) between A and F (where a grade of A indicates lower volumes and relatively free-flowing traffic conditions and an F indicates large volumes of traffic with significant congestion and delays). As shown in the table below, during construction of Brockton Power, the intersection would continue to operate at a generally A LOS in the morning except for traffic coming west on Sargent's Way and turning left onto Main Street (id.). Peak afternoon hour at the intersection overall is currently graded at a somewhat lower B LOS, with an expectation that during construction the LOS rating would drop to C with the addition of construction traffic (id.). The Company asserted that the congestion and delays are associated with west-bound traffic seeking to turn left off Sargent's Way onto Main Street (id.)

A Comparison of Level of Service at Intersection of Main Street (Rt. 28) and Sargent's Way

	Level of Service/Average Delay (Seconds)	
	AM	**PM**
Existing Conditions[1]		
Westbound Left	C/34.1	D/37.0
Westbound Right	A/5.4	A/3.3
Southbound Left	A/8.9	B/14.1
Overall Intersection	A/8.9	B/14.1
Construction Period		
Westbound Left	C/33.4	E/55.4
Westbound Right	A/4.8	A/2.8
Southbound Left	A/4.9	A/9.9
Overall Intersection	A/7.5	C.21.8

[1]Based on 2007 counts under signal control

The Company stated that post-construction, during normal operations, there would be three to seven workers at the plant (id., at 4-69). In the Company's view, the traffic generated by these few workers would not have a significant adverse impact on the operation of the Main Street/Sargent's Way Intersection (id.).

The Company contends that with the planned mitigation measures, the impact of construction traffic would be minimized (Brockton Power Brief at 99). The decline in overall LOS of the Main Street/Sargent's Way intersection in the afternoon peak period would be due to the increased delay projected to be experienced by westbound traffic on Sargent's Way desiring to turn left (id.). Once the westbound traffic receives a green light, all vehicles in the queue would be expected to clear the intersection (id.). The Company cited other factors which would tend to mitigate the traffic impact during construction, including: a Company pledge to schedule deliveries of construction equipment and materials outside peak morning and evening hours; a Company requirement that all construction traffic access the site through Main Street; the expectation that peak construction activity will not last 24 months due to the fact that typically construction activity ramps up to peak staffing and tapers of somewhat towards end; the Company's promise to attempt to negotiate with the union work force a limited Saturday work schedule (9:00 AM to 1:00 PM); and the Company's continuing consideration of using satellite parking areas during construction (id., Exh. B-4, at 5.6-2).

In addition to the mitigation measures directed at minimizing the impact of construction-related traffic, the Company committed to measures designed to restrict truck traffic associated

with delivery of fuel oil and aqueous ammonia when the plant is in operation (Tr. at 1823-1824). These delivery vehicles would, per the terms of the Company's contracts with the suppliers, be required to access the Brockton Power site through the City of Brockton via either State Route 24 or State Route 28 (id.). The Company committed to the use of fines and/or contract termination as penalty for suppliers whose trucks did not utilize the prescribed access routes (Tr. at 2719 and 2725)

B. Intervenors' Concerns

1. City of Brockton's Position

As a condition to any EFSB approval of the facility, the City of Brockton would like the Company to be required to hire a consultant to perform a traffic optimization study for the Main Street/ Sargent's Way intersection related to the construction phase (City of Brockton Brief at 43). Such a study would aim to optimize the timing of the traffic lights to minimize delays at the intersection. During the evidentiary hearing it was established that such an optimization study could be carried out for a cost of $5,000 (assuming all hardware including signal controllers are in place) to $10-20,000 (if detection equipment is added to left-turning lanes) (id.).

2. Town of West Bridgewater

The Town of West Bridgewater raised concerns about construction and delivery truck traffic needing to use West Bridgewater roads to access the proposed site if the primary routes through Brockton were blocked for repair work, accidents or some other reason (Town of West Bridgewater Initial Brief at 11-12). The Town noted that the Company had not identified secondary routes to be followed in the event that either of the two main routes from Rt. 24 to the proposed site were unavailable (id.; Tr. at 1821-1824). West Bridgewater stated that because the Company had not determined secondary routes to the plant site and examined the impact of these secondary routes, it has not fully described the environmental impact of its proposed plant (West Bridgewater Initial Brief at 11-12). The Town of West Bridgewater also raised a similar concern with regard to the route of trucks which would deliver distillate oil and aqueous ammonia to the plant (id. at 12-14). West Bridgewater urged that the Town receive some form of compensation from the Company when fines are levied and that the Company's contractual commitment with its suppliers be subject to annual renewal (West Bridgewater Initial Brief at 14).

C. Precedents and Options

Based on the record, traffic congestion is an issue only in the construction phase (and likely only during peak months within the 2-year construction period). The Company has committed on the record to the enactment or investigation of a number of mitigations (for

example contractual commitments on delivery routes, off-peak-hour delivery times, possible off-site parking). The Company has not, yet, agreed to pay for a traffic study to optimize the timing of the light at the Main Street/Sargent's Way insertion.

In the past, the EFSB has required petitioners to pursue permanent traffic improvements as a condition of its approval to construct. For example, the EFSB's decision in the case of the original 1999 Brockton Power petition provides an example of an EFSB-imposed condition which led to a permanent improvement. Brockton Power, 10 DOMSB 236 (2000) In that case the EFSB directed Brockton Power to "work with the City of Brockton Department of Public Works and with the management of other commercial or industrial facilities within the Oak Hill Industrial Park to identify and, if appropriate, promote implementation of plans to improve the Route 28-Sargents Way intersection." Id. Brockton Power was ordered to report back to the EFSB regarding the status of any plans to improve the intersection. As a result of this condition, the Main Street/ Sargent's Way intersection became a fully-signalized intersection.

The EFSB has also ordered operational traffic mitigation measures to address construction traffic. For example in the case of IDC Bellingham (IDC Bellingham, 9 DOMSB 225 (1999)), the EFSB conditioned its approval of the generating facility on the Company's commitment to stagger the schedule of its peak construction traffic to avoid local peak traffic movements and to station a police officer to direct traffic at an impacted intersection during peak hours (id. at 327-329). In the case of the Mystic power plant construction in Everett (Sithe Mystic, 9 DOMSB 101 (1999)), EFSB prescribed mitigation measures during construction that included secured the developer's commitment to provide off-site parking for 300 vehicles, to optimize timing of traffic lights at three intersections, to encourage carpooling and to make equipment deliveries by barge and rail whenever possible (id. at 176-177).

In the present Brockton case, the EFSB options include:

1. Require no further mitigation of construction traffic
2. Require that the Company fund a traffic study to optimize the timing of the traffic signal at the Main Street/Sargent's Way intersection
3. Require other operational mitigations (carpooling, offsite parking, etc.)
4. Require the Company to work with the Town of West Bridgewater regarding compliance by the Company's vendors with truck routes specified in contracts with the Company.

10. Cumulative Health Impacts

Brockton Power stated that the Project would not cause any cumulative health impacts (Brockton Power Initial Brief at 119-121). The City of Brockton and ACE disagree, for reasons set forth in more detail below.

a. Company's Description

The Company asserted that NAAQS standards are fully protective of human health, including the health of sensitive subgroups, with an adequate margin of safety (Company Initial Brief at 118-119). Furthermore, according to the Company, SILs have been set at between one and five percent of the NAAQS (id. at 119). Citing to the testimony of its expert and other exhibits, the Company asserted that it had established that the Project's maximum ground-level concentrations for all criteria pollutants would be below their SIL levels (Company Initial Brief at 119 *citing* BP-PAV-1 (REB), at 9; BP-PAV-1 (REB)(S) at 2; EFSB-H-6). Therefore, the Company concluded, "the ambient air quality" for Brockton and West Bridgewater would "essentially be the same whether the Project is operating or not" (Company Brief at 119). Regarding the allegation that emissions from the Project would exacerbate pediatric asthma, the Company cited to a study that refuted such a conclusion (Company Initial Brief at 123 *citing* Exhs. EFSB-H-2 and BP-PAV-1 (REB)(S) at 10).

The Company provided information with respect to asthma prevalence in Brockton and with regard to the possible effect of industrial emission sources, such as power plants and incinerators, on asthma rates (Exhs. BP-1, at 4-103 to 4-106; BP-4, at 5.14-2 to 5.14-5; EFSB-H-2). The information includes results of a Year 2008 Massachusetts Department of Public Health ("MDPH") study of air pollution in the Merrimack Valley. The MDPH study concluded that the prevalence of asthma in children and air pollution levels from stationary sources were not associated (Exh. EFSB-H-2).[24] The study further indicated that rural communities without power plants may have had higher pediatric asthma rates than cities with power plants (Exhs. EFSB-H-2; BP-PAV-1 (REB)(S) at 10-11). The Company stated that in a second MDPH document, "A Profile of Health Among Massachusetts Adults, 2005," Brockton and West Bridgewater were grouped with cities in the southeast, which overall had an adult asthma prevalence slightly under (by 0.4 percent) the statewide average of 14.2 percent (Exh. EFSB-H-2). Furthermore, the Company asserted that the Project would use an efficient turbine, clean fossil fuels, combustion controls and a "very effective" air pollution control system (Company Initial Brief at 38). This combination, according to the Company, would produce emission rates fully compliant with LAER and BACT requirements (id.).

b. Intervenors' Concerns

The City asserted that the Company's own evidence indicated that the background concentration of ozone over an eight-hour period already exceeds the applicable NAAQS

[24] The study did, however, link the incidence of asthma with proximity to high volumes of traffic (Exh. EFSB-H-2).

standards by 21% (City of Brockton Initial Brief at 7 *citing* COB-A-10, Table COB-A-10-1).[25] In addition, the City further asserted that the Project would be a significant source of NOx and other volatile organic compounds ("VOC"), which would be precursors to ozone (City of Brockton Initial Brief at 7 *citing* BP-4, at 5.1-5 to 5.1-6). Furthermore, according to the City, the Project would result in an increase in particulate matter in the Brockton air (City of Brockton Initial Brief at 8 *citing* Exh. RR-COB-2(c) Table RR-COB-2(c). The City argued that this was significant for two reasons: First, because even at levels below NAAQS the pollutant PM2.5 would be a health hazard (City of Brockton Initial Brief at 9-10 *citing* Exh. ACE-11, at 67-68); and second, because both ozone and PM2.5 have been associated with the aggravation of asthma (City of Brockton Initial Brief at 8-9 *citing* Exh. COB-LT-1(7), at 5-6, and Exh. COB-LT-1(8), at 54128).

ACE asserted that the Company's methodology for calculating particulate matter emissions was flawed (ACE Initial Brief at 3-4). While the Company included in its model particulate matter as it left the smokestack (a/k/a primary PM), ACE asserted that the Company erroneously excluded particulate matter that formed from exhaust gases after they left the smokestack (a/k/a secondary PM) (id. at 4 *citing* tr. 2377-2378). Said emission, PM2.5, would be formed by both primary and secondary PM (ACE Initial Brief at 4 *citing* COB-LT-1(8)). Therefore, by ignoring the secondary PM that the Project would emit, ACE implied, the Company underestimated the PM2.5 that would result from operation of the Project (id.). This is important, ACE asserted, because even though the Company's own model did not take into account the PM2.5 created by secondary PM the model predicted that PM2.5 emissions would be at 91% of NAAQS for the 24-hour period even without taking into account the PM2.5 created by secondary PM (ACE Initial Brief at 4, *citing* EFSB-A-1(S)(1), 6-12). ACE implied that, had the secondary PM been taken into account, the modeled PM2.5 emission might have exceeded NAAQS (id.).

Secondly, ACE asserted that the data the Company used for dispersion modeling is flawed because it comes from Logan Airport, 20 miles to the northeast of the propose site (ACE Initial Brief at 5 *citing* EFSB-A-1(S)(1), 5-3). There is no information provided from which one can conclude that the Logan Airport data "approximates the meteorological data at the Brockton site" (ACE Initial Brief at 5). Finally, ACE asserted that the Company's argument that the

25 The City asserted that, in the Petition and other documents, the Company had erroneously compared background concentrations of ozone to a former standard, which caused the Company to make incorrect assertions and representations (City of Brockton Initial Brief at 7, n. 1 *citing* 73 Fed.Reg. 16436, 16483 (2008). The Company did not directly address this charge. It should be noted, however, that large sections of the east coast have been out of standard for ozone. Furthermore, the Company proposed to purchase offsets of 126%, which should improve regional air quality (Company Initial Brief at 38, *citing* Exhs. EFSB-A-1(S)(1), at 8.3.2; EFSB-A-6).

Project's emissions would not exceed federal air quality limits is irrelevant because said limits do not fully protect public health (id. at 5-8).

c. Precedents and Options

In Sithe Edgar Development LLC, EFSB 98-7 (2000), the Board addressed the issue of compliance with NAAQS as follows:

> [T]he USEPA has set in place ambient air quality standards, called NAAQS . . . These standards are set based on extensive review of medical literature regarding the health effects of each pollutant, and are designed to be protective of human health, ***including the health of sensitive subgroups*** such as the elderly, children, and asthmatics, ***with an adequate margin for safety.*** The Siting Board ***gives great weight to these standards*** as indicators of whether incremental emissions of criteria pollutants will have a discernable impact on public health.
>
> Final Decision in Sithe Edgar Development LLC, EFSB 98-7 (2000) at 121 (10 DOMSB 132) (emphasis supplied).

This view of NAAQS was recently reiterated in Braintree Electric Light Department, EFSB 07-1/D.T.E./D.P.U. 07-5 at p. 66: "The EPA sets the NAAQS to be protective of sensitive populations, such as adult and pediatric suffers of respiratory illnesses, including asthma." Consequently, it appears that the Company is on safe ground in using NAAQS to measure the health impacts of the Project.

Nevertheless, it should be noted that NAAQS is an evolving standard, not a fixed one. For example, the EPA website has this to say about NAAQS: "The law also requires EPA to periodically review the standards to ensure that they provide adequate health and environmental protection, and to update those standards as necessary." The present NAAQS levels are, therefore, subject to change.

IV. 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.

B. Consistency with Environmental Justice Policy

In 2002, the Executive Office of Environmental Affairs ("EOEA") promulgated its Environmental Justice ("EJ") Policy (Exh. EFSB-1, EJ Policy Statement). This policy was issued pursuant to the EOEA's statutory mandate, which provides that said agency is authorized to "develop policies, plans, and programs for carrying out [its] assigned duties" (G.L. c. 21A, §2, *see also*, Exh. EFSB-1, EJ Policy Statement, page 2 of 12, "Legal Authority" section). Pursuant to said policy, an EJ population is a neighborhood in which the median household income is below 65 percent of the statewide median income for Massachusetts, or one in which 25 percent of the residents are either minority, foreign born, or lacking in English proficiency; a neighborhood need only satisfy one of these four criteria to constitute an EJ Population (Exh. EFSB-1, EJ Policy Statement at 5). While the Commonwealth contains 351 municipalities, only 20 of them have a neighborhood, or collection of neighborhoods, that satisfy all four EJ criteria. Brockton is one of those 20 (Exh. EFSB-2).

When the EJ Policy was issued, the Siting Board was under the jurisdiction of the Office of Consumer Affairs, not the EOEA. The policy originally explicitly stated that it was not applicable to the EFSB: "This policy is not intended to regulate agencies outside the EOEA secretariat . . . This policy is not intended to interfere with, supersede, or create any new obligations on the Energy Facility Siting Board, an entity which is not by law or otherwise a part of the EOEA secretariat" (ACE Initial Brief at 54). Based on this language, ACE argued that the Siting Board became subject to EJ Policy only when it came under the jurisdiction of the Executive Office of Energy and Environmental Affairs ("EOEEA") on April 11, 2007 (ACE Initial Brief, at 54). If that argument were to be accepted, it would mean that Board decisions prior to said date would have no direct precedential value on the issue of whether the proposed project is consistent with EJ Policy.

Pursuant to Chapter 19, section 28, of the Statutes of 2007, the Department of Public Utilities became subject to the newly-formed EOEEA on April 11, 2007. See Statutes of 2007, Chapter 19, section 17A Addendum Issued by Office of the Secretary of the Commonwealth dated March 7, 2007. In their briefs, all parties and Senator and Representative Creedon have assumed that EJ Policy constitutes one of the "current health and environmental protection policies of the Commonwealth" referred to in section 69J¼. No one has argued to the contrary.

The Petition presents the EFSB with the opportunity to review the significance of siting in an EJ Policy context. Although the proposed site would not be inside an EJ area, it would be within one half-mile or less of EJ areas to the west, north and northeast (Exhs. BP-4 at Figure 6.5-1; COB-SS-1 (Attachment)). The prevalent wind directions at the Brockton site have been measured as coming from the southwest and northwest (EFSB-A-1(S)(1) at 5.5). Winds from the southwest would tend to disperse emissions toward a portion of the EJ regions within Brockton (Exhs. BP-4 at Figure 6.5-1; COB-SS-1 (Attachment)). The Massachusetts EJ Policy contains a set of procedures to be followed by project proponents to enhance public participation when projects are proposed to be located in an EJ area (Exh. EFSB-1, at 8).

In addition, because the Project is located within five miles of an EJ population, the EJ Policy requires that if the Project were to exceed certain air pollution thresholds then an enhanced analysis of Project impacts within the EJ area would be required (Exh. EFSB-1 at 8). In the Certificate of the Secretary of Energy and Environmental Affairs issued on the FEIR issued in this case, the Secretary found that: "The project does not exceed a mandatory EIR threshold for air. Therefore, it is not subject to the requirement for enhanced analysis of impacts and mitigation pursuant to the EJ policy" (Exh. EFSB-G-(3)(b)(S) at 4). We note that no party or limited participant has addressed this issue.

The Intervenors and Senator and Representative Creedon argued that construction and operation of the Generating Facility would not be consistent with the Commonwealth's EJ Policy. The Company argued that EJ Policy imposed only procedural requirements. The Intervenors and the Limited Participants who filed a brief disagreed, and argued that EJ Policy also imposes substantive obligations.

1. The Company's Position

The Company asserted that: "EJ Policy establishes *procedural* requirements that an applicant must satisfy . . . [such as] additional outreach, education, and information distribution with EJ communities . . . . the EJ Policy does not establish any *substantive* requirements that provide any community, whether EJ or not, with preferential treatment either for or against the siting of development or infrastructure projects" (Company Reply Brief at 90, emphasis in original, language in brackets supplied). The Company argued that it, "has complied fully with the EJ policy through the MEPA process as a result of its extensive outreach efforts and public notification process" (Company's Initial Brief, at 137). In asserting that EJ Policy does not impose substantive requirements, the Company notes that "there is no mention of any specific EJ considerations within the Siting Board's statute," and that EJ has never been a separate element in any prior Siting Board proceeding (id. at A-6 and A-7).

2. City of Brockton's Position

The City acknowledged that EJ Policy required various procedural steps to be taken and admits that the Company has satisfied these requirements (City of Brockton Initial Brief at 46, n.7). Nevertheless, the City asserted that the Board must be attentive to the "broader findings and principles of" said policy (id.). Approving the Generating Facility, the City argued, would increase the pollution problems of an EJ community and this would, in turn, exacerbate "an existing equal protection problem as defined by EJ Policy" (id.).

3. ACE's Position

ACE articulated five specific arguments for denying the Company's Petition on EJ Policy grounds (ACE Initial Brief at 61). They are: 1) the Petition "does not include a comprehensive health impact assessment"; 2) the Petition "does not describe the environmental justice impacts of the facility"; 3) the Petition "does not describe the environmental justice considerations of the

site selection process"; 4) the Petition "does not use local meteorological data for air quality modeling"; 5) the Petition "does not compare its air modeling estimates to the most protective proposed SIL for PM2.5 or undertake the analysis required for exceeding the 24-hour SIL for PM2.5" (id.). Furthermore, ACE argued that siting the Generating Facility in Brockton would result in an "undue concentration of environmentally hazardous sites in the City of Brockton" (id. at 62).

4. Position of Senator and Representative Creedon

Senator Robert Creedon and Representative Geraldine Creedon asserted that allowing the Siting Board Petition would violate the rights of Brockton residents to clean air and water (Brief of Senator Robert S. Creedon, Jr. and Representative Geraldine Creedon, Limited Participants – hereinafter "Creedon Brief" – at 7-8). Senator and Representative Creedon argued that the City of Brockton is already "overburdened with environmentally hazardous sites and facilities." Therefore, Senator and Representative Creedon contended, siting the Generating Facility at the proposed location would "disproportionately overburden the Environmental Justice Population that abuts the site" (id. at 7).

5. The Company's Response

In response to the arguments propounded by the City, ACE, and Senator and Representative Creedon regarding air quality, Brockton Power asserted that the NAAQS are established by the EPA and are the only criteria that should be used to determine whether the Generating Facility would result in a "minimum environmental impact" (Company Reply Brief at 87). The Company argued that: "The Siting Board should not attempt to establish new air quality standards under the guise of the EJ Policy, but should continue to apply on an even-handed basis the currently applicable standards that are used by the federal and state agencies with primary authority over air emissions regulations" (id. at 89). Furthermore, the Company represented that: "the City will actually *benefit* from the highly efficient output from the Generating Facility because its operation will displace older, dirtier energy sources in the region, thereby substantially reducing overall air emissions" (id. at 91, emphasis in original).

6. ACE's Reply

In its reply brief, ACE asserted that the Company's arguments – that 1) there is no mention of any specific EJ consideration within the Siting Board's statute, and 2) EJ has not been a separate element in any prior Siting Board proceeding - both miss the mark (ACE Reply Brief, at 27). It was only in 2007 that the Siting Board came under the jurisdiction of the Executive Office of Energy and Environmental Affairs ("EOEEA") and became subject to EJ Policy (id.; *see also* ACE Initial Brief at 54). ACE implied, though it did not explicitly state, that precedent established before the Board was subject to the EJ Policy should not guide the Board now (ACE Reply Brief, at 27). ACE also disputed the Company's assertion that the Generating

Facility would replace dirtier power plants (ACE Reply Brief at 29). To the contrary, ACE argued that: 1) said claim is based upon a "faulty and unproven analysis"; 2) the displacement claims "are inconsistent from one document and witness to another"; and 3) the Company did no modeling to determine whether any displacement would, in fact, have an effect on Brockton's air quality (id. at 29).

C. Consistency with Other Policies of the Commonwealth

1. The Company's Arguments

In support of its argument that construction of the Generating Facility would be consistent with the Commonwealth's energy, health, and environmental policies, Brockton Power asserted that the Generating Facility would: 1) add reliability to the grid; 2) contribute to public health by using the cleanest fossil fuels; 3) comply with SILs and NAAQS for all criteria pollutants; 4) obtain all necessary state and federal permits; 5) satisfy TPS; 6) comply with RGGI, and 7) displace older and dirtier plants thereby producing a significant air quality benefit (Company Initial Brief at 133-138).

2. ACE's Arguments and the Company's Replies

a. Brockton Residents' Right to Clean Air

ACE represented that the City of Brockton already bears heavy environmental burdens and that, "the power plant would increase ambient air pollution" and thereby deny the City's residents their constitutional right to clean air and water (ACE Initial Brief at 62). The Company, however, asserted that the Constitutional right to clean air is ensured through statutory provisions and regulations such as the air emissions policies adopted by the Massachusetts Department of Environmental Protection ("MADEP"), and it argued that any project that complies with MADEP regulations, "cannot be said to be in violation of this constitutional protection" (Company Reply Brief at 98).

b. The Commonwealth's Water Policy

ACE cited the Commonwealth's 2004 Water Policy, maintaining that it encouraged protection of fish habitat and recharge of treated wastewater into the ground to replenish aquifers (ACE Initial Brief at 64-67). The Generating Facility's use of wastewater would, ACE argued, reduce the discharge into the Salisbury Plain River, thereby both endangering the fish habitat and precluding the use of this water to recharge the aquifer (ACE Initial Brief at 65-67). The Company, however, noted that the Commonwealth's 2004 Water Policy was not introduced into evidence during the proceedings (Company Reply Brief at 99-100 and at 31). Consequently, the Company had no opportunity to question the ACE witness about the Water Policy and no opportunity to present its own witnesses on this subject (id. at 99-100 and at 31). As a result, Brockton Power alleged, it was prejudiced and, therefore, it requested that the Board disregard both ACE's arguments and the Water Policy (id. at 99 n. 42 and at 31).

c. The Commonwealth's Greenhouse Gas Policy

ACE argued that the proposed use of ULSD fuel in the Generating Facility would violate the Greenhouse Gas ("GHG") Policy promulgated by the EOEEA (ACE Initial Brief at 69).[26] Brockton Power, however, asserted that it had provided a thorough greenhouse gas analysis in the DEIR, in compliance with the requirements of said policy (Company Reply Brief at 101). In addition, the Company also cited to its Siting Board Petition and to its response to a Siting Board record request in support of its assertion that it had "provided ample evidence of compliance with the GHG Policy including a detailed description of GHG emissions and associated mitigation measures" (id.). Finally, the Company argued that its receipt of a MEPA certificate demonstrated its compliance with the EOEEA's Greenhouse Gas Policy (id.).[27]

d. The Green Communities Act

ACE argued that construction of the Project would not be consistent with the goals of the Green Communities Act ("GCA"), including the goals of demand reduction, conservation, energy efficiency, and increasing renewable energy sources (ACE Initial Brief at 71). It should be noted that said statute, enacted as Chapter 169 of the Acts of 2008, was signed and made effective on July 2, 2008.[28] Consequently, ACE expressed some doubt as to whether the Act applied to this proceeding, which was begun approximately one year prior to the enactment (id.).

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26 The Executive Office of Energy and Environmental Affairs ("EOEEA") issued the Greenhouse Gas Emissions Policy and Protocol pursuant to its authority under the Massachusetts Environmental Protection Act ("MEPA"), G.L. c. 30 § 60 (MEPA Greenhouse Gas Emissions Policy and Protocol, at 1, available at www.mass.gov/envir/mepa). The Policy took effect on October 15, 2007 (id.). The GHG Policy was issued in order to fulfill the statutory obligation to take all feasible measures to avoid, minimize, or mitigate damage to the environment. The Policy requires certain Projects undergoing review by the MEPA Office to quantify their GHG emissions and to identify measures to avoid minimize, or mitigate such emissions (id.).

27 The MEPA certificate was titled: "Certificate of the Secretary of Energy and Environmental Affairs on the Final Environmental Impact Report," and designated as Exhibit Attachment EFSB-G-3(b)(S). In this exhibit, the Secretary noted that the ENF for this project was filed prior to the date that the GHG Policy was issued and, therefore, the Project would not be subject to the requirements of the MEPA/GHG Policy (Exh. Attachment EFSB-G-3(b)(S) at7-8). Nevertheless, the Secretary made the finding that he was "satisfied that the proponent adequately addressed GHG issues as indicated in [the] Certificate on the DEIR" (id. at 8).

28 Hearings on need in this case concluded on June 27, 2008; hearings on all issues concluded on July 11, 2008.

Furthermore, ACE admitted that: "The Act itself does not change any rights or obligations of the Company or intervenors" (id. at 70). The Company did not address this issue in its briefs.

D. Precedents and Options

The intervenors focused largely on recent policies and law in arguing that the construction of the Project would be inconsistent with the policies of the Commonwealth: EJ Policy was promulgated in 2002, and the Board did not come under EEOA jurisdiction until 2007; the Commonwealth's Greenhouse Gas Policy was promulgated in 2007; the Green Communities Act was signed into law in 2008; and the Commonwealth's water policy dates from 2004.

Historically, in the Board's review of whether a facility is consistent with the policies of the Commonwealth, the policies considered in this context were, for example, those relating to wetlands protection, groundwater protection, rare and endangered species habitat, and historic preservation (Berkshire Gas, EFSB 05-1, Final Decision, at 50; and KeySpan Energy, EFSB 05-2). Policies regarding wastewater treatment, wetlands impacts, and noise have also been considered in this regard (Billerica, EFSB 99-3, Final Decision at 137-138; Southern Energy Canal II, EFSB 98-9, Final Decision at 102-103).

There is no EFSB precedent concerning siting a generating facility in proximity to (or within) an EJ area. Therefore, the EFSB has a wide range of options with regard to its decision on this topic, including:

a. To determine that the Company has complied with EJ Policy;
b. To determine that the Company has not fully complied with EJ Policy;
c. To determine that the Company should take additional measures to comply with EJ Policy; and/or
d. To provide guidance in its decision to future applicants regarding how to meet EJ Policy requirements.

V. ZONING ISSUES

A. Standard of Review

Brockton Power requested a number of specific exemptions from the Brockton Zoning Code as well as a comprehensive exemption from all provisions of said code. In order to grant zoning relief, the Board must find that the exemptions are required and must also find that "the present or proposed use of the land or structure is reasonably necessary for the convenience or welfare of the public." G.L. c. 40A, § 3. Cases and decisions interpreting this statute have held that a petitioner must meet three criteria in order to obtain relief under this statute. The petitioner must: qualify as a public service corporation, establish that it requires the zoning exemption, and demonstrate that the proposed use of the land or structure is reasonably necessary for the public

convenience and welfare. Save the Bay, Inc. v. Department of Public Utilities, 366 Mass. 667 (1975); Braintree Electric Light Department, EFSB 07-1/D.T.E./D.P.U. 07-5, at 85 (2008).

B. Specific Zoning Exemptions Requested

The Project would be located in an I-3 zone, in which a power plant is a permitted use (Zoning Exemption Petition, at 3). Six specific zoning exemptions were requested. The Company did not allege that the City of Brockton would be unable to provide the zoning relief requested. Rather, the Company asserted that each exemption would be necessary in order to avoid the delay that would result from seeking zoning relief from the City (Zoning Exemption Petition, at 16-20).

1) The gas pipeline proposed to connect the Generating Facility to the existing Algonquin pipeline would go through the C-2 zoning district. The Brockton Zoning ordinance neither specifically allowed nor prohibited public utility structures in said district. The Company requested an exemption from any *implied* restriction that might prevent it from building the pipeline (Petition for Zoning Exemption, at 16-17).

2) The structure with the HRSG enclosure would be 130 feet high; the relevant zoning ordinance restricted buildings in industrial zones to 60 feet in height for a principal building. Consequently, Brockton Power sought an exemption from the height restriction (id. at 17-18). In addition, seven transmission poles, each 85 feet high, were proposed (tr. at 1387, June 12, 2008). While the poles would not be buildings, the Company nevertheless wanted to make sure that the 60 foot height restriction was not deemed applicable to said poles (id.)

3) The Zoning Code restricted ancillary buildings to 25 feet in height. The Petition listed five ancillary buildings that would be part of the Generating Facility, each of which would exceed this height limit. Therefore, Brockton Power requested an exemption from this height restriction as well (Petition for Zoning Exemption, at 18-19).

4) The Generating Facility smokestack would be 250 feet tall. Section 27-16 of the zoning ordinance specifically exempted smokestacks from the height limitations found elsewhere in said ordinance. Nevertheless, Brockton Power requested a specific exemption from all height limitations found in the zoning ordinance in case the "Brockton Building Inspector . . . had a different interpretation" of the ordinance and exemption (Petition for Zoning Exemption, at 19).

5) Two of the transmission poles proposed to carry a utility line linking the Generating Facility to the interconnection substation would lie within the Floodplain Overlay District. Brockton Power would need to obtain a special permit to place said poles in that location. Consequently, the Company requested an exemption from the relevant ordinance in order to "avoid the delay associated with seeking a special permit for special use" (id. at 19-20).

6) Brockton Power requested an exemption from the zoning ordinance that required site plan approval from the Brockton Planning Board for the development of all new industrial buildings "in order to avoid the delay associated with seeking site plan approval and any potential appeals arising therefrom" (id. at 20).

In addition, the Company requested a comprehensive exemption from the zoning ordinances of the City of Brockton on the grounds that "numerous individual exemptions are required and the issuance of a blanket exemption could avoid substantial public harm by serving to prevent delay in the construction and operation of the proposed use" (id. at 12).

C. Is Brockton Power a Public Service Corporation?

The City of Brockton raised the argument that Brockton Power does not qualify as a public service corporation because it has not received an "appropriate franchise" from the Commonwealth, and that the grant of such a franchise is the *sine qua non* of public service corporation status (Initial Brief of the City of Brockton, at 48 – 50 *citing* Save the Bay, Inc. v. Department of Public Utilities, 366 Mass. 667 (1975)). The City admitted that since the Save the Bay decision, the Department has determined that it is not necessary for a petitioner to establish the existence of an appropriate franchise in order to establish public service corporation status (Initial Brief of the City of Brockton, at 48 *citing* Princeton Municipal Light Department, D.T.E./D.P.U. 06-11, at 5 (2007) ("Princeton") and Berkshire Power Development, Inc., D.P.U. 96-104, at 31 (1997)("Berkshire Power"). Nevertheless, the City argued that Princeton and Berkshire Power were wrongly decided and urged the Siting Board to reinstate the grant of an "appropriate franchise" as a required element of all public service corporations Initial Brief of the City of Brockton, at 48).

Brockton Power responded that the Restructuring Act effectuated a change in energy generation that rendered the "appropriate franchise" argument inapplicable (Company Reply Brief at 103). Prior to the Restructuring Act, the generation and sale of energy was exclusively accomplished by vertically integrated utilities (id.). These vertically integrated energy companies enjoyed monopolies in their respective geographical areas (id.). As a result of restructuring, however, "the generation of electricity is now a competitive service that is no longer subject to a monopoly or utility franchise as granted by the state" (id.). Consequently, the Company asserted, no corporations now enjoy the type of franchise referred to in Save the Bay (id. at 104).

D. Are the Exemptions Required?

The City of Brockton argued that the Company failed to meet its burden of showing that an exemption from the zoning section regarding site plan approval would be necessary (Initial Brief of City of Brockton, at 50-52). Brockton argued that the Company should have filed its request for site plan approval with the City at the same time that it filed its Zoning Exemption Petition (id. at 51). If site plan approval had been denied, then the Company could have proceeded with the Zoning Exemption Petition (id.). There is no evidence to indicate, Brockton asserted, that site plan approval would have been withheld (id.). Consequently, according to the

City, there could be no basis on which to conclude that exemption from said approval is required (id.).

In its reply brief, the Company asserted that it is entitled to request an exemption from zoning requirements pursuant to G.L. c. 40A, § 3 (Company Reply Brief at 105-109). The Company stated that it *would have* been entitled to request an override by the Siting Board of an adverse ruling from a local agency, *if one had issued*, pursuant to G.L. c. 164, §§ 69K-69O (id. at 109, n. 45). Nevertheless, the right of the Board to grant a zoning exemption and the right of the Board to override an adverse determination of a municipal agency are two separate and distinct rights (id.). The Company stated that the statutory right to seek a zoning exemption under chapter 40A is not contingent upon a previous adverse determination by any agency (id.). Therefore, Brockton Power argued, there is no merit to the City's argument that the Company should have sought such a determination prior to seeking a zoning exemption (id.).

E. Is the Generating Facility Reasonably Necessary For the Public Convenience and Welfare?

1. Company Position

The Company asserted that its proposed plant would enhance the reliability of the regional electric system by providing 350 MW of dual natural gas/oil generating capacity (Exhs. BP-1, at 1-33; BP-4, at 2-26 to 2-29; AAPPL-1-5; RR-EFSB-16; Tr. 16 at 2, 187-89). The Company cited a number factors:

- demand for peak resources increasing at nearly 2% per year (Exh. BP-4 at 2-26);
- limited capacity additions in recent years (11 MW in 2006) (id.);
- the prospect of substantial unit retirements (Exh. BP-J-1 (Reb) at 8),
- uncertainty regarding the level of regional electrical imports and exports (Exh. BP-JLR-1 (REB) at 10-11);
- the need for "steel-in-the-ground" to back up the regional system's growing reliance on demand response resources (Exh. BP-JR-1 (Reb) at 11-12); and
- the requirement to maintain a sufficient level of reserves (Tr. 16 at 2,233-4, 2,282-3, 2285)

that together threaten the future reliability of the ISO-NE System and would create a general need for additional capacity in ISO-NE. Specifically in the Southeastern Massachusetts ("SEMA") region (within which Brockton is located), the Company stated that there is uncertainty surrounding the continued operation of the Mirant Canal capacity as an indication of need for additional capacity (Tr. 16, at 2189-90).

With respect to forecasted regional needs[29], the Company initially cited the ISO-NE 2006 Regional System Plan, indicating that ISO-NE would need new capacity by 2011-2012 (Exh. BP-4, at 2-26). However, the Company later testified that, based on the capacity and Demand Response added in the February 2008 Forward Capacity Auction and the projected 1.2% growth in peak summer demand forecast in of the 2008 ISO-NE CELT Report[30], ISO-NE might not require additional capacity until the 2013-2014 period assuming continued availability of imports at current levels, and the planned retirement of only the Norwalk, CT generating station (Exh. BP-JR-1 (REB) at 10). The Company's witnesses critiqued the vulnerabilities of the new forecasts (e.g. reliance on large amounts of Demand Response, assumed continued operation of older plants, historic inaccuracy of ISO-NE forecasts, and untested effectiveness of FCM auctions (Exh. BP-JR-1(Reb)(1), at 7-8, 10, 11-12)).

The Company asserted that "because of the critical importance of a reliable supply of electricity, the several-year lead time that is associated with adding new generating facilities and the sudden changes that may occur in market conditions, the Siting Board has determined [in past cases] that need for new generating facilities exists when need is shown within a window of 4-6 years from the proposed online date of the subject facility (Company Initial Brief at 160 *citing* ANP Bellingham, 7 DOMSB 39, 64 (1998); Cabot Power, 7 DOMSB 233, 252-253; U.S. Generating Company, 6 DOMSB 1, at 23 (1997)).

The Company also stated that the operation of proposed facility would result in significant environmental benefits for the ISO-NE region (Exhs. AAPPL-1-5; BP-JLR-1 (REB) at 5). The Company argued that the relatively high efficiency rating of the proposed Brockton plant (6,842 Btu/ kWh versus 7,200 But/kWh for the average existing gas-fired combined-cycle facility[31]) would result in its being designated by ISO-NE to operate at least 70% of the annual

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29 As regards the issue of "Need" the Company relied exclusively on ISO-NE forecasts of need for additional generating capacity (BP-1, at 1-4, 1-5 *citing* ISO-NE October, 2006 New England Regional System Plan). Since the Company's filing with the Siting Board, ISO-NE has modified its forecasts, reflecting slower growth in demand, evidence of new energy conservation and efficiency programs to be enacted by the New England states and the response to the first FCM auction held in February 2008. The ISO-NE 2008 Regional System Plan indicates that there is no need for additional generating capacity until after 2014 (EFSB-4(S), at 3). The ISO-NE 2008 Regional System Plan, dated October 16, 2008, was recently received by the Board and has been added to the Exhibit List as EFSB-4(S). A copy of this document was served electronically on all parties and limited participants.

30 "CELT" stands for Capacity, Energy, Load and Transmission and the CELT report is updated annually by ISO-NE.

31 In its initial Petition (Exh. BP-1, at 1-13), its DEIR (Exh. BP-4, at 2-9) and its FEIR (Exh. EFSB-G-2 (S) (1) at 2-1) Brockton Power described the proposed plant as being a "highly efficient unit" with "a nominal heat rate of 7,226 Btu/kWh. Brockton Power stated that a heat rate of approximately 7,300 would describe the average efficiency of gas-fired combined-cycle power plants added to the ISO-NE system since 1999/2000 (Tr.

hours (Company Initial Brief at 176). As a result of the Brockton plant being dispatched at such a high rate, the Company stated that operation of the proposed plant would back out (i.e. reduce the hours of operation of) other existing, less efficient and more polluting generating facilities within the ISO-NE system (Exhs. AAPPL-1-5; Company Initial Brief at 174-176). The Company conducted modeling of the ISO-NE dispatch program (and assuming the resources acquired in the February 2008 Forward Capacity Auction are in place), the proposed Brockton plant would reduce annual operating hours primarily at older, less efficient gas-fired combined-cycle power plants by about 1-2% (id.). Excluding the resources obtained in the Forward Capacity market and adopting more conservative (higher) assumptions on plant retirements and peak load growth, the Company's modeling showed that operating hours at older gas-fired combined-cycle plants would be reduced 6% and operating hours at the Salem coal-fired facility would be reduced by 1.4% (id.). The Company stated that these projected reductions in operating hours of less efficient plants would reduce annual CO_2 emissions by 68 to137 thousand tons (depending upon assumptions about other resources (generation, demand response, energy efficiency and future demand levels) (id.). The Company projected very limited reductions in NO_x and sulfur emissions as a result of the dispatch of the proposed plant (id.).

2. Other Positions

A. The City of Brockton

The City of Brockton disputes the Company's argument that the operation of the proposed plant would result in a net reduction in regional emissions (City of Brockton Initial Brief at 37). The City of Brockton contends that the Company's modeling of ISO-NE's future dispatch of the region's power plants assuming the Brockton Power plant is constructed is unreliable and that the modeling failed to consider the impact of programs such as RGGI (id. at 38). Finally, the City argues that any evidence of reduced emissions at other existing dirtier facilities should not be allowed to offset local impacts on the City of Brockton (id. at 39).

B. ACE

ACE, representing 11 Brockton and 15 West Bridgewater residents, argued that the Company's claims that its proposed plant will displace operations at existing, dirtier power plants in the region are misleading, inconsistent and lacking evidence of improvements in ambient air quality (ACE Reply Brief at 13). ACE stated that the Company's claims were

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1, at 42). Thus, at 7,226 Btu/kWh the proposed plant could better be described as average rather than highly efficient. However, in its Air Plan (Exh.EFSB-A-1 (S) (1)) and in its testimony during evidentiary hearings, the Company said that the heat rate of the plant would be 6, 876 Btu/kWh (Tr. 19, at 2636). The Company explained that the earlier characterizations of the plant's efficiency had been based on in- house calculations and the rating of 6,876 Btu/kWh was provided by the turbine manufacturer (Siemens) and included more accurate estimates of fuel requirements of other equipment within the power plant (id. at 2636-2638). In other parts of the record, Brockton Power stated that he proposed plant was designed to be water-cooled, which, the Company states is approximately 3% more efficient than an air-cooled plant (Exh. EFSB-A-13).

misleading in that modeling results showed that displacement would occur almost exclusively at other gas-fired co-generation plants rather than at the region's dirtier oil and coal-fired plants. ACE also stated that the Company's modeling results are inconsistent with the Company's representation that its proposed plant would displace "older, inefficient steam-cycle facilities firing fuel oil." Finally, ACE, stated that the Company failed to quantify through modeling the claimed improvements in ambient air quality that would be associated with the displaced plant operations.

3. Precedents & Options

As part of deregulation, the EFSB was specifically precluded from considering the need a generating facility under G. L. c. 164, § 69J ¼. Under the provisions of G. L. c. 40A, § 3, to obtain an exemption from a municipality's zoning regulations, the Company is required to be a public service corporation, to establish that the exemption(s) are required, and to demonstrate that the proposed use of land is "reasonably necessary for the convenience or welfare of the public

The EFSB's February 2008 decision in the case of Braintree Electric Light Department's petition (Braintree, EFSB 07-05 (2008)) to build a 116 MW peaking facility on land owned by the Town of Braintree provides an example of the EFSB weighing the need for and benefits from the proposed use of the site with the environmental impacts of the proposed use and concluding that the need and benefits outweighed the environmental impact. In the Braintree case the EFSB found that the proposed facility would "serve energy needs or provide energy benefits for both project participants and ISO-NE by providing: peaking power at lower cost and with fewer environmental impacts than peaking power from existing peaking generation resources. . . diversity by being capable of burning either oil or natural gas. . . and added capacity and power generation that would be reliably timed and economically and environmentally advantageous to install compared to other possible new capacity…." (id. at 105-106). Having identified a variety of "needs served" and benefits provided by the project, the EFSB then weighed these "needs" and "benefits" against the projected local impacts.

The DPU's decision in 2003 Salem Harbor case (D.T.E. 03-83) provides a different precedent for EFSB considering the public convenience and welfare before granting exemption from local zoning ordinances. In the Salem case the owners of the Salem Harbor generating facility (US Gen New England, Inc.) petitioned for relief from the zoning ordinances of Salem in order to install and operate pollution control equipment which was required according to the terms of an Administrative Consent Order ('ACO")[32]. The plant's owners sought exemption from height and dimensional requirements and from requirements to obtain approval for changes

[32] In June 2003, US Gen New England, Inc. entered into a settlement with the MA Department of Environmental Protection, the City of Salem, the Conservation Law Foundation, HealthLink, the Wenham Lake Association, Clean Water Action and MASSPIRG with respect to U.S. Gen New England's compliance with 310 C.M.R. § 7.29 . The terms of that settlement are contained in the June 19, 2003 Administrative Consent Order # ACO-NE-03-7001.

to existing non-conforming structures. The Department concluded that the emission control project was necessary for compliance with DEP's 7.29 Regulations and the Salem Harbor ACO and would provide environmental benefits through substantial reductions in emissions of NO_X and SO_2 from the Salem Harbor power plant. The Department determined that the benefits would outweigh any adverse local impacts, and, therefore, the project would serve the public convenience and welfare.

Assuming that Brockton Power meets the other requirements for obtaining zoning exemptions (being a public service corporation and requiring the requested exemptions in order construct the plant), the Energy Facilities Siting Board has a number of options available to it in how it takes into consideration the Company's position.

1. EFSB must determine whether or not the proposed use of land would serve the "public convenience and welfare." If the proposed land use is found to "serve the public convenience and welfare," the EFSB may determine, after review of the need for the requested exemptions in particular respects, that one or more exemptions should be granted or that no exemptions are required.

2. The EFSB may determine that the demonstration of "public convenience and welfare" is insufficient to justify granting any zoning exemptions. (Note: the Company may avail itself of the option of applying for required approvals or variances under the provisions of the Brockton By-laws. Recall that the proposed location within Oak Hill Industrial Park is already zoned for a power plant, so a use variance would not be required.)

F. The Request for a Comprehensive Zoning Exemption

In addition to the specific zoning exemptions it requested, Brockton Power also asked for a comprehensive zoning exemption (Zoning Exemption Petition at 12). As reasons therefore, Brockton Power argued that the Department has granted comprehensive exemptions, "where, as here, numerous individual exemptions are required and the issuance of a blanket exemption could avoid substantial public harm by serving to prevent delay in the construction and operation of the proposed use" (id.). This rationale, however, has been rejected by the Department (Princeton at 37).

The Company's legal expert asserted that unless a comprehensive exemption could be granted, it would not be possible for the Company to obtain the necessary financing (tr. at 1402-1403). Mr. Wallenstein asserted that without a comprehensive exemption, it would be unlikely that banks would provide the necessary loans (id.). The Intervenors and Senator and Representative Creedon did not address this issue.

G. Precedents and Options

Regarding the need for the grant of an "appropriate franchise" in order for an entity to qualify as a public service corporation (*see* Zoning Issues, section C, *supra*), the Department has spoken on this matter in a number of cases. For example, in Princeton Municipal Light Department, D.T.E./D.P.U. 06-11 (2007), the Department stated that: "it is not necessary for a

petitioner to demonstrate the existence of 'an appropriate franchise' in order to establish public service corporation status" (Princeton at 5). Additionally, the USGen New England, Inc., D.T.E. 03-83 (2005) (a/k/a Salem Harbor) held that: "the Department has determined that a lack of a franchise is not a barrier to obtaining public corporation status" (USGen New England at 12). Consequently, the Department has previously rejected the argument that an appropriate franchise is the *sine qua non* of a public service corporation.

On the issue of whether the zoning exemptions requested are required (*see* Zoning Issues, section D, *supra*), precedent requires that the Company bear the burden of proof on this issue. Braintree Electric Light Department ("BELD"), EFSB 07-1, D.T.E./D.P.U. 07-5, Final Decision at 87 (2008); *see also,* New York Cellular Geographic Service Area, Inc., D.P.U. 94-44, at 18 (1995).

The Company sought a comprehensive zoning exemption on the grounds that "numerous individual exemptions are required" (Petition for Zoning Exemption at 12; *see also* Zoning Issues, section F, *supra*). In the recent case of Princeton Municipal Light Department, D.T.E./D.P.U. 06-11 (2007), however, the Department specifically rejected this reason for granting a comprehensive exemption. Consequently, precedent argues against granting a comprehensive zoning exemption on those grounds.

VI. SECTION 72

Brockton Power's final petition was filed under G.L. c. 164, § 72; it sought permission to construct approximately 3,000 feet of 115 kV overhead line and related facilities which would connect the Generating Facility to the electric grid. General Laws chapter 164, § 72, provides that the Department may approve a section 72 petition if it determines that said line is necessary and will serve the public convenience and is consistent with the public interest. Consequently, if the Board approves construction of the Project, it may also approve construction of the transmission "tap" line as necessary to connect the Project to the Grid (*see* NSTAR Electric, EFSB 04-1, D.T.E. 04-5/04-7).

In response to comments to the DEIR, the Company decided to slightly change the route and configuration of the transmission lines (Company Initial Brief, at 72-73). As a result, both the EMF impacts and the cutting or trimming of trees along the right of way for the lines would be significantly reduced (id. at 73, 116-117; *see also*, Initial Brief of National Grid at 7-12). The Company, however, has not yet obtained all easements necessary to implement its proposed changes to the route (City of Brockton Initial Brief at 53). Consequently, the City argued, the route of said lines was left unresolved at the close of the record (City of Brockton Initial Brief at 53). Until this issue is resolved, Brockton argued, the section 72 petition should be denied (id.). In response, the Company, citing to Town of Andover v. Energy Facilities Siting Board, 435 Mass. 377, 395 (2001), argued that an applicant need not have a property right in the site or, by implication, in the route of a transmission line, in order to obtain approval under section 72 (Company Reply Brief at 115). The same argument is advanced by National Grid, which cites to Town of Sudbury v. Department of Public Utilities, 343 Mass. 428, 433 (1962) (Reply Brief of National Grid at 2-3).