

COMMONWEALTH OF MASSACHUSETTS
Energy Facilities Siting Board

)	
Petition of Exelon West Medway, LLC and)	
Exelon West Medway II, LLC to Construct a New)	EFSB 15-01
Generating Facility in the Town of Medway)	
Pursuant to G.L. c. 164, § 69J¼)	
)	
)	
Petition of Exelon West Medway, LLC and)	
Exelon West Medway II, LLC for Exemptions)	D.P.U. 15-25
from the Zoning Bylaw of the Town of Medway)	
Pursuant to G.L. c. 40A, § 3)	
)	

TENTATIVE DECISION

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November 4, 2016

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ABBREVIATIONS

BACT	Best Available Control Technology
BANCT	Best Available Noise Control Technology
<u>Berkshire Power</u>	<u>Berkshire Power Development, Inc.</u> , D.P.U. 96-104 (1997)
<u>Braintree Electric</u>	<u>Braintree Electric Light Department</u> , 16 DOMSB 78 (2008)
<u>Brockton Power</u>	<u>Brockton Power Company, LLC</u> , 17 DOMSB 157 (2009)
Btu	British thermal unit
BVW	Bordering Vegetated Wetlands
CACI	Clean Air Construction Initiative
CAIR	Clean Air Interstate Rule
CECP	Clean Energy and Climate Plan
CO	carbon monoxide
CO ₂	carbon dioxide
CRWA	Charles River Watershed Association
CTG	Combustion Turbine Generator
dB	un-weighted decibels
dBA	A-weighted decibels
DOMSB	Decisions and Orders of Massachusetts Energy Facilities Siting Board
EFSB	Energy Facilities Siting Board
EIA	U.S. Energy Information Agency
EIR	Environmental Impact Report
EEA	Executive Office of Energy and Environmental Affairs
EJ	Environmental Justice
ENF	Environmental Notification Form

EPC	Engineering, Procurement and Construction
ERCs	Emission Reduction Credits
ERPG-1	American Industrial Hygiene Association's Level 1 Emergency Response Planning Guideline
<u>Eversource Hopkinton</u>	<u>NSTAR Electric Company d/b/a Eversource Energy, D.P.U. 15-02 (2015)</u>
FCA	Forward Capacity Auction
FERC	Federal Energy Regulatory Commission
FRM	Federal Reference Method
FRP	Facility Response Plan
<u>Footprint Power Certificate</u>	<u>Footprint Power Salem Harbor Development LP, 19 DOMSB 280 (2014)</u>
<u>Footprint Power</u>	<u>Footprint Power Salem Harbor Development LP, 19 DOMSB 151 (2013)</u>
G.L. c.	Massachusetts General Laws chapter
GE	General Electric
GEP	Good Engineering Practice
GHG	greenhouse gases
gpd	gallons per day
gpm	gallons per minute
GWSA	Global Warming Solutions Act, St. 2008, c. 298
HAPs	Hazardous Air Pollutants
HCA	Host Community Agreement
I/I	Inflow and infiltration
IVW	Isolated Vegetated Wetland
ISO-NE	ISO-New England

<u>Kain</u>	<u>Kain v. Department of Environmental Protection</u> , 474 Mass. 278 (2016)
kV	kilovolt
kW	kilowatt
kWh	kilowatt-hour
LAER	Lowest Achievable Emission Rate
lbs.	pounds
LEDs	light emitting diodes
LNG	liquefied natural gas
LOS	Level of Service (traffic grade at an intersection)
MAAQs	Massachusetts Ambient Air Quality Standards
MADPH	Massachusetts Department of Public Health
MassDEP	Massachusetts Department of Environmental Protection
MassDOT	Massachusetts Department of Transportation
MCP	Massachusetts Contingency Plan, 310 C.M.R. § 40.00 <u>et seq.</u>
MEPA	Massachusetts Environmental Policy Act
$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
mG	milligauss
MGD	million gallons per day
<u>Montgomery Energy</u>	<u>Montgomery Energy Billerica Power Partners LP</u> , 16 DOMSB 317 (2009)
MW	megawatts
MWh	megawatt-hour
<u>MVRP</u>	<u>New England Power Company d/b/a National Grid</u> , D.P.U. 15-44/15-45 (2016)
NAAQS	National Ambient Air Quality Standards

NEMA/Boston	Northeast Massachusetts (load zone)
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NOI	Notice of Intent
NSPS	New Source Performance Standards
NSR	New Source Review
O&M	operating and maintenance
OSHA	Occupational Health and Safety Administration
PILOT	Payment in Lieu of Taxes
PM	particulate matter
PM _{2.5}	particulates 2.5 microns or smaller
PM ₁₀	particulates 10 microns or smaller
ppm	parts per million
PSC	public service corporation
PSD	Prevention of Significant Deterioration
psig	pounds per square inch gauge
<u>PVEC</u>	<u>Pioneer Valley Energy Center</u> , 17 DOMSB 294 (2009)
RFA	Riverfront Area
RGGI	Regional Greenhouse Gas Initiative
<u>Russell Biomass 2008</u>	<u>Russell Biomass LLC</u> , D.T.E./D.P.U. 06-60 (2008)
<u>Russell Biomass/WMECO</u>	<u>Russell Biomass LLC/Western Massachusetts Electric Company</u> , 17 DOMSB 1 (2009)
ROW	right-of-way
<u>Salem Cables</u>	<u>New England Power Company d/b/a National Grid</u> , 20 DOMSB 129 (2014)
SCR	Selective Catalytic Reduction

SEMA/RI	Southeast Massachusetts/Rhode Island (load zone)
7Q10	seven-day low flow with ten-year return frequency
SF ₆	sulfur hexafluoride
SILs	Significant Impact Levels
<u>Sithe West Medway</u>	<u>Sithe West Medway Development, LLC</u> , 10 DOMSB 274 (2000)
<u>Sithe Mystic</u>	<u>Sithe Mystic Development, LLC</u> , 9 DOMSB 101 (1999)
Siting Board	Energy Facilities Siting Board
SO ₂	sulfur dioxide
SPCC Plan	Spill Prevention, Control and Countermeasure Plan
SWMI	Sustainable Watershed Management Initiative
TAG	The Analysis Group
TMP	Traffic Management Plan
TPS	Technology Performance Standards
tpy	tons per year
UAW	Unaccounted for Water
ULSD	Ultra Low Sulfur Distillate fuel oil
USEPA	U.S. Environmental Protection Agency
VOCs	volatile organic compounds
WMA	Water Management Act

Pursuant to G.L. c. 164, § 69J¼, the Massachusetts Energy Facilities Siting Board hereby [approves], subject to the conditions set forth below, the Petition of Exelon West Medway, LLC and Exelon West Medway II, LLC to construct a 200 megawatt simple-cycle dual-fueled electric generating facility, and ancillary facilities, on the site of an existing Exelon generating facility on Summer Street in the town of Medway, Massachusetts. Pursuant to G.L. c. 40A, § 3, the Siting Board also [approves] Exelon’s Petition for certain exemptions from the Town of Medway Zoning Bylaw.

I. INTRODUCTION

A. Description of the Proposed Project

Exelon West Medway, LLC and Exelon West Medway II, LLC (together, “Exelon,” “Company,” or “Petitioner”) propose to construct a new electric generating facility, capable of generating 200 megawatts (“MW”) of electricity (“Facility”), and ancillary facilities (together, “Project”), in the town of Medway, Massachusetts.

1. The Proposed Generating Facility Site

The Company proposes to locate the proposed Facility on an approximately 13-acre site (“Facility site”) within a larger 94-acre Exelon-owned site on Summer Street in Medway (“Summer Street site”) (Exhs. EX-19, at 1-1; EFSB-G-1(S1)). The Summer Street site currently contains an existing Exelon West Medway, LLC electric generating facility (“existing facility”), which is located on a five-acre site (“existing facility site”) to the north of the proposed Facility site (Exh. EX-1, at 1-4).¹ NSTAR Electric Company d/b/a Eversource Energy (“Eversource”) uses 54 acres of the Summer Street site, to the west of the existing and proposed facility sites, for

¹ The existing facility consists of three peaking units fueled by ultra low sulfur distillate (“ULSD”) fuel oil, with a combined capacity of 135 MW. The existing facility has been in operation on the Summer Street site since 1970 (Exh. EX-1, at 4-118). In 2000, the Siting Board approved the construction of a 540-MW peaking facility on the site, proposed by Sithe Energies. Sithe West Medway Development LLC, 10 DOMSB 274 (2000) (“Sithe West Medway”). That facility was never built. The existing facility has been owned and operated by Exelon West Medway, LLC since 2002 (id. at 4-118). The proposed Facility would be owned and operated by Exelon West Medway II, LLC (Exh. EX-1, at 1-7).

a 345 kilovolt (“kV”) switchyard, a 115 kV switchyard, and transmission lines owned and operated by Eversource (id.).

2. The Proposed Generating Facility and Ancillary Facilities

The proposed generating Facility would be a dual-fuel (natural gas and USLD), simple-cycle, quick-start, peaking facility, capable of generating 200 MW (nominal) of electricity (Exh. EX-1, at 1-1).² The main components of the proposed Facility are two General Electric (“GE”) LMS100 simple-cycle peaking combustion turbines generators (“CTGs”), each with a net nominal output of 100 MW (id.). The turbines would be equipped with pollution control equipment including selective catalytic reduction (“SCR”) and carbon monoxide (“CO”) oxidation catalysts, closed-cycle dry cooling, and noise attenuation features (Exh. EX-19, at 1-2). The Company has proposed the installation of two 160-foot-high exhaust stacks for the turbines (id.).

Other major components of the proposed Project include four above-ground storage tanks: a 1,000,000-gallon fuel oil storage tank; a 450,000-gallon demineralized water storage tank; a 500,000-gallon raw water storage tank; and a 12,000-gallon aqueous ammonia tank (Exhs. EX-1, at 1-11; EFSB-G-1(S1)). Additionally, the Project would include a 15,700-square-foot building housing a control room, and administrative, maintenance, and warehouse areas (Exh. EX-19, at 1-2). As part of the Project, the Company plans to install a 55-foot-high sound wall around the Facility turbine area, and a 20-foot-high sound wall on the Summer Street site property line, adjacent to an existing daycare center (Exh. EX-1, at 4-81). The Company plans to construct an interior perimeter road within the Summer Street site (id. at 1-11).

The natural gas interconnection for the proposed Facility would consist of a new approximately 3,000-foot-long 750 pounds per square inch gauge (“psig”) twelve-inch diameter underground pipeline from the Facility site to an existing Algonquin Gas Transmission Company (“Algonquin”) pipeline to the northwest of the site (Exhs. EX-1, at fig. 1.1-1; EX-19, at 1-2;

² ISO-NE defines a quick-start, or fast-start, facility as “a generation unit that can start up and be at full load in less than 30 minutes, which helps with recovery from contingencies and assists in serving peak demand.” [<https://www.iso-ne.com/participate/support/glossary-acronyms>]

EFSB-G-17). Exelon would construct this pipeline connection to the Algonquin system (Exh. EFSB-G-16). The Facility would have an electrical interconnection at the existing Eversource switchyard on the Summer Street site (Exh. EX-1, at 1-5). Exelon would construct an approximately 1,200-foot, three-phase 115 kV overhead circuit from the proposed Facility to the Eversource switchyard (Exh. EX-1, at 1-5).³ The Facility's operational water would be supplied primarily by a well that Exelon would drill on the Summer Street site and secondarily by an underground pipeline from the Town of Millis municipal water system (Exh. EX-8, at 15). The Company also proposes to contract with firms that would deliver back-up water by truck from off-site locations for use during water supply contingencies (Exh. EX-19, at 1-10 to 1-11).

The Company stated that the primary purpose of the proposed Facility is to provide additional capacity for the Southeastern Massachusetts/Rhode Island ("SEMA/RI") load zone in ISO-New England ("ISO-NE") to help meet energy demand during peak times; the Facility also would provide quick-starting back-up for intermittent renewable energy sources such as wind and solar energy (Exh. EX-19, at 1-3). Exelon successfully bid 195 MW of capacity into ISO-NE's Forward Capacity Auction ("FCA") 9 in February 2015 (Exh. EX-1, at 1-9). Exelon's capacity supply obligation begins on June 1, 2018, and the proposed Facility is obligated to be available to produce electricity by that date (Exh. EX-19, at 1-4).

³ In its Brief filed with the Siting Board on February 29, 2016, Eversource requests explicit approval of certain upgrades to Eversource's switchyard, which Eversource characterizes as "ancillary facilities integral to the Facility's interconnection" (Eversource Brief at 2). These ancillary facilities consist of: (1) replacing the cable bus with a four-inch copper bus and adding copper cable line; (2) replacing the line terminal switch with a disconnect switch; (3) replacing a coupling capacitor voltage transformer and junction box with all associated control cables and conduits; (4) installing all necessary supports, conduits, junction boxes, pull boxes, and cables to the junction box; (5) extending the ground grid; and (6) rewiring of control and protection and upgrade as necessary (Eversource Brief at 2, 3). The Siting Board notes that: (1) Exelon has described and requested all electrical components that it would construct to interconnect with Eversource (see Exhs. EX-1, at 1-5; EFSB-G-1(S2)), and (2) Eversource is not a petitioner in this case (EFSB 15-01/D.P.U. 15-25). Furthermore, based on the description of the facilities for which Eversource seeks Siting Board approval, it does not appear that any of the items requires approval by the Siting Board; therefore, the Siting Board declines Eversource's request.

B. Procedural History

Pursuant to G.L. c. 164, §69J¼, the Company filed its Petition to Construct the proposed Facility (“Petition”) with the Siting Board on March 13, 2015, and, pursuant to G.L. c. 40A, § 3, its Second Amended Zoning Exemption Petition (“Zoning Petition”) on September 18, 2015 (together, the “Petitions”).⁴ On April 16, 2015, the Chairman of the Department of Public Utilities issued an order consolidating the Zoning Petition with the Petition to Construct and referring the matter to the Siting Board for review and decision.

The Siting Board conducted a public comment hearing regarding the Petitions in Medway on June 11, 2015. Pursuant to instructions the Presiding Officer provided, the Company published the Notice of Public Hearing/Notice of Adjudication (“Public Hearing Notice”) for the Project once a week for three consecutive weeks, in English in the Boston Globe and the Milford Daily News, and in Spanish in El Mundo.⁵ The Company placed copies of the Petitions in the Medway Town Hall and the Medway Public Library,⁶ and sent copies of the Public Hearing Notice in English, Spanish and Portuguese to the owners of property abutting the Summer Street site, owners of land directly opposite on any public or private street or way, and abutters to the

⁴ Exelon originally filed a zoning exemption petition on March 19, 2015. On May 1, 2015, the Company filed an amended zoning exemption petition. The amended zoning petition sought additional exemptions from the Medway Zoning Bylaw’s height restriction. On May 11, 2015, Medway revised its Zoning Bylaw (Exh. EX-2, at 2). As a result, one of the exemptions Exelon previously requested was no longer needed, and the Zoning Bylaw was renumbered. In response to a request from the Siting Board staff, Exelon filed a second amended zoning petition on September 18, 2015, reflecting the May 11, 2015 amendments. Thus, the Zoning Petition referenced in this Decision is the September 18, 2015, second amended zoning petition (Exh. EX-2) and the referenced Zoning Bylaw is the June 3, 2015 edition of the Bylaw (*id.* at exh. 1).

⁵ The Project is subject to the enhanced public participation and enhanced analysis provisions of the Commonwealth’s Environmental Justice Policy, as the proposed Facility would be located within five miles of Environmental Justice (“EJ”) populations in the towns of Milford and Franklin and exceeds mandatory Environmental Notification Form (“ENF”) and mandatory Environmental Impact Report (“EIR”) thresholds for air emissions under the Massachusetts Environmental Policy Act (“MEPA”) (Exh. EX-6, at 2-25 through 2-30 and Fig. 2-7). See Section V.B, below.

⁶ The Company updated the copies of the Zoning Petition available for public review at Town Hall and the Library each time the Petition was amended (Affidavit of Compliance of Publication, Posting, Service and Placement, June 10, 2015, at 2 (“Kwesell Affidavit”).

abutters within 300 feet of the Summer Street site boundaries. The Company sent copies of the Public Hearing Notice in all three languages to the Medway Town Clerk, the Medway Planning Board, and the Planning Board of each municipality abutting Medway.^{7, 8} Based on linguistic data regarding the population in Medway and surrounding communities, the Presiding Officer arranged for the services of a translator for any Spanish- and Portuguese-speaking attendees at the public comment hearing desiring such assistance.

Four entities filed timely petitions to intervene in the proceeding: the Town of Medway (“Medway”); Conservation Law Foundation (“CLF”); the Charles River Watershed Association (“CRWA”); and Eversource. The Town of Franklin (“Franklin”) submitted a late-filed petition to intervene; the Presiding Officer denied Franklin’s petition to intervene but granted limited participant status.⁹

During the discovery phase of the proceeding, Siting Board staff issued three sets of information requests to Exelon, and one set of information requests each to Medway, CRWA, and CLF. Medway issued one set of information requests to Exelon; CRWA and CLF each issued two sets of information requests to Exelon. Siting Board staff conducted eleven days of evidentiary hearings between December 8, 2015, and January 28, 2016. Exelon presented the testimony of 13 witnesses; CLF presented two witnesses; and CRWA presented one witness. On February 29, 2016, Exelon, CLF, CRWA, Medway, and Eversource filed initial briefs. On March 7, 2016, Exelon, CLF, and CRWA filed reply briefs.

⁷ The Company on May 21, 2015, sent the Public Hearing Notice to the Planning Boards of Millis, Norfolk, Franklin, Bellingham, Milford, and Holliston (Kwesell Affidavit at 2).

⁸ Over 100 written comment letters regarding the proposed Project were filed with the Siting Board over the course of the proceeding, primarily by Medway residents. The comment letters addressed a wide range of topics, focusing in particular on the potential air, water, health, and quality of life impacts that could result from construction and operation of the Project. Commenters at the public comment hearing expressed similar concerns and raised questions, with some in support of the Project, some opposed, and others seeking additional information.

⁹ The intervention deadline was June 25, 2015. Franklin filed its petition to intervene on December 10, 2015. On December 15, 2015, the Presiding Officer orally denied Franklin’s petition to intervene, but granted Franklin limited participant status. On April 26, 2016, the Presiding Officer issued a written ruling memorializing Franklin’s limited participant status and the denial of its petition to intervene (Ruling on Late-Filed Motion to Intervene (April 26, 2016)).

On November 3, 2015, Exelon filed with the Siting Board a copy of a Host Community Agreement (“HCA”) negotiated between Medway and the Company. In its brief in this proceeding, Medway asks the Siting Board to incorporate the HCA into any approval of the Project that the Siting Board might issue. In the event of the Siting Board's approval of the Project, Medway asks the Siting Board to incorporate certain specific provisions of the HCA as conditions into the Siting Board's Final Decision.

The HCA is part of the record evidence in this proceeding, and the Siting Board relies on the Company's commitments in the HCA in its analysis of the Facility. The Siting Board refers to certain provisions of the HCA within its Final Decision, and incorporates some of the HCA provisions as Conditions. However, the HCA is a private agreement between two parties to this proceeding, Exelon and Medway, and therefore, the Siting Board declines to incorporate the full HCA into the Final Decision regarding the Facility, and also declines to assume enforcement responsibilities for the HCA, per se. Where any future deviations from the HCA's provisions alter material facts or assumptions relied upon by the Siting Board in the Final Decision, the Company is obligated to notify the Siting Board in writing so that it may consider whether further inquiry is required.

As discussed in Section IV.B.2, below, on May 17, 2016, the Massachusetts Supreme Judicial Court issued a decision interpreting a key provision of the Massachusetts Global Warming Solutions Act (“GWSA”). See Kain v. Department of Environmental Protection, 474 Mass. 278 (2016) (“Kain”). In Kain, the Court held that GWSA Section 3(d) requires the Massachusetts Department of Environmental Protection (“MassDEP”) to promulgate regulations setting declining annual aggregate greenhouse gas (“GHG”) emissions limits for sources or categories of sources that emit GHGs. Subsequent to the Kain decision, CLF filed a motion with the Siting Board (“CLF Motion”), seeking leave to file supplemental briefing “on the impact of the Kain decision on the Board's consideration of [Exelon's] Petition” (CLF Motion at 2). See Section VIII, below, for the Siting Board's ruling on CLF's Motion.

Siting Board staff prepared a Tentative Decision and distributed it to Siting Board members and all parties and the limited participant for review and comment on November 4, 2016. The parties were given until November 14, 2016 to file written comments on the Tentative Decision. The Siting Board held a public meeting to consider the Tentative Decision on [November 17, 2016], at which the parties and limited participant were invited to present oral

comments to the Siting Board. Comments were presented by_____. After deliberation, the Board directed staff to draft a Final Decision [approving] the Petitions, subject to the conditions set forth below.

C. Jurisdiction and Scope of Review pursuant to G.L. c. 164, § 69J¼

Exelon filed its Petition to construct the proposed Facility pursuant to G.L. c. 164, § 69J¼. Pursuant to G.L. c. 164, § 69J¼, no applicant shall commence construction of a “generating facility” unless a petition for approval of construction of that generating facility has been approved by the Siting Board. Pursuant to G.L. c. 164, § 69G, a jurisdictional “generating facility” is defined as

any generating unit designed for or capable of operating at a gross capacity of 100 megawatts or more, including associated buildings, ancillary structures, transmission and pipeline interconnections that are not otherwise facilities, and fuel storage facilities.

Because the proposed Facility is capable of operating at a gross capacity of 100 MW or more, it is a “generating facility” requiring Siting Board approval under G.L. c. 164, § 69J¼. In accordance with G.L. c. 164, § 69J¼, before approving a petition to construct a generating Facility, the Siting Board must determine that the applicant has met five requirements.

First, the Siting Board must determine that the applicant’s description of the site selection process used is accurate (see Section II, below). Second, if the expected emissions from the proposed facility do not meet the applicable Technology Performance Standard, the Siting Board must determine, based on a comparison with other fossil fuel generating technologies, that the proposed generating facility, on balance, contributes to a reliable, low-cost, diverse regional energy supply with minimal environmental impacts (see Section III, below). Third, the Siting Board must determine that the applicant’s description of the proposed generating facility and its environmental impacts is substantially accurate and complete (see Section IV, below). Fourth, the Siting Board must determine that the proposed generating facility will minimize environmental impacts consistent with the minimization of costs associated with mitigation, control, and reduction of the environmental impacts (see Section IV, below). Fifth, the Siting Board must determine that plans for construction of the proposed generating facility are consistent with current health and environmental protection policies of the Commonwealth and

with such energy policies as are adopted by the Commonwealth for the specific purpose of guiding the decisions of the Board (see Section V, below).

II. SITE SELECTION

A. Standard of Review

The Siting Board's overall mandate, set forth in G.L. c. 164, § 69H, requires the Board to determine whether a proposed energy facility contributes to a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.

G.L. c. 164, § 69H. In the case of a proposed generating facility, G.L. c. 164, § 69J¼ requires the Siting Board to determine whether "plans for the construction of [the] 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. This Section also requires the Siting Board to determine whether an applicant's description of the site selection process used for the proposed generating facility is accurate. G.L. c. 164, § 69J¼. An accurate description of an applicant's site selection process must include a complete description of the environmental, reliability, regulatory, and other considerations that led to the applicant's decision to pursue the facility at the proposed site, as well as a description of other siting and design options the applicant considered. Footprint Power Salem Harbor Development, LP, 19 DOMSB 151, 173 (2013) ("Footprint Power"); Montgomery Energy Billerica Power Partners, LP, 16 DOMSB 317, 333 (2009) ("Montgomery Energy"); Braintree Electric Light Department, 16 DOMSB 78, 90-91 (2008) ("Braintree Electric"). Thus, site selection, together with project design and mitigation, is an integral part of the process of minimizing the environmental impacts of a proposed generating facility, and therefore integral to determining whether the facility contributes to a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost, in accordance with G.L. c. 164, § 69H.

B. Company Proposal

Exelon initially focused its site selection on the ISO-NE market and five Company-owned sites in Massachusetts (Exh. EX-1, at 3-1). The Company identified five primary criteria in its site selection process: (1) history of recent industrial use, preferably for an existing power plant; (2) the ability to develop within a brownfield location; (3) access to a

natural gas pipeline or interconnection; (4) access to an electrical interconnection; and (5) the ability to serve both the SEMA/RI and Northeast Massachusetts and Boston (“NEMA”) load zones in ISO-NE (id. at 3-1 to 3-2; Tr. 3, at 423-424). Exelon stated that it was critical to identify a location for a quick-start facility that could readily and efficiently respond to the needs of the ISO-NE market (Exh. EX-1, at 3-2).

In addition to market conditions, the Company employed several criteria pertaining to location, environment, and community (Exh. EX-1, at 3-6 to 3-8). The Company considered location factors, including: sufficient acreage (a minimum of eight acres); minimal demolition and environmental remediation required; proximity to electric load; availability of natural gas (a pipeline interconnection within one mile); availability of an electrical interconnection; availability of water; compatibility with local zoning and surrounding uses; a limited number of sensitive receptors; and expected ease of permitting (id. at 3-6). The Company considered environmental factors, including: the ability to minimize impacts related to air quality, water consumption, wastewater, wetlands, waterways, noise, land use, historical and archaeological resources, cultural resources, visual aesthetics, traffic, solid and hazardous waste, electric and magnetic fields; and transportation and storage of aqueous ammonia and other hazardous and non-hazardous materials (id. at 3-7). In assessing the community factors of the potential sites, Exelon focused on the level of support from municipal officials and prospective neighbors and the importance to the host community of project-related property tax revenues and jobs (id.).

Exelon focused on sites owned by Exelon affiliates in Massachusetts and identified five candidate sites that met its general objectives (Exh. EX-1, at 3-2). The candidate sites included: West Medway Generating Station;¹⁰ Mystic Generating Station in Everett; Framingham Generating Station; New Boston Generating Station in South Boston; and Fore River Energy Center in Weymouth (id. at 3-4). The Company eliminated Framingham due to limited land available for development, costly and extensive transmission upgrades, the long distance to gas pipeline infrastructure, and limited water availability (id. at 3-3). The Company eliminated New Boston due to limited land availability, costly remediation, and significant opposition likely by the City of Boston (id. at 3-4). Furthermore, a significant portion of the New Boston property was transferred to Massport in December 2014 (id.). Exelon sold Fore River to Calpine

¹⁰ For the purposes of site selection, the term West Medway Generating Station (or West Medway) is synonymous with the existing facility on the Summer Street site.

Corporation in November 2014 and the Company therefore eliminated this site from further consideration (id. at 3-6). Exelon continued its evaluation of the West Medway and Mystic sites in its second stage of site evaluation and applied the location, environmental, and community criteria listed above (id. at 3-3 and 3-5).

The Company stated that the West Medway site offers many benefits including ample available land, compatible land use, available electric transmission and natural gas interconnections, and the opportunity to deliver power into either the NEMA or the SEMA/RI load zones (Exh. EX-1, at 3-5). As noted above, three peaking generating units, with a combined capacity of 135 MW, are currently operating at this site (id.). The Company acknowledged that water supply is a constraint at the site, but it identified several possible approaches, discussed in Section IV.C., below, for meeting the Facility's water needs (id.).

The Mystic site is the current location of three generating units with a combined capacity of over 2,000 MW (Exh. EX-1, at 3-3). The Mystic site comports with many of the site selection criteria Exelon established, including: compatible local zoning and surrounding industrial land uses; available natural gas, electric, and water interconnections; and the opportunity to sell into the NEMA load zone (id.). However, the Company also identified concerns with the Mystic site including: a limited natural gas supply; the need for electric transmission upgrades; access to only the NEMA and not the SEMA/RI load zone; and potential site remediation requirements (id.).

With respect to locational criteria, the Company stated that the West Medway site is superior regarding available acreage, ease of natural gas and electric transmission interconnections, the ability to sell into SEMA/RI and NEMA load zones, and lack of demolition and remediation costs, while Mystic has advantages due to its location in an industrial area with fewer nearby residents, and better availability of water (Exh. EX-1, at 3-8 to 3-9). Exelon stated that the two candidate sites are comparable based on its environmental criteria, but preferred West Medway due to the absence of waterways impacts (no Chapter 91 license would be necessary) and more favorable traffic conditions (id. at 3-9). Exelon regarded the West Medway site as slightly preferable based on community criteria, particularly given the importance to Medway officials of expanding Medway's industrial tax base (id.). In conclusion, the Company determined that both West Medway and Mystic satisfied Exelon's overall site selection criteria;

however, the Company determined West Medway to be preferable overall based on a combination of location, environmental, and community criteria (id.).

The Company stated that it initially evaluated configurations of four combustion turbines at West Medway (for a total of 400 MW), and that it bid 200 MW into SEMA/RI and 200 MW into NEMA in FCA 9 (Exhs. EX-1, at 3-9 to 3-10; EFSB-SS-4; Tr. 3, at 426). However, because only the 200 MW bid into SEMA/RI cleared the market, the Company is proposing two turbines for the site (Exhs. EX-1, at 3-9 to 3-10; EFSB-SS-4). Although the site selection process for West Medway was initially based on a 400 MW facility, the Company evaluated the Mystic site during the site selection process based on a 200 MW resource, as that is the total capacity the Company wanted to sell into NEMA and the Mystic site could not support a 400 MW facility (Tr. 3, at 426-427; RR-EFSB-9).

C. Analysis and Findings

The record demonstrates that the Company's site selection process included locations with existing industrial uses, access to natural gas and electric infrastructure, and the ability to connect to the NEMA and SEMA/RI load zones. The record shows that the Company focused its site selection process on five existing Exelon affiliate generation properties in Massachusetts.

After conducting an initial review of five sites, Exelon identified two preferred sites, the West Medway Generating Facility in Medway and Mystic Generating Station in Everett. Following an additional investigation, the Company concluded that the West Medway site is preferred based on its access to natural gas and electric infrastructure, the availability of buildable land, lower remediation costs, and the opportunity it provides to sell into both the NEMA and SEMA/RI load zones. The Company determined that one disadvantage of the West Medway site is the limited availability of water. However, Exelon concluded that the advantages of the West Medway site outweigh the disadvantages.

With respect to site selection, G.L. c. 164, § 69J¼ provides that a petitioner must meet the requirement that "the description of the site selection process used is accurate." In Town of Andover v. Energy Facilities Siting Board, 435 Mass. 377 (2001), the Supreme Judicial Court of Massachusetts affirmed that the Siting Board's minimum duty with respect to site selection review is to determine whether the petitioner's description of its site selection process is accurate. Here, there is nothing in the record to indicate that the Petitioner's description of its

site selection process is inaccurate. The record shows that the locational, environmental, and community factors that guided the Company's site selection process, and information gathered in the site selection process, led to the selection of a site that contributes to the minimization of the proposed Facility's environmental impacts (see Section IV, below). Accordingly, the Siting Board finds that the Company provided an accurate description of its site selection process and that Exelon's site selection process contributes to minimizing the environmental impacts of the proposed Project.

III. TECHNOLOGY PERFORMANCE STANDARD

The Siting Board's Technology Performance Standard ("TPS") requires a project proponent to prepare an analysis of other fossil fuel generating technologies if the project does not meet one or more of the emissions criteria established by the applicable regulation.

A. Standard of Review

G. L. c. 164, § 69J¼ requires the Siting Board to promulgate a Technology Performance Standard for generating facility emissions. The TPS is to be used solely to determine whether a petition to construct a generating facility must include information regarding fossil fuel generating technologies other than the technology proposed by the petitioner. G. L. c. 164, § 69J¼; 980 C.M.R. §§ 12.00 et seq. If expected emissions of the facility meet the TPS in effect at the time of filing, the petitioner is not required to provide a comparison of the proposed generating facility technology with potential alternative technologies. 980 C.M.R. §§ 12.00 et seq. If the expected emissions of the facility do not meet the TPS in effect at the time of filing, the petitioner must include in its petition a description of the environmental impacts, costs, fuel diversity, and reliability of other fossil fuel generating technologies, and an explanation of why the proposed technology was chosen. Id. The Siting Board must then determine whether the technology selection for the proposed generating facility, on balance, contributes to a reliable, low cost, diverse regional energy supply with minimal environmental impacts. Montgomery Energy at 340; Braintree Electric at 161.

B. Company Proposal

1. Emissions Comparison to TPS

The Company presented a comparison of the proposed Facility's anticipated emissions with the TPS criteria (Exh. EX-1, at 2-1 to 2-4). Exelon calculated the Facility emission rates when firing on natural gas for the five criteria pollutants and 16 non-criteria pollutants (consisting of trace metals and trace metal compounds) for which the Siting Board has set TPS criteria (*id.* at 2-3 to 2-4). The Company, *citing* 980 C.M.R. §§ 12.03(1) and 12.03(2), noted that the TPS regulations require a petitioner to present a TPS analysis for predicted emissions relating only to a proposed project's primary fuel source (Exh. EFSB-TPS-8). As Table 1 below indicates, the Company's analysis, using natural gas as the primary fuel, shows that the Facility would exceed the TPS for two criteria pollutants – carbon monoxide and sulfur dioxide (Exh. EX-1, at 2-3 to 2-4).¹¹ Accordingly, in its Petition, the Company presented an evaluation of other fossil fuel generating technologies (*id.* at 2-4).

Table 1. Comparison of Facility Emissions with TPS for Criteria Pollutants

Pollutant	Facility Emissions (lbs./MWh) ¹	TPS (lbs./MWh)
Nitrogen Oxides ("NO _x ")	0.081	0.120
Carbon Monoxide ("CO")	0.098	0.077
Volatile Organic Compounds ("VOCs")	0.028	0.035
Particulates/PM ₁₀	0.073	0.081
Sulfur Dioxide ("SO ₂ ")	0.023	0.021

(Exh. EX-1, at 2-2).

1. Based on 100 percent load at 50 degrees Fahrenheit.

¹¹ The Company indicated the Facility would not emit non-criteria pollutants included in the TPS (metals and metallic oxides) when firing on natural gas based on United States Environmental Protection Agency's ("USEPA") Compilation of Air Pollution Emission Factors, 5th Edition, AP-42 Section 3-1, Table 3.1-3 "Emission Factors for Hazardous Air Pollutants from Natural Gas-Fired Stationary Gas Turbines" (Exh. EX-1, at 2-3 to 2-4).

Although the proposed Facility's catalyst is designed to remove 96 percent of CO emissions, the Company acknowledged that the Facility's CO emissions still would exceed the TPS by 27 percent (Exh. EX-1, at 2-3). The Company noted that the use of water injection for NO_x control (instead of dry low-NO_x technology) contributes to the CO emission rate being above TPS levels (*id.* at 2-2). The Company indicated that adding additional layers to the CO catalyst (beyond Best Available Control Technology or "BACT") could reduce CO emissions to below TPS levels; however, Exelon indicated that doing so would result in lower fuel efficiency and increased CO₂ emissions per megawatt hour ("MWh") (Exh. EFSB-TPS-1). Accordingly, the Company chose the proposed CO catalyst, which it contends meets BACT for CO control (*i.e.*, 5.0 parts per million ("ppm")) and appropriately balances environmental impacts (*id.*).

With respect to SO₂ emissions, the Company relied on Algonquin pipeline data to determine the sulfur content of pipeline gas based on its maximum sulfur content over a two-year period, ending September 2014 (Exh. EX-1, at 2-3). Based on this information, the Facility's SO₂ emission rate would exceed the TPS level by approximately seven percent (*id.*). The Company indicated that its assumption for sulfur content of pipeline gas is conservative, as most of the time, Algonquin's pipeline gas would not result in SO₂ emission rates above TPS levels for the Facility (*id.*).

2. Alternative Technologies Comparison

The Company's consultant, The Analysis Group ("TAG"), performed an analysis of alternative fossil fuel generating technologies, as required by G.L. c. 164, § 69J¼ and the related TPS regulations, 980 C.M.R. §§ 12.00 *et seq.*¹² TAG considered and eliminated advanced coal-fired generating technologies¹³ and simple-cycle oil-fired turbine facilities due to economic, financial, and environmental permitting constraints specific to New England; the uncertainty

¹² The Company argued that, by referring specifically to "fossil fuels," G.L. c. 164, § 69J¼ does not envision a TPS review of non-fossil alternative resource options such as renewable power, nuclear power, storage technologies, energy efficiency or distributed energy resources (Exh. EX-1, App. F at 28-29).

¹³ TAG considered coal-fired generating technologies including pulverized coal and integrated coal gasification combined-cycle facilities (Exh. EX-1, App. F at 28-32).

surrounding federal requirements to control GHG emissions from new coal-fired generating plants; and the difficulties now associated with permitting either coal- or oil-fired facilities (Exh. EX-1, App. F at 28-32).

The Company asserted that there is a need for dual-fuel peaking facilities in New England, and characterized the Project as a peaking facility (Exh. EX-1, at 1-1 and App. F at 18-20; Tr. 2, at 329, 332, 340, 329-340). Exelon indicated, furthermore, that ISO-NE and the Federal Energy Regulatory Commission (“FERC”) have taken steps to encourage construction and operation in New England of quick-start, dual-fuel, simple-cycle generation facilities (Exh. EX-1, App. F at 18-25). The Company explained that construction of the Facility would help meet load in the SEMA/RI load zone which, even with the Facility, would still remain slightly short of ISO-NE’s projected capacity requirement (id. at 24-25).

In selecting alternative generating technologies, TAG limited its choices to technologies and fuels that it judged as feasible to site in Massachusetts, including only those technologies that depend primarily or solely on natural gas (Exh. EX-1, App. F at 32). TAG identified three categories of fossil-fuel alternatives to compare to its selected GE LMS100 aero derivative simple-cycle technology: (1) two different simple-cycle frame technology gas turbines (Siemens SGT6-5000F and GE 7FA.05 2x0); (2) two natural-gas combined-cycle frame units (Siemens SGT6-5000F 1x1x1 and GE 7FA.05 2x1); and (3) two gas-fired reciprocating engines (the Wärtsilä 18V50DF and the Wärtsilä 18V50SG) (Exh. EX-1, 2-4 to 2-5, App. F at 32-45 and Att. ST/PD-3(a) through 3(c)).

TAG collected information about the respective technologies from various sources including Exelon (regarding the Project), equipment vendors, ISO-NE, and government and industry publications and articles (Exh. EX-1, App. F at 33-34). TAG provided a comparison of the respective technologies based on the TPS criteria of reliability, cost, diversity in energy supply, and environmental impact (id. Att. ST/PD-3). Data from TAG’s analysis are shown in Table 2, below.

Table 2: Reliability Comparison of Alternative Fossil Fuel Technologies

Technology	Ramping Time to Full Load (minutes)	Forced Outage Rate	Unforced Outage Rate	Lead Times: Development/ Construction (months)
GE LMS100 (Proposed)	10	3.00%	1.50%	18/15
Natural Gas Simple Cycle Siemens SGT6-5000	10	8.27%	1.91%	18/15
GE 7FA.05 2x0	10	8.27%	1.91%	18/15
Natural Gas Combined Cycle Siemens SGT6-5000F	45	4.58%	1.83%	24/30
GE 7FA.05 2x1	60	4.58%	1.83%	24/30
Reciprocating Engine Wärtsilä 18V50DF	10	21.09%	2.52%	18/15
Wärtsilä 18V50SG	10	21.09%	2.52%	18/15

(Exh. EX-1, App. F, Att. ST/PD-3(a)).

According to TAG’s evaluation, the GE LMS100 would have either equivalent or superior reliability characteristics to the other technologies (Exh. EX-1, App. F, Att. ST/PD-3(a)).¹⁴ These characteristics include the ramping time for the unit to reach full load; forced outage rates,¹⁵ unforced outage rates,¹⁶ and project development lead time and construction lead time (*id.*; Exh. EX-1, App. F at 37-38). TAG attributed the relatively low outage rates of the GE LMS100 to its quick maintenance periods (Exh. EX-1, App. F at 37). With the exception of the Wärtsilä 18V50SG reciprocating engine, all of TAG’s technology options are dual-fuel capable, adding to their reliability when natural gas supplies may be unavailable (*id.*). The Company maintains that the shorter lead time and construction time for

¹⁴ TAG noted that a reliable electric system needs to be provided with two additional “essential reliability services” which the GE LMS100 provides: (1) voltage support (through the use of reactive power sources); and (2) power frequency management (Exh. EX-1, App. F at 35-36).

¹⁵ A forced outage rate is the percentage of time a unit is unavailable (including both unplanned outage hours and equivalent unplanned derated hours).

¹⁶ An unforced outage rate is the percentage of time a unit is unavailable due to normal, planned maintenance activities.

the GE LMS100 (as with the other peaking units) compared to combined-cycle options, would help ensure that the Project meets its mid-2018 Capacity Supply Obligation period with ISO-NE and thereby addresses system reliability needs for the SEMA/RI load zone (*id.* at 25-25).

TAG's technologies cost comparison data are shown in Table 3, below. TAG presented data indicating that the capital cost per kilowatt ("kW") for the GE LMS100 exceeds capital costs for both of the simple-cycle alternatives, is comparable to the GE combined-cycle unit, but is lower than the Siemens combined-cycle unit and the reciprocating engines (Exh. EX-1, App. F. at 25-42). In contrast, TAG's heat rate data (*see* Table 4) indicate that the fuel use per kilowatt-hour ("kWh") of the GE LMS100 is lower than for both of the simple-cycle alternatives, but it is higher than fuel use of the combined-cycle units and the reciprocating engines (*id.*). According to the Company, TAG's analysis (based on studies performed by Lazard and the U.S. Energy Information Agency ("EIA")) shows that levelized costs of energy for the GE LMS 100 are comparable to other simple-cycle units and reciprocating engines, but approximately double those for the combined-cycle units studied (*id.*).

Table 3: Cost Comparison of Alternative Fossil Fuel Technologies

Technology	Typical Unit Size (MW)	Total Capital Cost (\$millions) ¹	Capital Cost (\$/kW)	Levelized Cost of Energy (\$/MWh)	Fixed O&M Costs (\$/kW-year)	Variable O&M Costs (\$/MWh)
GE LMS100 (Proposed)	100	\$240	\$1,200	\$179-\$230 ² \$106-\$149 ³	\$15.30	\$4.00
Natural Gas Simple Cycle Siemens SGT6-5000	205-417	\$146-\$327	\$711-\$785	\$179-\$230 ² \$106-\$149 ³	\$7.95-\$16.26	\$8.05-\$11.07
GE 7FA.05 2x0	383-396	\$364-400	\$931-\$1,012	(same)	\$13.70-\$25.60	\$4.25-\$4.29
Natural Gas Combined Cycle Siemens SGT6-5000F	302-305	\$472-\$618	\$1,560-\$2,034	\$61-\$87 ² \$61-\$76 ³	\$27.19-\$41.01	\$1.05-\$1.06
GE 7FA.05 2x1	576-595	\$708-\$808	\$1,073-\$1,210	(same)	\$23.30-\$28.30	\$2.60-\$2.63
Reciprocating Engine Wärtsilä 18V50DF	18-20	\$405-\$505	\$2,154-\$2,683	\$179-\$230 ² \$106-\$149 ³	\$20.67-\$35.00	\$10.98-\$11.22
Wärtsilä 18V50SG	18-20	\$363-\$368	\$1,836-\$1,955	(same)	\$14.02-\$15.46	\$10.61-\$10.69

(Exh. EX-1, App. F, Attachments ST/PD-3(a) and ST/PD-3(b)).

Notes:

1. Based on Capital Cost per kW and Typical Unit Size
2. Based on Lazard's "Levelized Cost of Energy Analysis – Version 8.0," September 2014
3. Based on EIA's "Levelized Cost and Levelized Avoided Cost of New Generation Resources in Annual Energy Outlook, 2014"

The Company noted that there are generally tradeoffs between fixed costs (taking both capital costs and fixed operating and maintenance costs (“O&M”) into account) and operating efficiency (taking into account heat rate and variable O&M) of the alternative technologies; higher capital cost units tend to be associated with lower variable costs due to higher efficiency of such units (Exh. EX-1, App. F at 41). Exelon also noted that the GE combined-cycle unit is much larger in capacity than the peaking plant options, and requires a greater total capital investment, even though its per-kW capital costs are on par with the GE LMS100, which could be difficult to recoup (id.).

The Company indicated that, among the class of peaking units studied, the GE LMS100’s relatively low heat rate, its relatively low variable O&M costs, and its higher unit availability would enable it to compete successfully in ISO-NE’s energy and ancillary services markets (Exh. EX-1, App. F at 42). Exelon concluded that the GE LMS100 would run enough to offset its higher capital costs relative to the other peaking units evaluated, and that it offers a “relatively attractive combination of economic attributes” (id. at 39).

With regard to diversity of energy supply, the Company presented evidence pertaining to the overall natural gas supply picture in New England and its availability at the Facility site (Exh. EX-1, App. F at 42-43). Exelon observed that although New England’s overall annual electricity usage peaks during the summer months and New England has sufficient capacity to meet such requirements, the region nonetheless faces a winter-peak reliability challenge (id. at 18-19). According to the Company, 30 percent of the New England region’s winter generation capacity can burn only natural gas and the region therefore faces fuel supply and unit availability constraints during such peak winter periods (id.). The Company noted that despite these natural gas limitations, ISO-NE still projects increasing dependency on natural gas-fired generating capacity in the upcoming years (id. at 20). The Company noted that there are multiple options for firming gas-dependent generation facilities, including dual fuel, greater use of existing liquefied natural gas (“LNG”) facilities, new LNG storage, as well as new pipeline capacity (id. at 23-24). Exelon pointed to an ISO-NE study that found dual-fuel capable generating units to be cost effective options for firming fuel supplies (id.).

The Company noted that the GE LMS100, like other peaking units and combined-cycle units evaluated, has fast ramping and load-following capability that will help support the integration of non-dispatchable and intermittent renewable resources, and would therefore

contribute to a more diverse regional energy supply (Exh. EX-1, App. F at 43). Exelon concluded that, except for a gas-only combined-cycle or peaking unit, which would not help diversify the fuel mix in New England, all of the technologies evaluated are comparable from a diversity point of view (id.).

TAG also provided environmental impact information relevant to a comparison of the alternative technologies, as presented in Table 4, below.

Table 4: Environmental Impact Comparison of Alternative Fossil Technologies

Technology	Heat Rate (Btu/kWh)	CO₂ Emissions on Gas (lbs./MWh)	Site Size (acres)	Water Usage (gallons per day)
GE LMS100 (Proposed)	9,073-9,161	1,078	Existing Site	<100,000
Natural Gas Simple Cycle Siemens SGT6-5000	10,250-10,583	1,219	10	<100,000
GE 7FA.052x0	10,297-10,322	1,224	30	<100,000
Natural Gas Combined Cycle Siemens SGT6-5000F	7,095-7,437	844	20	<100,000
GE 7FA.05 2x1	6,791-6,811	807	40	<100,000
Reciprocating Engine Wärtsilä 18V50DF	8,512	1,012	10	<100,000
Wärtsilä 18V50SG	8,512	1,012	10	<100,000

(Exh. EX-1, App. F, Att. ST/PD-3(c)).

TAG determined that since the GE LMS100 has a lower heat rate than the simple-cycle turbines, it would produce lower CO₂ emissions per MWh than those technologies (Exh. EX-1, App. F at 43). In contrast, TAG's data showed that the GE LMS100 is less efficient than the combined-cycle technologies and the reciprocating engines, so it would also produce higher CO₂ emissions per MWh than those technologies (id. at 43-44). TAG also determined that the GE LMS100 technology has a lower heat rate than many other existing generating units on the grid (such as oil steam, oil/gas units, and gas-fired units) and would displace output at such units, resulting in lower overall CO₂ and other emissions (id. at 44, 59, 60). TAG based this assessment on data that show the marginal generating units on the New England grid are fossil units, and that dispatch of the more-efficient GE LMS100 would lead to lower overall consumption of fossil fuel for a given level of system electrical output (id. at 43).

Regarding land requirements, the Company stated that either of the combined-cycle technologies evaluated would require significantly more land than would the GE LMS100 technology (Exh. EX-1, App. F, Att. ST/PD-3(c)). Exelon indicated that siting a dual-fueled, combined-cycle facility at the Summer Street site would not be feasible as the site is not large enough to accommodate the additional equipment required (RR-EFSB-2). A combined-cycle unit would require additional cooling for the steam cycle and Exelon assumed that elevated air-cooling fans (rather than any wet cooling) would be employed and would be unlikely to comply with MassDEP's noise policy at the Summer Street site without a significant increase in the height of the noise wall surrounding the Facility (or creating a much larger building) (*id.*). According to the Company, this, in turn, would increase the required height of the stacks and increase the resulting visual impacts in the surrounding area (*id.*). Given the size constraints for the site, the Company indicated that a combined-cycle facility would be difficult, if not impossible, to build at the Summer Street site and, in any event, would likely exceed MassDEP's noise limits at nearby sensitive receptors (*id.*). TAG also indicated that a GE 7FA peaker would also require more land than the GE LMS100 technology (Exh. EX-1, App. F, Att. ST/PD-3(c)).

With respect to water usage, the proposed Facility would be air cooled, and would use less than 100,000 gallons per day ("gpd") of water (Exh. EX-1, App. F, Att. ST/PD-3(c)). Given its expectation that other fossil technologies would also be air cooled, with consumption also below 100,000 gpd, the Company did not view water consumption as a distinguishing factor among the competing fossil technology options (Exh. EX-1, App. F at 44). To the extent that a combined-cycle unit was to be built using wet cooling at the Facility site, Exelon indicated that it would require up to 2,000 to 3,000 gallons per minute ("gpm") of water on a sustained basis in warmer weather, and such water supplies are not available at the Facility location (RR-EFSB-2). The Company concluded that the operational efficiency and resulting environmental profile for the GE LMS100 option offer relatively attractive environmental characteristics compared to the other fossil generating technologies studied (Exh. EX-1, App. F at 44).

C. Positions of the Parties

1. CLF

CLF contends that, because the Facility exceeds TPS for two criteria pollutants, CO and SO₂, it is not "state-of-the-art" (CLF Brief at 7, *citing* Exh. EX-1 at 2-2, 2-3). CLF maintains

that the Petition may only be approved if the Siting Board determines that the Facility would, on balance, deliver reliable, cost-effective power “with minimal environmental impacts” when compared to available, “state-of-the-art” fossil fuel generating technologies (id. at 2). However, given its assumption that capacity factors for the Facility would range from 43 to 60 percent, CLF argues that the record “precludes such a determination” (id.). CLF contends that the Facility would not be a “peaking” plant as the Company maintains (Tr. 9, at 1562-1563; CLF Brief at 7). CLF asserts that a peaking plant operates only about 10 to 15 percent of the time, and that the Facility would have an average annual capacity factor between 30 and 60 percent, making it an intermediate-load generating facility (CLF Brief at 7-8, citing Exhs. CLF-8; EX-1, at 4-12; EX-6, at 1-10). CLF maintains that the Company should compare the Facility’s emissions not against those of peaking generating technologies, but against the emissions of other intermediate generating technologies that would be expected to operate at average annual capacity factors within the same 30 percent to 60 percent range as the Facility (id. at 11).

CLF maintains that the Petitioner’s TPS alternatives data indicate that available combined-cycle technologies are as much as 44 percent more efficient than the Facility and would meet TPS emissions criteria (CLF Brief at 12, citing Exh. EX-1, App. F, Att. ST/PD-3(c)). CLF also cited data on another combined-cycle technology that it contends is a viable and superior choice for the Project – the Siemens Flex Plant 10, a dual-fuel, combined-cycle, quick-start generating facility with a capacity of 275 MW per unit that is capable of operating in both peaking and combined-cycle modes (id. at 12-14, citing RR-EFSB-2; RR-CLF-3; RR-CLF-4; RR-CLF-5). CLF represents that the Siemens unit offers greater efficiency and many of the same benefits the Company cites regarding the GE LMS100 (Exh. EX-1, App. F Att. ST/PD-3(c); RR-EFSB-7; CLF Brief at 12).

CLF argues that Company has incorrectly characterized the performance of modern combined-cycle units in support of its proposed simple-cycle Facility (RR-EFSB-2; RR-EFSB-3; RR-EFSB-4; RR-EFSB-5; CLF Brief at 14). CLF contends that state-of-the-art combined-cycle plants are capable of providing the same ten-minute reserve services to the grid that the Facility would be able to provide (RR-CLF-3; CLF Brief at 14). Further, CLF asserts that the Company introduced after-the-fact selection criteria¹⁷ designed to justify its simple-cycle turbine choice of

¹⁷ CLF identifies as after-the-fact selection criteria introduced by the Company: the requirement for 200 MW (rather than the original 400 MW) of fast-start generation;

and exclude more efficient and less polluting combined-cycle technologies (Exh. EX-6, at 2-1; RR-EFSB-2; RR-CLF-3; RR-CLF-4; RR-CLF-5; CLF Brief at 14).

CLF argues that the Company's draft EIR ("DEIR") and final EIR ("FEIR") show that the Facility's expected actual CO₂ emission rate is 1,374 lbs./MWh (under "real-world conditions" such as partial load operation, temperature variation, turbine degradation between maintenance overhauls, and use of ULSD) rather than the 1,078 lbs./MWh cited by TAG which assumed full-load operation using only natural gas (CLF Brief at 12-13, citing Exhs. EX-6, Att. D, at 5-52; EX-9, Att. H, at 1-2).

CLF argues that the Siting Board "must discount – if not reject in its entirety – the Company's TPS Alternatives analysis which was based first, on incomplete or incorrect information regarding the existence and performance of commercially available, quick-start, fast ramping combined-cycle technology, and then later on newly-added Project 'objectives' designed to make selection of anything other than the proposed Facility impossible" (CLF Brief at 15). CLF further asserts that the Siting Board should reject the Company's TPS analysis because, in addition to alleged factual errors, it is premised on the wrong environmental standard. CLF maintains that "the Petition claims no more than that 'the proposed technology has relatively attractive environmental characteristics compared to the other fossil fuel generating technologies' " (id., citing Exh. EX-1 App. F). The legal requirement under G.L. c. 164, § 69J¼, CLF insists, is that the Siting Board may only approve non-TPS compliant technology "with minimal environmental impacts" (id. at 15-16). CLF concludes that the Facility would not, on balance, deliver reliable, cost-effective power with "minimal environmental impacts" when compared with state-of-the-art fossil-fuel generating technologies (id. at 16).

2. Company

The Company asserts that although it performed an analysis of combined-cycle technologies, and responded to additional questions the Siting Board staff and CLF posed,

the ability to ramp across a wide load range (25 to 100 percent load); and operation with unlimited starts and stops and no maintenance penalties (CLF Brief at 14, citing Exh. EX-6 at 2-1).

neither statute nor the TPS regulations require such analysis (Company Brief at 23-25).¹⁸ The Company further argues that, even if combined-cycle technology is properly considered in a TPS review of a simple-cycle facility, such a comparison should only occur if the proposed facility is intended to run as a base load facility and not as a peaking facility (id. at 25-26). By limiting the comparison of alternative technologies to plants that would operate in a similar manner as intended for the proposed facility, the Company asserts that the Siting Board would be making a relevant “apples-to-apples” comparison of “other generating technologies” (id.).

Contrary to CLF’s assertion, the Company maintains that it is not seeking approval for the Facility to be constructed and operated as an intermediate load generating facility (Company Reply Brief at 5). The Company states that “the Facility is being constructed in order to provide power during peak demand (i.e., when the load is high) and to provide operational flexibility and responsiveness to support the region’s growing reliance on intermittent and renewable resources” (id. at 6). The Company contends that the record in this case demonstrates that CLF’s reliance on capacity factor as the element determining whether a facility is a peaking facility is misplaced (id.).

Exelon responds to CLF’s criticism regarding the disparity between the CO₂ emissions rate for the GE LMS100 presented by TAG and the rate reflected in the Company’s air permit applications (and the DEIR/FEIR) (Company Reply Brief at 11). The Company asserts that the air emissions included in the air permit applications reflect “the addition of a 9.5% margin” and are not “real world emissions,” contrary to CLF’s characterization (id., citing Tr. 4, at 715, 737).

The Company maintains that the GE LMS100 “is the most efficient simple-cycle combustion turbine available” (id., citing Tr. 2, at 223). The Company dismisses CLF’s contention that the combined-cycle Siemens Flex Plant 10 could or should be used instead of the proposed GE LMS100 (Company Brief at 38-40). The Company notes that there is only one Siemens Flex Plant 10 operating in the United States, in comparison with 35 GE LMS100 units (id. at 39, citing RR-CLF-5). Exelon contends that developing a successful project that meets

¹⁸ The Company notes that the TPS were developed using combined-cycle facilities exclusively; therefore, it reasons that a comparison of the Facility to combined-cycle technology is inherent in the comparison of the Facility’s emission rates with the TPS criteria, and need not be repeated (Company Brief at 22).

reliability requirements requires using a unit with a demonstrated track record – which the Siemens unit currently lacks (id. at 39). The Company also notes the Siemens unit, which provides up to 150 MW in simple-cycle mode and 275 MW in combined-cycle mode would not be able to deliver the full 200 MW required by Exelon in ten minutes to fulfill its Capacity Supply Obligation to ISO-NE (id. at 40, citing Tr. 4, at 808). The Company also cites the lower efficiency of the Siemens unit when operating in simple-cycle mode (37 percent) versus the GE LMS100 (43 percent) (id., citing Tr. 4, at 808).

Finally, Exelon asserts that the TPS does not require an applicant to demonstrate that its proposed technology is superior to other technologies (Company Brief at 29, citing G.L. c. 164, § 69J¼; Sithe West Medway at n.77). Rather, Exelon maintains that the applicant must provide data relative to other fossil fuel generating technologies and show that, on balance, the proposed technology contributes to a reliable, low-cost, diverse regional energy supply with minimal environmental impacts (Company Brief at 29). The Company contends that such a review was performed, and that the Facility meets the standard (id.). The Company concluded that its proposed Facility, on balance, contributes to a reliable, low-cost, diverse regional energy supply with minimal environmental impacts (id.).

D. Analysis and Findings

The proposed Facility does not meet the TPS emissions criteria established by the Siting Board. See 980 C.M.R. § 12.00 et seq. Therefore, both G.L. c. 164, § 69J¼ and 980 C.M.R. § 12.00 require the Company to provide information regarding other fossil fuel generation technologies, which the Company has done. Failure to meet TPS criteria does not mean that the Siting Board will automatically reject a facility. Montgomery Energy at 326, 340; Braintree Electric at 86, 161; Sithe West Medway at 284, 361. Before we turn to the comparison of the proposed Facility with the alternative fossil fuel generating technologies in the record, we address some initial matters regarding our review of TPS.

The Company argues that there is no requirement to find that a proposed generating technology is superior to other generating technologies (Company Brief at 29). CLF takes the position that the Siting Board must make a comparative determination between the proposed technology and alternatives on the record (including technologies put forth by CLF) and ensure

that an approved facility demonstrate that it is using “state-of-the-art” technology “with minimal environmental impacts” (CLF Brief at 1).

The Siting Board has consistently interpreted and applied the TPS statute and regulations as more than a purely descriptive requirement. Montgomery Energy at 340; Braintree Electric at 161; Sithe West Medway at 361. The Siting Board’s practice since the TPS was first promulgated has been to establish a record and make findings on the relative merits of the proposed facility’s generating technology and alternative fossil fuel technologies in its determination of whether the proposed generating technology on balance contributes to a reliable, low-cost, diverse, regional energy supply with minimal environmental impacts. Montgomery Energy at 340; Braintree Electric at 161; Sithe West Medway at 361. In this proceeding, there is a record that is sufficient to apply this longstanding approach.

The parties also disagree about the appropriate types of alternative generating resources that should be considered for TPS purposes. CLF points to the expected capacity factors of the Facility and asserts that the Facility must, therefore, be compared to combined-cycle plants that are generally described as intermediate or baseload plants. In addition, CLF takes issue with the Company’s description of the Facility as a peaking unit, citing its expected annual capacity factor of 33 percent, and the opportunity for the plant to run at a 43 percent three-year-rolling average capacity factor – with a maximum capacity factor of 60 percent in any given year. The Company maintains that the technology comparison should be guided, first, by the fact that a simple-cycle plant is generally regarded as a peaking plant and, second, that the Company’s intent is to operate the Facility as a peaking plant.

Despite the disagreement between the Company and CLF as to whether the proposed Facility is appropriately characterized as a “peaking” unit, the Company and its consultant provided a diverse group of alternative fossil technologies for the TPS comparison to the proposed GE LMS100 simple-cycle Facility. In addition, the Company evaluated other combined-cycle technologies as CLF and the Siting Board staff had requested.¹⁹

¹⁹ Although the Company submitted a group of alternative technologies for TPS review that included both peaking and combined-cycle technologies, the Company argues that it is required to compare the proposed Facility to other peaking technologies only (Company Brief at 25-26). We reject this argument as having no basis in either the G.L. c. 164, §69J¼, 980 C.M.R. § 12.00, or Siting Board precedent. The Siting Board considers a robust technology alternatives analysis to include a wide range of fossil fuel

The Company performed a detailed comparative assessment of the proposed Facility and alternative fossil fuel generating technologies based on the criteria of reliability, cost, environmental impact, and a diverse regional energy supply. As noted in the standard of review above, the Siting Board determines whether the technology for the proposed generating facility “... on balance, contributes to a reliable, low cost, diverse regional energy supply with minimal environmental impacts.” In every generator case the Siting Board has reviewed to date, including this one, there have been tradeoffs between the proposed technology and the alternative technologies considered in the TPS review. The expectation of such tradeoffs is reflected in the phrase “on balance” in the standard of review. Accordingly, the Siting Board’s TPS review involves consideration of the relative advantages and disadvantages of multiple alternative technologies.

With respect to reliability comparisons, the record shows that the GE LMS100 would have either equivalent or superior reliability characteristics compared to the alternatives. These characteristics include the ramping time for the unit to reach full load, forced outage rates, unforced outage rates, and project development lead time and construction lead time. Given the shortage of required generation capacity in the SEMA/RI load zone, the Siting Board places great importance on the reliability criterion in these circumstances, and finds this to be a key strength of the GE LMS100 technology in comparison with the combined-cycle technologies. While combined-cycle technologies are also capable of following load, and also have quick ramp rates to reach partial load (but take longer to reach full load), the record demonstrates that the GE LMS100 has advantages in key reliability attributes, which will grow in importance in the future with the increasing use of renewable and intermittent technologies on the grid.

With respect to cost comparisons, the GE LMS100 comes with higher capital costs per kW than the other simple-cycle turbines, but this is offset by its higher efficiency (*i.e.*, a lower heat rate) and lower variable O&M costs. The Siting Board notes that, at higher capacity factors, which likely would be permissible under the Facility’s MassDEP air permits, the GE LMS100’s relatively low variable costs would provide further cost advantages relative to the other peaking units. On balance, the Siting Board concludes that the GE LMS100 compares favorably to the other peakers on cost criteria.

technologies. See Montgomery Energy at 340-344; Braintree Electric at 161-164; Sithe West Medway at 361-366.

Comparing the cost profile of a peaking plant, such as the GE LMS100, to a combined-cycle unit is more difficult as the units perform different functions, with combined-cycle units operating as baseload or intermediate plants, and simple-cycle combustion turbines (or reciprocating engines) typically serving as peaking units, with lower capacity factors. The record demonstrates that the combined-cycle units, when run as baseload units, are much more efficient and have lower operating costs than the peaking technologies. However, the record also shows that if combined-cycle plants operate at lower capacity factors, more typical of peaking units, they can actually be less efficient than peaking plants (such as GE LMS100) and also face significant maintenance costs from frequent starts and stops. Given the air permit limitations on the Facility's three-year rolling average and maximum capacity factors, the Siting Board concludes that the GE LMS100 would be a cost-effective generation option in its expected range of operation, in comparison with the alternative technologies.

Turning next to diversity of energy supply, the record shows that all of the technology options evaluated are capable of using natural gas as a primary fuel, and using ULSD as a backup fuel, to increase reliability and diminish the ISO-NE region's significant reliance on gas-only power plants. In addition, peaking facilities support intermittent resources such as renewable energy, facilitating diversity of energy supply. Overall, the GE LMS100 is comparable to the other technologies evaluated with regard to providing a diverse regional energy supply.

With respect to environmental impacts, the CO₂ emissions of the technology options reflect their relative efficiencies, since CO₂ emissions are not typically controlled like other pollutants such as NO_x or CO. The GE LMS100 is more efficient (and emits less CO₂) than the other simple-cycle peakers, but is slightly less efficient than the reciprocating engines, and generally much less efficient than the combined-cycle units when operating as a baseload plant. The GE LMS100 is also among the most compact of the technology alternatives, requiring the fewest acres for siting. As noted by the Company, a combined-cycle option would likely create significant additional noise and visual impacts due to its need for large air cooling fans, additional acreage, and closer proximity to abutters; it could potentially require additional water resources, which are limited at the Summer Street site.

As the record above demonstrates, the GE LMS100 has both environmental advantages and disadvantages compared to the alternatives yet overall offers a positive combination of

environmental performance attributes – particularly for a peaking technology. The Siting Board also recognizes that as a quick start, fast-ramping unit, peaking plants like the GE LMS100 can help facilitate the integration and increasing use of intermittent renewable resources, which, in turn, promotes significant additional environmental benefits.^{20,21}

As described above, the record in this case presents extensive information about the relative advantages and disadvantages of the proposed GE LMS100 technology in comparison with a diverse group of alternative fossil fuel generating technologies. The record shows that the GE LMS100 has relative advantages and disadvantages among the alternatives, with superior reliability, competitive costs, attractive overall environmental attributes, and comparable supply diversity characteristics.

Accordingly, based on our review of record evidence above, the Siting Board finds that construction of this Facility, including the selection of GE LMS100 technology, contributes on balance to a reliable, low-cost, diverse regional energy supply with minimal environmental impacts.

IV. ENVIRONMENTAL IMPACTS

A. Standard of Review

G. L. c. 164, § 69J¼ requires the Siting Board to determine whether the plans for construction of a proposed generating facility minimize the environmental impacts of the proposed facility consistent with the minimization of costs associated with the mitigation, control, and reduction of the environmental impacts of the proposed generating facility. In order to make this determination, the Siting Board assesses the impacts of the proposed facility in eight areas prescribed by its statute – air quality, water resources, wetlands, solid waste, visual

²⁰ The Siting Board notes that the CO₂ emission rates presented by TAG (see Exh. EX-1, App. F, Att. ST/PD-3(c)) for the GE LMS100 (1,078 lbs./MWh) and the alternative technologies are all based solely on natural gas usage, even though the group is comprised of dual-fuel technologies. This consistently applied, but simplifying assumption (plus the 9.5 percent margin used by the Company in its air permit emissions calculations) explain why TAG's CO₂ emissions rate for the Project varies from that reflected in the air permit (1,374 lbs./MWh) (Tr. 4, at 715, 737; CLF Brief at 12).

²¹ The Siting Board also notes that the Company identified a limited number of environmental attributes in its TPS analysis. The Siting Board performs a more extensive analysis of environmental impacts in Section IV.

impacts, noise, local and regional land use, and health – and determines whether the applicant’s description of these impacts is substantially accurate and complete.²² 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 necessarily 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 among conflicting environmental concerns and between environmental impacts and cost. A facility proposal that 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. Footprint Power at 179-180; Montgomery Energy at 346-347; Braintree Electric at 197.

B. Air Impacts

1. Criteria Pollutants

a. Company Proposal

i. Applicable Regulations and Required Permits

Air quality programs administered by the USEPA and MassDEP that apply to the proposed Facility include: (1) National Ambient Air Quality Standards (“NAAQS”);²³

²² The Siting Board also reviews in the Decision the environmental impacts of the Project with regard to traffic and safety.

²³ USEPA has developed NAAQS for the six air contaminants known as criteria pollutants in order to protect public health and welfare (Exh. EX-6, at 4-4). The NAAQS consist of primary and secondary standards (Exh. EFSB-A-1(2)(S1) at 3-3). Primary standards are intended to protect human health (*id.*). Secondary standards are intended to protect public welfare from known or anticipated adverse effects associated with the presence of

(2) Prevention of Significant Deterioration (“PSD”); (3) New Source Review (“NSR”) requirements; (4) New Source Performance Standards (“NSPS”); (5) Hazardous Air Pollutants (“HAPs”) requirements; and (6) the Massachusetts Clean Air Interstate Rule, 310 C.M.R. 7.32 (Exhs. EX-1, at 4-2; EFSB-A-2).

The USEPA classifies all areas of the country as attainment, unclassifiable, or nonattainment with respect to NAAQS for the six criteria pollutants – SO₂, particulate matter (“PM”), nitrogen dioxide (“NO₂”), CO, ozone, and lead (Exh. EFSB-A-1(2) (S1) at 3-2). PM is regulated in two particle-size classes: particulates with a diameter of ten microns or less (“PM₁₀”); and particulates with a diameter of 2.5 microns or less (“PM_{2.5}”), also known as fine particulates (Exh. EX-1, at 4-2, n.9). The Project site is presently classified as attainment or unclassifiable (treated as attainment) for all criteria pollutants except ozone, which is designated as unclassifiable/attainment for the 2008 eight-hour standard, though provisions for moderate nonattainment areas apply since Massachusetts is part of the Ozone Transport Region (Exh. EFSB-A-1(2) (S1) at 3-2, 3-6).

Under the PSD program administered by MassDEP, the Facility must obtain a PSD permit (Exh. EX-1, at 4-4 to 4-6). Under rules of the PSD program, a combustion turbine engine facility is considered a major source if emissions of any criteria pollutant are greater than 250 tons per year (“tpy”) (Exh. EFSB-A-1(2) (S1) at 3-4). Although the Project is not a major source itself, it is considered a modification of a major source, Exelon’s existing facility at the Summer Street site (id.). For a PSD major modification, PSD regulations apply to each pollutant emitted in excess of a defined Significant Emission Rate (id. at 3-4 to 3-5). Based on the applicable emissions criteria, the Facility is subject to PSD review for emissions of NO_x, particulate matter (PM₁₀ and PM_{2.5}), sulfuric acid mist (H₂SO₄), and CO₂ (id.; Exh. EX-1, at 4-5). In order to obtain a PSD permit, an applicant must demonstrate that it has selected BACT and that the project would comply with NAAQS and PSD requirements (Exh. EX-1, at 4-5). In addition, since the proposed Facility’s NO_x emissions exceed the major source

air pollutants, such as damage to property or vegetation (id.). NAAQS have been developed for various durations of exposure (id.). The MassDEP has adopted the NAAQS limits as the Massachusetts Ambient Air Quality Standards (“MAAQS”) (id. at 3-2).

threshold, under the NSR program, the Facility would be required to acquire emission offsets²⁴ and implement Lowest Achievable Emissions Rate (“LAER”) controls for NO_x (Exh. EFSB-A-1(2) (S1) at 3-6 to 3-7). As discussed below, MassDEP issued a Draft PSD Permit for the Facility on October 12, 2016 (Exh. EFSB-A-8(2)).

The Facility also requires an Air Plan Approval from MassDEP pursuant to G.L. c. 111, Section 142 A-O, Chapter 21C, Sections 4 and 6, Chapter 21E, Section 6, and 310 C.M.R. 7.00 “Air Pollution Regulation” (Exh. EX-A-8(1), at 1). The Air Plan Approval allows construction and operation of the Facility (*id.* at 2). The Air Plan Approval contains the NSR approval, and sets out the conditions for emissions control systems, emissions limits, continuous emissions monitoring systems, testing, recordkeeping, and other air pollution control requirements for construction and operation of the facility (*id.*). As discussed below, MassDEP issued a Proposed Air Quality Plan Approval (“Draft Air Plan Approval”) for the Facility on October 12, 2016 (Exh. EFSB-A-8 (1)).

ii. Baseline Air Quality

Exelon presented background air quality measurements based on Federal Reference Method (“FRM”) data from the monitoring station it considered most representative of background pollutant levels at the Project site on the basis of proximity (Exh. EFSB-A-1(2) (S1) at 6-8; EFSB-A-9). The Company obtained all model input data (*i.e.*, for SO₂, CO, NO₂, PM₁₀, and PM_{2.5}) from the MassDEP monitoring station at Summer Street in Worcester (Exh. EX-1, at 4-10). The Summer Street, Worcester, monitoring station is adjacent to a major roadway and in an urbanized area approximately 20 miles west-northwest of the Facility site (Exh. EFSB-A-1(2) (S1) at 6-8). The Company stated that the monitored ambient air quality concentrations demonstrate that background conditions for the evaluated pollutants are in compliance with federal and state ambient air quality standards (*i.e.*, NAAQS and MAAQS) (*id.*; Exh. EX-1, at 4-10).

²⁴ Appendix A of 310 C.M.R. § 7.00 requires offsets for NO_x emissions at a minimum ratio of 1.26 to 1 (Exh. EX-6, at 4-7). NO_x emission offsets may be obtained by either a one-time purchase of rate-based emission reduction credits (“ERCs”), or the same amount of mass-based ERCs for each year of operation (*id.*).

iii. Projected Project Air Emissions

The Company filed a Comprehensive Air Plan Approval Application and one supplement with MassDEP (“Air Plan Application”) (Exhs. EFSB-A-1(2); EFSB-A-1(2) (S1)). The Air Plan Application and supplement contain BACT and LAER analyses for air emissions, as required by MassDEP and USEPA (Exhs. EFSB-A-1(2); EFSB-A-1(2) (S1)).

Projected air emissions for the Facility include emissions from the emergency generator, fire pump, ULSD tank, as well as 500 annual startups and shutdowns of the combustion turbines (50 of these on ULSD) (Exhs. EX-6, at 4-3; EFSB-A-75). The stacks would emit products of combustion from the firing of natural gas or ULSD (*id.*). Proposed air pollution control systems include a water injection and SCR system to control NO_x, as well as an oxidation catalyst for control of CO and VOCs (a precursor to ozone) (Exh. EX-6, at 4-3). The Facility would acquire offsets and implement LAER for NO_x (Exh. EX-1, at 4-6 to 4-7).

Table 5, below, provides a summary of total potential emissions from the Project and the Company’s planned air pollution control measures. The potential emissions listed include four different scenarios: (1) operating at a 60 percent capacity factor (“CF”) (5,256 hours per year), which is the anticipated permit limit for any one year, with the equivalent of 30 days (720 hours per year) of ULSD firing; (2) the maximum three-year average based on the NSPS Subpart TTTT limit of 43 percent three-year rolling average capacity factor including the equivalent of 30 days (720 hours per year) of ULSD firing; (3) a 34.5 percent capacity factor with 15 days of ULSD use, which represents the average of the two years after a full year at a 60 percent capacity factor (three-year annual average capacity factor equals 43 percent); and (4) the Company’s expected typical operating case of a 33 percent capacity factor with ten days (240 hours) of ULSD firing (Exh. EX-6, at 4-2; Tr. 1, at 135-137).

Table 5. Potential Emissions: Comparison across Capacity Factors and ULSD Use

Pollutant	Potential Emissions: 60% CF & 30 days ULSD (tpy)	Potential Emissions: 43% CF & 30 days ULSD (tpy)	Potential Emissions: 34.5% CF & 15 days ULSD (tpy)	Potential Emissions: 33% CF & 10 days ULSD (tpy)	Planned Control Measure
NO_x	66.0	49.8	37.3	35.0	Water Injection/Selective Catalytic Reduction
SO₂	13.4	9.6	7.7	7.4	Low Sulfur Fuels
CO	67.4	48.4	38.7	37.0	Oxidation Catalyst
VOCs	20.7	15.3	11.6	10.8	Oxidation Catalyst
PM	58.2	46.0	32.3	28.7	Use of Natural Gas as Primary Fuel
CO₂	695,875	505,000	394,000	377,000	Primary Use, Natural Gas; Use of Highly Efficient Turbines
Sulfuric Acidic Mist H₂SO₄	12.3	8.8	7.1	6.8	Low Sulfur Fuels

(Exh. EX-6, at 4-3).

Under the NSR program, the Project must obtain NO_x emission offsets at a ratio of 1.26 tons of offsets per ton of the Facility's maximum potential emissions (Exh. EFSB-A-1 (2) (S1) at 3-7). The 66 tpy of maximum potential NO_x emissions predicted from the Facility would require 83 tpy of NO_x offsets (i.e., 66 tpy x 1.26 offset tons/ton = 83 offset tpy) (id.). Prior to obtaining an air permit from MassDEP, Exelon would either acquire 83 tpy of rate-based NO_x ERCs or surrender five years of the mass-based ERCs that it currently holds, or meet the NO_x offset requirement with ERCs from a combination of the two sources (id.). The Company stated that it has so far obtained 31.2 tons of NO_x ERCs (id. at 7-1; Exh. EFSB-A-6).

iv. Project Pollutant Dispersion

As proposed, the Facility would have two stacks, each proposed to be 160 feet tall and 13 feet in diameter, to emit combustion products from the turbines (Exh. EX-6, at 4-3). The Company conducted dispersion modeling for the Project using the AERMOD atmospheric dispersion model, as recommended by the USEPA (Exh. EFSB-A-1(2) (S1) at 6-4).²⁵

Dispersion modeling results show that the highest ground level concentrations would be close to the stacks (Exhs. EFSB-A-4; EFSB-A-5; EX-6, at 3-17; EFSB-A-42). However, as shown in Table 6, below, the modeling shows that Project impacts would not exceed NAAQS.²⁶

Table 6. Project Emission Impacts with Stack Height of 160 Feet

Pollutant	Averaging Period	Significant Impact Level ($\mu\text{g}/\text{m}^3$)	Maximum Projected Impact ($\mu\text{g}/\text{m}^3$)	Exceeds Significant Impact Level?	NAAQS ($\mu\text{g}/\text{m}^3$)
NO ₂	1-hour	7.5	9.0	Yes	188
	Annual	1.0	0.3	No	100
SO ₂	1-hour	7.8	1.4	No	196
	3-hour	25.0	1.5	No	1,300
	24-hour	5.0	0.7	No	365
	Annual	1.0	0.04	No	80
PM ₁₀	24-hour	5.0	9.1	Yes	150
	Annual	1.0	0.2	No	50
PM _{2.5}	24-hour	1.2	6.1	Yes	35
	Annual	0.3	0.1	No	12
CO	1-hour	2,000.0	53.0	No	40,000
	8-hour	500.0	22.4	No	10,000

(Exhs. EFSB-A-(1) (2) (S1) at 6-18, Table 6-9).

²⁵ AERMOD is the acronym for the “American Meteorological Society/Environmental Protection Agency Regulatory Model,” an atmospheric dispersion modeling system for air pollutant emissions from stationary industrial sources.

²⁶ The existing West Medway facilities would not operate concurrently with the proposed Facility at night (Exh. EFSB-A-1(2)(S1) at 8-21). In addition, the Company asserted that, since operation of the Facility on ULSD is limited to 720 hours per year, it is unlikely that the new turbines would run for 24 hours continuously on ULSD (RR-EFSB-19, at 3).

While the Project impacts would not exceed the NAAQS, the air dispersion modeling showed that Project impacts would exceed another set of criteria, Significant Impact Levels (“SILs”),²⁷ for one-hour NO₂ and 24-hour PM_{2.5}/PM₁₀, as shown above in Table 6. Because the Facility would exceed these SILs, the Company conducted cumulative impact modeling of the maximum predicted Facility emissions plus ambient background concentrations for these two criteria pollutants for a NAAQS compliance assessment (Exh. EFSB-A-1(2) (S1), Table 6-12).²⁸

The Company stated that for 24-hour PM_{2.5} the background is 20.7 micrograms per cubic meter (“μg/m³”); the cumulative impact concentrations from West Medway (both proposed and existing facilities) and five other area sources is 6.54 μg/m³ (Exh. EFSB-A-1(2) (S1), Table 6-12).²⁹ Therefore, the total impact plus background for PM_{2.5} is 27.24 μg/m³, which is less than the NAAQS of 35 μg/m³ (id.). According to Exelon, for one-hour NO₂, the background is 92.12 μg/m³ and the cumulative impact concentration from West Medway (both new and existing facilities) and the five other area sources is 62.88 μg/m³; therefore, the total impact plus background for NO₂ is 155.0 μg/m³, which is less than the NAAQS of 188 μg/m³ (id.). Based on this assessment, the Company concluded that the total concentrations for these pollutants are below the NAAQS (id. at 6-20).

The Company stated that emissions from the Facility would be significant with respect to PSD review for NO_x, PM₁₀ and PM_{2.5}, H₂SO₄, and CO₂ (Exh. EX-6, at 4-6, Table 4-5). In the

²⁷ The SILs are numerical values that represent thresholds of insignificant, i.e., de minimis, modeled source impacts that are used as screening tools for a major source subject to PSD to determine the subsequent level of analysis and data gathering required for a PSD permit application (Exh. EX-6, at 4-6, 4-17, 4-25). The USEPA requires air modeling from cumulative sources when SILs are exceeded (Exh. EX-1, at 4-4).

²⁸ The five sources considered in the cumulative impact modeling are ANP Bellingham, ANP Blackstone, ANP Milford Power, Bellingham Cogen, and St. Gobain Containers in Milford (Exh. EFSB-A-1(2)(S1) at 6-19).

²⁹ In addition to modeling the impacts from the new units, the Company’s analysis included modeling of the six existing units (three nominal 45 MW electric generators, each served by two ULSD-fired, simple-cycle combustion turbine sets) at West Medway Station (Exhs. EFSB-A-1(2)(S1) at 6-1; EX-1, at 1-4). The Company proposed that the existing units would not operate between the hours of 11:00 p.m. through 6:00 a.m. concurrently with the proposed Project unless required by ISO-NE to dispatch the unit as a result of a local or regional system contingency (e.g., VAR control or transmission reliability) or Security Constrained Unit Commitment (Exh. EFSB-A-1(2)(S1) at 6-1).

PSD review process, in addition to demonstrating BACT for each significant pollutant regulated, the Company must demonstrate compliance with NAAQS and PSD increments³⁰ for its Project (Exh. EX-6, at 4-6). The Company stated that its PSD application to MassDEP demonstrated compliance with all applicable PSD requirements (id.; Exh. EFSB-A-1(1) (S1) at 5-1 to 5-52).

v. Stack Height and Dispersion

Exelon asserted that a stack height of 160 feet would best balance air quality, visual impacts, and noise impacts³¹ for the Project (Exhs. EFSB-A-5; EFSB-A-24). At the request of Siting Board staff, the Company evaluated pollutant dispersion impacts of an increase in stack height of 15 feet. The Company provided mapping of Project impacts for these two different stack heights, compared points of maximum impact, and evaluated the results of the comparisons (RR-EFSB-19; RR-EFSB-19(1); RR-EFSB-19(2)).³²

Considering the three pollutants predicted to exceed SILs with the 160-foot stack (i.e., 24-hour average PM₁₀, 24-hour average PM_{2.5}, and one-hour average NO₂), the Company's modeling projected only small decreases in Project impact given an increase in stack height from 160 to 175 feet (RR-EFSB-19). At points of maximum impact, Table 7 below shows that if the modeled height is raised to 175 feet, there would be a small reduction in ground-level pollutant concentrations when using natural gas and a somewhat greater reduction in ground-level pollutant concentrations when using ULSD. For example, when firing ULSD, use of the 175-foot stack over 24 hours shows a reduction of approximately 0.5 µg/m³ of PM_{2.5} in most areas and up to a 1.47 µg/m³ maximum increase (id.).

³⁰ A PSD increment is "the maximum allowable increase in concentration that is acceptable to occur above a baseline concentration for a pollutant" (Exh. EFSB-A-1(1)(S1) at 3-3).

³¹ To meet MassDEP noise guidelines, the Company would build noise wall that may result in downwash of Facility air emissions if the stack height is too low (Exh. EFSB-A-24).

³² Good Engineering Practice ("GEP") height for a new emissions stack is set using a formula (the height of nearby structure(s) plus 1.5 times their lesser dimension – height or width) or 65 meters, whichever is greater) (see Exh. EFSB-A-1(2)(S1) at 6-10 to 6-11). The GEP stack height for the proposed Facility would be 213 feet, based on the dimensions of the 55-foot sound wall that would surround the turbine area (Exh. EFSB-A-24). EPA does not allow credit for additional dispersion of pollutants achieved by building stacks higher than GEP stack height; MassDEP incorporates USEPA's GEP guideline (Exh. EFSB-A-25).

Table 7. Maximum 24-Hr PM_{2.5} Ground-Level Concentrations (µg/m³) Predicted for the West Medway Facility with New Turbine Stacks at 160 Feet and 175 Feet

Stack Height	Natural Gas	ULSD
160 feet	3.46	5.07
175 feet	3.16	3.60

(RR-EFSB-17; RR-EFSB-19, at 6).

The Company compared the resulting reduction ground-level concentrations from the Facility against the existing 24-hour ambient PM_{2.5} background concentration of 20.7 µg/m³ and the NAAQS standard of 35 µg/m³ to gauge the significance of the reduction (RR-EFSB-19, at 2). The Company stated that such a reduction would be less than the day-to-day variability of the existing ambient background concentration (*id.*).³³ The Company indicated that a stack height increase to 175 feet would add an incremental cost of \$993,530 to the cost of its proposed 160-foot-high stack (RR-EFSB-17). According to the Company, a still smaller decrease in impact would be achieved if stack height were further increased from 175 to 190 feet – at an incremental cost of \$1,267,774 over the cost of the proposed 160-foot-high stack (Exh. EX-6, at 3-17; RR-EFSB-17). The Company maintains that the additional cost and visibility (*see* Section IV.D) of higher stacks outweigh the small benefits to air pollutant concentrations (Exh. EFSB-A-53; RR-EFSB-19).

vi. Vehicular Emissions

Exelon stated it would require that all heavy construction equipment be fitted with the best available after-engine emission control technology, such as diesel particulate filters or diesel oxidation catalysts, in accordance with the MassDEP Clean Air Construction Initiative (“CACI”) (Exh. EX-19, at 10-1). The Company also stated, however, that construction contractor(s) for the Project would have their own fleets of construction equipment that would broadly vary in age

³³

The Company indicated that the change in modeled average 24-hour maximum PM_{2.5} concentrations for both fuels fell below SILs at individual properties within ½ mile and one mile, in addition to throughout the Company’s 15-kilometer AERMOD modeling area (RR-EFSB-19).

as the life expectancy of such equipment is many years (id.). Therefore, the Company stated that it would encourage – not require – use of contractor equipment meeting the requirements of Tier 4 standards for new equipment, when available (id.).

b. Positions of the Parties

i. CLF

The major focus of CLF's concerns regarding air emissions centers on GHG emissions rather than criteria pollutants; however, some assertions CLF makes relate to both issues. CLF contends that despite the Company's testimony suggesting otherwise, the Company's Petition and the record contain "no limitation on the number of hours or the frequency with which the Facility will be allowed to burn oil outside of the ozone season (May 1 to September 30)" (CLF Brief at 21). Specifically, CLF contends that the only "potentially enforceable emissions limits" contained in the record are those the Petitioner proposed in Part 5 of its Air Permit application, submitted as Attachment D(1) to the DEIR (CLF Brief at 22). CLF considers the enforceable restriction on burning of oil to be not a specified number of hours per year, but total annual amounts of various emissions that were calculated on the assumption of a specified annual number of hours on oil (id. at 22, 23). CLF maintains that the Company's Petition and the MassDEP Air Permit application propose only that the Facility's total annual emissions be limited to an amount calculated by estimating the Facility's emissions if it were to operate at a 60 percent capacity factor in any one year, of which 720 hours (30 days) constitute full-power operations while burning oil (further assuming 450 start-up/shutdown cycles on natural gas and 50 such cycles on oil) (id. at 22, citing Exhs. EX-1, at 4-12; EFSB-A-12; EFSB-G-2). CLF posits that these air permit provisions would, in fact, enable to Facility to operate on oil alone, for up to 4,494 hours in a year (a 50 percent annual capacity factor) (id. at 23).³⁴

³⁴ Using figures CLF cites for CO₂ emissions, 697,036 tons CO₂/year x 2000 lb./ton / (1,551 lb CO₂/MWh x 200 MW) = 4494 hours.

ii. Company

The Company asserts that CLF's contentions about unrestricted oil use are incorrect and that "the record could not be more clear" (Company Reply Brief at 13). The Company states that the express limitation that the Facility will use a maximum of 30 days (720 hours) of ULSD during the months of October through April appears numerous times in the DEIR, the FEIR, the Air Permit Application, and the record in this proceeding (*id.* at 13-14, *citing* Exhs. EFSB-A-40; EX-6, at 1-1, 2-12, 2-20, 3-11, 4-2). Exelon indicates that it proposed this limitation, and it will accept it as a condition (*id.* at 13-14).

With respect to an increase in stack height to 175 feet or 190 feet (a 15- or 30-foot increase in the proposed height), the Company contends that the 175-foot-tall stack would have "very small reductions in air impacts over the 160-foot tall stack, and the 190-foot stack would have insignificant [additional] reductions in air impacts with significant cost impacts" (Company Brief at 65). The Company conducted a further analysis of the 175-foot stack and concluded that when firing natural gas, there is a "negligible impact on maximum modeled 24-hour concentrations of PM_{2.5}" (*id.* at 67). The Company acknowledged that when using ULSD, there are some modeled differences in PM_{2.5} concentrations to the northeast, southeast and southwest, with a reduction of 0.5 µg/m³ in most areas (*id.*). However, Exelon asserts that this reduction would be less than the day-to-day variability of the existing ambient background concentration (*id.*).

c. MassDEP Draft Air Permits

As noted above, on October 12, 2016, MassDEP issued a Proposed Air Plan Approval and a Draft PSD Permit for the proposed Facility (together, "Draft Air Permits").³⁵ The

³⁵ The four documents pertaining to the Facility's air permitting authorizations are: (1) the Proposed Air Plan Approval (Exh. EFSB-A-8 (1)); (2) the Draft PSD Permit (Exh. EFSB-A-8 (2)); (3) a PSD Fact Sheet (Exh. EFSB-8 (3)); and (4) a Notice of Public Hearing and Public Comment Period ("Public Hearing Notice") (Exh. EFSB-A-8 (4)). The Company filed the documents on October 12, 2016, in accordance with the parties' continuing obligation to update Information Request responses (*see* EFSB First Set of Information Requests to Exelon West Medway, LLC and Exelon West Medway II, LLC at par. 4 (July 13, 2015)).

Proposed Air Plan Approval sets out conditions for emission control systems, emission limits, monitoring and testing, record keeping, reporting, and other requirements for all air contaminants emitted by the proposed Facility (Exh. EFSB-A-8(1), at 2). The Draft PSD Permit, issued by MassDEP pursuant to its Agreement for Delegation of the Federal Prevention of Significant Deterioration Program with the USEPA (dated April 2011), parallels the requirements in the Proposed Air Plan Approval, and specifically addresses federal Clean Air Act requirements and related regulations for the design, construction and operation of the proposed Facility (Exh. EFSB-A-8(2)). MassDEP determined in the Draft Air Permits that air emissions from the Facility will not cause a violation of federal and state air quality standards, MassDEP Air Toxics guidelines, nor PSD increments, and that such emissions meet BACT and LAER technology standards and federal standards for Hazardous Air Pollutants (Exh. EFSB-A-8 (2), at 2).

The Draft Air Permits contain much of same information and analysis submitted by the Company to MassDEP in its Air Plan Application and PSD Permit Application, although the Draft Air Permits reflect various updates and additional information and MassDEP's own analysis (Exh. EFSB-A-8(1), at 2). The Proposed Air Plan Approval includes additional limitations on the Company's requested use of ULSD for up to 30 days of full load operation. Specifically, the Proposed Air Plan Approval allows the Facility to use up to 681,120 MMBtus of ULSD (15 days of full load operation) during the non-zone Season (October 1 – May 31) when the market price of ULSD is less than the price of natural gas to the Facility on a dollar-per-MMBtu basis (id. at 68). The Proposed Air Plan Approval also allows for total ULSD use (including any price-based ULSD use described above) of up to 1,362,240 MMBtus (30 days of full load operation) over a yearly period (July 1 – June 30) during specified conditions, such as: (1) an ISO-NE-defined emergency or capacity scarcity; (2) pipeline gas curtailments (regardless of price); (3) the Project is dispatched by ISO-NE pursuant to system reserve requirements or local reserve requirements associated with the load zone in which the Project is located; (4) equipment failure (on-site or off-site) that requires the Project to use ULSD; and (5) commissioning, start-up testing, emissions testing, or modification, repair, and maintenance, requiring the use of ULSD (id. at 68-69).

MassDEP also included in the Proposed Air Plan Approval requirements that create annual declining carbon dioxide equivalent (“CO₂e”)³⁶ caps on all sources of greenhouse gas included in the Project. The Proposed Air Plan Approval requires Exelon to comply with the declining annual CO₂e caps by either controlling the Project's operations to limit actual CO₂e emissions below the applicable year's CO₂e cap, or using over-compliance credits created when the Project's actual annual project-wide emissions of CO₂e are less than the Project's applicable year's CO₂e cap (Exh. EFSB-A-8(1) at 2, 19, Table 17 at Condition 23). This provision is intended to “ensure that this Project will not emit GHG emissions that may cause or contribute to a condition of air pollution, or cause damage or threat of damage to the environment, as required by the state Clean Air Act, M.G.L. c. 111, §§ 142A-142E, MassDEP air regulations, 310 C.M.R. 7.00, and M.G.L. c. 21A, § 8 (*id.*).” MassDEP included this provision to “ensure that the Project's GHG emissions will not jeopardize achievement of the mandated limits to reduce GHG emissions by 25% from 1990 emission levels by the year 2020 and by 80% from 1990 emission levels by the year 2050 as required by the GWSA, and the decision by the Supreme Judicial Court in *Kain*” (*id.* at 2). To demonstrate compliance with the declining annual CO₂e caps, MassDEP has incorporated monitoring, recordkeeping, and reporting requirements into the Proposed Air Plan Approval. The declining CO₂e cap provision of the Proposed Air Plan Approval is addressed further in Section IV.B.2, below.

d. Analysis and Findings

With respect to baseline air quality, emissions impacts, and compliance, the record shows that the Facility would meet applicable air quality standards, including NAAQS, PSD, NSR, and NSPS. The record shows that the turbines selected by the Company and the specified emission controls – including an oxidation catalyst for VOCs and CO and water injection and SCR for NO_x – would be effective in meeting all applicable emission control requirements.

The Siting Board does not share CLF's concern that the Company's use of ULSD is unlimited. There are multiple references to this provision limiting USLD firing to 720 hours of full load operation in the record, and the Siting Board also imposes a condition to this effect

³⁶ CO₂e, or carbon dioxide equivalents, quantifies greenhouse gas emissions as an amount of CO₂ emissions that would have an equivalent global warming potential (Exh. EFSB-A-8(1) at 73).

below. This condition is intended to parallel the limitations included in the MassDEP Proposed Air Plan Approval, or those ultimately included in the Final Air Plan Approval.

Air dispersion modeling studies indicate that emissions from the Facility would not cause any significant diminution of local or regional ambient air quality. Although ambient impacts would exceed SILs established for 24-hour $PM_{2.5}$, 24-hour PM_{10} and one-hour NO_2 (which required the Company to conduct impact cumulative modeling), the modeling indicates that ambient concentrations would not exceed the NAAQS. Compliance with the NAAQS provides an assurance that the proposed Facility would be protective of public health of area residents. MassDEP will render a formal determination on NAAQS compliance in its Comprehensive Plan Approval process.

MassDEP and USEPA also evaluate compliance with LAER and BACT and the NSR Program as part of the Comprehensive Air Plan Approval process. Evidence on the record, including MEPA review and the MassDEP's Draft Air Permits, indicate control of the Facility's air emissions and the consistency of the Facility's design and anticipated operation with LAER, BACT, and NSR Program requirements. The Company has already obtained approximately 36 percent of the NO_x offsets necessary to meet its requirements under the NSR program; it would make up the difference either with additional rate-based NO_x ERCs that it would acquire or with qualified mass-based ERCs that it holds and would surrender.

In order to minimize the visual impacts of the proposed Project, Exelon has proposed stack heights of 160 feet. The Company conducted modeling analyses to determine the extent to which moderate increases in stack height would reduce air quality impacts. An increase in stack height from 160 feet to 175 feet would affect air quality through increased dispersion of pollutants. For the Facility firing natural gas, for example, the predicted maximum 24-hour contributions of $PM_{2.5}$ with 160-foot-high versus 175-foot-high turbine stacks would be $3.46 \mu g/m^3$ versus $3.16 \mu g/m^3$, respectively. The benefits of dispersion from the 175-foot stack height would be greater for the Facility when firing ULSD than for the Facility on natural gas (*i.e.*, $5.07 \mu g/m^3$ versus $3.60 \mu g/m^3$). The Project would meet all applicable air standards operating with either natural gas or ULSD at either of the two considered stack heights.

Increasing the stack height 15 feet above the 160-foot proposed stack height would add an incremental cost to the Project of approximately \$993,530. In Section IV.D, below, the Siting Board reviews the visual impacts of the Project and concludes that the overall visual impacts of

the Project would be minimized with the shorter stack. The Town of Medway opposes the construction of higher stacks if air quality standards can be met at the proposed stack height; no other intervenor commented on stack height. The Facility meets NAAQS; the increment in air pollutant concentrations avoided with an additional 15 feet of stack height is small in proportion to these health-based standards. The Siting Board finds that the proposed 160-foot stack height would minimize air quality impacts consistent with minimizing cost, and would also minimize visual impacts of the Facility.

Nonetheless, while the proposed Facility would meet NAAQS, the Siting Board recognizes that the Facility would add incrementally to concentrations of criteria pollutants, including PM, in the vicinity of the proposed Project. It is consistent with the goals of the Siting Board of minimizing environmental impacts of new energy facilities to consider reasonable additional mitigation for air pollution that goes beyond required compliance with existing regulatory limits. Therefore, the Siting Board directs Exelon to submit, in consultation with Medway, a PM reduction plan to the Siting Board prior to commercial operation of the Facility. The plan shall include: (1) identification and description of feasible and cost-effective PM reduction measures that could be implemented in the vicinity of the Project; (2) the potential cost of such measures; and (3) a proposal for the Company's participation in the implementation of such reduction measures. Further, to limit emission of criteria pollutants, the Siting Board directs the Company to limit operation of the Facility on ULSD consistent with MassDEP's requirements specified in the Proposed Air Plan Approval, or, as otherwise included in the Final Air Plan Approval, when issued.

Since 2010, the Siting Board has required that all jurisdictional projects comply with a diesel retrofit condition in order to limit PM emissions associated with construction equipment. This is the second power plant petition that has come before the Board since the diesel retrofit condition has been incorporated in Board decisions. In Footprint Power, the Siting Board required the Company to comply with the standard diesel retrofit condition. See Footprint Power, at 196, 198-199.

The Company has committed to using ULSD in its construction equipment and to limiting vehicle idling to no more than five minutes. The Siting Board directs that all diesel-powered non-road construction equipment with engine horsepower ratings of 50 and above, and that are to be used for 30 or more days over the course of project construction, have

USEPA-verified (or equivalent) emission control devices, such as oxidation catalysts or other comparable technologies (to the extent that they are commercially available) installed on the exhaust system side of the diesel combustion engine.

2. Greenhouse Gas Emissions Impacts

a. Legislative, Judicial and Regulatory Context

The Global Warming Solutions Act (“GWSA”), enacted in August 2008, is a comprehensive statutory framework to address climate change in Massachusetts. St. 2008, c. 298.³⁷ The GWSA mandates that the Commonwealth reduce its GHG³⁸ emissions by 10 to 25 percent below 1990 levels by 2020, and by at least 80 percent below 1990 levels by 2050. G. L. c. 21N, §3(b). The GWSA authorizes the establishment of legally binding limits on GHG emissions in the Commonwealth, and designates the Secretary of Energy and Environmental Affairs (“Secretary”) and MassDEP as the entities primarily responsible for implementing the GWSA. G.L. c. 21N, §§ 2-5. In particular, Section 3(d) of the GWSA requires MassDEP to promulgate regulations setting declining annual aggregate GHG emissions limits for sources or categories of sources that emit GHGs, to achieve the 2020 limit. G.L. c. 21N, § 3(d).

Pursuant to the GWSA, the Secretary issued the Massachusetts Clean Energy and Climate Plan for 2020 on December 29, 2010 (the “2020 CECP”) and an update dated December 31, 2015 (the “2020 CECP Update”) (together, the “Climate Plan”). In the 2020 CECP, the Secretary set the 2020 state-wide GHG emissions limit at 25 percent below 1990 levels.³⁹

³⁷ The GWSA is codified at G.L. c. 21N, as the “Climate Protection and Green Economy Act.”

³⁸ The GWSA defines GHGs as: “any chemical or physical substance that is emitted into the air and that the department may reasonably anticipate will cause or contribute to climate change including, but not limited to, carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride.” G.L. c. 21N, §1.

³⁹ See Exhs. CLF-22A (2020 CECP); EX-18 (2020 CECP Update).

On May 17, 2016, the Massachusetts Supreme Judicial Court issued a decision finding that MassDEP had not yet issued the GHG-reduction regulations required by GWSA Section 3(d), and it required MassDEP to do so. See Kain. Subsequently, on September 16, 2016, Governor Charles D. Baker issued Executive Order 569, titled “Establishing an Integrated Climate Change Strategy for the Commonwealth” (“Executive Order 569”). Executive Order 569 includes the directive that MassDEP issue regulations pursuant to Section 3(d) no later than August 11, 2017, “to ensure that the Commonwealth meets the 2020 statewide emissions limit mandated by the GWSA” (Executive Order 569, at 3).⁴⁰

The GWSA also includes requirements relating to climate change and GHG emissions for purposes of MEPA which, of relevance to this proceeding, specify: “In considering and issuing permits, licenses and other administrative approvals and decisions, the respective agency, department, board, commission or authority shall also consider reasonably foreseeable climate change impacts, including additional greenhouse gas emissions, and effects, such as predicted sea level rise.” G.L. c. 30, § 61.^{41,42}

⁴⁰ On August 8, 2016, Governor Charles D. Baker also signed into law H. 4568, titled “An Act to Promote Energy Diversity.” The new law requires, among other things, electric distribution companies in Massachusetts to solicit and enter into long-term contracts for the procurement of offshore wind power and other clean energy generation resources. See St. 2016, c. 188.

⁴¹ G.L. c. 164, §69I states that “neither said [D]epartment [of Public Utilities], the [Siting B]oard, nor any other person, *in taking any action pursuant to sections 69I to 69J¼*, inclusive, shall be subject to any of the provisions of sections 61 to 62H, inclusive, of chapter 30” (emphasis added). Thus, if this were a proceeding under G.L. c. 164, § 69J¼, only, the Siting Board would not be required to make MEPA findings, including the Section 61 finding regarding climate change impacts. However, the Company’s Section 69J¼ petition to construct has been consolidated with its G.L. c. 40A, §3 zoning exemption petition into a single docket. Accordingly, the Siting Board must comply with MEPA review requirements in this proceeding and make all required MEPA Section 61 findings. See Section VII.

⁴² This provision was added to MEPA by St. 2008, c. 168, § 2. In 2010, MEPA also issued its Greenhouse Gas Emission Policy and Protocol (“GHG Policy”). The GHG Policy requires certain state agencies to include Section 61 findings, including a finding regarding reasonably foreseeable climate change impacts, in their permits for certain large projects. The Siting Board generally is not subject to the requirements of MEPA, but, in this case, must comply with MEPA.

The Siting Board has a statutory obligation to ensure that, in approving any facility proposed under G.L. c. 164, § 69J¼, “the plans for the construction of the proposed generating facility are consistent with current health and environmental protection policies of the [C]ommonwealth and with such energy policies as are adopted by the [C]ommonwealth for the specific purpose of guiding the decision of the [B]oard.” The Siting Board recognized the GWSA as a “policy of the Commonwealth” in Footprint Power (the only Section 69J¼ petition the Siting Board has decided to date that was subject to the GWSA) and made findings in that case regarding the consistency of the proposed facility with the GWSA.

b. Company Proposal

As part of its GHG emissions analysis, the Company estimated the Facility’s direct CO₂ emissions as well as the Facility’s impact on regional CO₂ emissions from the electric generation sector (Exh. EX-1, App. F at 57-58). The Company anticipated that the GE LMS100 turbines would operate with a CO₂ emission rate of 1,140 pounds per MWh at full load on natural gas (Exh. EFSB-A-1(2) (S1) App. A at 8).⁴³ In its baseline case, presented in the FEIR, the Company estimated the Project’s annual CO₂ emissions at 505,000 tons, based on a 43 percent capacity factor, and 30 days of ULSD use (Exh. EX-6, at 4-2 to 4-3). However, the Company stated that it expected actual annual operation to reflect a 33 percent capacity factor and ULSD use of ten days, producing 377,000 tpy of CO₂ (*id.*).⁴⁴ The Company estimated that the Project would pay between \$2 million and \$4.5 million annually for Regional Greenhouse Gas Initiative (“RGGI”)⁴⁵ allowances based on estimates of the Facility’s direct CO₂ emissions under different

⁴³ The Company proposed in its PSD application a BACT limit of 1,352 pounds CO₂/MWh (gross), including part load operation, natural gas firing, and ULSD firing (Exh. EFSB-A-1(1)(S1) at 5-51).

⁴⁴ For the highest one-year Facility emissions scenario – operation at 60 percent capacity factor, including 30 days of ULSD use, the Company estimated that annual CO₂ emissions would be approximately 695,875 tpy (Exh. EX-6, at 4-3).

⁴⁵ Nine states cooperating in reducing power plant greenhouse gas emissions are part of RGGI. In Massachusetts, RGGI is implemented through (1) MassDEP’s CO₂ Budget Trading Regulations at 310 C.M.R. § 7.70, which require electric generating units equal to or greater than 25 MW to acquire sufficient CO₂ allowances through a regional auction to cover a facility’s emissions (Exh. EX-6, at 4-9, 5-2), and (2) Department of Energy

operating scenarios and recent auction prices of \$6.02 per ton of CO₂ (id. at 5-2, 5-22 to 5-23; Exh. EFSB-A-48).

TAG developed a proprietary model for Exelon to help analyze whether operation of the Facility would result in reduced regional air impacts compared to a base case for New England without the Facility (Exh. EX-1, App. F at 58). The Company submitted results of the model showing the Facility's impact on regional emissions of GHGs, NO_x, and SO₂ from the electric generation sector in New England from June 2018 through 2030 (Exhs. EX-1, App. F Att. ST/PD-4 and ST/PD-5; EFSB-TPS-4(3)).

To conduct its analysis, TAG modeled two scenarios from June 2018 through 2030: a base case for New England in which the Facility is not built or operated; and an alternative case for New England in which the Facility enters service mid-year in 2018 and then continues in operation through 2030 (Exh. EX-1, App. F at 60, Att. ST/PD-4). The Company stated that, although the proposed Project is intended to have an operational life beyond 2030 (and potentially beyond 2050), there are numerous uncertainties in the future that would make modeling past 2030 increasingly speculative and "harder to defend within the Siting Board's adjudicatory process" (id. App. F at 62-66).

The TAG model matches supply and demand in every hour of the time period examined, and calculates the output of power plants in each hour, in order to satisfy forecasted demand in those hours (Exh. EX-1, App. F Att. ST/PD-4, at 1). The model dispatches plants according to their variable costs (reflecting the sum of fuel and non-fuel costs), from lowest cost to highest cost, until total supply equals total demand in that hour; the model then determines generation output and air emissions by plant, and the price for energy in a single New England market zone (id.).

The price for energy in each hour is established by the variable costs of the last generator dispatched to meet that hour's load (Exh. EX-1, App. F, Att. ST/PD-4, at 1). The variable costs of the marginal unit determine the price for energy in that hour, which is repeated for all hours in a given time period, and then price results are aggregated into different time intervals (id.). For each hour in which a generating unit is dispatched, the TAG model produces information about the unit's output (in MWh) and its air emissions (based on the unit's average air emissions rate

per MWh) for CO₂, SO₂ and NO_x (*id.* at 2). Hourly air emissions for dispatched plants are aggregated on an annual basis to produce an estimate of total air emissions by air pollutant (*id.*).

TAG used the following as its key model assumptions: operating assumptions in the Exelon Petition; the ISO-NE demand forecast; a supply outlook from the SNL Financial database of power plants with adjustments (*e.g.*, for retirements and additions, for capacity derating, for outage factors, for imports, and for emissions rates); fossil fuel prices taken from a combination of futures prices and EIA long-term outlook for prices (with adjustments for gas pipeline projects under construction or with regulatory approval, and adjustments for price volatility); and a system topology reflecting a single zone in New England, with imports/exports at the New England grid boundaries (*id.* at App. F Att. ST/PD-4, at 2-13).⁴⁶

Using these assumptions, TAG projected that the Facility would produce a net reduction in overall regional CO₂ emissions of 226,464 tons, cumulatively, for the 2018-2030 period (Exh. EFSB-A-1(1) (S1) App. E at 58). For other pollutants, TAG projected that the Facility would reduce regional emissions of NO_x by 766 tons and SO₂ by 930 tons, cumulatively, for the 2018-2030 period (Exh. EFSB-TPS-4(3)).⁴⁷ Under a higher generating facility retirement scenario requested by CLF, TAG projected that the Facility would displace 126,630 tons of regional CO₂ emissions, cumulatively, for the same time period (Exh. CLF-1-10(1)). TAG calculated that if the Facility were to operate more frequently, the net emissions reduction would be higher (*id.*).

The Company acknowledged that compared to industry-standard dispatch models (such as GE MAPS or PROMOD), the TAG model is simplified and easier to adapt for this proceeding

⁴⁶ TAG's model averaged a 6.22 percent capacity factor for the years 2018-2030, provided in response to Exh. EFSB-TPS-4(1).

⁴⁷ For comparison purposes, TAG provided a scenario analysis based on the ISO-NE 90/10 high-demand forecast in addition to the original modeling analysis in the Petition, which was based on the ISO-NE 50/50 expected demand forecast (Exh. CLF-1-11). In the case of the ISO-NE 90/10 demand forecast, the probability of exceeding the forecast is ten percent (*id.*). There is an equal chance of exceeding the forecast – or not – in the ISO-NE 50/50 demand forecast (*id.*). Using the ISO-NE 90/10 demand forecast, TAG projected that the proposed Project would reduce regional GHG emissions by 484,769 tons, NO_x by 1,574 tons, and SO₂ by 1,863 tons, cumulatively, for the 2018-2030 period (Exh. CLF-1-11(1)). Assuming 90/10 weather, TAG estimated a capacity factor of between 8.0 percent and 9.3 percent for the years 2018 to 2030 (*id.*).

(Tr. 1, at 144). The simplified features of the model include: (1) single zone topology (i.e., no transmission constraints in moving power); (2) instantaneous dispatch with no consideration of run times or ramping rates; (3) the ability of dual-fuel units (such as the proposed Facility) to dispatch on the least expensive fuel in any given hour without ensuring that permit limitations are observed; and (4) no assurance within the model's logic that the total amount of oil or gas use in any given time period is feasible, given the capacity of regional supplies (id. at 150, 175, 178).

The Company also evaluated the GHG impacts associated with the Project's two 115 kV circuit breakers that would use pressurized sulfur hexafluoride ("SF₆") gas for insulation and cooling, with breaker gas pressure monitored for early detection of leakage within the Project control system (Exh. EX-6, at 5-16). Exelon would follow manufacturer-recommended maintenance procedures and industry best practices to avoid leakage and would be responsible for the secure storage, re-use, recycling, or destruction of the SF₆ (id. at 4-10; Exh. EFSB-A-29). MassDEP limits SF₆ emissions from gas-insulated switchgear, and any such emissions would be minimized through the use of sealed equipment in compliance with 310 C.M.R. § 7.72 (Exh. EX-6, at 4-10). The Company estimated a potential SF₆ emission rate of 6.3 tpy of CO₂ equivalent, based on a leak rate estimate of 0.5 percent per year (id. at 5-16; Exh. EFSB-A-1(2) (S1) at App. C). Exelon expected little to no leakage of SF₆ based on the purchase and maintenance of equipment with leakage limits and pressure monitoring (Exh. EX-6, at 5-16). The Company would procure its breakers with maximum leakage rate guarantees (id.; Exh. EFSB-A-71).

The Company proposed various measures to minimize Facility-related GHG emissions. For example, the Administration Building is designed to meet the Massachusetts Stretch (Energy) Code (Exhs. EX-19, at 5-17; EX-20, at 12). The Company anticipates saving 20.9 tpy of indirect CO₂ emissions by using light emitting diodes ("LEDs") instead of fluorescent lighting (Exh. EX-19, at 5-19). Exelon committed to using propane, natural gas heating, or air-source heat pumps to heat the Administration Building, an additional savings of 6.7 to 12.4 tpy of CO₂ (id. at 5-21). In addition, the roof of the Administration Building would be built to accommodate a future solar photovoltaic installation (id. at 5-23).

c. Positions of the Parties

i. CLF

CLF argues that, pursuant to the GWSA, any approval by the Siting Board must include a determination regarding “reasonably foreseeable climate change impacts, including additional greenhouse gas emissions” relating to the [proposed] Facility and “a finding that all feasible measures have been taken to avoid or minimize said impact” (CLF Brief at 5, citing G.L. c. 30, §61). Therefore, CLF contends, unrestricted Facility operations through and beyond 2050 are incompatible with the GWSA and cannot be approved by the Siting Board (id. at 15-16). CLF proposes a declining CO₂ emissions cap to reduce Facility CO₂ emissions (RR-EFSB-31; RR-EFSB-31(1); RR-EFSB-31(2); CLF Brief at 27-28). CLF asserts that the Siting Board cannot avoid its statutory obligation to ensure the Facility’s expected actual GHG emissions are feasibly and cost-effectively minimized (CLF Brief at 44-45, citing G.L. c. 30, §61).

CLF points to the 2020 CECP Update as a basis to contest unrestricted operations of the proposed Facility (Exh. EX-18; CLF Brief at 33-35). CLF contends that the 2020 CECP Update recommends “the expanded availability of clean energy in order to achieve deep [GHG] reductions by 2030 and a fully decarbonized electricity sector by 2050” (CLF Brief at 33-35). To that end, CLF notes that the 2020 CECP Update anticipates annual in-state emissions reductions from the electric power sector of at least 400,000 metric tons of CO₂ every year from 2020 to 2050 (Exh. EX-18, at 54, fig. 14; CLF Brief at 34). CLF contends that the 2020 CECP Update indicates a reduction in annual electric sector emissions from an amount equivalent to about 12.5 million metric tons of CO₂ in 2020 to an amount equivalent to less than 1.25 million metric tons of CO₂ in 2050 (Exh. EX-18, at 54, fig. 14; CLF Brief at 43). CLF further contends that the Siting Board may not approve the Company’s request for unrestricted operation, which, it argues, is expected to add almost 400,000 tons of in-state CO₂ emissions each year (CLF Brief at 34).⁴⁸

CLF asserts that the Petitioner’s model is insufficient to demonstrate the Facility would reduce GHG emissions in the Commonwealth between 2018 and 2030, as the GWSA requires,

⁴⁸ CLF contends that the 2020 CECP Update no longer supports the finding made by the Siting Board in Footprint Power regarding the earlier 2020 CECP; that it would be plausible for the Commonwealth to achieve its mandated GWSA limits for 2050 with some gas-fired generation still part of the grid by 2050 (CLF Brief at 44-45).

regardless of whether the Facility runs at low capacity (i.e., below ten percent) or at higher capacity factors between 30 and 60 percent (CLF Brief at 40-42, citing Exh. EX-18, at 33).⁴⁹ CLF further asserts that the Siting Board has never recognized – and should not recognize in this case – that “displacement” alone is a viable mitigation of direct facility emissions (CLF Brief at 34).

CLF contends that the ability of the Petitioner’s model to accurately predict regional GHG displacement is in doubt, and that the alleged net reduction of overall CO₂ emissions in the region for the 2018-2030 period does not support a determination by the Board that the Facility is likely to reduce emissions within the Commonwealth or on a schedule sufficient for compliance with GWSA-mandated reduction levels (CLF Brief at 41, citing G.L. c. 21N, §3). CLF notes that “non-Commonwealth-specific” regional emission reductions were rejected in the 2020 CECP Update as a basis for calculating GWSA impacts (Exh. EX-18, at 33; CLF Brief at 42). CLF further argues that the Company failed to provide any credible evidence that the Facility will comply with the GWSA between 2030 through 2050 (CLF Brief at 42-44).

CLF also argues that the Petition includes no mitigation of the Facility’s actual expected direct CO₂ emissions (CLF Brief at 34-39, citing Exh. EX-1, at 5-4 to 5-5; Exh. EX-19, App. H at 1). Specifically, CLF argues that: (1) the Company proposes no mitigation to reduce direct actual CO₂ emissions; and (2) the HCA with Medway includes no provision that would meaningfully disincentivize the Facility from burning oil (Exh. EX-7, at 9; CLF Brief at 23-24).⁵⁰

CLF asserts that feasible, cost-effective mitigation of the proposed Facility’s actual expected CO₂ emissions is available (e.g., a declining CO₂ emissions cap and use of LNG instead of ULSD) (Exh. CLF-2, at 12-15; RR-CLF-7, at 2-3; CLF Brief at 24, 27). CLF proposes a cap on the Facility’s CO₂ emissions beginning in 2018 at 148,500 tons per year, equivalent to a

⁴⁹ CLF’s witness asserts that TAG should have used an “industry standard” model such as PROSYM, PROMOD, or PLEXOS instead of a “reduced form of a production simulation model” (Exh. CLF-1, at 7; Tr. 9, at 1599, 1619-20). Because of the model’s alleged proprietary nature, CLF also contends that it was not provided with access to key details regarding the model (Exh. CLF-2-1; Tr. 9, at 1655-1656; CLF Brief at 37).

⁵⁰ As a disincentive for running the Facility on ULSD, a provision in the HCA sets and requires a payment from Exelon to Medway of five dollars per MWh of electricity generated using ULSD (Exh. EX-7, at 9).

15 percent capacity factor and seven days' use of ULSD (Exh. CLF-2, at 16). CLF asserts that setting the declining emissions cap at an emissions level that corresponds to a 15 percent capacity factor would be consistent with the Petitioner's proposal to construct a peaking facility (Exh. CLF-2, at 16; RR-EFSB-31). The cap would remain unchanged until 2030, at which time it would be set to the lower of 148,500 tons, or the annual average of the Facility's actual CO₂ emissions between 2026 and 2030 (Exh. CLF-2, at 16). For 2031 and thereafter, the cap would decline annually by the lesser of 7,425 tons, or five percent of the annual average of actual CO₂ emissions from the Facility between 2026 and 2030 (Exh. CLF-2, at 16). The cap would decline under this yearly decrement, until 2050, at which time the cap would reach zero (Exh. CLF-2; RR-EFSB-31; CLF Brief at 30).

According to CLF's proposal, any excess emissions above the annual cap could be offset by facility-wide actual CO₂ emission reductions from Exelon's Mystic Station, or a retirement of CO₂ credits or allowances (Exh. CLF-2, at 16-17). In any calendar year between 2019 and 2046, the Facility could earn, for each ton that the Facility's annual actual CO₂ emissions are less than the Facility's annual CO₂ cap, one "CO₂ Operating Allowance" (Exh. CLF-2, at 17). Facility CO₂ Operating Allowances may be used to offset Facility actual CO₂ emissions for purposes of complying with the Facility's annual CO₂ cap in any calendar year (Exh. CLF-2, at 17). CLF proposed that CO₂ Operating Allowances created in 2019-2022 be available for offsetting future excess emissions at a 90 percent factor, decreasing to 80 percent (for 2023-2027); 70 percent (for 2028-2031); 60 percent (for 2032-2036); and 50 percent (for 2037-2046). After 2046, no allowances could be created (Exh. CLF-2, at 17). CLF also proposed that Exelon could offset excess CO₂ emissions by purchasing and retiring Class I Renewable Energy Certificates, which would accrue a CO₂ credit equal to the ISO-NE System Annual Average CO₂ Emission Rate, as reported by ISO-NE (Exh. CLF-2, at 17-18).

CLF calculated that imposing a declining emissions cap between 2030 and 2050 would reduce Facility CO₂ emissions by up to a total of 5 million tons (id. citing RR-EFSB-31; Confidential Attach. RR-EFSB-31(3); Confidential Attach. RR-EFSB-31(2)). According to CLF, the use of the declining cap would not limit the operation of the Facility, or prevent its dispatch, but would shift to the Company the cost of GHG emissions above the cap (id.).⁵¹

⁵¹ CLF contends that the declining cap would not limit the Facility's ability to meet all ISO-NE requirements, or the ability of ISO-NE to dispatch the Facility at any time

CLF also argues that requiring the Facility to use LNG rather than oil as its secondary fuel alternative would further reduce Project CO₂ emissions by at least 182,000 tons over the period from 2018 to 2050 (Exh. CLF-2, at 15). By relying on LNG rather than ULSD, CLF asserts that the Company would benefit from lower annual Project costs after making the initial capital investment for LNG capability (id. at 13-14). Based on CLF's estimates, the annual benefit to the Company of choosing LNG rather than ULSD as a secondary fuel would be approximately \$100,000 per year (id.). These cost advantages, according to CLF, would accrue to the Project from differences in the RGGI payments, shipping prices, and ISO-NE Winter Reliability Program payments associated with LNG versus ULSD oil (id.).

ii. Company

Exelon contends that its Facility is consistent with the GWSA. Exelon notes that the GWSA does not impose any restriction or obligation on an individual emissions source (Company Brief at 179). Exelon asserts that the proposed Facility is subject to, and consistent with, Siting Board precedent established in Footprint Power (id.). Like Footprint Power, Exelon contends, its West Medway Facility would be a highly efficient state-of-the-art natural gas facility designed to use “cleaner fossil fuels like natural gas to act as a bridge to a clean energy future...” (id. at 183-184, citing Footprint Power at 30-31).

The Company challenges CLF's recitation of the 2020 CECP Update as selective “cherry picking” to make a dubious claim that the plan calls for the complete elimination of fossil fuel generation by 2050 (Company Reply Brief at 26). The Company points to the 2020 CECP

(including during a Pay-for-Performance scarcity window) or during any year (even after 2049) (RR-EFSB-31; CLF Brief at 30-31). According to CLF, the declining cap would give Exelon a range of options for compliance, and discretion to choose among them to ensure economic efficiency (Exh. CLF-2, at 15-18; RR-EFSB-31(2); CLF Brief at 31). According to CLF, if/when emissions approach the annual cap (in any year after 2030, and for as long as the Facility remains in operation), Exelon could avoid above-cap emissions by including its declining cap compliance costs in its required market bids for either the Facility (or for the Company's affiliate Mystic Generating Station) (Exh. CLF-2, at 16-18; CLF Brief at 31). CLF asserts that this would help ensure that the Facility (or the Mystic plant) is not dispatched – directly avoiding additional emissions. Or, if the Facility were dispatched, CLF asserts that Exelon's bid would include adequate market compensation to account for the cost of obtaining offsets to meet the cap (Exh. CLF-2, at 16-18; CLF Brief at 31).

Update statement that it “focuses on the near-term requirement for emissions reductions by 2020 as required by the GWSA” (id. at 26). The Company contends that the 2020 CECP Update clearly contemplates the operation of efficient gas-fired plants, like the Facility, to meet the 2020 limits of the GWSA (id. at 27). The Company also notes that Figure 14 of the 2020 CECP Update, which depicts how emissions change across sectors over time in one scenario, appears to show that there are still some carbon emissions associated with the electricity supply in 2050 (Exh. EX-18, at 53).^{52,53}

Based on TAG’s analysis of the Facility, Exelon asserts that the Project would lead to a net reduction in overall cumulative CO₂ emissions in the region by at least 226,000 tons for the 2018-2030 period (Exh. EX-19, at 5-28). Exelon contends that if the Facility were to operate more frequently, the net CO₂ reduction would be higher (id.). Therefore, the Company argues that operation of the Facility is itself a GHG mitigation measure (Company Brief at 212).

The Company contends that the record demonstrates that the Facility would reduce GHG emissions on a net basis, even with ULSD use as proposed, and that the more the Facility runs, the more emissions it would avoid by displacing less efficient units (Company Brief at 188). Exelon asserts that CLF’s declining emissions cap proposal would penalize a new, efficient facility while grandfathering existing, less-efficient peaking units with higher emission rates (id. at 200). Requiring the declining cap would inhibit Facility operations when its operations would actually lead to lower CO₂ emissions in New England, producing a result opposite to CLF’s purported goal (id.).

⁵² Exelon asserts that contrary to CLF’s view, the “[2020 CECP Update] does not include two future scenarios with no fossil fuel generation” (Company Reply Brief at 27). Rather, the Company contends, the plan indicates that two separate scenarios are being created and that further analysis of 2030 and 2050 is underway at EEA, but beyond the scope of the 2020 CECP Update (id.). Exelon adds, “[t]he fact is that we do not yet know what the two scenarios will be although there is certainly a suggestion that at least one of the scenarios will include fossil generation in 2050” (id.).

⁵³ With respect to Figure 14, the 2020 CECP Update also notes that “these graphs are intended to illustrate EEA’s intended analytical approach to addressing GWSA requirements as they relate to 2030 and 2050, and do not represent EEA’s expectations regarding emissions in future years. Further analysis of 2030 and 2050 is underway at EEA, but is beyond the scope of this CECP Update” (Exh. EX-18, at 53).

The Company challenges the testimony and assertions by CLF regarding the feasibility of using on-site LNG as a backup fuel for the Project instead of ULSD (Exh. EX-19, at 4-2 to 4-3; Tr. 1, at 33-37). The Company contends that the Summer Street site is constrained and the neighbors would be in close proximity to the LNG facility (Exh. EX-19, at 4-2 to 4-3; RR-CLF-1(1) at 1-4; RR-CLF-1(2).) The Company maintains that the LNG facility would not comply with the Siting Board's LNG requirements for exclusion areas (Tr. 1, at 33-37; RR-CLF-1(1) at 2-3). According to the Company, the LNG facility could take as much as four years to permit and therefore likely could not be operational in time for the Company's FCA 9 commitment; the construction cost would be approximately \$57 million for a 1.9 million-gallon tank (Exh. EX-19, at 4-3). The Company also reports that Medway is strongly opposed to an LNG facility on the Summer Street site (id. at 4-2 to 4-3).

d. MassDEP Draft Air Permits

As noted in Section IV.B.1.c above, on October 12, 2016, MassDEP issued: (1) a Proposed Air Plan Approval; and (2) a Draft PSD Permit for the proposed Facility. MassDEP included in the Proposed Air Plan Approval requirements that create annual declining carbon CO₂e caps ("CO₂e Cap") on all sources of GHGs included in the Project (Exh. EFSB-A-8(1) at 2). The Proposed Air Plan Approval requires Exelon to comply with the declining annual CO₂e caps by either controlling the Project's operations to limit actual CO₂e emissions below the applicable year's CO₂e cap, or using over-compliance credits created when the Project's actual annual project-wide emissions of CO₂e are less than the Project's applicable year's CO₂e cap (Exh. EFSB-A-8(1) at 2). This provision is intended to "ensure that this Project will not emit GHG emissions that may cause or contribute to a condition of air pollution, or cause damage or threat of damage to the environment, as required by the state Clean Air Act, M.G.L. c. 111, §§ 142A-142E, MassDEP air regulations, 310 CMR 7.00, and M.G.L. c. 21A, § 8" (id.). MassDEP included this provision to "ensure that the Project's GHG emissions will not jeopardize achievement of the mandated limits to reduce GHG emissions by 25 percent from 1990 emission levels by the year 2020 and by 80 percent from 1990 emission levels by the year 2050 as required by the GWSA, and the decision by the Supreme Judicial Court in Kain (id.). To ensure compliance with the CO₂e Cap, MassDEP has incorporated into the Proposed Air Plan Approval various monitoring, recordkeeping and reporting requirements (id. at 2-3).

The declining CO₂e Cap included in the Proposed Air Plan Approval requires that at the date of commencement of commercial operation of the Project (anticipated to be 2018), CO₂e emissions shall not exceed 505,000 tpy (equivalent to a 43 percent capacity factor), and, thereafter, the CO₂e Cap shall be reduced by 2.5 percent from the CO₂e Cap of the prior year (Exh. EFSB-A8(1) at 72). Starting in 2025, the CO₂e Cap is reset to 377,000 tpy (equivalent to a 33 percent capacity factor) and continues to decline 2.5 percent annually (*id.*). Exelon can demonstrate calendar year compliance with the CO₂e Cap by either: (1) controlling operations at the Project to limit actual CO₂e emissions to a level at or below the applicable year's CO₂e Cap; or (2) in the event that the Facility is required by its obligations to ISO-NE to ensure a reliable supply of electricity in the Commonwealth, and the resulting actual CO₂e emissions exceed the applicable CO₂e Cap, the Company may demonstrate compliance by retiring "Over Compliance Credits" from prior years of the Facility's operation to offset the amount of the excess emissions (*id.* at 73).⁵⁴

Over Compliance Credits under the CO₂e Cap accrue to the Company in any calendar year when the Project's actual emissions are less than the applicable emissions cap. Overcompliance credits are earned at a specified percentage that decreases over time, according to the following schedule:

- Credits created from 2018-2021: 90 percent
- Credits created from 2022-2026: 80 percent
- Credits created from 2027-2031: 70 percent
- Credits created from 2032-2036: 60 percent
- Credits created from 2037-2046: 50 percent
- No Credits may be created after 2046.

(Exh. EFSB-A-8(1) at 73).

The Proposed Air Plan Approval notes that its schedule of annual emissions reductions of CO₂e for the Facility, and related compliance requirements, shall be modified after the promulgation of any final MassDEP regulation establishing declining annual GHG emissions caps applicable to the Project (Exh. EFSB-A-8(1) at 73). Such regulations would be

⁵⁴ Even with the use of credits, the Facility may not operate at greater than a 43 percent capacity factor over a rolling 36-month period.

promulgated under the authority of section 3(d) of Chapter 21N of the GWSA and Executive Order 569 to ensure that the goals of that statute are met to reduce greenhouse gas emissions in the Commonwealth by 25 percent from 1990 level emissions by the year 2020 (id.).

e. Analysis and Findings

In this section, the Siting Board addresses four GHG questions for the Project: (1) how the Project affects GHG emissions, both direct and indirect; (2) whether the Project meets applicable regulatory requirements; (3) whether the Project is consistent with the GWSA, as a policy of the Commonwealth; and (4) whether the GHG emissions for the proposed Facility comport with the requirement to “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” under Section 69J¼. We address each issue in turn.

i. Expected GHG Emissions

As a fossil fuel generator, the proposed Facility would produce direct emissions of CO₂ from the combustion of natural gas or ULSD during operations. Additional GHG emissions would occur during construction (e.g., construction vehicles and equipment) and operations (e.g., ancillary equipment such as fire pumps or SF₆ leakage from switchgear.) (Exh. EFSB-A-1 (2) (S1) at 5-42 to 5-53). The Company’s estimates of direct CO₂ emissions from the Facility vary widely, reflecting a range of potential capacity factors, varying assumptions about how often ULSD (which emits more CO₂ than natural gas) would be used, and the number of startups/shutdowns during the year. The Company’s expected case assumes a 33 percent capacity factor and ten days oil use, but the Draft Air Permits would allow up to a 60 percent capacity factor in a given year (subject further to the declining CO₂e Cap) and the opportunity to use a quantity of ULSD equivalent to 30 days of full-power operation on ULSD. The annual CO₂ emissions estimates the Company provided ranged from 377,000 tons to 695,875 tons, depending on capacity factor (see Table 5, above). The MassDEP Draft Air Permit’s CO₂e Cap would limit the Facility’s GHG emissions to a maximum of 505,000 tons per year, in the first year of operation (2018) (Exh. EFSB-A-8 (1), at 72).

ISO-NE dispatches generation based on a regional grid, and the TAG analysis was based on regional dispatch. The Company relied on the TAG dispatch model to support its contention

that, despite the production of CO₂ emissions at the West Medway site due to Exelon's operation of the Facility, the overall CO₂ emissions on the New England grid would decrease due to the Facility displacing lower efficiency, higher emitting units, that otherwise would have been dispatched to meet load requirements. The base estimate for this net CO₂ emissions reduction is a total of 226,464 tons between the June 2018 commercial operation date and 2030, corresponding to an average capacity factor of 6.22 percent. Sensitivity analyses show that the reduction in regional net CO₂ emissions could be higher or lower than the base estimate.

In response to a Siting Board request, TAG presented a breakdown of the specific generating units where MWh output reductions were calculated to occur during the 2018-2030 modeled time period. The units identified include plants in Massachusetts and other New England states, across a mix of technologies and fuel types. The reduced operation of individual plants in Massachusetts would inherently result in reduced CO₂ emissions from these plants, contributing to the net regional GHG reductions.

With regard to whether such regional CO₂ emissions reductions would also result in GHG reductions, as measured for GWSA compliance purposes, the Siting Board notes that "statewide greenhouse gas emissions" are defined within G.L. c. 21N, § 1 as "the total annual emissions of greenhouse gases in the commonwealth, including all emissions of greenhouse gases from the generation of electricity delivered to and consumed in the commonwealth, accounting for transmission and distribution line losses, *whether the electricity is generated in the commonwealth or imported*" [emphasis added]. Thus, the reduction of emissions at out-of-state generating facilities (due to the Project, for example) may also serve to reduce the Commonwealth's "statewide greenhouse gas emissions."⁵⁵

CLF contends that the TAG model is a simplified production cost model that does not have the capabilities of other industry-standard models, and is not a reliable predictor of GHG emissions. The Company agrees that the TAG model is a simplified model, but argues that the

⁵⁵ Whether this is the case, or not, depends in part on the detailed calculations of the GHG accounting system established by MassDEP pursuant to its responsibilities under G.L. c. 21N, § 3. Regardless of the results of such an after-the-fact accounting process, the record shows that the Project would have a beneficial effect in reducing regional GHG emissions from the electric grid, through at least 2030. Based on the record in this case, economic dispatch of energy resources indicates that, if the Facility continues to operate after 2030, it would continue to produce net CO₂ emission reductions across the region.

TAG model suffices for the purpose of assessing net avoided CO₂ emissions in the region, and that its simplifying assumptions actually provide more conservative results (*i.e.*, calculating lower net CO₂ reductions). The simplifying assumptions include: single zone topology of the grid (*i.e.*, no transmission constraints); lack of unit commitments; instantaneous unit start/stops; and lack of operational constraints based on fuel supply availability or permit restrictions. All of these simplifications would tend to represent a grid that operates with near-optimal economic efficiency and few real-world constraints. The Siting Board considers these simplifying assumptions acceptable for the purposes of this proceeding as the model would tend to understate emissions reductions. Similarly, TAG's decision to run the dispatch model only through 2030, rather than to the end of the Facility's useful life, reflects appropriate caution about forecasting uncertainties inherent in forecasting for an extended period such as to 2050.

As noted by CLF, there is a significant disparity between the capacity factor the Company requested in its air permit application and in TAG's projections of the Facility's operation. In a high-load sensitivity case (using 90/10 ISO-NE load forecasts), TAG's model determined that increased Facility output results in greater net avoided CO₂ emissions. Although this sensitivity does not address the highest possible capacity factors at which the Facility could operate, it does demonstrate that increased output is correlated with increased avoided emissions. This outcome is consistent with record evidence that the relative efficiency of plants determines both their dispatch order and their relative CO₂ emissions. Therefore, plants tend to run when it is efficient (and less polluting) for them to do so.⁵⁶

In sum, we find that the TAG model adequately demonstrates that the Facility would result in net reductions of CO₂ emissions from electric power generation for New England. The Project would be one of the most efficient fossil fuel peaking units in New England, and would incorporate current BACT/LAER emission controls. Thus, New England fossil units the Facility would displace in the foreseeable future would yield GHG and criteria pollutant emission reductions on a net basis under any plausible modeling scenario. While the actual levels of emission reductions may vary from those shown by the TAG model, we conclude that the overall

⁵⁶ An exception to this general rule would be when ULSD is less expensive than natural gas, and merit dispatch order may not necessarily reflect a strict use of the lowest emitting units available. However, we note that the impact of this exception is somewhat limited as the Company is restricted in the amount of time it may run the Facility on ULSD.

trend of reduced emissions is not in doubt. In addition, the declining CO₂e Cap included in MassDEP's Proposed Air Plan Approval is designed to achieve additional GHG emission reductions.

ii. Compliance with GHG Regulations

As discussed above, a number of existing regulatory programs are in place which govern air emissions from the Facility, including GHG emissions. Primary regulation of the Facility's GHG emissions will occur pursuant to the Commonwealth's air pollution control laws and regulations, as administered and enforced by MassDEP.⁵⁷ Pursuant to its authority under these provisions, MassDEP has issued the Proposed Air Plan Approval and a Draft PSD Permit for the Facility, which must be finalized before the Facility can begin operation. As noted above, the Proposed Air Plan Approval, issued on October 12, 2016, includes a declining CO₂e Cap and other GHG-related control provisions applicable to the Facility.

Facility GHG emissions also are regulated by requirements under MEPA. The Secretary's MEPA Certificate on the proposed Facility, issued March 18, 2016, found the Project was subject to review under the 2010 MEPA GHG Policy, noting that the GHG Policy "requires identification of the GHG emissions associated with the project and adoption of all feasible measures to avoid, minimize, and mitigate these increases" (Exh. EX-20, at 10). The Secretary's Certificate found that the project adequately and properly complied with MEPA and its implementing regulations, including the requirements of the GHG Policy (Exh. EX-20, at 10, 22).

RGGI, which imposes a regional emissions cap on CO₂ in nine eastern states, also will govern Facility GHG emissions. MassDEP implements RGGI through its Massachusetts CO₂ Budget Trading Program (310 C.M.R. § 7.70) and it is also administered by the Massachusetts Department of Energy Resources through its CO₂ Budget Trading Program Auction Regulation (225 C.M.R. § 13.00). Pursuant to RGGI, the Facility will be required to procure emission allowances at auction or on secondary market, at prevailing market prices. The Company estimated that it would spend between \$2.0 and \$4.5 million annually at current allowances

⁵⁷ See G.L. c. 111, §§ 142 A-O; Chapter 21C, §§ 4 and 6; G.L. c. 21E, § 6; 310 C.M.R. §§ 7.00, 7.02 (Exh. EFSB-A-8(1), at 1).

prices. The Company would also monitor and report CO₂ emissions using methods specified in 40 C.F.R. § 75 (Exh. EFSB-A-1(2) (S1) at 3-8).

The Company has represented that it would comply in full with all regulatory requirements applicable to the proposed Facility, including those pertaining to GHGs. In Condition CC below, the Siting Board also sets forth this requirement as a specified condition of this Decision.⁵⁸ Additionally, as set forth in Condition D, below, the Company shall submit to the Siting Board a copy of the Final Air Plan Approval and Final PSD permit for the Facility when issued by MassDEP.

iii. Consistency with the GWSA

This is the second petition seeking Siting Board approval of a power plant since the enactment of the GWSA in 2008. In compliance with the GWSA, the Commonwealth has adopted a state-wide GHG reduction requirement of 25 percent below 1990 levels for 2020. The Commonwealth has not yet adopted specific limits for 2030 or 2040. The GWSA sets a state-wide GHG reduction requirement of 80 percent below 1990 levels for 2050.

The 2020 CECP described two hypothetical scenarios for achieving the 2050 limit based on modeling. The first scenario posits the elimination of fossil fuel use; the second scenario instead emphasizes efficiency and conservation. Both scenarios presume the Commonwealth's attainment of the 80 percent reduction requirement by 2050. The scenarios are illustrative, not

⁵⁸ With respect to future regulatory requirements that may apply to the Facility's GHG emissions, the Siting Board notes three developments, discussed above, that have occurred since the conclusion of hearings in this proceeding. First, the Supreme Judicial Court of Massachusetts has directed MassDEP to promulgate regulations to achieve the GHG-reduction objectives of Section 3(d) of the GWSA. See Kain, 474 Mass. at 300. Second, in Executive Order 569, the Governor has directed MassDEP to issue these Section 3(d) regulations by August 11, 2017, approximately a year before the Facility's projected June 2018 commencement of operation date. Finally, MassDEP has issued a Proposed Air Plan Approval for the Facility. Reflecting the mandates in Kain and Executive Order 569, MassDEP in the Draft Approval has imposed CO₂ limits on the Facility consistent with Section 3(d); has indicated its intention to issue Section 3(d) regulations by August 11, 2017; and has indicated that it will require Exelon to comply with any applicable provisions of those regulations once issued. See MassDEP Proposed Air Plan Approval at 3, 73..

prescriptive; the 2020 CECP states that achieving the 2050 emissions limit will require practices, technologies, and policies that are beyond the reach of one state.

The 2020 CECP Update anticipates, on a net annual basis, a 2020 emissions reduction estimate equivalent to 2.7 million metric tons of CO₂ resulting from the ongoing closure of coal-fired electric generating plants and a substitution of natural gas-fired generation (Exh. EX-18, at 32, 35). The 2020 CECP Update does not specify whether the greater use of natural gas would be accompanied by an increased number of gas-fired plants. However, the Climate Plan does not prohibit natural gas as part of the electric generation fleet, even as far off in the future as 2050.^{59,60}

To meet the GWSA's 2050 limit, there must be a significant increase in the amount of renewable resources, including wind energy, solar generation, and hydroelectric power. The electric system would need, therefore, to support the integration of increased intermittent renewable generation. The Facility, as a responsive quick-start unit, is well-suited for this function, with which it may be expected to assist during the transition from natural gas-fired generation to renewables anticipated by the Climate Plan.

The GWSA establishes broad GHG reduction objectives for the entire Commonwealth and places the responsibility of developing regulations and programs to achieve these reductions primarily on the Secretary and MassDEP. The GWSA lacks specific guidance as to limits that should be placed on specific generating facilities. As noted above, MassDEP has included GHG requirements in the Draft Air Permits for the Facility, and will propose Section 3(d) rules to comply with the Kain decision and Executive Order 569.

The Siting Board's review of GWSA consistency is based on consideration of Commonwealth policy and planning documents for the GWSA, such as the 2020 CECP and the

⁵⁹ In addition, the GWSA explicitly recognizes the necessity of new power plants in the foreseeable future: "Nothing in this chapter shall preclude, prohibit or restrict the construction of a new facility or the expansion of an existing facility subject to regulation under this chapter, if all applicable requirements are met and the facility is in compliance with regulations adopted pursuant to this chapter." G.L. c. 21N, § 9.

⁶⁰ The 2020 CECP Update states, discussing Clean Energy Imports, that "[m]ore importantly for 2030 and 2050, continued expansion [of Clean Energy Imports] beyond the 2020 level appears viable, providing a possible path to deep reductions in 2030 and a fully decarbonized electric sector by 2050." 2020 CECP Update at 51.

2020 CECP Update; and the MassDEP Draft Air Permits for the proposed Facility. In addition, we base our decision on measures taken by the Company to build and operate the Project in a manner consistent with the policy of GHG-emissions reduction embodied in the GWSA, including the Climate Plan. These measures include the choice of turbines, fuels, and pollution control technology for the Facility, as well as the Facility's operational effect of displacing the operation of older, less efficient generating plants. Additional provisions to minimize CO₂ emissions are highlighted by the Secretary's Certificate on the FEIR. Accordingly, and based on the record in the case, the Siting Board concludes that the proposed Project is consistent with the GWSA.

iv. Mitigation Options

Section 69J¼ requires the Siting Board to determine whether the GHG emissions for the Facility comport with the requirement to "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." This requires an examination of mitigation options and their costs under the established provisions of Section 69J¼.

The Company highlights the highly efficient nature of the turbines chosen, and the fact that the Facility will operate on natural gas. In addition, the Company proposed several on-site mitigation measures, including energy efficiency and renewable energy projects. CLF proposed two additional mitigation options: (1) a declining CO₂ emissions cap, and (2) use of LNG as a back-up fuel, in place of ULSD.

CLF proposes a declining CO₂ emissions cap conceptually similar to the one Footprint Power accepted under a settlement agreement with CLF in another Siting Board proceeding. Footprint Power Salem Harbor Development LP, 19 DOMSB 280 (2014) Exhibit A ("Footprint Power Certificate"). However, the substantive question of the appropriateness of a declining emissions cap as a CO₂ mitigation measure was not raised by the parties, or addressed by the Siting Board, in the Footprint proceeding. The cap was an element of a private settlement agreement reached by the parties outside of the adjudicatory process. Thus, while the Siting Board attached the declining CO₂ cap settlement agreement to the Final Decision in that case, the Siting Board expressly stated that it "does not, and cannot cede its responsibility to decide future proceedings in accordance with applicable statutory and regulatory requirements and the specific

facts of each case. The settlement agreement is a private agreement between two parties to this proceeding, Footprint and CLF.” Footprint Power Certificate, Exhibit A at 5. Thus, the Board in the Footprint Power Certificate decision did not establish the settlement agreement (or its declining emissions cap mechanism) as a requirement or as precedent in future Siting Board review or approval of proposed electric generating facilities.⁶¹

If the Siting Board were to approve the proposed Facility, CLF has calculated a specific declining CO₂ emissions cap that it asserts should be imposed by the Siting Board as a condition to the approval (see Exh. CLF-2, at 15-23). At the time CLF proposed its cap (November 2015), MassDEP had not yet issued the Draft Air Permits for the Facility. MassDEP has now issued the Draft Air Permits, and the Proposed Air Plan Approval includes a declining CO₂ emissions cap (Exh. EFSB-A-8 (1) at 72-73).

The Siting Board notes that the emissions cap in the Proposed Air Plan Approval is similar, although not identical to that proposed by CLF in this proceeding. As compared to the cap proposed by CLF, however, the MassDEP cap (1) is based on the permit limits that MassDEP has established for the Facility, rather than the assumptions and projections relied on by CLF when it proposed its cap; and (2) has been developed by MassDEP, the agency in the Commonwealth with the primary authority and expertise to regulate air pollutant emissions.

The Siting Board notes that recent legal and public policy developments in Massachusetts, including the Supreme Judicial Court’s decision in Kain and the Governor’s Executive Order 569, have re-emphasized the centrality of MassDEP’s role in developing and implementing the state’s air pollution regulatory programs, particularly with respect to the reduction of GHGs. Likewise, the Draft Air Permits expressly state that the CO₂ emissions cap, as well as CO₂ monitoring, recordkeeping, and reporting requirements in the Proposed Air Plan Approval have been included in the Approval specifically to

ensure that the Project’s GHG emissions will not jeopardize achievement of the mandatory limits to reduce GHG emissions . . . as required by the Global Warming Solutions Act . . . and the decision of the Supreme Judicial Court in Kain.

⁶¹ With respect to CLF’s argument for imposition of the declining emissions cap, the Siting Board notes that Footprint Power and CLF entered into a settlement agreement for a declining emissions cap after the Siting Board’s Final Decision approving the Footprint facility, and prior to the Siting Board Final Decision granting the Footprint Power Certificate.

Exh. EFSB-A-8(1), at 2. Additionally, MassDEP notes that Executive Order 569 requires it to issue regulations under GWSA Section 3(d), establishing annual declining GHG emission limits by August 11, 2017, and states that these limits “will take into account all GHG emissions from existing and new facilities in the electric generation sector” (*id.* at 3). To that end, MassDEP has included in the Proposed Air Plan Approval a provision that “requires Exelon to comply with any applicable Section 3(d) regulations when adopted” (Exh. EFSB-A-8 (1), at 3, 73).

Based on the foregoing, in this instance, the Siting Board elects to rely on MassDEP regarding whether and, if so, how, to impose an annual declining CO₂ emissions cap on Facility air emissions.⁶² The Siting Board consequently will not adopt the emissions cap proposed by CLF in this Siting Board proceeding, but rather will allow a cap, if one ultimately is adopted, to be developed by MassDEP and vetted by the public in the course of MassDEP’s ongoing air permitting proceeding for the Facility.⁶³

⁶² The Massachusetts Supreme Judicial Court has recognized that the Siting Board may appropriately rely on the expertise of MassDEP with respect to setting air emissions permitting requirements for electric generating facilities. City of Brockton v. Energy Facilities Siting Board, 469 Mass. 196, 207 (2014) (Board may rely on NAAQS set by USEPA and MassDEP as “the legislative scheme contemplates that much of what the Board does in the area of air pollution will be dependent on [MassDEP] which has a significant and independent role in the permit process for new generating facilities,” citing Town of Andover v. Energy Facilities Siting Board, 435 Mass. 377, 381-382 (2001) (Board “neither delegated nor abdicated its responsibility to establish “final, binding emissions limits for the proposed facility” because it never had that authority. Regulation of the actual emissions of the proposed facility is a matter within the jurisdiction of the [MassDEP], not the board”). In accord, Box Pond Association v. Energy Facilities Siting Board, 435 Mass. 408, 422 (2001) (determining whether [new air pollution control technology] is BACT or LAER “[is] properly left to other agencies;” Clean Air Act administered by MassDEP).

⁶³ The Siting Board notes that the MassDEP permitting process includes a public hearing in Medway regarding the Proposed Air Plan Approval and Draft PSD Permit as well as a public comment period on these permits (Exh. EFSB-A-8(4)). Additionally, persons aggrieved by the issuance of the permits may request an adjudicatory hearing before MassDEP (Exh. EFSB-A-8 (1), at 78, citing 310 C.M.R. § 1.01 (6) (b)). It is the Siting Board’s view that MassDEP’s permitting process, with its public hearing, public comment, and adjudicatory review components, is the most effective and appropriate avenue for any review of MassDEP’s declining CO₂ emissions cap or any other terms or conditions of the MassDEP Proposed Air Quality Plan Approval and Draft PSD Permit.

With respect to CLF's proposed GHG mitigation measure regarding LNG use as a back-up fuel rather than ULSD, LNG use would likely reduce GHG emissions compared to ULSD. However, the Siting Board notes that use of LNG at the Exelon West Medway site poses challenges that make it infeasible for the Project. An LNG facility would require a larger site than available at the Summer Street site, would likely be too close to surrounding residences, and may not comply with the Siting Board's exclusion area requirements for LNG facilities. The time necessary to permit and construct an LNG facility would most likely mean that an LNG facility could not be constructed in time for the Company to meet its FCA 9 commitments. In addition, the construction cost for LNG exceeds that for ULSD, and Medway strongly opposes construction of an LNG facility on the Company's Summer Street site. The Siting Board concludes that LNG is not feasible as an on-site fuel alternative for the Company's Facility and the Summer Street site.

One of the policies set forth in the Climate Plan is reducing SF₆ emissions by 2020 equivalent to a reduction of 0.4 million metric tons of CO₂ from 1990 levels. As part of the Siting Board's mandate to ensure that new energy facilities are consistent with the Commonwealth's current health, environmental protection, and resource use and development policies, the Siting Board reviews the Company's proposed use of SF₆ to ensure that SF₆ emissions are reduced to the maximum extent possible. Here, the Company would monitor any emissions of SF₆ from its gas-insulated switchgear – two 115 kV circuit breakers – for early detection of leakage within the Project control system and would otherwise follow all manufacturer guidelines and industry best practices in handling SF₆. The Company's use of sealed equipment in compliance with 310 C.M.R. § 7.72 would minimize emissions, as would the Company's procurement of its breakers with leak rate guarantees.

Referencing a provision of the HCA, the Siting Board directs Exelon to install and maintain a continuous emission monitoring system in compliance with the requirements of the MassDEP and USEPA. In the event that there is a lapse in compliance with any air emissions requirement during the operation of the proposed Facility, Exelon shall provide to the Medway Board of Health copies of: (1) any excess emissions reports or reports of deviations which Exelon files with either MassDEP or USEPA; and (2) any notice of violation or notices of

The Siting Board requires the Company to submit the final Air Plan Approval and final PSD Permit, when issued by MassDEP, for Siting Board review.

non-compliance that MassDEP or USEPA issues to the proposed Facility within ten business days of filing or receipt, as applicable.

3. Conclusion on Air Impacts

Accordingly, the Siting Board finds that, with implementation of the above conditions for both operational and construction air impacts, the air quality impacts of the proposed Project would be minimized.

C. Water Resources

In this section, the Siting Board addresses the water-related impacts of the proposed Facility including water supply systems, surface and groundwater resources, wastewater and stormwater discharges, and wetlands impacts.

1. Company Proposal

a. Water Use Requirements

The Facility turbines would use dry cooling rather than wet cooling (Exh. EX-1, at 1-14). The primary use of water (approximately 99 percent) for the Facility would be for NO_x control (Exh. EFSB-W-1). The GE LMS100 injects demineralized water into the combustion system to minimize the formation of NO_x; the GE LMS100 is not available with dry low-NO_x control (Exhs. EX-1, at 1-18; EFSB-W-31). The Company identified dry-low NO_x combustion technologies available in dual-fuel or gas-only configurations, but stated that these technologies would not meet the required Project criteria and would result in increased capital and operational costs (Exhs. EFSB-W-31; EFSB-W-60). The Company proposes to obtain water from an on-site well and from the Town of Millis municipal water supply, with trucked-in water available in the event of a water-supply contingency (Exh. EFSB-G-1 (S1); Tr. 6, at 1076-1081, 1089-1090). The Medway municipal system would supply the remaining one percent of water demand for potable water (e.g., building and rest room plumbing, maintenance wash water) (Exhs. EFSB-W-1; EFSB-W-45).

i. Water Demand Forecast

The Company modeled the projected annual water requirements of the Facility based on water injection rates provided by GE, and anticipated Facility operations parameters such as capacity factor, fuel type, and ambient temperatures (Exh. EFSB-W-1).

In October 2015, the Company indicated that newly promulgated NSPS would restrict the Facility to USEPA's three-year rolling average capacity factor of 43 percent (Exh. EFSB-G-1 (S1)). As stated in Section IV.B.1, above, if the Facility operated at its maximum capacity factor of 60 percent in year one, it could operate at a 34.5 percent capacity factor in years two and three to achieve a three-year rolling average capacity factor of 43 percent (*id.*).⁶⁴ Exelon described the 33 percent capacity factor as the expected annual use of the Facility (Exhs. EFSB-G-1 (S1); EFSB-W-46). Based on those possibilities, the Company presented annual water demand forecasts based the Facility operating at 60 percent, 43 percent, 34.5 percent, and 33 percent capacity factors (Exhs. EFSB-G-1 (S1); EFSB-W-46). The Company stated that it used an average annual capacity factor instead of operating hours by month for its analysis because it is unable to predict monthly usage (Exh. EFSB-W-40).

The Company stated that volumes of water needed for NO_x control depend on fuel type and ambient temperatures; volumes would be higher when the inlet air temperature is low and also would be higher when the turbines are fired with ULSD rather than gas (Exhs. EFSB-W-48; CRWA-2-13). The Company is proposing to use ULSD for up to 30 days a year, and with limited exceptions, only during the non-ozone season (*i.e.*, from October to April); therefore the Facility would operate almost completely on natural gas in the summer (Exh. EFSB-G-1; Tr. 6, at 1036).

Exelon stated that the ambient temperature used to calculate water use when the Facility would be operating on gas, 50 degrees Fahrenheit, is representative of an average annual ambient temperature (Exh. EFSB-W-48). Exelon asserted that its annual water usage projection, based on 50 degrees Fahrenheit, is conservative because the Facility would likely operate more in summer than winter, and would use less water at the higher summer temperatures (Exhs. CRWA-2-13; CRWA-2-14; Tr. 8, at 1033).

⁶⁴ In the Company's initial filing to the Siting Board, Exelon presented water needs based on a 60 percent capacity factor operating at 100 percent load and 60 days of ULSD firing (Exhs. EFSB-G-1; EFSB-W-40).

The Company stated that using an ambient temperature of 30 degrees Fahrenheit for ULSD firing is indicative of an average winter temperature, and an increase or decrease of ten degrees would have little effect on the water injection rate (Exhs. EFSB-G-1; EFSB-W-48; CRWA-2-13). Exelon estimated that peak water demand of approximately 190,000 gpd would occur at an ambient temperature of zero degrees Fahrenheit (Exhs. EX-1, at 1-19; CRWA-2-13).

Exelon provided annual, peak day, and average daily water demand projections under four different cases, summarized in Table 8, below.

Table 8. Project Water Use Requirements

	Capacity Factor (Percent)	Amount ULSD Firing (Days)	Annual Water Demand (Gallons)	Peak Day Water Demand (Gallons)	Average Daily Water Demand (Gallons)	Comments
Case 1	60	30	34,750,080	178,600	95,206	Maximum single-year capacity factor
Case 2	43	30	25,106,500	178,600	68,800	Three-year rolling average capacity factor
Case 3	34.5	15	19,939,500	178,600	54,600	Years two and three after a 60 percent capacity factor in year one
Case 4	33	10	18,961,000	178,600	51,900	Typical peaking plant capacity factor

Notes: Peak day water demand assumes 24 hours of operation at 100 percent load, ULSD firing, and an ambient temperature of 30 degrees Fahrenheit. Average daily water demand assumes a temperature of 30 degrees Fahrenheit for ULSD firing and 50 degrees Fahrenheit for gas firing over the course of one year (Exh. EFSB-G-1 (S1)).

ii. Development of a Water Supply Plan

The Company's preferred source of water changed several times throughout the course of the proceeding. The final proposed plans are based on the following assertions by the Company: (1) Exelon would always draw water from the on-site well before drawing from the Millis municipal system; (2) municipal water from Millis would be needed only when the on-site well and on-site storage capacity could not keep up with demand; and (3) under many operating scenarios, there would be no need to use the Millis municipal water supply (Exhs. EFSB-W-65; EFSB-W-66). The Company calculated that the on-site well and storage could provide enough

water for approximately seven days of continuous firing at the peak daily rate, 190,000 gpd, before needing to call on the Millis municipal system (Exh. EFSB-W-65). In the event of a water-supply contingency, the Company would use trucked-in water.

(A) On-Site Well

Exelon identified a potential source for groundwater in a zone of sand and gravel deposits overlaying fractured bedrock beneath the southern portion of the Summer Street site and investigated the feasibility of a 500-foot deep on-site bedrock well (Exhs. EX-1, at 4-31 to 4-33; EFSB-W-29). The on-site well would be located within a “headwaters to Chicken Brook” sub-basin of the Charles River (Exh. CRWA-NBP-1, at 11). Exelon first conducted a short-term field test to determine the sustainable yield of the potential well location in February 2015, which indicated a yield of approximately 34 gpm or 50,400 gpd (Exhs. EX-1, at 4-33; EFSB-W-16). The Company concluded that the short-term field test suggested that the identified site could be used as a well to supply a significant portion of the water the Facility needs (Exh. EX-1, at 4-33). In July 2015, Exelon conducted a longer-term pump test, which resulted in a conservative sustainable yield estimate of 36 gpm or 51,840 gpd (Exhs. EFSB-W-16; CRWA-1-7 (1)). Based on the results of the longer-term pump test, the Company reported that the on-site well would provide up to 75 percent of the Facility’s water needs based on a three-year rolling average capacity factor of 43 percent and 30 days of ULSD firing (Exh. EFSB-G-1 (S1)).

The Company stated that the well would be classified as an “Irrigation or Non-Potable Water Supply” under the Medway Board of Health regulations, and would need to be registered with the Board of Health (Exh. EFSB-W-16). However, the Company stated that the on-site well would not be subject to registration and permitting under the Massachusetts Water Management Act (“WMA”) regulations because it would not exceed the regulatory threshold volume of approximately 69 gpm (*id.*).

(B) Town of Medway Municipal Supply

In its initial filing, Exelon indicated that the Town of Medway could be a potential source of water for the Facility (Exh. EX-1, at 4-31).⁶⁵ However, the Company stated that Medway had

⁶⁵ Additionally, Exelon initially stated that Bellingham could be a potential source of water, by possibly serving the Facility through a well that was utilized by Northeast Energy

been utilizing the full amount of its WMA permit allocation and had been reporting elevated levels of unaccounted for water (“UAW”) (*id.*). Exelon contributed \$40,000 towards the completion of a leak detection study that identified six leaks in the Medway water distribution system (Exhs. EX-1, at 4-31; CRWA-1-4 (1); EX-7, at 3; Tr. 6, at 1101).

In August 2015, after the leak detection study and following repair of a major leak, the Company reported that Medway had retained the engineering consulting firm Kleinfelder to assess the existing Medway water system and the availability of water under Medway’s WMA permit (Exhs. EFSB-W-16; EFSB-MED-1; EFSB-MED-1 (3)). Under the terms of the HCA, Exelon paid Medway \$28,000 to fund the Kleinfelder study (Exh. EX-7, at 3). The study concluded that Medway would not have the capacity to meet the water needs of the Facility; therefore in September 2015, the Company determined that it would not utilize the Medway municipal system to meet the Facility’s water needs (Exhs. EFSB-MED-1; EFSB-W-37).⁶⁶

(C) Town of Millis Municipal Supply

The Company indicated in August 2015 that it had begun discussions with the Town of Millis to determine if Millis would be able to supply water to the Facility and that it was investigating an interconnection between Millis and Medway (Exhs. EFSB-G-1; EFSB-W-16). In September 2015, Exelon stated that its proposed method to meet demand from the Facility would be through use of the on-site well and the Millis municipal water system, and that Medway had indicated that it would consider transporting water to the Facility from Millis through existing water mains and existing interconnections (Exh. EFSB-W-37).

Exelon reported that it would seek to enter into a water supply contract with Millis for an average daily demand of 48,000 gpd and a peak day demand of 190,000 gpd (Exh. EFSB-W-62). The average daily demand is based on the difference between the average daily demand of the Facility based on a 60 percent capacity factor (95,206 gpd) and the yield of the on-site well

Associates (Exhs. EX-1, at 4-32; EFSB-W-12). In August 2015, the Company determined that it would no longer consider Bellingham as a water source for the Facility (Exhs. EFSB-G-1; EFSB-W-34).

⁶⁶ Medway’s municipal water system would be able to provide potable water to the Facility (Exh. EFSB-W-45).

(51,840 gpd), plus a ten percent volume contingency/safety factor (RR-EFSB-33, at 7).⁶⁷ The Company would request a peak day maximum of 190,000 gpd to accommodate the worst-case scenario (i.e., the on-site well is out of service) (id.). To date, the Company has not provided an executed water supply contract between Exelon and Millis.

(1) Millis's Water Management Act Permit

Millis's WMA permit was issued February 26, 2010 ("2010 WMA permit") (Exhs. EX-9, at 101; CRWA-2-11 (1)). The 2010 WMA permit covers a 20-year period, divided into five four-year periods (Exhs. EX-9, at 101; CRWA-2-11 (1) at 12; RR-EFSB-33 (1) at 36). The 2010 WMA permit states that in order to increase withdrawal limits after the first four years, MassDEP must complete a 5-Year Review or permit amendment (Exhs. EX-9, at 101; CRWA-2-11 (1) at 12; RR-EFSB-33 (1) at 36). The first term of the 2010 WMA permit was from March 1, 2010, to February 28, 2014, with a daily withdrawal limit of 0.80 million gallons per day ("MGD") (Exh. CRWA-2-11 (1) at 12; RR-EFSB-33 (1) at 36). The second term, from March 1, 2014, to February 29, 2019, has a withdrawal limit of 0.99 MGD (Exh. CRWA-2-11 (1) at 12; RR-EFSB-33 (1) at 36). MassDEP has not completed the 5-Year Review, and therefore MassDEP stated that Millis is currently authorized to withdraw 0.80 MGD (Exh. EX-9, at 101). The Company reported that MassDEP would complete the 5-Year Review in 2018 (RR-EFSB-33 (1) at 36). Exelon estimated that the permit limit would increase to at least 0.84 MGD based on the new WMA regulations, which allow a five percent increase over previous baseline limits (id.).

Millis draws its supply from six municipal wells located within the Bogastow Brook and Chicken Brook-Stop River sub-basins of the Charles River (Exhs. EFSB-W-38; CRWA-NBP-1, at 8). The Millis municipal wells are 46 to 60 feet deep with screens in bedrock and gravel aquifers (Exh. CRWA-2-11 (6)). The average daily cumulative withdrawals from Millis's six wells are subject to the withdrawal limit discussed above (Exh. CRWA-2-11 (1) at 12, 13).

⁶⁷ $110\% \times (95,206 \text{ gpd} - 51,480 \text{ gpd}) = 47,703 \text{ gpd}.$

(2) Kleinfelder Reports

In September 2015, the Company stated that Kleinfelder would be retained to prepare a hydraulic assessment of the feasibility of the Millis municipal system to meet the Facility's water demands (Exh. EFSB-W-39). In November 2015, Exelon stated that a scope of work had been agreed to among the Company, Millis, and Kleinfelder (Exh. EFSB-W-53).⁶⁸ The scope of services included three tasks: (1) assessing the ability of Millis to provide sufficient physical supply to meet current and long-term water needs, analyzing Millis's projected demand compared to WMA permit requirements, evaluating the adequacy of Millis's existing water distribution system, and reviewing regulatory requirements of a sale to Exelon ("Task 1"); (2) providing additional consultation and meetings based on the results of Task 1 ("Task 2"); and (3) evaluating the environmental benefit, feasibility, and cost of minimization and mitigation options that would be required under WMA regulations ("Task 3") (Exh. EFSB-W-53 (1)).

The Company submitted the "Draft Water Supply and Demand Assessment in Relation to the Exelon Power 'West Medway II' Project" ("Draft Task 1 Report") on December 15, 2015, and the "Water Supply and Demand Assessment in Relation to the Exelon Power 'West Medway II' Project" ("Final Task 1 Report") on March 28, 2016, after evidentiary hearings were complete and the parties submitted briefs (Exh. EX-10; RR-EFSB-33 (1)). Additionally, the Company submitted a peer review of the Draft Task 1 Report, prepared by the engineering firm Tighe & Bond (RR-EFSB-33 (2)).

The Final Task 1 Report concluded that Millis would have sufficient withdrawal authorization under its 2010 WMA permit limit of 0.80 MGD through 2025 (RR-EFSB-33(1) at 11, 30). Additionally, Task 1 evaluated interconnection points between Millis and Medway, and analyzed whether any permanent infrastructure (e.g., a booster pumping station) or chemical dosing would be required to distribute water between the two municipal water systems (id. at 12-13).

Exelon stated that Medway would transport water from Millis to the Facility through existing water mains, and that a new booster pumping station would need to be constructed to

⁶⁸ The Company agreed to reimburse Millis for all costs related to work performed by Kleinfelder and a peer-review to be undertaken by Tighe & Bond, acting as Millis's water consultant (Exh. EFSB-W-53).

move the water (Exh. EFSB-W-54; RR-EFSB-33 (1) at 13).⁶⁹ Exelon stated that the pumping station would be designed, permitted, and constructed by an engineering firm typically employed by Millis (Tighe & Bond), with all design and construction costs reimbursed by Exelon (Exh. EFSB-W-54; Tr. 10, at 1745-1746). Millis would own and operate the pumping station (Exh. EFSB-W-54). The Company stated that the valve at the interconnection point would be opened only when the Facility requires water (Exh. EFSB-W-66).

Exelon reported that Millis had requested a mitigation portion be added to the hydraulic feasibility study, and that the Company had agreed to fund this analysis (Exh. EFSB-G-1 (S2) (2); Tr. 6, at 1104). The Company submitted the draft “Minimization and Mitigation Implementation Analysis” (“Task 3 Analysis”) in January 2016 and the revised Task 3 Analysis in March 2016 (Exh. EX-13; RR-EFSB-33 (1) at 57). The results of the Task 3 Analysis are intended to meet the requirements of Millis’s current and future WMA permits and assist Millis in prioritizing implementation of minimization and mitigation projects (RR-EFSB-33(1) at 64). The recommendations provided in the Task 3 Analysis are directed towards Millis, not the Company, and are not specific to the impact of Exelon’s demand; furthermore, the Company has not agreed to fund any of the measures in the Task 3 Analysis (Tr. 10, at 1747, 1801).⁷⁰

⁶⁹ The Kleinfelder Report stated that an interconnection on Village Street would be the most favorable interconnection, as it would be able to provide a more reliable volume of water under all system demand conditions (RR-EFSB-33(1) at 13). The Final Task 1 Report also concluded that a booster pumping station would be needed to control the flow rate and volume of water transferred from the Millis to Medway distribution systems (id. at 13, 43). Furthermore, Kleinfelder concluded that a system modification permit would be needed from MassDEP and that an inter-municipal agreement should be used between Millis and Medway to detail responsibilities including operations, maintenance, and billing (id. at 13).

⁷⁰ The Task 3 Analysis evaluated the measures that would be required under the new WMA regulations incorporating the Sustainable Watershed Management Initiative (“SWMI”) framework, which MassDEP introduced in 2014 (Exhs. EFSB-W-53(1); EX-13; RR-EFSB-33(1) at 64). The objective of the SWMI framework is to develop and implement water policy that supports ecological needs while also meeting the needs of economic growth (Exh. EX-CRWA-1(4) at 5; RR-EFSB-33(1) at 64). The new MassDEP regulations would apply when Millis’s WMA permit is up for renewal, or when Millis requests a withdrawal volume above its established baseline withdrawal volume, which is currently 0.80 MGD (Exh. EX-13, at iii). If Millis exceeds its baseline volume, it would need to develop a plan to mitigate any increases in withdrawals above that volume, commensurate with the impact (Exh. EX-CRWA-1(6) at 29; RR-EFSB-33(1) at 61). Kleinfelder concluded that since Millis’s wells are within

(D) Trucked-In Water

The Company provided two letters of intent from water supply trucking companies, which indicated they could meet the water supply needs of the Facility if Exelon did not sign a water supply contract with Millis (Tr. 6, at 1076-1090). Exelon stated that contracts with water supply companies are a common practice in the power generation industry and would also serve as contingency sources of water in emergencies (Tr. 6, at 1076-1081, 1089-1090). The two companies, Fleet Fuel and Nala Industries, stated they would be capable of providing 40,000 and 190,000 gpd, respectively (Exhs. EX-11; EX-12).

(E) On-Site Storage

The Facility would have a 450,000-gallon demineralized water storage tank and a 500,000-gallon raw water storage tank (Exhs. EX-1, at 41; EFSB-W-19).⁷¹ During operations, the water stored in the raw water storage tank would be pumped through the mobile, trailer-mounted demineralization system to be stored in the demineralized water storage tank (Exhs. EFSB-W-19; EFSB-W-51). The on-site well or municipal system would replenish water to the raw water storage tank, and ideally each tank would be filled to capacity by the end of the day (Exh. EFSB-W-19).

b. Environmental Impacts of Water Use

The Company presented an analysis of impacts to local groundwater wells, mean annual flow, and the artificially or naturally occurring seven-day low flow with ten-year return frequency (“7Q10”) to the Charles River resulting from withdrawals from the Facility’s water supply (Exh. EFSB-W-56; RR-EFSB-24).

Charles River sub-basins determined to have August net groundwater depletion levels of greater than 25 percent, Millis would be required to develop and implement a plan to minimize environmental impacts of these withdrawals to the greatest extent feasible at the time of WMA permit renewal, even if the renewal volume is less than the baseline (Exhs. EX-CRWA-1(4); EX-CRWA-1(6) at 22; RR-EFSB-33(1) at 61).

⁷¹ The raw water storage tank would also be available for fire safety needs (Exh. EFSB-W-20).

The Company stated that impacts on the local groundwater levels from the on-site well are not anticipated due to the low pumping rate and the depth of the well within deep bedrock rather than overburden aquifer (Exh. EFSB-W-29). The Company identified 13 private wells within one-half mile of the on-site well, the closest being 1,300 feet away (Exh. EFSB-W-58). Exelon stated that no influence on groundwater levels was observed in an overburden monitoring well and shallow bedrock monitoring well, located 835 feet and 1,600 feet, respectively, from the on-site well during the longer-term pump test (Exhs. EFSB-W-29; EFSB-W-58). Exelon therefore concluded that the on-site well would have no impact on private wells (Exh. EFSB-W-58). With respect to Millis's municipal water wells, the Company reported that as groundwater wells, they do not withdraw water directly from the Charles River (Exh. EFSB-W-56). The Company calculated that, based on a peak consumption of 0.19 MGD, the Facility's water use would be equivalent to 0.24 percent of mean annual flow and 7.6 percent of 7Q10 flow at the Charles River Medway Gage and 0.09 percent of the mean annual flow and 2.4 percent of 7Q10 flow at the Charles River at Dover Gage (id.).⁷²

The Company stated in response to MassDEP's comments on the DEIR (provided in the Project's FEIR) that the Payment in Lieu of Taxes ("PILOT") program agreed to in the HCA with Medway could, at the discretion of Medway officials and citizens, be used for ongoing maintenance of the water distribution system and for residential and institutional water conservation initiatives (Exh. EX-19, at 222). The Company also stated in the FEIR that it would consider asking Medway to use a portion of the revenues from a \$5 per megawatt-hour payment it would make to Medway for power generated using ULSD (pursuant to the HCA) for water conservation initiatives (id. at 223). Furthermore, the Certificate on the FEIR recommended, based on MassDEP comments, that Exelon provide regular leak detection studies along the water distribution lines between Millis and the Facility to assist Medway in reducing UAW (Exh. EX-20, at 17).

⁷²

The Company also presented impacts on mean annual flow and 7Q10 flow based on the three-year rolling average of 68,800 gpd (RR-EFSB-24). CRWA calculated impacts on mean annual stream flow, 7Q10 actual flow, and August median unaffected flow based on peak day use (0.19 MGD) and peak summer use (0.14 MGD) (RR-EFSB-34).

c. Wastewater Discharge

The Company stated that most of the water the Facility would use would be evaporated in the combustion turbines and discharged as water vapor via the stacks; therefore, the Facility would not generate process wastewater (Exh. EX-1, at 4-34; Tr. 6, at 1014-1015). The Facility would generate a small quantity of wastewater from activities including maintenance and sanitation (Exh. EX-1, at 4-34; Tr. 6, at 1014). The existing facility also does not generate process wastewater, although other types of wastewater from it are currently discharged into a private septic system and leach field (Exh. EFSB-W-17).

To accommodate the wastewater of the proposed and existing facility, Exelon would build a new six- or twelve-inch sewer connection to the Medway municipal sewer system on West Street (Exh. EX-1, at 4-34). Under the terms of the HCA, Exelon would be allowed to discharge 5,000 gpd of wastewater from both facilities into the Medway sewer system (Exh. EX-7, at 7; Tr. 6, at 1018-1019). The Company asserted that the sewer line would not fall under a moratorium on new sewer line extensions passed in Medway in March 2015 (Exh. EFSB-W-28). All discharge into the sewer system would first pass through oil-water separators (Exh. EFSB-W-19). The Company would pump out, clean, and abandon in place the existing septic system and leach field (Exhs. EFSB-W-17; EFSB-W-26).

d. Stormwater Management

The Company designed a new stormwater management system for the Facility site that would collect, convey, and treat runoff from the 4.3 acres of new impervious area (Exhs. EFSB-W-22; EX-19, at 1-5). The stormwater system would be designed in accordance with the MassDEP Stormwater Handbook and the Town of Medway Stormwater Regulations (Exh. EX-1, at 4-38 to 4-41). The stormwater management system at the existing facility site would not be modified (Tr. 6, at 1020).

Exelon asserted that the stormwater management system would mitigate peak runoff rates, provide water quality treatment, promote groundwater recharge, and direct stormwater runoff to down gradient wetland areas to mimic existing conditions (Exh. EFSB-W-22). The stormwater management system would incorporate deep-sump hooded catch basins, bio-swales, and hydrodynamic separators (*id.* Exh. EX-1, at 4-38). All stormwater would travel through

these treatment units before entering a bioretention area and then an infiltration basin designed to infiltrate runoff up to the design 100-year storm event (Exh. EFSB-W-22; Tr. 6, at 1019-1020).

e. Wetlands Impacts

The Company identified state and local jurisdictional wetlands on its property that include bordering vegetated wetlands (“BVW”), riverfront areas (“RFA”), inland banks, and isolated vegetated wetlands (“IVW”) (Exh. EX-1, at 4-35). Exelon reported that it would utilize erosion and sedimentation control measures such as silt fences, straw wattles, swamp mats, and construction tracking pads, and develop a Stormwater Pollution Prevention Plan to mitigate impacts to wetland resources (Exh. EFSB-W-21; Tr. 3, at 500-501). The Company asserted that it would substantially restore temporary construction after completion of construction, and permanent impacts would be replicated at a ratio greater than 2:1 (Exhs. EFSB-G-1 (S2); EFSB-G-17). The Company stated it would submit a Notice of Intent (“NOI”) to the Medway Conservation Commission prior to construction (Exh. EX-1, at 4-35). Table 9, below, summarizes the total wetland impacts from the Project.

Table 9. Impacts to Wetland Resources

	Temporary IVW	Temporary BVW	Permanent BVW	Buffer Zone	RFA
Total Impacts (square feet)	734	1,564	206	78,462	20,562

Exh. EFSB-G-1 (S2) (1).

The Company identified wetland impacts to BVW buffer zones and RFAs caused by the construction of the following components associated with the Facility: the main access road, a noise wall along 5 Summer Street, perimeter fencing, a secondary containment berm, and the access road to proposed fuel unloading station (Exh. EFSB-G-1 (S2) (1)).

The Company reported that the route of the proposed gas pipeline was refined throughout the course of the proceeding to minimize wetlands impacts (Exhs. EX-19, at 7-2; EFSB-G-1 (S2) (1)). The construction of the gas pipeline would result in 1,241 square feet of temporary BVW impacts, 734 square feet of temporary IVW impacts, and temporary impacts to buffer zones (*id.*; Exh. EX-19, at 7-2). The length of the pipeline crossing through wetland resources would be

approximately ten feet and the majority of wetland impacts would be due to construction work areas (Exh. EX-19, at 7-2). Exelon asserted it would reduce the impacts of pipeline construction by staging equipment outside of the wetlands and limiting the width of the construction area through the wetland area (id.).

The Company researched two options for the pipeline construction: (1) trenchless (i.e., horizontal directional drill, jack and bore); and (2) conventional open cut trench (Tr. 3, at 537). The Company concluded that the trenchless technique could eliminate wetland impacts, but that the small quantity of temporary impacts would not warrant the expense of that technique (id. at 537-538; Exh. EX-19, at 1-6, 7-2).

The Company stated that construction associated with the electric transmission line interconnection would result in 206 square feet of permanent and 323 square feet of temporary BVW impacts (Exh. EFSB-G-1 (S2)). Exelon proposed 500 square feet of BVW replication to mitigate the permanent impacts, which the Company stated is greater than the 2:1 ratio required under the Massachusetts Wetlands Protection Act (id.).

2. Positions of the Parties

a. CRWA

CRWA argues that the Facility's water demand would result in decreased streamflow in an already highly stressed area of the Charles River and its tributaries, both, hydrologically and biologically (CRWA Brief at 18). CRWA reports that the sub-basins from which the on-site well and Millis municipal wells withdraw water suffer from low summer season flows as a result of cumulative water withdrawals (id. at 18, citing Exh. CRWA-NBP-1, at 11-12, Exhibit 7, Exhibit 8, Exhibit 9; EX-CRWA-1(4)). CRWA argues that water withdrawal impacts are cumulative and local, and that the minimization of water impacts from the Project are not just a matter of evaluating water supply adequacy and streamflow measurements at downstream gages (id. at 20, citing Exh. CRWA-NBP-1, at 12; Tr. 1972; CRWA Reply Brief at 1, 8).

CRWA used the SWMI framework to characterize the impact of the Facility's operations on the groundwater withdrawal and biological categories and on the median August streamflow and groundwater withdrawals (CRWA Brief at 3, 19, citing Exh. CRWA-NBP-1; CRWA Reply Brief at 2). CRWA argues that the three sub-basins from which the Facility would draw water (headwaters-to-Chicken Brook, Bogastow Brook, and Chicken Brook-Stop River) are within the

most severe groundwater withdrawal and biological categories and are already experiencing impacts from water withdrawals including low streamflow and severely altered fish communities (CRWA Brief at 18-20, citing Exh. CRWA-NBP-1, at 11-12, Exhibit 7, Exhibit 8, Exhibit 9). Furthermore, CRWA argues that the Project's water withdrawals would increase the August streamflow alteration and groundwater depletion for each sub-basin (CRWA Brief at 19-20, citing Exh. CRWA-NBP-1, at 11-12).

CRWA contends that even small groundwater well withdrawals can have large negative impacts on streamflow if the withdrawals are combined with withdrawals by other wells within a watershed (CRWA Brief at 9, citing Exh. CRWA-NBP-1, at 12). CRWA argues that there is a direct hydrological connection between surface water and groundwater, and that municipal wells in the upper Charles River watershed directly impact and reduce streamflow by intercepting groundwater from flowing to the Charles River and its tributaries (id. at 2, citing Exh. CRWA-NBP-1, at 4-5). CRWA states that the annual withdrawals from Millis wells would equal annual stream depletion (id. at 21). CRWA states that the on-site bedrock well would not be as connected to the surficial groundwater as the Millis municipal wells, but that over the long term, the withdrawals from the bedrock well would have the same average effect on the Charles River as shallower wells (id. at 12, 21, citing Exh. CRWA-NBP-1, at 12). CRWA concludes that analyzing the mathematical impacts of well withdrawals at a single Charles River streamflow gage is not a useful metric for evaluating environmental impacts (id. at 20, citing Exh. CRWA-NBP-1, at 12; Tr. 1972; CRWA Reply Brief at 1).

CRWA maintains that the months of highest water use for the Facility would coincide with the time of lowest streamflow in the Charles River and its tributaries and highest demand from other municipalities upstream of the Facility (CRWA Brief at 21, citing Exh. CRWA-NBP-1, at 4-6; Tr. 1869-1870, 1855). CRWA states that, based on a 60-percent capacity factor for a single year, the Facility's monthly summertime average withdrawals would be 107,025 gpd, compared to the average annual 95,000 gpd (id. at 22; CRWA Reply Brief at 3, citing Company Brief at 75).

CRWA, projecting that Millis would comply with MassDEP's SWMI and WMA regulations, argued that those programs would fail to require mitigation equivalent to the quantitative impact of the Facility's water demand because Millis's baseline is high enough that Millis may not be required to mitigate water withdrawals (CRWA Brief at 24-25, citing

Exh. EX-CRWA-1 (6)). Furthermore, CRWA argues that Millis's compliance with SWMI and WMA regulations would not mitigate the impacts of its increased withdrawals commensurate with the withdrawals' environmental impacts, because the SWMI regulations do not require direct volumetric mitigation (id.). CRWA concludes that even if Millis is in compliance with WMA regulations, the Company has not minimized the environmental impacts of the Facility's water demand (id. at 26-27).

CRWA further asserts that the mitigation measures Exelon has performed to date (e.g., funding of the leak detection study in Medway, funding of the Task 3 Analysis) or proposed as future work, are inadequate to minimize the environmental impacts of the Project (CRWA Brief at 22-23). CRWA contends that there are numerous cost-effective mitigation measures available in both Millis and Medway (id. at 27-28, CRWA Reply Brief at 1). CRWA asserts that: (1) there are many opportunities to increase stormwater recharge in Medway; (2) Medway has one of the highest sewer inflow and infiltration ("I/I") percentages in the Upper Charles River Watershed based on analyses completed by CRWA's expert witness; and (3) Medway exceeds the ten percent UAW performance standard (CRWA Brief at 27-28, citing Exh. EX-CRWA-1(7); Tr. 1891-1892, 1984-1985). With respect to Millis, CRWA asserts that the Task 3 Analysis underestimated the available number of parcels for stormwater recharge and overestimated stormwater recharge project construction costs (id. at 14-15, citing Exh. EX-13, at Table A2, Tr. 1888-1892).

CRWA concludes that the Siting Board should deny the Project; however, if the Project is approved, CRWA argues that the Siting Board should require that the Company effectuate water conservation and/or stormwater recharge programs in Medway and Millis equivalent in magnitude to groundwater withdrawals associated with operation of the Facility (CRWA Brief at 29).⁷³

⁷³ CRWA recommends that Exelon be subject to the following pre-construction conditions: (a) make a filing showing that Exelon has executed a water supply contract with the Town of Millis for the water volume described in the record; (b) make a filing that the Towns of Millis and Medway have executed an inter-municipal water agreement for the transfer and distribution through the Medway system of this potable water to the facility; (c) commit to fund programs or projects that would conserve and/or keep within Millis, through measures such as stormwater recharge or I/I reduction, 16.4 million gallons of water per year (43,835 gpd) to mitigate the environmental impacts of the facility's use of Millis municipal water and to make a filing documenting this; and (d) commit to fund

b. Company

Exelon maintains that it has minimized environmental impacts of its water supply plan by selecting multiple sources of water and using dry cooling (Company Brief at 74). The Company asserts that the on-site well would not be expected to impact the Charles River in any realistically measureable time frame (id. at 81). The Company argues that any impacts associated with the Facility's use of water from Millis has been minimized and the current permitted and future expected permitted capacity of the Millis municipal water system is capable of accommodating the Facility's water needs (id. at 83, 86, 91).

Exelon states that calculations on the effect of withdrawals on mean annual flow and 7Q10 flow do not account for the difference in time of travel between groundwater and surface water resources, variations in distances from river bed, and variations in depth of withdrawals (id. at 82 n.39, citing RR-EFSB-24). The Company contends that the 7Q10 flow measure for the Charles River represents a lower stream flow than the August median unaffected flow CRWA presented, and therefore is more conservative (id. at 82 n.38, citing Tr. 10, at 1819). The Company argues that CRWA's calculations show that the Facility's withdrawals do not actually worsen either of the SWMI biological or groundwater withdrawal categories (id. at 82 n.38). Exelon concludes that the cumulative impacts from the Facility's water withdrawals would result in "minuscule" mathematical differences and no measureable impact on flow in the Charles River (id. at 83, citing RR-EFSB-24). Additionally, the Company argued that under MassDEP's SWMI framework and continued involvement in WMA permitting, Millis's withdrawals would be minimized and withdrawal impacts would be mitigated (id. at 86).

Exelon further states that it has provided sufficient "offsets" for the Facility's water demand: (1) funding a \$40,000 leak detection study in Medway that identified a 432,000 gpd

water conservation programs or projects that would conserve and/or keep within Medway, through measures such as stormwater recharge or I/I reduction, 18.9 million gallons of water per year (52,000 gpd) to minimize and mitigate the environmental impacts of the facility's on-site well and to make a filing documenting these programs (CRWA Brief at 29). Furthermore, CRWA recommends that the Siting Board require Exelon to file annual reports with the Town of Medway on the monthly volumes withdrawn from the on-site well; and to file a notice of project change with the Siting Board if the Company is unable to execute a water-supply agreement with the Town Millis (id. at 30).

leak, which has been repaired; (2) proposing an enhanced stormwater infiltration system for the Facility; and (3) funding the \$50,000 Task 3 Report, which identified mitigation opportunities in Millis (Company Brief at 86-88).

3. Analysis and Findings

The record shows that the three-year average daily water demand would not exceed 68,800 gpd and that the peak daily water demand would not exceed 190,000 gpd. The Company plans to obtain water from an on-site well and the Millis municipal system, supplemented by on-site water storage. The on-site well would be capable of providing 51,840 gpd. A total of 950,000 gallons of on-site water storage would be available to supplement on-site well water for up to seven days if Millis municipal water were unavailable. The record shows that the Company anticipates entering into a water supply contract with Millis; however, a contract has not yet been executed. To provide confirmation of water availability, the Siting Board directs the Company to provide to the EFSB a copy of the water-supply contract between the Company and the Town of Millis prior to the commencement of Project construction.

The record contains several different estimates of quantitative streamflow impacts based on various baseline streamflow scenarios, various interpretations of the connectedness of area groundwater and streamflow, and various scenarios of Facility operation. Each of the different estimates indicates that quantitative impacts of the Facility on Charles River basin surface water flow would be minimal. CRWA argues that the SWMI framework establishes that withdrawals are cumulative and local, and the Facility's impact, in addition to other withdrawals in the Project sub-basins, are real impacts to highly stressed Charles River sub-basins. While it is possible that cumulative impacts of other water uses in the Charles River basin could have an adverse impact on the Charles River, it is the Facility's incremental impacts specific to Medway and Millis that are discussed below.

The withdrawals from the on-site well do not meet the regulatory requirements for WMA permitting, and therefore would not have to comply with SWMI guidelines for minimization and mitigation. However, the withdrawals from the on-site well would extract groundwater from the closest Charles River sub-basins; these withdrawals could be partially offset by improving stormwater recharge at the Summer Street site. As CWRA discussed, opportunities exist in Medway to enhance stormwater recharge. The Company has not agreed to fund specific

minimization or mitigation measures in Medway, and also does not plan to update the existing facility's stormwater management system. In order to mitigate potential local groundwater impacts of using the on-site well, the Siting Board directs the Company, prior to construction of the Facility, to retrofit the existing facility's stormwater management system to promote groundwater recharge, consistent with the MassDEP Stormwater Handbook and the Medway Stormwater Regulations.

The Certificate on the FEIR and MassDEP recommend that the Company support regular leak detection studies on Medway's municipal distribution water system and the record shows that CRWA indicated Medway has high levels of UAW. The Siting Board concludes that the Company can assist Medway in reducing UAW. As MassDEP and the Secretary of EEA have suggested, the Siting Board directs the Company to perform regular leak detection surveys along Medway's distribution piping to the Facility, and provide the results to Medway. Furthermore, the Company shall work with Medway to identify cost-effective water distribution maintenance projects and water conservation programs that could be funded through the PILOT program and ULSD burning fee that would be collected pursuant to the HCA.

The Millis municipal system consists of six wells of various depths, located within two sub-basins of the Charles River. The withdrawals from the Millis municipal system would be subject to cumulative withdrawal limits under WMA regulations, and Millis would be required to mitigate impacts of water withdrawals if the baseline is exceeded.⁷⁴ The record shows that Millis has sufficient capacity under its current WMA permit to accommodate the Facility and other developments through 2025, that Millis's WMA permit would likely be renewed in 2018, and that Millis's permit limit may increase in 2018. To provide confirmation of MassDEP's evaluation of water resource impacts, the Siting Board directs the Company to provide Millis's renewed WMA permit, when issued. CRWA argued that the SWMI Framework does not require mitigation of water withdrawal impacts below established baselines, and, therefore, that neither Millis nor the Company would be required to mitigate impacts from use of the Millis municipal supply. Thus, CRWA contends, the Company has not minimized the environmental impacts of

⁷⁴ Millis is currently authorized by MassDEP to withdraw 0.80 MGD under its 2010 WMA Permit. Although the 2010 WMA Permit allocates a limit of 0.99 MGD for the period of March 1, 2014 to February 29, 2019; Millis has not completed the 5-Year Review required to withdraw above 0.80 MGD.

its water demand in Millis. Given the small quantitative impact of the Project on groundwater resources and streamflow, and with implementation of the above conditions relative to water withdrawals, the Siting Board concludes that the Project would have minimal impacts on groundwater and surface water resources.

Exelon stated that it would transport water to the Facility through existing water mains from an interconnection point on Village Street. Water from Millis would be delivered to the Facility by underground water lines on Main Street or Village Street. If the Company wishes to use any other delivery means or location, it shall file a notice of project change. Prior to commencing construction, the Siting Board directs Exelon to file with the Board a copy of the inter-municipal agreement with the towns of Millis and Medway regarding the delivery of water from Millis's water system to Medway's water system.

The Company identified water trucking companies that could meet the demand required in addition to the on-site well, and therefore in place of a contract with Millis. However, the Company did not present the environmental or traffic impacts of trucked water delivery. The Siting Board directs the Company to limit use of trucked-in water to a temporary, contingency-related, back-up measure only. If the Company at any time decides to incorporate the use of any other water supply source, including trucked-in water, as a planned, regular component of its water supply plan for the Facility, as opposed to a contingency-related back up measure only, the Company shall file a notice of project change with the Siting Board. In addition, the Siting Board directs Exelon to submit an annual report for the first three years of the Facility's operation that provides the following information on a monthly basis: (1) withdrawals from the on-site well; (2) purchases from Millis's municipal system; and (3) purchases from water trucking companies.⁷⁵

The record shows that the proposed facility would be allowed to discharge up to 5,000 gpd of wastewater into the Medway sewer system. The record shows that the Company has proposed a stormwater management system that would be in compliance with MassDEP and Medway stormwater standards. This system, with a bioretention area and infiltration basin,

⁷⁵ To monitor the withdrawals from the on-site well, and ensure they remain below Water Management Act permitting thresholds, MassDEP's Draft Air Plan Approval includes a requirement for reporting of monthly withdrawal volumes from each on-site well, to be submitted annually by the Company to MassDEP (Exh. EFSB-A-8 (1) at 66).

would direct stormwater from the site into groundwater. In combination, these provisions would minimize wastewater and stormwater impacts of the Facility.

The record indicates that the Project would create temporary and permanent wetland impacts. The Company would provide 500 square feet of wetland replication to mitigate permanent impacts, which is more than the 2:1 ratio required by the Massachusetts Wetlands Protection Act. Furthermore, Exelon stated it would minimize temporary construction impacts by reducing construction work areas.

The Siting Board finds that water supply impacts would be minimized with the on-site well and Millis as the two primary water sources, with the conditions described above. In addition, the Siting Board finds that the wastewater, stormwater discharges, and wetlands impacts would be minimized, with the conditions described above. Accordingly, the Siting Board finds that, with the implementation of the above conditions, the water-related environmental impacts of the proposed Project would be minimized.

D. Visual Impacts

1. Company Proposal

The Company proposes to construct the Project on 13 acres within the Company-owned 94-acre Summer Street site in West Medway (Exh. EX-6, at 1-12). The Project would require construction of a number of elements with the potential to affect surrounding views and sensitive receptors. These elements include: a 66-by-218-foot administration and facility services building; two 160-foot-high stacks (one per CTG); a 55-foot-high noise wall around the power island; a 25-foot compressor sound wall; and a 20-foot-high L-shaped noise barrier wall at the property line near 5 Summer Street (*id.*; Exhs. EFSB-A-1(2)(S1) at Figs. 2-1, 2-2; EFSB-G-26(2)).

The Company described the Summer Street site's existing generation, transmission, and switchyard facilities as its predominant visual features (Exh. EX-1, at 1-4).⁷⁶ Two Eversource switchyards take up much of the west-southwest corner of the Summer Street site (*id.* at 1-10). Existing switchyard facilities, towers to support transmission lines, and the transmission lines themselves are 47 to 159 feet high; base elevations range from 187 to 247 feet above sea level

⁷⁶ Exelon's existing generation facility, to the north of the Project site, is located on five acres of the Summer Street site and has six 65-foot-tall stacks (Exh. EX-1, at 1-4).

(id. at 1-4). The Company stated that the Project would be consistent with existing and surrounding development at its Summer Street site given structures and facilities currently located there (id. at 4-43).

The Company developed viewsheds to assess near- and far-field visual impacts on surrounding sensitive receptors (e.g., residences, commercial uses, and roads) (Exh. EX-1, at 4-43 to 4-62). The Company subsequently supplemented its initial pre-and post-Project views for each of four near-field viewsheds and four far-field viewsheds in response to requests of Siting Board staff and Medway (Exhs. EFSB-V-2; EFSB-V-3(1); EFSB-V-3(2); Medway-V-2(1) to Medway-V-2(4)). The Company also detailed (1) locations where unobstructed or partially obstructed views of the Project might occur, and (2) views of an L-shaped sound wall at 5 Summer Street (Exhs. EFSB-V-6; EFSB-V-8; RR-EFSB-16).⁷⁷

The Summer Street site presently has tree cover, wetlands, and other vegetation that together provide substantial screening in most directions (Exh. EX-1, at 4-43). The Company stated that it expects to confine tree removal to the center of its property; it would maintain most existing on-site tree-covered areas, including areas along the perimeter of the Summer Street site (Tr. 5, at 850-852). The Company indicated that it would replace any trees removed for proposed employee parking during construction (id. at 843-844). With respect to lighting, the Company indicated that outdoor lighting fixtures would be no more than 20 feet high and would not extend above 90 degrees horizontally to minimize skyward light pollution (Tr. 5, at 870-871).

The Company indicated it would mitigate visual impacts to the south and southeast of the Summer Street site by constructing an earthen berm five to nine feet in height, with approximately a 15-foot-wide area for planting on top, and approximately 1,000 feet in length along the southern property line (Tr. 5, at 852; RR-EFSB-15). The berm would start in the vicinity of the Project's access road on West Street (Tr. 5, at 851-853; RR-EFSB-15; RR-EFSB-15(1)). The Company provided a preliminary visual rendering of the proposed berm

⁷⁷ The Company provided topographic mapping of a three-mile area from the Project stacks to identify locations with potential stack views if the stacks were 160 feet high or as much as 213 feet high; the Company, furthermore, using the same stack heights, evaluated potential visibility of the Project stacks at specific locations identified by Medway (Exhs. EX-1, at Fig. 4.5-12, Fig. 4.5-13; EFSB-V-2; EFSB-V-3(1); EFSB-V-3(2); Medway-V-2(1) through Medway-V-2(4)).

as well as a photo-simulation of the berm from the south under defoliated conditions during winter months (RR-EFSB-15(2)).

The Company indicated that it was in negotiations to purchase the property at 5 Summer Street, currently used as a daycare center (Tr. 5, at 874-875). If unable to purchase the property, the Company would construct an L-shaped sound wall along the rear edge of the yard behind the property (Exhs. EFSB-V-8; EFSB-V-8(1); EFSB-V-8(2)). The sound wall would close off the back yard of the property to the north and west, but leave it open to the south (Exh. EFSB-V-8(2)). The Company provided a rendering which depicts the wall as a charcoal gray, 20-foot-high structure with a brick-like texture (id.). The Company stated it would work with the property owner to select siding and paint colors to improve the visual appearance of the sound wall (Tr. 5, at 876-879). To the extent possible, the Company indicated it would also use landscaping in an attempt to soften the wall's visual impact (id.).

The Company explained that air emission requirements necessitated a minimum stack height of 160 feet, while GEP analysis indicated a maximum stack height of 213 feet (Exhs. EX-1, at 4-15; Medway-V-1; Medway-V-2). The Company provided additional analysis of stack visibility with intermediate stack heights of 175 or 190 feet (Exh. EFSB-A-42). The Company's analysis indicated that the Facility stacks at their proposed 160-foot height would be visible at 18 locations; the stacks, if constructed to a height of 175 feet, would be visible from only one additional identified location (id.; Tr. 5, at 886-888).

The Company submitted a draft landscaping plan that describes the vegetation the Company would use to provide a visual screen for off-site locations from both the existing facility and the Project. The landscaping plans include: (1) replacing any trees or other vegetative buffer lost in Project construction; (2) screening a planned bioretention basin and infiltration pond; and (3) mitigating views of the Project from the south (Exhs. EFSB-V-12; EFSB-V-13; EFSB-V-19; EFSB-V-20; RR-EFSB-15). The Company stated it would work with abutters to ensure adequate screening and minimization of visual impacts to the extent possible (Exh. EFSB-V-14). The final landscaping plan would be part of the Site Plan Review Medway requires of the Company (Exh. EFSB-V-12). The Company stated that its landscaping plans meet all Medway Planning Board requirements concerning trees and landscaping (id.; Exh. EFSB-V-13; EFSB-V-13(1); Tr. 5, at 835). The Company also submitted a lighting plan that is intended to minimize Facility lighting impacts on the surrounding area (Exhs. EFSB-V -2;

EFSB-V-13; EFSB-V-13(1)). The Company stated that its lighting plans meet Medway Planning Board requirements (Exh. EFSB-V-13(1); Tr. 5, at 834-835).

As previously noted, Eversource operates existing transmission facilities on the Summer Street site. The proposed transmission interconnection for the Facility would tap into an existing circuit that runs south from Exelon's existing facility to the Eversource 115 kV switchyard (Exhs. EFSB-V-1; EFSB-G-1(3)). The Company maintained that the character of the existing Eversource transmission facilities would remain essentially the same with the addition of two new dead-end structures, 50 feet or less in height (Exhs. EFSB-V-1; EFSB-G-1(3)). The Company would also add an A-frame tower, approximately 30 feet high, to facilitate the transmission line connection (Exhs. EFSB-V-1; EFSB-G-1(3)). The Company stated it does not anticipate visual mitigation for the Eversource transmission facilities beyond visual mitigation measures already proposed for the Project (Exhs. EFSB-V-1; EFSB-G-1(3)).

2. Positions of the Parties

Medway expresses a strong preference for stack heights no greater than 160 feet to avoid visual impacts on the community (Tr. 5, at 909-910; Medway Brief at 2). Specifically, Medway asserts that stack heights should remain as the Company proposed (160 feet) unless significant air quality benefits would result from higher stacks (Medway Brief at 2-3). In any event, Medway contends that 175 feet should be the maximum height of the Facility's stacks to avoid unacceptable visual intrusions of the Facility on many residents (Tr. 5, at 909-910; Medway Brief at 2-3).⁷⁸

Medway affirms that conditions set out by the HCA would help ensure the minimization of environmental impacts, including visual impacts, resulting from the construction and operation of the Project if it is approved (Exh. EX-7; Medway Brief at 1-2). Therefore, Medway requests that the Siting Board incorporate certain provisions of the HCA into its decision, including those provisions (B, D, and E) pertaining to visual impacts in the HCA, Section 12 (Exh. EX-7; Medway Brief at 1-2).

⁷⁸ The Company maintained (see Section IV.B.1) that higher stacks would not significantly reduce predicted worst case air quality impacts, but would, on the other hand, increase costs of construction by \$993,530 to as much as \$1,691,810 for stack heights ranging from 175 feet to 213 feet (RR-EFSB-17).

3. Analysis and Findings

The Company proposes to construct the Facility on a parcel with existing generation, transmission, and gas pipeline structures. The Project, as proposed, would add some structures (e.g., the Facility stacks) that will be higher and more obtrusive than comparable existing facility structures to a site currently used for a smaller-scale generation facility. The Company's near- and far-field viewsheds, and its topographic mapping of the area within a three-mile radius of the proposed stacks, show significant existing screening of the Project, but also show an increase in visual impacts in the vicinity of the Summer Street site as a result of the Project.

Among Project structures with the greatest potential for visual impacts are the Project's two 160-foot-high stacks, and an L-shaped sound wall that would protect 5 Summer Street (the daycare center) from the noise of Facility operation. Analysis of the Facility with stacks at varying heights indicates that a stack height of 160 feet would meet air emission requirements while minimizing cost and visual impacts. The appearance and visual impacts of the transmission facilities on the Summer Street site would not change in character or extent in conjunction with the addition of the two dead-end structures and the A-frame tower necessary for the transmission line interconnection.

The Company would submit its final landscaping plan as part of the Site Plan Review that Medway requires of the Company. The Company states that both its plans for landscaping and for outdoor lighting would be in keeping with rules and regulations of the Medway Planning Board. Medway has included visual mitigation in the HCA executed with the Company. The Company states it would further reduce visual impacts at its Summer Street site by maintaining or replacing most existing trees, including trees and other vegetation at its parking lot for construction staff and crew and along its property perimeter. The Company's construction of its proposed berm, previously described, would serve to mitigate further views to the south and southeast of the Company's Summer Street site and the Project. The Company also proposes to mitigate visual impacts of the sound wall at 5 Summer Street with, in addition to vegetative screening and landscaping, paint color and cladding selected in consultation with the property owner; nonetheless, the wall as currently proposed will have a significant visual impact on the daycare center. It will add an imposing structure at the edge of the daycare center backyard, a location now characterized by low, open fencing, with a view over a grassy field.

The Company's plans to construct at the site of an existing generation facility and its specific plans to mitigate visual impacts of the Project should in most cases guard against increased visual impacts in the vicinity of the Company's Summer Street site. Locating a generating facility in proximity to residences, however, would inevitably result in visual impacts. In several prior generating facility decisions, the Siting Board has required proponents to mitigate visibility of the facility and the associated stack(s) by providing selective tree plantings and other requested reasonable mitigation in all residential areas within varying distances of up to one mile of the proposed location of the stack(s). Footprint Power at 221-222; Pioneer Valley Energy Center, 17 DOMSB 294, 324-325 (2009) ("PVEC"); Montgomery Energy at 374-375.

Consistent with previous cases, the Siting Board directs the Company to provide, as requested by individual property owners or appropriate municipal officials, reasonable off-site mitigation of visual impacts, including shrubs, trees, window awnings, or other measures that would screen views of the proposed generating Facility and related facilities at affected residential properties and roadways up to one-half mile from the 94-acre Summer Street site boundary where the Facility impacts views. The Siting Board chooses a one-half mile setback from the 94-acre Summer Street site boundary for required visual mitigation measures after a review of mapping data, the number of residences that would be affected by the proposed Project, the density of homes within the area, as well as Siting Board precedent. In implementing this requirement, the Company: (1) shall provide shrub and tree plantings, window awnings, or other reasonable mitigation on private property, only with the permission of the property owner, and along public ways, only with the permission of the appropriate municipal officials; (2) shall provide written notice of this requirement to appropriate officials and to all owners of property within one-half mile of the 94-acre Summer Street site boundary, prior to the commencement of construction; (3) may limit requests for mitigation measures to a specified period ending no less than six months after initial operation of the Facility; (4) shall complete all agreed-upon mitigation measures within one year after completion of construction or, if based on a request filed after commencement of construction, within one year after such request; and (5) shall provide a warranty to property owners to ensure that all plantings are established and replaced if needed at the end of one year from the date of planting, provided that the property owner reasonably maintains the plantings.

The Company continues to negotiate for the purchase of 5 Summer Street, used for a daycare center. The purchase of 5 Summer Street would resolve major visual impacts associated with the sound wall to be installed to remediate noise impacts at this location. The Siting Board directs the Company at least three months before the start of Project construction to provide documentation to the Siting Board: (1) of the pending or effected purchase of 5 Summer Street; or (2) of completed plans and documentation for construction of the L-shaped sound wall, incorporating reasonable visual mitigation found acceptable to the property owner.

Finally, and as further visual mitigation, the Siting Board directs the Company to maintain the good appearance of the Facility, including the stacks, the vegetation atop the berm and the berm itself along the south-to-southeast perimeter of the Exelon property, as well as other on-site landscaping, for the life of the Project.

The Siting Board finds that, with implementation of the above conditions, the visual impacts of the proposed Project would be minimized.

E. Noise

1. Company Proposal

a. Operational Noise

The Company's ambient sound measurement program consisted of seven long-term continuous sound level monitoring stations to establish A-weighted broadband ambient sound pressure levels in decibels ("dBA"). The Company established the stations to assess compliance with the MassDEP Noise Policy (Exh. EFSB-A-1(2)(S1) at 8-2).⁷⁹ The Company used dBA and un-weighted ("dB") octave-band background sound levels for daytime (6:00 a.m. to 11:00 p.m.) and nighttime (11:00 p.m. to 6:00 a.m.) hours to evaluate Project compliance with the MassDEP noise policy (*id.* at 8-9). Exelon's existing peaking units at West Medway Station were not operating during the measurement of background sound levels (*id.* at 8-6).

⁷⁹ The MassDEP Noise Policy limits a new noise source to a ten dBA increase above the ambient sound at the property lines of the new source and nearest residences (Exh. EFSB-A-1(2)(S1) at 8-2 to 8-3). The MassDEP Noise Policy also prohibits the production of "pure tone" conditions (*id.* at 8-2). A pure tone condition occurs when "any octave band sound pressure level exceeds both of the two adjacent octave band sound pressure levels by three decibels or more" (*id.*).

The Company took the long-term sound level measurements from May 1 through May 8, 2014, at seven locations concurrently for approximately 168 hours per location (24 hours/day, for one week) to characterize the “baseline” acoustical environment in the Project vicinity (Exh. EFSB-A-1(2)(S1) at 8-6). Monitoring locations, unattended except for a daytime and nighttime site visit by a field technician, included the nearest property lines to the north and southeast, as well as the closest residences in each of the four cardinal directions (id. at 8-6 to 8-7). The seventh location, chosen based on MassDEP comments, reflects the location of potential future residences at the Eversource transmission line right-of-way (“ROW”) near the northwest corner of the Exelon property line (id.). The seven locations are:

- Location R1: 23 Summer Street, represents sound levels at the closest residential receptor immediately north of the Project site, approximately 500 feet west of Route 126 near the edge of the Company’s property line;
- Location R2: 10 Old Summer Street, represents sound levels at the nearest residential receptors along Old Summer Street to the east of the Project site;
- Location R3: on the Summer Street site near the fence line of the daycare center, 5 Summer Street, represents sound levels at the nearest property line to the southeast of the Project site, as well as at the daycare center;
- Location R4: 3 West Street, represents sound levels at the residences nearest to the Project site to the south along West Street and Main Street;
- Location R5: near the northern entrance to the West Medway Generating Station across from 33 West Street, represents sound levels at the nearest residences along West Street to the west of the Project site;
- Location R6: along the eastern edge of the Eversource transmission line ROW adjacent to 55 Milford Street, represents sound levels at the residences to the north of the Company’s property along Route 109; and
- Location R7: at the edge of the Eversource transmission line ROW near the northwest corner of the Company’s property line, represents sound levels near future residences at the end of the cul-de-sac off Fisher Street.

To model Facility noise impacts, the Company used noise calculation software (Cadna/A) which accounts in its computations for local topography, ground attenuation, drop-off with distance, barrier shielding, diffraction around building edges, reflection off building facades, and atmospheric absorption of sound from multiple noise sources (Exh. EFSB-A-1(2)(S1) at 8-14

and 8-15).⁸⁰ Background minimum L_{90} (one-hour) sound levels⁸¹ ranged, by location, from 36.5 to 43.1 dBA during the day and from 32.0 to 34.8 dBA at night (Exhs. EX-1, at 4-71; EFSB-NO-2). See Table 10 below.

Table 10. Predicted Nighttime Noise Levels above Ambient, Project Only (dBA)

Receptor	Ambient (L_{90}) (dBA)	Proposed Facility (dBA)	Total (dBA)	Increase (dBA)
R1 23 Summer Street	34.3	40.7	41.6	7.3
R2 10 Old Summer Street	32.8	42.3	42.8	9.9
R3 5 Summer Street	34.1	39.7	40.7	6.7
R4 3 West Street	33.9	40.4	41.3	7.4
R5 33 West Street	34.8	41.7	42.5	7.7
R6 55 Milford Street	32.0	32.6	35.3	3.3
R7 End of cul-de-sac, Fisher Street	32.3	35.6	37.3	4.9

(Exhs. EFSB-NO-2, at 3; EFSB-A-1(2)(S1) at 8-16).

The Company reported that the principal noise sources of the Project would consist of two GE LMS100 CTGs and associated equipment, including air pollution control units, natural gas compressors, air-cooled heat exchangers, electrical transformers, blowers, pumps, and ventilation fans (Exh. EFSB-A-1(2)(S1) at 8-1).⁸²

In order to mitigate noise levels, the Company has proposed a 55-foot-high power block perimeter noise barrier surrounding the Facility at a cost of \$8,000,000 (Exh. EFSB-A-1(2)(S1) at 8-20). The Company explained that, in addition to construction of a 55-foot noise barrier, it would incorporate: all available noise control enhancement from the turbine manufacturer, GE; combustion exhaust noise control; and additional noise mitigation including low-noise air-cooled

⁸⁰ Current noise sources in the area surrounding the Project site that field personnel identified included traffic noise from highways and local roads; transformer hum and corona noise from the existing Eversource switchyard and overhead transmission lines, respectively; daytime construction; aircraft flyovers; residential activity; and background noise from insects, birds, and rustling vegetation (Exh. EX-6, at 6-6).

⁸¹ L_{90} is the sound level exceeded for 90 percent of the measuring period, and is used to represent background (or baseline ambient) sound level.

⁸² As discussed in Section IV.B, the Company committed that the existing generators will not run concurrently with the Facility at night.

heat exchanger fans, gas compressor enclosure, a 25-foot-tall gas compressor yard noise barrier wall, and a 20-foot-tall L-shaped property-line noise barrier wall near 5 Summer Street (id. at 8-19 to 8-20). The Company also stated that additional off-site reduction measures, including the installation of central air conditioning, replacement windows and doors, and certain types of property line fencing could provide varying levels of effectiveness with respect to mitigation for sensitive receptors (Exh. EFSB-NO-37).

The Company emphasized that with its proposed noise mitigation for the Project, modeled future daytime and nighttime sound levels from the Project are predicted to increase the measured background L_{90} sound levels by no more than ten dBA at all modeled receptor locations (Exhs. EX-1, at 4-77; EFSB-A-1(2)(S1) at 8-15). The Company indicated that the majority of sensitive receptors in the vicinity of the Project would experience noise increases under eight dBA (3.3 dBA to 7.7 dBA) (Exh. EFSB-NO-2). According to the Company, one receptor, located to the northeast of the Facility (R2), might experience noise increases greater than eight dBA during the three hour period from 1:00 a.m. to 4:00 a.m. (RR-EFSB-26). The Company indicated the possibility of a nighttime noise increase at R2 of as much as 9.5 dBA over ambient during one nighttime hour, from 2:00 a.m. to 3:00 a.m. (id.).⁸³ The Company contends that, as a peaking plant, the Project would rarely, if ever, operate at night between 12:00 a.m. and 4:00 a.m. (RR-EFSB-30).

The Company indicated that its Best Available Noise Control Technology (“BANCT”) analysis shows that the application of additional noise controls beyond those proposed would not yield further acoustic benefits for its Project (Exhs. EFSB-A-1(2)(S1) at 8-22; EFSB-NO-24; EFSB-NO-25).⁸⁴ In addition, the Company represented that it now has noise limit guarantees

⁸³ In response to a Siting Board request, the Company provided the measured background noise level, modeled facility-only noise level (proposed), the combined facility-plus-background noise level, and the increase above background for all monitored receptors (R1 through R7) for each hour between 11:00 p.m. and 6:00 a.m. (RR-EFSB-26).

⁸⁴ The Company’s BANCT analysis indicated that constructing an insulated full composite building enclosure around each CTG and its associated auxiliary facilities would be technically possible; however, it would result in higher sound level impacts than the proposed Project design and would not demonstrate compliance with MassDEP noise limits during nighttime operation (Exh. EFSB-NO-16). In addition, the Company explained that the close-in barrier walls now proposed for the Project would be less effective within any full building enclosures, thus increasing sound levels in the community (id.). The Company concluded that the proposed barrier walls combined with

from GE for all GE-provided equipment for the Project, i.e., most major Project noise sources (Exh. EFSB-NO-31; Tr. 7, at 1214-1217).⁸⁵ Further, the construction contractor would guarantee noise limits for all equipment not provided by GE (Tr. 7, at 1310).

Exelon reported that it evaluated 13 previous Siting Board generating facility decisions for residential ambient nighttime noise levels, and proposed operational noise levels, then compared results for these facilities to modeling results for the Project (RR-EFSB-30). The Company reported that ambient nighttime noise levels are between 32 and 35 dBA at the residential receptors tested in Medway (id.). The loudest ambient noise level during this nighttime period, 35 dBA, is lower than all but one of the nighttime ambient noise levels for all the other facilities evaluated (id.). Therefore, according to the Company, the area surrounding the Project is, at night, among the quietest of the generating facility sites the Siting Board has reviewed (id.). The Company indicated that the operational noise of the Project itself, as proposed, would range from 32 dBA to 41 dBA (id.). The Company asserts that even at the highest expected operational noise level of 41 dBA, the Project is one of the quietest generating facilities that the Siting Board has reviewed, both in terms of expected operational noise levels of the Facility, and in terms of total sound impact (including ambient sound) at receptor locations (id.).

The Company provided a nighttime (between 11:00 p.m. and 6:00 a.m.) noise evaluation of measured background noise levels combined with modeled Project noise and existing facility noise levels for receptors R1 through R7 (Exh. EFSB-NO-3). If both the Project and existing facilities at the Project site were to run simultaneously during nighttime hours, the increase above background noise levels would be as much as 15.1 dBA at one location (R2), and above 10 dBA at two other locations (R1 and R5) (id.). According to the Company, however, combined noise impacts from operation of both the Project and the Company's existing CTGs at

full building enclosures would add \$3.5 million dollars cost per turbine with no reduction in sound level impacts at the closest community receptors (id.).

⁸⁵ GE-provided equipment for the Project include the inlet air filter, CTG enclosure, CTG auxiliary skid, acoustic enclosure air inlet, acoustic enclosure air outlet, generator, SCR equipment, turbine, exhaust stack exit, and combustion turbine vent exit (Exh. EFSB-NO-31).

the Project site are unlikely, as the Company's existing CTGs have operated infrequently over the past five years (Exh. EFSB-A-1(2)(S1) at 8-21).⁸⁶

To minimize the chance of simultaneous operation of the proposed and existing units and the production of associated noise impacts, the Company proposes to restrict nighttime operation of the existing CTGs. The Company's proposal is included in its Comprehensive Plan Approval Application, as follows: "Upon the commencement of operations of the new CTGs, the existing CTGs shall not operate concurrently with the new CTGs between the hours of 11:00 p.m. and 6:00 a.m. unless required solely by ISO-NE to dispatch the unit as a result of a local or regional system contingency (e.g., VAR Control or transmission reliability or Security Constrained Unit Commitment). This condition assumes that new CTGs are already running and would require concurrent operation of the existing CTGs" (Exh. EFSB-A-1(2)(S1)).⁸⁷ The above operational constraint with respect to the Project and existing facilities is reflected in the HCA the Company has signed with Medway (Exh. EX-7, at 8).⁸⁸

⁸⁶ Each of the existing units has operated less than 80 hours annually over the past five years, rarely at the same time or at night. Specifically, during these past five years, the existing units only operated between 11:00 p.m. and 6:00 a.m. during 2014 for a total of approximately six hours (Exh. EFSB-A-1(2)(S1) at 8-21).

⁸⁷ The Company's proposal is similar to that in the Air Plan Approval and subsequent Operating Permit for the simple-cycle CTGs now serving the Braintree Electric Light Department (Exh. EFSB-A-1(2)(S1) at 8-21, n.93).

⁸⁸ The Company has also guaranteed that it would perform noise testing as required by its operating permits and would promptly forward these results directly to Medway's designated representative, who may witness the operation noise measurement(s) (Exh. EX-7, at 8). Exelon has agreed to establish a noise testing protocol in Medway with MassDEP and Medway's designated representative and to cooperate with Medway, and provide assistance when requested, in Medway's efforts to review, among other environmental reports, any Project-related noise testing prepared by the Company for submission to governmental authorities (id.). Furthermore, the Company agreed to meet all noise limitations imposed under the applicable by-laws of Medway (id.). The Company maintains that it will also address complaints to the Company or Medway about noise from Project operations as best it can, with any and all commercially reasonable actions necessary (id.).

b. Construction Noise

The Company stated that the construction period is approximately one year, which includes neither early site construction nor startup and commissioning (Exh. EFSB-G-4; Tr. 7, at 1341). The Company's proposed typical work days would begin at 6:00 a.m. and end at 6:00 p.m., Monday through Friday (Exh. EFSB-NO-18).⁸⁹ The Company stated that it tries not to work on the weekend, and that any Saturday work would be coordinated with Medway to keep the Project on schedule (Tr. 7, at 1331, 1363). Specifically, work outside the above schedule may occur to replace one or more work days lost due to weather, to complete tasks requiring a continuous process, once started, or to handle schedule-sensitive work activities (Exh. EFSB-NO-18).⁹⁰

As part of the HCA negotiated between Exelon and Medway, the Company has agreed to limit weekday Project-related construction activities that generate significant noise levels to the hours between 8:00 a.m. and 4:00 p.m., Monday through Friday, except as otherwise approved by Medway (Exhs. EX-7, at 7; EFSB-MED-1). If work occurs on Saturday for the reasons noted above, the HCA limits any construction-related activities for the Project that may generate significant noise levels to the hours between 9:00 a.m. and 3:00 p.m., except as otherwise approved by Medway (Exhs. EFSB-NO-18, EX-7, at 7; EFSB-MED-1).⁹¹ The Company equated arrival and departure noise impacts of workers at the beginning and end of the day with

⁸⁹ The Company anticipated arrangements that would allow activities that would not produce significant noise levels (e.g., arrival, departure, mobilization, demobilization, and activities involving no noise beyond the Exelon property line) to take place between 6:00 a.m. to 8:00 a.m. in the morning and 4:00 p.m. to 6:00 p.m. in the afternoon during the typical Monday to Friday work week (Exh. EFSB-NO-32).

⁹⁰ The Company stated that any Saturday work would consist of a crew of six to 45 workers (Tr. 7, at 1329-1330).

⁹¹ The Company opined that a general understanding of "significant" noise sources would include pile driving, metal erection activities, banging, and other "high impact" construction (Exh. EFSB-N-32; Tr. 7 at 1360). Routine operation of diesel engine powered equipment (front-end loaders, backhoes, graders, generator powering lights, etc.) would not fall under the definition of "significant" noise sources (Exh. EFSB-NO-32; Tr. 7, at 1360). Furthermore, "significant" or "loud" noise sources involve a locational component: where the equipment is located and activated on site and whether equipment noise will be heard off site affect whether equipment noise is "loud" or "significant" (Tr. 7, at 1361).

impacts of normal traffic noise (Exh. EFSB-NO-32). Exelon stated that, with respect to noise impacts as well as other impacts of construction, it would continue to work with Medway regarding development of a Construction Management Plan and community outreach (Exh. Medway-NO-9).

The Company measured the distance between the seven sensitive noise receptors and the nearest Project noise source, reporting that the measured distances ranged from 377 feet to 2,398 feet (Exhs. EX-1, at 4-70; EFSB-NO-9; EFSB-NO-29; EFSB-NO-20, at Table 1). In addition, the Company identified the loudest construction noise sources affecting each (R1-R7) receptor; these consisted of excavation and steel erection activities with predicted sound levels ranging from 55 dBA to 65 dBA (Exh. EFSB-NO-20, at Table 1). The Company stated that it would construct its planned 20-foot-high sound wall near 5 Summer Street, an estimated 377 feet from operating Project construction equipment, at the beginning of construction to provide immediate construction noise benefits⁹² to that location (Exhs. EFSB-NO-20; EFSB-NO-21; EFSB-NO-29).⁹³

The Company stated that, once started, it would need to continuously pour large concrete foundation placements, but it would complete any such process within 24 hours (Exh. EFSB-NO-19). The Company would discuss any other continuous construction activities with Medway, and would communicate directly with abutters and other neighbors of the Project in advance of such work (Exh. EFSB-NO-19; Tr. 7, at 1328).

The Company anticipated use of the following construction noise mitigation measures in its engineering, procurement, and construction (“EPC”) contract: using appropriate mufflers; performing ongoing maintenance of intake and exhaust mufflers; muffling enclosures on continuously running equipment such as air compressors and welding generators; evaluating specific construction operations and techniques and replacing them with less noisy ones, where feasible; selecting the quietest equipment alternatives, where feasible; scheduling equipment

⁹² The Company stated that it would implement best management practices during construction of the sound wall to reduce construction noise as much as possible. The Company did not anticipate construction of the wall would generate significant noise because the wall’s relatively shallow foundations would require little earthwork for installation (Exh. EFSB-NO-28).

⁹³ If the Company were to acquire the 5 Summer Street property, it would not construct this sound wall.

operations, when feasible, to keep average noise levels low, conducting the noisiest construction activities with times of highest ambient noise levels (during daylight hours) and maintaining relatively uniform noise levels; turning off idling equipment when feasible; and locating noisy equipment at locations that would protect sensitive receptors through shielding or distance, where feasible (Exhs. EX-1, at 4-85; EFSB-NO-17; EFSB-NO-21). The Company further indicated that it would require that its EPC contractor to comply with Medway Bylaws (Exh. EFSB-NO-21).

2. Positions of the Parties

Medway has filed a copy of its HCA with Exelon as Exhibit EX-7 in this proceeding and asks that the Siting Board incorporate the HCA into any decision it may issue in this proceeding (Exh. EX-7, at 8; Medway Brief at 2). Medway believes that conditions between Exelon and Medway that are set out by the HCA would help ensure the minimization of environmental impacts, including noise impacts, resulting from the construction and operation of the Project if it is approved (Medway Brief at 1). Therefore, Medway requests that the Siting Board incorporate certain provisions of the HCA into its decision, including those provisions (A, B, C, and F) pertaining to noise in the HCA, Section 12 (Exh. EX-7; Medway Brief at 1-2).

3. Analysis and Findings

In prior decisions, the Siting Board has reviewed the noise impacts of proposed facilities for general consistency with applicable regulatory requirements, including the MassDEP Noise Policy standard. 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 the MassDEP ten-dBA standard, may adversely affect residences or other sensitive receptors. Footprint Power at 230-231; PVEC at 294, 325, 328; Montgomery Energy at 380-381. In cases where measured background noise levels at the most affected residential receptors are neither unusually noisy nor unusually quiet, the Siting Board has accepted or required facility noise mitigation sufficient to hold residential L_{90} increases to five dBA to eight dBA. Footprint Power at 230-231; PVEC at 325; Montgomery Energy at 380.

With respect to operating noise of the Project, the record indicates that, at most of the nearest residences and sensitive receptors to the Project, the Company's proposed mitigation should limit noise increases to no more than eight dBA, a level the Siting Board has found appropriate in a number of prior cases. At one receptor (R2), however, located to the northeast of the Project, noise increases between eight dBA and 9.5 dBA are possible during the three-hour period from 1:00 a.m. to 4:00 a.m.

The Siting Board notes that the Company has incorporated maximum available mitigation from the manufacturer (GE) for the major noise sources of the Project. For these Project components the Company has, in addition, obtained manufacturer noise limit guarantees. Further mitigation identified and considered by the Company in its BANCT analysis would not provide a decrease in noise levels nor be cost effective. In addition, the Company's proposed mitigation includes construction of an L-shaped sound wall along the 5 Summer Street (daycare center) property line, as previously discussed, if on-going attempts by the Company to purchase the property are not successful.

Although additional mitigation on the Project site may not be cost-effective, as the Company asserts, there may be cost-effective off-site mitigation measures available to lower nighttime noise increases at R2 and neighboring residences to a maximum of eight dBA. The Siting Board therefore directs the Company to work with property owners at R2, and at neighboring properties within 300 feet of R2, should the property owners so desire, to choose and implement any mutually acceptable measures to limit nighttime noise impacts.

To ensure that the Company makes every effort to minimize noise levels, especially nighttime noise levels at R2, an accounting and verification of all Company efforts to minimize noise levels at R2 over the first year of operation is appropriate, along with an explanation of whether the Company has achieved the target level of mitigation, and if not, why. Therefore, to help ensure that the operational noise impacts of the proposed Facility are as estimated, the Siting Board directs the Company to consult with Medway and MassDEP to develop an operational noise monitoring protocol, which shall consist of an ongoing periodic noise monitoring program and reporting procedure. The protocol shall include the collection of additional baseline noise measurements, taken on a schedule chosen in consultation with MassDEP and Medway. The periodic noise monitoring program shall begin within six months of the commencement of the Project's commercial operation. The reporting procedure should

provide for submission of all periodic monitoring results to Medway; and relevant results to any persons whose property is affected by noise increases from the Project of three dBA or more. The Company shall submit a copy of the noise monitoring protocol to the Siting Board prior to commencement of commercial operation, and shall submit copies of the monitoring results when provided to Medway or affected persons in accordance with the noise monitoring protocol.

The Company has agreed that construction work would typically take place from 6:00 a.m. to 6:00 p.m., Monday through Friday, with extended work days only to occur to replace one or more lost weather days, to complete tasks requiring a continuous process once started, or to handle schedule-sensitive work activities. Such work would consist of a crew of between six to 45 workers. The Company has negotiated an arrangement through the HCA with Medway that limits significant noise from construction to the hours between 8:00 a.m. and 4:00 p.m., Monday through Friday, except as otherwise approved by Medway. The HCA also specifies that, if work occurs on Saturday for any reason as discussed above, the Company shall limit any construction-related activities for the Project that may generate significant noise levels to the hours between 9:00 a.m. and 3:00 p.m., except as otherwise approved by Medway. The Company has agreed to prepare a Construction Management Plan for Medway, as set forth within the HCA established between Medway and Exelon. The Siting Board directs Exelon, consistent with the HCA, to establish, prior to commencement of commercial operation, a construction noise testing protocol in Medway in consultation with MassDEP and Medway's designated representative, and to respond, as best it can, to complaints to the Company or Medway about noise from Project construction.

The Company's typical work days may begin at 6:00 a.m. and end at 6:00 p.m., Monday through Friday; the Company shall, however, limit Project-related construction activities that generate significant noise levels to no earlier than 8:00 a.m. and no later than 4:00 p.m. Saturday work and extended weekday work shall occur only to replace one or more lost weather days, to complete tasks requiring a continuous process once started, or to handle schedule-sensitive work activities; furthermore, with respect to Saturday work, the Company shall limit any construction-related activities for the Project that may generate significant noise levels to the hours between 9:00 a.m. and 3:00 p.m. Extended work weeks or days shall occur only as approved, in advance and in writing, by Medway.

To address potential vehicle noise and disturbances to neighbors of the Project site that could arise in conjunction with proposed early morning arrival (6:00 a.m.) of construction crew traffic and the potential of construction crew activity outside usual work hours, the Siting Board directs the Company to develop and adopt a clear and strict policy for its workers and contractors to minimize vehicular noise and visual impacts to neighborhoods adjacent to the Project. The policy should include designated speed limits, staggered arrival and departure times, proper maintenance of vehicles, a provision prohibiting the use of high beams and loud sound systems, and carpooling incentives, as well as additional mitigation measures that may be useful. Furthermore, if work crew arrivals and departures prove disruptive, the Siting Board directs the Company to arrange for assistance from traffic control detail or personnel at Medway's request.

In addition, it is important that an outreach plan is in place to communicate with area residents. Consequently, the Siting Board directs the Company, in consultation with Medway, to develop an outreach plan for Project construction, to be made available to the public no later than one month after the date of this decision. This outreach plan should, at a minimum, set forth procedures for providing prior notification to affected residents of: (1) the scheduled start, duration, and hours of construction; (2) any construction the Company intends to conduct that must take place outside of the hours detailed above; and (3) complaint and response procedures including contact information, the availability of web-based project information, a dedicated project hotline for complaints, and protocols for notifying all potentially affected residents as well as educational institutions, community organizations, and public centers of upcoming construction.

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

F. Hazardous Waste, Solid Waste, and Safety

The following section addresses hazardous and solid waste from the Project's construction and operation, as well as the safety impacts of the proposed Project.

1. Company Proposal

a. Hazardous Waste

Hazardous waste streams that operation of the Facility would generate would be related to maintenance tasks and would include waste oils, spent aerosol cans, waste cleaning solvents,

and waste paint (Exh. EX-1, at 4-42). The Company reported that the existing facility is classified as a Large Quantity Generator of waste oil and a Small Quantity Generator of non-oil hazardous waste under MassDEP's hazardous waste regulations, 310 C.M.R. § 30.00 (id.; Exh. EFSB-HW-7). Exelon stated that the hazardous waste registration under MassDEP regulations would apply to the existing and proposed facilities (Exh. EFSB-HW-6). Under the regulations, the Company would be responsible for conducting weekly hazardous waste area inspections and for emergency preparation, and would be subject to accumulation limits for waste-oil and non-waste-oil containers (Exh. EFSB-HW-7).

The Company reported that it conducts periodic groundwater sampling and oil recovery in compliance with a 2000 Massachusetts Contingency Plan ("MCP") developed in response to an oil spill near the existing ULSD storage tanks (Exh. EFSB-HW-8; RR-EFSB-28). Exelon stated that it performs oil monitoring and recovery operations approximately once per month and submits status reports to MassDEP semi-annually (Exh. EFSB-HW-8; RR-EFSB-28). The Company indicated that the low permeability of the soils on the property limits the potential for migration or expansion of the release area, but increases the difficulty in removing oil (RR-EFSB-28). Exelon affirmed that construction and operation of the Project would have no effect on the groundwater and oil recovery operations related to the 2000 MCP release (Exh. EFSB-HW-8; RR-EFSB-28).

In addition, Exelon reported that there have been at least three recorded oil spills between 1977 and 1995 for which a permanent solution was achieved (RR-EFSB-28). Additionally, there have been four recorded transformer releases on the Eversource easement, which are all closed (RR-EFSB-28).

b. Chemical/Oil Storage and Handling

i. Aqueous Ammonia

The SCR system for NO_x control would use 19 percent aqueous ammonia (Exh. EX-1, at 4-86).⁹⁴ The Company would store the aqueous ammonia in a 12,000-gallon welded steel tank twelve feet in diameter, 15 feet in length, and 24 feet in height and would be fully enclosed within a building (id. at 4-87; Exh. EFSB-G-1(S1)). The tank would be placed in a secondary

⁹⁴ On an hourly basis, ULSD would require approximately 68 percent more aqueous ammonia than natural gas (Exh. EFSB-S-12).

containment structure with 110 percent tank capacity and would contain a level gauge that would alert plant staff if the tank level falls at an abnormal rate (Exhs. EX-1, at 4-87; EFSB-G-1(S1)). The open interior of the containment structure would contain buoyant plastic spheres that would float on the surface of any spilled or leaked aqueous ammonia, reducing the exposed surface area and the airborne concentrations (Exh. EX-1, at 4-87).

The Company must submit a Construction Permit application to the State Fire Marshal 30 days in advance of constructing the aqueous ammonia and ULSD storage tanks, and each tank must be hydrostatically tested before receiving a Use Permit (Exh. EX-1, at 4-85). The tank would be pneumatically tested before use and would be subject to multiple inspections: daily visual inspections, annual inspections by a licensed Massachusetts tank inspector, an external inspection every five years, and an internal inspection every ten years (Exh. EFSB-S-1).

The Company indicated that it used the USEPA's Risk Management Program Guidance for Offsite Consequence Analysis to calculate the maximum predicted one-hour concentration for an accidental release due to a complete failure of the aqueous ammonia tank (Exh. EX-1, at 4-26 to 4-29). The Company stated that the parameters of the release rate calculation are based on a release of the entire 12,000-gallon storage tank at an outdoor temperature of 97 degrees Fahrenheit (Exh. EFSB-A-1(2)(S1) at 6-35).⁹⁵

The Company stated that all modeled concentrations at or beyond the Facility's fence line would be below the American Industrial Hygiene Association's Level 1 Emergency Response Planning Guideline ("ERPG-1"), the lowest risk level of three thresholds (Exh. EX-1, at 4-28 to 4-29). Exelon stated that ERPG-1 (25 ppm or $17,414.1 \mu\text{g}/\text{m}^3$) is defined as the maximum airborne concentration below which nearly all individuals could be exposed to for up to one hour without experiencing other than mild, transient adverse health effects or without perceiving a clearly defined objectionable odor (id., at 4-27). Based on the modeling, Exelon calculated that airborne ammonia concentrations would be $3,042.1 \mu\text{g}/\text{m}^3$ at or beyond the fence line (Exh. EFSB-A-1(2)(S1) at 6-37). The ERPG-1 threshold is $17,414.1 \mu\text{g}/\text{m}^3$, and therefore the modeled concentration at or beyond the fence line would be 17.5 percent of the ERPG-1 maximum concentration (id.).

⁹⁵ The source of emissions would be a one-square foot roof vent, above the center of the enclosure, modeled to release ammonia at a rate of 0.353 pounds per minute (Exh. EX-1, at 4-28).

Based on a 60 percent maximum annual capacity factor, the Company indicated that it expects, on average, one truck-delivery of aqueous ammonia every eleven days (Exh. EFSB-S-15).⁹⁶ A specialty chemical delivery company would deliver the ammonia to the Facility, and the delivery and unloading would be conducted with heavy duty rubber hoses in a bermed unloading area (Exh. EX-1, at 4-86). The delivery trucks would be equipped with fast-action shut-off valves and the pump system would be equipped with an automatic shut-off (id. at 4-86 to 4-87). The unloading area would collect any fluids from incidental releases in an enclosed containment structure (id. at 4-86).

ii. ULSD

The Facility would include a 1,000,000-gallon aboveground ULSD storage tank (Exh. EX-1, at 4-88).⁹⁷ The storage tank would be equipped with a secondary containment system at 125 percent of the capacity of the storage tank to accommodate any possible spillage and rainwater (Exhs. EFSB-S-2; EFSB-S-5). The Company stated it would apply for a Construction Permit before construction and a Use Permit from the State Fire Marshal before use (Exh. EX-1, at 4-85). The storage tank would be located approximately 250 feet from the nearest wetland resource (Exh. EFSB-S-3). The Facility would also contain oil in equipment such as transformers, lubrication oil reservoirs, drums, and emergency generator fuel tanks, all of which would include secondary containment systems (Exhs. EX-1, at 4-88; EFSB-S-5).

At the ULSD unloading station, Exelon stated it has designed containment structures capable of containing 110 percent of the volume of a delivery truck (Tr. 3, at 558-559). The fuel unloading area would contain catch basins, oil-water separators, and oil-grit separators, and be graded such that any spills would be drained away from sensitive resources (id. at 557-559).

The Company stated it would be required to develop a Facility Response Plan (“FRP”) prior to the construction of the proposed Facility because the total quantity of oil stored at the Summer Street site would exceed the threshold of 1,000,000 gallons (Exh. EFSB-S-7). A FRP

⁹⁶ Assuming peak use of oil, the Company estimated, on average, one aqueous ammonia delivery truck every 4.2 days (Exh. EFSB-S-15).

⁹⁷ The Company stated that the proposed 1,000,000-gallon ULSD storage tank and the approximately 314,000 gallons of ULSD storage for the existing facility would be combined into a single ULSD system to serve both facilities at the Summer Street site (Exhs. EFSB-T-12; EFSB-S-4; Tr. 8, at 1388).

would generally consist of measures such as an emergency response action plan, evacuation plans, hazard evaluation, response planning scenarios for different levels of discharge, self-inspection, drills, and response training (id.).

The Company maintains a Spill Prevention, Control, and Countermeasure (“SPCC”) Plan for oil storage, delivery, and transfer for the existing facility (Exh. EFSB-HW-3). The SPCC Plan is intended to minimize the potential for oil discharge and includes a spill contingency plan, fuel delivery procedures, and other measures to minimize the risk of spills at the existing facility (Exh. EFSB-HW-3). The existing SPCC Plan would be modified to cover the proposed Facility, and would include the proposed additional ULSD storage and the FRP for both facilities (Exh. EFSB-S-7). In addition, Exelon would require its construction contractor to develop a separate SPCC Plan specifically for construction of the proposed Facility (Exh. EFSB-HW-3).

c. Solid Waste

The Company reported that it would minimize the generation of solid waste during construction by implementing best management practices such as recycling of construction debris; salvaging waste materials such as metal, scrap wood, asphalt, brick, and concrete; and using containment structures around refueling and maintenance areas (Exh. EX-1, at 4-41). Exelon stated that a small amount of office waste and other trash (e.g., cardboard, aluminum, glass) would be generated during operation of the Facility and that it would implement programs to maximize recycling (id. at 4-42). The Company explained that it would segregate storage areas to ensure separation of potentially hazardous waste from non-hazardous waste (id. at 4-42).

d. Safety

The Company stated that to ensure safety during construction, it would implement the following measures in conjunction with its construction contractor: (1) developing a health and safety plan; (2) providing an on-site safety professional from the construction contractor and the Company during active phases of construction; and (3) following all appropriate Occupational Safety and Health Administration (“OSHA”) regulations (Exhs. EX-1, at 4-85; EFSB-S-8; EFSB-S-9). The health and safety plan would include descriptions of anticipated hazards, mandated safety measures, safety training requirements, incident report procedures, and emergency procedures (Exh. EFSB-S-8). Exelon reported that the Facility would have 24-hour

per day site security, fencing around the entire construction site, and signage identifying parking and access areas (id.).

Exelon stated it would operate the Facility in accordance with federal OSHA standards and all equipment would be engineered and constructed in accordance with applicable building and safety codes (Exh. EX-1, at 4-86). The Company described measures to ensure adequate fire and operational safety including: the selection of appropriate building materials; installation of sprinkler systems, dry chemical fire suppression systems, and emergency lighting; provision of adequate access for emergency response and egress for employees; and the ability for the Facility to be isolated from the gas transmission line (Exh. EFSB-S-10). The Facility would be equipped with a diesel fire pump and would utilize the 500,000-gallon raw water storage tank for emergency on-site fire response (Exhs. EX-1, at 4-86; EFSB-W-20).

Under the terms of the HCA, the Company would consult with the Medway fire chief in the development of all design, construction management, and operations plans related to fire, safety, and emergency medical requirements (Exh. EX-7, at 9). Additionally, pursuant to the terms of the HCA, the Company would provide Medway with: (1) \$15,000 per year for emergency management services, police, and first responder training; (2) \$650,000 for a foam and structural firefighting vehicle; (3) \$100,000 for a dry chemical firefighting vehicle; and (4) \$50,000 for emergency management and preparedness (id. at 3; Exh. EFSB-S-10; Tr. 7, at 1192-1193).

2. Analysis and Findings

The record indicates that the Company intends to dispose of all hazardous waste according to MassDEP's hazardous waste regulations. The Company reported that on-going monitoring and reporting is in place as a result of a previous oil spill, and stated that it did not anticipate Project construction would have an effect on the monitoring and recovery operations.

The Company proposes to store aqueous ammonia on-site in an enclosed 12,000-gallon tank, surrounded by secondary containment with the capacity to hold 110 percent of the tank contents. Exelon stated that in the case of an accidental release of the entire ammonia storage tank, ammonia concentrations at the maximum impacted receptor and at the fence line would be below the level that may cause transient health effects for most people. The ammonia tank and containment area would be within an enclosed building, consistent with recent Siting Board

decisions. See Footprint Power at 240; Brockton Power at 226-227 ; Braintree Electric at 135-137.

The record shows that the Facility would contain a 1,000,000-gallon ULSD storage tank, which would be surrounded by a secondary containment structure with 125 percent of tank capacity. The Company also would construct secondary containment systems around all oil-containing equipment, such as transformers and emergency generators. Exelon provided the SPCC Plan for the existing facility; the Company stated that the SPCC Plan would be modified to encompass both facilities, and would include a FRP due to the increased quantity of oil storage. The Siting Board directs the Company to submit to the Siting Board the updated SPCC Plan, including the FRP, prior to the commencement of construction. The Company would apply for pre-construction and pre-operational permits for the aqueous ammonia and ULSD storage tanks from the State Fire Marshal. With these actions, the Siting Board finds that hazardous waste and chemical/oil storage impacts of the proposed Facility would be minimized.

The Company stated that it would minimize construction and operational waste, through measures such as recycling and salvaging of construction materials. The Siting Board finds that the measures the Company outlined would minimize the solid waste impacts of the proposed Facility.

The record shows that Exelon would have programs in place to address safety during both Facility construction and operation. The Company would provide adequate access for emergency response and egress for employees, and the ability for the Facility to be isolated from the gas transmission line in the event of an incident. The record also indicates that the Company would store, handle, and dispose of oil and chemicals properly, in accordance with applicable regulatory standards. To facilitate accurate and effective emergency response planning procedures, the Siting Board directs the Company to develop an Emergency Response Plan for the proposed Facility in consultation with Medway. The Siting Board finds that, with the implementation of the safety measures proposed by the Company, and the conditions above, the proposed Project adequately addresses identified safety considerations.

Accordingly, the Siting Board finds that, with the implementation of the above conditions, the hazardous waste, solid waste, and chemical/oil storage impacts of the proposed Project would be minimized, and the Project would adequately address identified safety considerations.

G. Traffic

This section describes and evaluates traffic impacts associated with construction and operation of the Facility.

1. Company Proposal

The Company submitted a traffic study with its initial filing and a supplemental traffic study in November 2015 (Exhs. EX-1, at App. D; EFSB-T-31(1)). The traffic studies evaluated the following: (1) existing traffic conditions on roads surrounding the Summer Street site; (2) traffic generation characteristics under peak construction and operating conditions; (3) traffic impacts of the Facility's operation relative to existing conditions; and (4) the Company's proposed traffic management improvements (Exh. EX-1, at 4-89). The traffic studies included data such as daily traffic volumes, turning movement counts, measured travel speeds, intersection crash history, sight line evaluations, level of service analyses ("LOS"), and stop sign delays (*id.*, at 4-90 to 4-99; Exh. EFSB-T-31(1)). The supplemental traffic study presented traffic volume data at six intersections: (1) Milford Street/Route 109 at Summer Street/Route 126; (2) Summer Street/Route 126 at the Summer Street site driveway; (3) Summer Street/Route 126 at Main Street; (4) Hartford Avenue/Route 126 at West Street; (5) Milford Street/Route 109 at West Street; and (6) West Street at the proposed construction parking lot driveway (Exh. EFSB-T-31(1) at 5). At the Siting Board's request, Exelon also analyzed the intersection of Beech Street and Hartford Avenue/Route 126, near the proposed construction worker parking area (Exh. EFSB-T-35; RR-EFSB-13).

a. Construction Traffic

The supplemental traffic study based its analysis on the impact of construction worker arrival and departure during the periods of 5:00 a.m. to 6:00 a.m. and 6:00 p.m. to 7:00 p.m. (Exh. EFSB-T-31).⁹⁸ The study concluded that incremental traffic increases from the Project

⁹⁸ The initial traffic study assumed construction worker arrival and departure times between 6:00 a.m. and 7:00 a.m. and 3:00 p.m. and 3:30 p.m.; based on a 7:00 a.m. to 3:00 p.m. work schedule. The Company subsequently revised the arrival and departure times to reflect a proposed a 6:00 a.m. to 6:00 p.m. work schedule (Exh. EFSB-G-1(S1)).

would result in inconsequential changes in intersection operations (Exhs. EX-1, at 4-89, EFSB-T-31(1) at 25). Specifically, the LOS at all intersections during the construction period would be below capacity; i.e., at an overall LOS C or better (Exhs. EFSB-T-31(1) at 25; EFSB-T-34; EFSB-T-35).⁹⁹

The Company stated that, during peak construction, up to 200 construction workers would be on site (Exh. EX-1, at 4-103). Exelon reported that fewer construction workers would be present during the beginning and end of the year-long construction period (id.). The Company further indicated that construction workers would be expected to travel to the Facility site from Interstate 495 (“I-495”), Milford Avenue/Route 109, and Hartford Avenue/Route 126 (id. at 4-104; Exh. EFSB-T-20).

The temporary parking lot for construction workers would be located in an existing material laydown lot off of West Street and could accommodate peak construction activity of up to 200 vehicles (Exh. EFSB-T-7). The existing lot is primarily grass; the lot and the driveway would be reinforced with gravel, stone, or a similar material prior to construction (Exh. EFSB-T-39). The surrounding intersections (i.e., Hartford Avenue/Route 126 at West Street, Hartford Avenue/Route 126 at Beech Street, proposed parking lot driveway) are unsignalized, single-lane roadways (Exhs. EFSB-T-31(1) at 5; EFSB-T-35; Tr. 3, at 602, 603, 609, 611). To alleviate queuing of vehicles at the parking lot entrance, the construction workers would have an identification tag hanging in their vehicle that would be monitored as they drive into the parking lot; they then would present an identification badge after they have parked, but before entering the construction site (Tr. 8, at 1380-1381).

The supplemental traffic study indicated that West Street is a low-volume local street, which carries fewer than 1,000 vehicles per day (Tr. 3, at 591). The study assumed that

⁹⁹ The LOS is a letter designation that provides a qualitative measurement of operating conditions based on several factors, including: roadway geometry, speeds, ambient traffic volumes, traffic controls, and driver characteristics. An LOS designation ranges from LOS A (the least delay) to LOS F (delay greater than 50 seconds for unsignalized movements) (Exh. EFSB-T-31(1) at 22). The LOS analysis was performed based on Massachusetts Department of Transportation (“MassDOT”) guidelines and the 2010 Highway Capacity Manual (Exh. EFSB-T-31(1) at 22).

65 percent of construction workers (i.e., 130 vehicles) would travel from I-495 to the northern¹⁰⁰ portion of West Street and make a left turn into the parking area, and the remaining 35 percent (i.e., 70 vehicles) would travel from the south and make a right turn into the parking area (id. at 590; Exhs. EFSB-T-31(1) at 15; EFSB-T-32). The driveway into the parking area is located 545 feet west of the intersection of Hartford Avenue/Route 126 and West Street and 335 feet east of the intersection of Beech Street and West Street (Exh. EFSB-T-36). The Company reported that there are approximately 48 homes on West Street between Milford Street/Route 109 and Hartford Avenue/Route 126 and approximately six homes on Beech Street between West Street and Hartford Avenue/Route 126; however, there are no homes in the direct vicinity of the driveway (Exh. EFSB-T-38; Tr. 3, at 600).

The Company stated that the delay in entering and exiting the construction worker parking driveway would be ten seconds or less and the driveway is modeled to operate at LOS A; therefore, the Company stated, delay from the construction workers entering and exiting the parking lot would be inconsequential and have no material influence on through traffic (i.e., baseline traffic volumes) (Exh. EFSB-T-34; Tr. 3, at 594-596). The Company claimed that it is not possible to precisely calculate a delay in through traffic movement, and the volume on West Street is low enough that the delay in through traffic due to construction traffic would be less than five seconds (Tr. 3, at 594-596).

The Company hypothesized that no roadway closures or detours would be required during construction (Exh. EX-1, at 4-102). The Company reported that under the terms of the HCA with Medway, all construction and heavy truck traffic to the Summer Street site must use the entrance on Summer Street and travel from I-495 via Hartford Avenue/Route 126 in Bellingham and Summer Street in Medway, which the Company states are established commercial truck routes (Exh. EX-7, at 8).¹⁰¹ Furthermore, the HCA requires the Company to coordinate with the Medway and Bellingham Chiefs of Police, the Medway Director of Public

¹⁰⁰ Traffic on the northern portion of West Street would originate from I-495 South via Milford Avenue/Route 109 to West Street or I-495 North via Hartford Avenue/Route 126 and Beech Street to West Street (Exh. EFSB-T-20).

¹⁰¹ As of the December 11, 2015 evidentiary hearing, the Company had not addressed with the Town of Bellingham the issue of using Hartford Avenue through Bellingham to reach the Facility (Tr. 3, at 578-579).

Services, and the Bellingham Director of Public Works in advance of oversized and overweight loads in connection with construction and operation of the Facility (id., at 8, 9; Tr. 3, at 583). Finally, the Company agreed to repair any damage from construction to Summer Street/Route 126, West Street, or Main Street in Medway within six months of the completion of construction (Exh. EX-7, at 9).

b. Operational Traffic

Exelon indicated that, based on an average expected operational scenario, the Facility would operate on natural gas and no ULSD delivery trucks would be needed (Exh. EFSB-T-4). Under the average expected scenario, a total of 40 trips per day for both the existing and proposed facilities would be expected, primarily from employees (id.). The Facility would be staffed with six new full-time employees (Exh. EX-1, at 4-100).

Exelon reported that with a single ULSD fuel system, the existing and proposed facilities could operate for at least three continuous days before completely exhausting the ULSD storage (Tr. 8, at 1389). Under the worst case operating scenario, there would be three deliveries, or six truck trips, per hour to deliver ULSD to maintain the storage capacity (Exh. EFSB-T-12).¹⁰² The Summer Street site would contain a total of three unloading stations (id.; Exh. EFSB-T-25). ULSD delivery trucks would access the Summer Street site on established commercial truck routes from I-495 and Route 126 (Exhs. EFSB-T-18; EFSB-T-20; Tr. 3, at 585). Each ULSD delivery truck has a capacity of 9,000 gallons, and the fuel unloading process would take approximately 45 minutes, including entering and exiting the Summer Street site (Exhs. EX-1, at 4-100; EFSB-T-25).

As noted in Section F.1.b, above, aqueous ammonia deliveries would be needed once every eleven days with the use of natural gas at a 60 percent capacity factor, and once every 4.2 days under peak oil firing (Exh. EFSB-S-15). The Company stated that water delivery trucks may be needed to deliver water in contingency situations (Tr. 6, at 1076-1081, 1089-1090). Under a worst case contingency, the Company predicted two 9,000-gallon water delivery trucks

¹⁰² Exelon reported that it does not normally schedule more than two oil deliveries per hour under normal operating conditions (Tr. 8, at 1391).

per hour (*id.* at 1084).¹⁰³ Exelon reported that the property would be able to stage multiple water, ULSD, and ammonia delivery vehicles (Tr. 8, at 1396).

The Company modeled the traffic impacts of a “worst case” operating scenario, representing 30 days, 24 hours a day, of continuous operation of both the existing and proposed facilities on ULSD (Exhs. EFSB-T-2; EFSB-T-3). Exelon predicted that the worst-case scenario would generate approximately 176 truck trips per day (Exhs. EFSB-T-3; EFSB-T-18).¹⁰⁴ The truck trips would include ULSD and aqueous ammonia deliveries, service vehicles, and replacing the demineralization trailer (Exh. EX-1, at 4-100). The delivery period would be based on an 18-hour day to avoid the peak morning and evening hours (Exhs. EFSB-T-18; EX-7, at 8; Tr. 8, at 1386). The Company maintains however, that the Summer Street site has adequate staging areas to accommodate deliveries and truck traffic – even during a peak operating scenario (Tr. 8, at 1396).

c. Mitigation

Exelon asserted that traffic control or mitigation would not be warranted at the construction worker parking area because: (1) the Company would provide ample on-site parking; and (2) the driveway and surrounding intersections would operate below capacity with nominal delays during the peak construction period (Exhs. EFSB-T-34; EFSB-T-35; Tr. 3, at 596). The Company further stated that it would not implement any traffic mitigation for construction deliveries or ULSD deliveries at the Summer Street site entrance, based on the analysis of crash rates, sight lines, and vehicle delays (Exhs. EFSB-T-24; EX-7, at 10-49).

The traffic study recommended site access and on-site circulation improvements for traffic management during operation of the Facility (Exh. EX-1, at 4-106). The recommended measures include: (1) installing a stop sign at the Summer Street site entrance; (2) maintaining a

¹⁰³ The Company’s worst case contingency for water delivery trucks assumes a maximum water use of 190,000 gpd, with no water available from the on-site well or the Millis municipal system (Tr. 6, at 1084). As noted above, regular operations of the Facility may only rely on water from the on-site well or Millis’s municipal supply. Trucked-in water may only be used as a temporary, contingency, back-up measure (*see* Section IV.C.3).

¹⁰⁴ One truck trip would be equal to one trip to either enter or exit the Facility. Two truck trips would be equal to one truck entering and leaving the Facility (Exhs. EX-6, at 10-1; EFSB-T-4).

maximum height of two feet for plantings and structures within sight lines of the existing driveway; (3) properly identifying staging areas; and (4) ensuring staging areas do not limit on-site mobility (id.; Exh. EX-19, at 11-6 to 11-7). The Company noted these traffic measures in its FEIR as transportation mitigation commitments for the Project (Exhs. EX-19, at 11-6, 11-7, 11-14, 11-15; EX-20, at 19, 21).

Exelon stated it would work cooperatively with Medway to develop a Traffic Management Plan (“TMP”) prior to the start of construction to accommodate the specific needs of the site (Exhs. EX-7, at 8; EFSB-T-24; EFSB-T-29; EFSB-T-34). The TMP would include measures such as: (1) timing deliveries and construction periods to avoid on-peak travel times; (2) providing designated parking areas; and (3) establishing waiting and staging areas for material deliveries and truck traffic (Exh. EX-1, at 4-107). The Company stated that it would provide frequent updates to abutting landowners during the construction period, including increased communication during certain activities such as large deliveries or when higher traffic volumes are expected (Tr. 8, at 1384).

2. Analysis and Findings

The Company asserts that surrounding intersections near the Facility would operate below capacity during all phases of construction and operation of the Project. The traffic studies Exelon submitted indicate that incremental construction traffic from the Facility would result in inconsequential changes in intersection operations, and therefore the Company indicated no mitigation would be necessary at the parking area. The Siting Board concurs that construction and operational traffic as modeled, in most instances, shows limited impacts to existing traffic conditions. However, during peak construction, the proposed construction parking lot and entrance on West Street have the potential to cause traffic impacts to drivers and residents on West Street due to workers arriving and departing during an approximately one-hour period at an unsignalized, unsigned, one-lane road. The record shows that there is no way to ascertain the intervals that cars would arrive and depart within these one-hour morning and evening periods.

Therefore, the Siting Board directs the Company to utilize traffic detail or personnel at the construction worker parking lot entrance and on West Street during the predicted arrival and departure hours when the Company anticipates more than 100 vehicles would be using the lot. Furthermore, the Company identified over 50 residences along West Street and Beech Street that

could be impacted by the increased vehicular traffic. The Siting Board directs the Company to provide outreach to all residences on West Street between Milford Avenue/Route 109 and Hartford Avenue/Route 126 and on Beech Street between West Street and Hartford Avenue/Route 126 detailing the specifics of the construction worker parking lot; including location of the driveway, expected arrival and departure times, description of the worker identification process, and number of vehicles expected during each stage of Project construction. The outreach shall contain Company contact information and a proposed construction schedule, and shall be in addition to any community outreach or communication regarding large deliveries or other general construction-related impacts. Mitigation for noise impacts associated with parking and traffic activities are addressed in Section IV.E.3.

The Company stated that, pursuant to the HCA, Exelon would repair any damage caused by the Facility's construction along West Street, Main Street, and Summer Street in Medway, but not beyond the Bellingham town line. However, the HCA also specifies that deliveries to the Facility be made from I-495 along Hartford Avenue/Route 126 in Bellingham. Furthermore, construction workers would travel along Beech Street in Bellingham to reach the parking area. Therefore, the Siting Board directs the Company to repair any roadway damage attributable to Project construction-related traffic in Bellingham on Hartford Avenue/Route 126 between I-495 and the Medway town line and on Beech Street between West Street and Hartford Avenue/Route 126, within six months following completion of construction. Within 60 days of completing road repairs, Exelon shall provide the Siting Board with verified records of all road repairs made in Medway and Bellingham.

Due to the proximity of the construction worker parking lot to Bellingham, and the proposed construction and operational travel routes through Bellingham, the Siting Board directs the Company to work collaboratively with Bellingham in coordinating construction and operational traffic. Specifically, the Company shall: (1) submit the TMP to Bellingham after it has been drafted with Medway and invite Bellingham to review and suggest additional measures; (2) incorporate appropriate mitigation or measures as Bellingham requests; (3) provide the Siting Board a copy of Bellingham's requests and subsequent changes to the TMP; and (4) provide Bellingham with a copy of the final TMP. Lastly, the Siting Board directs the Company to submit the TMP to the Board prior to the start of construction.

The record shows that the Company would develop adequate staging and parking for the number of deliveries that may occur during a peak-firing scenario. The Siting Board notes the Company's traffic consultant recommended mitigation related to access and on-site circulation improvements for traffic management during operation of the Facility. The Siting Board notes that the Company included those measures as transportation mitigation commitments in its FEIR.

The Siting Board finds that, with implementation of the above conditions, the traffic impacts of the proposed Project would be minimized.

H. Land Use

1. Company Proposal

The Facility would occupy approximately 13 acres of the 94-acre Summer Street site (Exhs. EFSB-G-1(S1); EX-9, at 3-1). The existing facility, located on five acres, has three turbine buildings, each consisting of a single generator, two oil-fired combustion turbine sets, and two stacks (Exh. EX-1, at 1-4, 4-117). The Siting Board approved a 540 MW simple-cycle gas-fired generation facility on the Summer Street site in 2000 proposed by Sithe, but that facility was never built (id. at 4-118).

Eversource holds an easement on approximately 54 acres of the property (Exh. EX-1, at 4-118). The Eversource easement contains two substations (one 345 kV/230 kV, and one 115 kV), transmission lines and towers, and associated ancillary equipment (id.).

The Company reported that the Facility site is zoned as "Industrial II" according to the Town of Medway Zoning Map (Exh. EX-1, at 1-4, 4-115). Exelon further stated that a forested portion in the northeast corner of the Summer Street site is located in Medway's "Agricultural and Residential II" zoning district, but that the Company does not propose any work within or near that area (id. at 4-117).

The Facility site consists of open grass fields, limited groups of trees, areas of wetlands, hedgerows, and undeveloped land (Exhs. EX-1, at 1-4, 4-38; EFSB-LU-2). The abutting and adjacent land uses to the Summer Street site include forest, residential, and commercial (Exh. EX-1, at 4-115). The Summer Street site is bordered on the north by land abutting Route 109 (Milford Street), on the east by Route 126 (Summer Street), and on the south and west by residences and West Street (id.).

The Company reported that very limited demolition would be required for construction of the Facility, and demolition would be limited to the modification of the existing asphalt entryway; removal of fencing, stone walls, hedge rows, and limited vegetation; relocation of electric transmission lines and water lines; and replacement of the existing leach field (Exh. EFSB-LU-1).

A portion of the Facility site consists of a regularly mowed grass field, separated by hedgerows (Exh. EX-1, at 1-4). The Company stated that it currently has a written agreement with a local farmer to harvest hay from that field, but no money is exchanged between the Company and the farmer; and furthermore, that future use of the hayfield for harvesting hay would be discontinued following Project construction (Exh. EFSB-LU-4). Therefore, Exelon stated, the land would not be subject to the Massachusetts Agricultural Land Mitigation Policy because the Project is privately funded (RR-EFSB-11).

Exelon indicated that there are no state-listed rare species or habitat, or federally listed endangered species or habitat within the Project area (Exhs. EX-1, at 4-119; EFSB-LU-10; EFSB-LU-11). The Company further reported that there are no historic or archeological resources within the Summer Street site (Exh. EX-1, at 4-119).

According to the Company, there are two surface water resources in the vicinity of the Summer Street site: (1) an unnamed brook on the eastern border of the Property; and (2) Hopping Brook, a tributary of the Charles River, located approximately 400 feet southeast of the southern border of the property (Exh. EX-1, at 4-113). The Company reported that there are no vernal pools in the immediate vicinity of the Summer Street site (*id.* at 4-119).

The nearest residence is 120 feet from the Summer Street site (Exh. EFSB-LU-7). There are 33 residences within one quarter mile and 197 residences within one mile of the Facility's proposed stack structures (Exh. EFSB-LU-5). There are three businesses within one quarter mile and 13 businesses within one half mile of the proposed stack structures (Exh. EFSB-LU-5). A daycare center directly abuts the southeast corner of the Summer Street site, and the Company would build a 20-foot sound wall to directly abut the daycare yard that would be within 50 feet of the daycare facility itself (Exhs. EFSB-LU-7; EFSB-LU-13). The visual impacts of the 20-foot sound wall are discussed in Section IV.D, above.

The Company asserted that the Facility would meet several goals contained in the 2009 Medway Master Plan ("Master Plan"), such as: (1) expanding the commercial and

industrial tax base and land uses; (2) developing commercial and industrial properties along the Medway and Bellingham town line; and (3) reviving the previously proposed West Medway expansion (Exh. EX-1, at 4-118; Tr. 3, at 483-489). With respect to the Facility's consistency with a goal in the Master Plan that states "[s]hort-term gains in growth and/or tax revenue that produce potential long-term harm to Medway's environment must be avoided," the Company maintained that the Project would be consistent with this goal by: (1) remaining in the community for a long time; (2) implementing mitigation to prevent potential impacts; and (3) participating in the development of an HCA in cooperation with Medway officials (Tr. 3, at 489-491). Exelon filed a Major Site Plan Review Application with the Town of Medway on February 9, 2016 (Exh. EFSB-Z-6(S1)). Medway stated that the Project would be consistent with the goals of the 2009 Master Plan, and that it supports the construction of the Project, subject to several comments (Exh. EFSB-MED-8; Medway Brief at 3).

2. Analysis and Findings

The record establishes that the proposed Facility is consistent with the existing and longstanding utility-related uses of the Summer Street site. The Facility would occupy 13 acres of the 94-acre Summer Street site. The Summer Street site currently contains generation, electric, and natural gas infrastructure; is zoned for industrial use; and has been owned by Exelon since 2002. Medway has indicated that the proposed Facility is consistent with its Master Plan.

The Facility site consists of a hay field and limited tree stands. The Facility site is surrounded by a variety of uses, including a daycare center, residential homes, commercial businesses, and forested land. Mitigation for noise, visual and traffic impacts with the potential to affect these uses are addressed in Sections IV.D, IV.E, and IV.G. The record indicates that there no protected agricultural resources, rare species habitat, or historical or archeological resources within the Summer Street site.

The Siting Board finds that the land use impacts of the proposed Project would be minimized.

I. Cumulative Health Impacts

This section describes the cumulative health impacts of the proposed Facility. The Siting Board considers the term "cumulative health impacts" to encompass the range of effects that a

proposed facility could have on human health due to exposure to substances emitted during construction and operation of the proposed facility, as well as physical phenomena such as noise and magnetic fields. Footprint Power at 257. The Siting Board considers these effects in the context of existing baseline health conditions and existing background conditions and, when appropriate, likely changes in the contributions of other major emissions sources. Footprint Power at 257; PVEC at 339; Sithe Mystic Development, LLC, 9 DOMSB 101, 189-190 (1999).

1. Baseline Health Conditions

Exelon provided a summary of asthma prevalence and cancer incidence study findings for Medway, available from the Massachusetts Department of Public Health (“MADPH”) (Exh. EFSB-H-2(2)). Exelon also provided asthma prevalence and cancer incidence data for neighboring communities including Milford, Holliston, Bellingham, Franklin, Millis, and Norfolk (id. at 32).

For asthma prevalence among schoolchildren over five years (2007-2008 to 2011-2012), Medway exhibited rates higher than statewide averages in one year, lower in two years, and not statistically significantly different results in two years; the neighboring communities were also generally consistent with statewide averages except that asthma prevalence in Bellingham was generally lower (Exh. EFSB-H-2(2) at 34-36). Among adults, the region encompassing Medway and surrounding communities exhibited an adult asthma prevalence of 8.2 to 9.5 percent for the years 2003-2007, compared to a statewide average of 9.8 percent, and Medway’s asthma hospitalization rate was 161.4 per 100,000 for calendar year 2009, compared to an age-adjusted statewide average of 160.2 (id. at 36-37).

Medway cancer rates in 2006-2010 were not statistically significantly different from statewide averages except that the total number of cancer cases among females was below the state average (Exh. EFSB-H-2(2) at 33). Statistical differences identified between neighboring towns and state averages included elevated total, bladder and urinary, and prostate cancers in males and lower breast and total cancers in Milford; decreased lung and bronchial cancer in Holliston; elevated prostate and decreased lung cancer in men in Franklin; and increased total and breast cancers in women in Norfolk (id.). The Company interpreted these data to mean that cancer incidence in Medway and the surrounding communities are comparable to statewide average rates (id.).

2. Criteria Pollutants

Exelon used the NAAQS for SO₂, particulate matter, NO₂, and CO as relevant criteria to evaluate potential health impacts of its potential air emissions (Exh. EFSB-H-2(1) at 7-11). USEPA selected the NAAQS to be protective of members of the general population, including potentially susceptible individuals (Exh. EFSB-H-2(2) at 8). The Company's modeling of the dispersion of Facility emissions shows that maximum Facility impacts are a fraction of background concentrations at MassDEP's closest air monitoring station, which is in Worcester (id.). As further discussed in Section IV.B.1. above, adding those background concentrations to the Company's dispersion modeling of Project emissions indicated that cumulative air concentrations would remain below the applicable NAAQS (id.). The Company projects that the Facility would emit lead, another criteria pollutant, at trace levels, related to ULSD use (Exh. EFSB-A-1(1)(S1)).

The record shows that the NAAQS are set to be broadly protective of health including any sensitive populations, and that the Facility would meet the NAAQS. As described in Section IV.B.1. above, ground-level impacts of Facility emissions could be further reduced by increasing stack heights, although reductions would be minimal. Accordingly, the Siting Board finds that the health impacts of criteria pollutants would be minimized.

3. Non-criteria Pollutants (Air Toxics)

Exelon calculated a toxicological hazard index and a cancer risk level for a hypothetical resident breathing air throughout the year at the point of highest airborne concentrations modeled from stack emissions, for a period of 30 years, and for a child attending the nearby daycare center (Exh. EFSB-H-2(2) at 14). The Company stated that such a calculation is conservative relative to real exposures to air toxics – that is, toxic air pollutants other than the criteria pollutants (id.). For the resident, Exelon calculated a hazard index¹⁰⁵ of 0.04 for all air toxics, combined, including background levels, which is well below the established threshold of 1.0;

¹⁰⁵ Toxicologists calculate a hazard index to assess non-cancer risks. Adverse health impacts are not anticipated when a hazard index is less than 1.0, and may not necessarily occur when a hazard index exceeds 1.0 due to safety margins built into the calculation (Exh. EFSB-H-2(2) at ES-2, n.2).

therefore, the Company concluded that non-cancer health effects would not be anticipated (id. at 19). With the same worst-case exposure, and again including background levels, the Company calculated a cancer risk of 7.7×10^{-8} , which is lower than the range of 10^{-6} to 10^{-4} normally considered acceptable by USEPA (id.). Calculated risks for a child at the daycare center were lower still (id.). The Company noted that almost all of these low calculated risks were associated with background air toxics levels and that risks to an off-site resident from background levels alone are almost identical to those calculated for the combination of Project impacts with background (id. at 24).

The record shows that health risks from non-criteria pollutants would be minimal. In each of the risk calculations, the preponderance of the risk is from background sources, rather than emissions modeled from the Facility. Accordingly, the Siting Board finds that the health impacts of non-criteria pollutants would be minimized.

4. Noise

As discussed in Section IV.E above, the Company has proposed to implement noise mitigation at the Facility sufficient to keep operational Facility noise levels to 42.3 dBA at residential locations, representing increases of ten dBA or less (Exh. EX-1, at 4-78). As discussed in Section IV.E, noise during construction may be louder, but would be temporary. The Company stated that the Project meets regulatory standards for noise and that, while regulatory standards for noise are not health effects thresholds, the standards have been established to be protective of health with a margin of safety (Exh. EFSB-H-5). The record does not indicate that noise produced by the Project either due to construction or operation would present health concerns.

In Section IV.E.3, the Siting Board found that, with implementation of the Company's proposed mitigation measures and conditions imposed by the Siting Board, noise impacts of construction and operation of the proposed Facility would be minimized, consistent with minimizing cost. Accordingly, the Siting Board finds that the health effects, if any, of noise from the proposed Project would be minimized.

5. Handling and Disposing of Hazardous Materials

In Section IV.F. above, the Siting Board reviewed the Company's plans for storage and handling of hazardous materials, including a solution of 19 percent aqueous ammonia and limited amounts of industrial chemicals for Facility maintenance and operation. Section also outlines the Company's plans for minimizing and responding to accidental releases of oil and other hazardous materials. The record shows that the Company would establish plans for minimizing and responding to accidental releases. The Siting Board finds that, with implementation of the conditions set forth in Section IV.F.2, above, the health impacts related to the handling and disposal of hazardous materials, including ammonia, would be minimized.

6. Magnetic Fields

Exelon stated that it would construct a 115 kV transmission line approximately 1200 feet from the proposed Facility to the nearby Eversource switching station (Exh. EX-1, at 4-120). This connector would consist of three phases arranged vertically on monopoles (*id.*). The Company indicated that at its closest point, the connector would be approximately 75 feet from the Summer Street site property line (Exh. EFSB-G-18)(1)). The Company's model indicated that magnetic fields directly under the connector would reach a maximum of 80.3 milligauss ("mG") under winter peak output of the Facility, falling below 15 mG at a distance 100 feet from the circuit (Exh. EX-1, at 4-120 and App. E at 6). At the daycare center, the magnetic fields would fall to 1.2 mG, and the magnetic fields at the nearest residences located would fall to 0.7 mG (Exh. EFSB-MF-1).

The power from the proposed Facility would be transmitted via a new interconnection to the existing 115 kV substation located on the Exelon property (Exh. EX-1, at 1-5). Exelon estimated that magnetic fields from this new interconnection would not exceed 15 mG at a distance of 100 feet from the interconnection (Exh. EFSB-G-18)(1)). In addition, operation of the Facility would affect magnetic fields from four 115 kV transmission lines that interconnect at the electrical substation (Exh. EFSB-MF-2). The magnetic fields from these lines depend on dispatch elsewhere in New England, and on generation at West Medway and could increase or decrease with dispatch of the Facility; furthermore, dispatch of the Facility would indirectly cause changes in electrical flows and therefore magnetic fields on other lines on the same ROWs, which could also affect magnetic fields (*id.*). The Company projected that, evaluating a total of

twelve scenarios (two different 2018 load scenarios each modeled for each of the two edges of each of three ROWs), magnetic field values would be reduced in nine scenarios (by up to 9.1 mG) and increased in three scenarios (by up to 11.4 mG) by operation of the Facility, but that none of the resulting values approaches or exceeds 85 mG, a value the Siting Board has previously accepted for edges of ROWs (Exh. EFSB-MF-2(R)).

The Siting Board has found that although some epidemiological studies have suggested a statistical correlation between exposure to magnetic fields and childhood leukemia, there is no evidence of a causal relationship between magnetic field exposure and human health. Footprint Power at 262; PVEC at 342; Sithe Mystic at 198-199. In addition, the proposed Project would not create a significant increase in magnetic field at off-site locations.

The Siting Board finds that health effects of the proposed Project related to magnetic fields would be minimized.

7. Conclusion on Cumulative Health Impacts

The Company provided its evaluation of Project cumulative health impacts. The record shows that the NAAQS are set to be broadly protective of health and that the Facility would meet the NAAQS so health impacts of criteria pollutants and air toxics would be minimized. Additionally, the record shows that hazardous materials would be managed appropriately; that noise impacts would be minimized; and that the Facility would not create significant increases in off-site magnetic fields. Consequently, the Siting Board finds that the proposed Project would not exacerbate health problems in the communities surrounding the proposed Project. Accordingly, the Siting Board finds that cumulative health impacts of the proposed Project would be minimized.

J. Conclusions on Environmental Impacts

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

In Section IV.B, the Siting Board found that with the implementation of a reporting requirement to the Town of Medway, development of a PM reduction program, and implementation of a diesel retrofit program, the air quality impacts of the proposed Project would be minimized.

In Section IV.C, the Siting Board found that with implementation of several conditions relating to water supplies, as well as implementation of on-site stormwater and off-site leak detection programs, the water impacts of the proposed Project would be minimized.

In Section IV.D, the Siting Board found that, with the implementation of off-site visual mitigation programs and the Facility appearance condition, the visual impacts of the proposed Project would be minimized.

In Section IV.E, the Siting Board found that, with the implementation of measures to limit operational nighttime noise impacts to eight dBA in one residential area, the creation of noise monitoring protocols, the restriction of noisy work to certain hours, the adoption of a employee vehicle noise policy, the creation of an outreach plan for Project construction, the noise impacts of the Project would be minimized.

In Section IV.F, the Siting Board found, with the provision of an updated SPCC Plan and the development of an emergency response plan, the hazardous waste, solid waste, and chemical/oil storage impacts of the Project would be minimized, and the Project would adequately address identified safety considerations.

In Section IV.G, the Siting Board found that, with the implementation of a traffic control condition, an outreach condition, a roadway repair condition, a traffic coordination condition, and several additional mitigation measures the Company's consultants recommended, the traffic impacts of the Project would be minimized.

In Section IV.H, the Siting Board found the land use impacts of the Project would be minimized.

In Section IV.I, the Siting Board found that the cumulative health impacts of the Project would be minimized.

Accordingly, the Siting Board finds that, with the Company's compliance with: (1) all applicable legal requirements, including statutory, regulatory, and environmental permitting requirements; (2) all measures the Company has stated in this proceeding that it will use to avoid, minimize, and mitigate environmental impacts; (3) all conditions to this Decision; and (4) all additional measures and conditions in Sections IV.B through I, above, the Company's plans for the construction of the proposed Project would minimize the environmental impacts of the Project consistent with the minimization of costs associated with the mitigation, control, and reduction of the environmental impacts of the Project. In addition, the Siting Board finds that the

proposed Project would achieve an appropriate balance among conflicting environmental concerns as well as between environmental impacts and costs.

V. CONSISTENCY WITH THE POLICIES OF THE COMMONWEALTH

A. Standard of Review

G.L. c. 164, § 69J^{1/4} requires the Siting Board to determine whether the plans for construction of a proposed generating 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. In this section, the Siting Board summarizes the health, environmental protection and energy policies of the Commonwealth that are applicable to the proposed Project and discusses the extent to which the proposed Project complies with these policies.¹⁰⁶

B. Environmental Justice Policy

1. Background

In 2002, the Massachusetts Executive Office of Environmental Affairs, the predecessor to EEA, issued its Environmental Justice Policy (“EJ Policy”), applicable to all agencies within the Secretariat.^{107, 108} Among the primary purposes of the EJ Policy are to enhance (1) the opportunities for public participation in environmental decision-making, and (2) the substantive

¹⁰⁶ The energy policies embodied by the Legislature in the Siting statute, G.L. c. 164, §§ 69G- 69S, and particularly §§ 69H-J^{1/4}, are the foundation for the Siting Board’s overall review of the Company’s Siting Petition in this proceeding, and are reflected in the Board’s analyses and findings, and final decision, in this matter.

¹⁰⁷ When the EJ Policy was issued, the Siting Board was not an agency within EEA. The EJ Policy first applied to Siting Board proceedings on April 11, 2007, when the Legislature created EEA, and placed the Department of Public Utilities, under which the Siting Board is organized, within EEA. See City of Brockton v. Energy Facilities Siting Board, 469 Mass. 196, 199 (2014).

¹⁰⁸ In 2015, EEA issued a revised EJ Policy in draft form for public comment; the revised EJ Policy has not yet been finalized.

environmental review of new or expanding large sources of air emissions and regional waste facilities that would be located in or near high-minority/low-income neighborhoods in Massachusetts (“EJ communities”) (EJ Policy at 4). The Policy describes EJ communities as “communities where the residents are most at risk of being unaware of or unable to participate in environmental decision-making” (*id.*). Specifically, an EJ community, or “EJ population” is one in which the median household income is equal to or less than 65 percent of the statewide median or whose population is made up of 25 percent minority, foreign born, or lacking English [language] proficiency (*id.* at 5).

For a proposed large source of air emissions or regional waste facility that would be located in or near an EJ population, the EJ Policy may require enhanced public participation alone, or may require both enhanced public participation and enhanced environmental analysis (EJ Policy at 7-9). Of relevance to the Company’s proposed Project, the EJ Policy requires enhanced public participation for a project that exceeds an ENF threshold under MEPA for air emissions and is located within five miles of an EJ population; additionally, if the project also exceeds a mandatory EIR threshold for air emissions and is located within five miles of an EJ population, the EJ Policy requires “enhanced analysis of impacts and mitigation under MEPA” (*id.* EJ Policy at 8). The proposed Facility meets both of these criteria: the Facility site is located within four miles of EJ populations in Milford and within five miles of EJ populations in Franklin, and the Facility’s air emissions would exceed both a MEPA ENF threshold and a MEPA EIR threshold for air emissions (Exhs. EX-6, at 2-25; EX-20, at 4-5).

2. Compliance with the EEA Environmental Justice Policy

a. Enhanced Public Participation

The Siting Board developed specific public notice and participation requirements to satisfy the enhanced public participation requirements of the EJ Policy in this proceeding. The Siting Board conducted a public comment hearing with respect to both Petitions in Medway on June 11, 2015. At the Siting Board’s direction, prior to the public hearing the Company executed a number of enhanced public notice measures. The Company published the Public Hearing Notice for the Project once a week for three consecutive weeks, in English in the Boston Globe and the Milford Daily News, and in Spanish in El Mundo (Kwesell Affidavit; Affidavit of Alanna Kelly, May 21, 2015 (“Kelly Affidavit”)). The Company sent copies of the Public

Hearing Notice in English, Spanish, and Portuguese to the owners of property abutting the Summer Street site, owners of land directly opposite on any public or private street or way, and abutters to the abutters within 300 feet of the Summer Street site boundaries. The Company also sent copies of the Public Hearing Notice in all three languages to the Medway Town Clerk, the Medway Planning Board, and the Planning Board of each municipality abutting Medway.¹⁰⁹ Copies of the Petitions were available for public review in Medway Town Hall and the Medway Public Library throughout the course of the proceeding.¹¹⁰

The public outreach measures required by the Siting Board in connection with its review of Exelon's proposed Project exceed those typically required in a Siting Board proceeding. In particular, the Siting Board required the Company to translate the Public Hearing Notice into languages other than English (here, Spanish and Portuguese), provide Spanish/Portuguese translation services at the public comment hearing, and publish the Public Hearing Notice in both English and non-English-language newspapers; these measures are not regularly employed in Siting Board proceedings. These measures reflect the Siting Board's awareness that there are EJ communities within five miles of the proposed Project (in Milford and in Franklin) and constitute the Siting Board's implementation of the enhanced public participation requirements of the EJ Policy.

b. Enhanced Analysis of Environmental Impacts and Mitigation

In its ENF for the Project, filed with MEPA on April 10, 2015, the Company indicated that the proposed Facility would exceed an ENF review threshold for air quality (GHGs) (Exh. EX-3, at 1, 26). On June 19, 2015, the Secretary found in his Certificate on the ENF that the Project also would exceed an EIR threshold for air, and that it would be located within five

¹⁰⁹ The Siting Board based its selection of Spanish and Portuguese on its review of demographic information from the American Fact Finder (U.S. Census Bureau) and available MassGIS databases and maps pertaining to EJ populations in Medway and other nearby communities within five miles of the proposed Project.

¹¹⁰ See Letter to John A. DeTore Esq. and Robert D. Shapiro, Esq., from M. Kathryn Sedor, Esq., Presiding Officer (April 22, 2015). The Company also provided public outreach beyond that required by the Siting Board (Exh. EX-20, at 5).

miles of designated EJ populations (Exh. EX-5, at 4-5). Accordingly the Secretary determined that the Project was subject to both the EJ Policy's requirement for enhanced public participation and its requirement for enhanced analysis of impacts and mitigation (id. at 4).

The Company's DEIR for the Project, filed on September 30, 2015, included a section specifically addressing environmental justice (Exh. EX-6, at 4-26 to 4-27). Exelon stated in this section that, in connection with its MassDEP PSD air application for the Facility, the Company conducted air quality dispersion modeling, specifically to determine whether the Project would result in disproportionately high, adverse human health or environmental effects for EJ populations (id. at 4-26, and Tables 4-16 to 4-19; Exh. EFSB-A-1(1)). The Company stated that it calculated a population weighted average concentration for pollutants/averaging times above the SILs for NO₂, PM₁₀, and PM_{2.5}, using the worst case AERMOD impacts from the new Facility for each averaging period (Exh. EX-6, at 4-27). The Company stated that it then compared the population weighted concentrations for areas classified as EJ areas to those not classified as EJ areas (id.). The Company stated that the modeling results demonstrated that the impacts from the proposed Facility would not be disproportionately high in EJ areas as compared to non-EJ areas (id. at 4-26 to 4-34).

The Company also conducted a human health risk assessment based on its air impacts modeling analyses, and provided information on health implications of magnetic fields and emissions from the Project (Exhs. EFSB-H-2; EFSB-H-5; EFSB-MF-2). Based on these analyses, the Company stated that it did not expect any adverse human health impacts to occur as a result of Facility operation (Exh. EX-1, at 5-1; Company Brief at 206-211).¹¹¹

With respect to compliance with the enhanced public participation requirement in the EJ Policy, the Secretary in his November 13, 2015 Certificate on the Project's DEIR referenced the public notice and participation measures implemented by MEPA, the Siting Board, and the Company (Exh. EX-8, at 5). With respect to enhanced substantive review of environmental

¹¹¹ The record shows that mitigation of Facility air emissions, including emissions avoidance and reduction, would be reflected in a number of Project design and operational aspects, such as generation technology, fuel, pollution-control equipment choices, and compliance with requirements of regulatory programs including RGGI, BACT, and NSPS requirements. See Section IV.B. above. See also, Exhs. EX-6, at 4.0-5.0; EX-8, at 7-13; EX-20, at 7-14.

impacts and mitigation, the Secretary referenced the air dispersion modeling conducted by the Company as part of its PSD application (id.). The Secretary found that the DEIR adequately and properly complied with MEPA (id. at 17). The Secretary directed the Company to provide further information and analyses in its FEIR regarding certain issues (id. at 17-25). However, with respect to environmental justice, the Secretary did not require any further substantive environmental review or public outreach measures; the Secretary noted that the Company would ensure the continued adequacy of public participation through the MEPA and Siting Board processes (id. at 5). In his Certificate on the FEIR for the Project, issued on March 18, 2016, the Secretary noted again the Company's air quality dispersion modeling analysis and noted that additional public outreach measures had been conducted by Exelon and by the Town of Medway since publication of the DEIR in September 2015 (Exh. EX-20, at 4-5). The Secretary found that the FEIR for the Project adequately and properly complied with MEPA (id. at 22).

Under its primary statutory mandate, to review a proposed generating facility, the Siting Board must find, among other things, that the plans for the generating facility minimize environmental impacts. G.L. c. 164, § 69J¼. Accordingly, in this proceeding, as in all Siting Board proceedings conducted under G.L. c. 164, § 69J¼, the Siting Board has conducted a comprehensive review of the potential environmental impacts of the Project. As the record shows, and as is discussed in detail in Section IV, above, the Siting Board has reviewed the Project's potential air, water, wetlands, visual, noise, traffic, hazardous and solid waste, safety, cumulative health, and land use impacts. The Siting Board found that environmental impacts of the Project, including cumulative health impacts, would be minimized, and that the Company's plans for the construction of the proposed Project would minimize the environmental impacts of the Project consistent with the minimization of costs associated with the mitigation, control, and reduction of the environmental impacts of the Project.

MEPA also has conducted a comprehensive environmental review of the Project under G.L. c. 30, § 61. The Company's submissions to MEPA, including the ENF, DEIR and FEIR for the Project; public comments on the those documents; and the Secretary's Certificates on those documents, all are included in the record of this proceeding, and have been reviewed and considered by the Siting Board in its review of the Project as well.

The Siting Board's comprehensive environmental review of the proposed Project in this proceeding is consistent with the Board's statutory mandate, and with its established practice and

precedent of comprehensive environmental review for all proposed new energy facilities. The same comprehensive and in-depth environmental review would have occurred with or without the proximity of the identified EJ communities in Milford and Franklin. It is the Siting Board's view that the comprehensiveness of its established level of environmental review meets the enhanced review requirement and goals of the EJ Policy..¹¹²

The Siting Board finds that, consistent with the enhanced impacts and mitigation analysis requirement of the EJ Policy, the Company appropriately conducted air quality dispersion monitoring to determine whether the proposed Facility's air emissions, particularly its NO_x and particulates emissions, would have disproportionately adverse health or environmental impacts on the identified EJ communities in Milford and Franklin. This modeling showed that there would be no such impacts (Exhs. EX-6, at 4-26 and 4-27; EFSB-A-1(1)(S)(1)). The Siting Board notes that the Company in its DEIR for the Project presented this air modeling, and the associated analyses, as its enhanced impacts analysis for EJ purposes; that the Secretary found that the DEIR adequately and properly complied with MEPA; and that the Secretary required no further enhanced analysis of Project environmental impacts by the Company pursuant to the EJ Policy.

Based on the Siting Board's comprehensive review of the potential environmental impacts of the proposed Project; the Board's awareness of the "enhanced impacts and mitigation analysis" component of the EJ Policy; the Company's analysis in its DEIR and PSD application to MassDEP of the potential air emissions impacts of the Facility on areas within five miles of the Facility, including the identified EJ communities in Franklin and Milford; and the Secretary's review of the Project, including the Secretary's Certificates on the DEIR and FEIR, the Siting Board concludes that the component of the EJ Policy requiring enhanced review of environmental impacts and mitigation for the proposed Project has been satisfied.

¹¹² The EJ Policy states that enhanced analysis of impacts and mitigation may include analysis of multiple air impacts; data on baseline public health conditions within the affected EJ population; analysis of technological, site planning, and operational alternatives to reduce impacts; and proposed on-site and off-site mitigation measures to reduce multiple impacts and increase environmental benefits for the affected EJ population (EJ Policy at 8).

C. The Global Warming Solutions Act

As discussed in Section IV.B.2, above, the GWSA establishes a comprehensive framework for the reduction of GHG gas emissions in Massachusetts. The 2020 CECP, and the 2020 CECP Update, developed pursuant to the GWSA, require the reduction of GHG emissions to 25 percent below 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

As noted above, the GWSA contemplated establishing numeric GHG emissions limits for GHG-emitting sources or categories of sources by 2020, but such limits have not yet been promulgated. Accordingly, there currently are no GWSA-specific emissions criteria by which the Siting Board can assess the compliance of a GHG-emitting facility, such as the Company's proposed generating Facility, with the GWSA.¹¹³ However, as discussed in Section IV.B.2, above, MassDEP is in the process of developing regulations pursuant to Section 3(d) of the GWSA that, pursuant to the Executive Order 569, are to be proposed by December 16, 2016 and promulgated by August 11, 2017. Additionally, MassDEP has issued a Proposed Air Quality Plan Approval for the proposed Facility. Citing GWSA Section 3(d) and Executive Order 569, the Proposed Air Plan Approval imposes an annual declining cap on the Facility's allowable CO₂ emissions, and requires the Facility's compliance with applicable provisions of the Section 3(d) regulations once MassDEP has issued the regulations.

Section IV.B.2, above, discusses measures taken by the Company to build and operate the Project in a manner consistent with the policy of GHG-emissions reduction embodied in the GWSA, including the Climate Plan. These measures include the choice of turbines, fuels, and pollution control technology for the Facility, as well as the Facility's operational effect of displacing the operation of older, less efficient generating plants. Additional provisions to minimize CO₂ emissions are highlighted by the Secretary's Certificate on the FEIR. Consequently, for the reasons above and in Section IV.B.2, the Siting Board finds that construction and operation of the proposed Project is consistent with the GWSA.

D. Consistency with Other Policies of the Commonwealth

In Sections II and IV, above, the Siting Board has reviewed the process by which the Company sited and designed the proposed Facility, and the overall environmental and health

¹¹³ However, as noted above, MassDEP regulations at 310 CMR § 7.72 relative to SF₆ leakage rates apply to the Facility.

impacts of the proposed Facility as sited and designed. As part of this review, the Siting Board has identified a number of Commonwealth policies applicable to the design, construction, and operation of the proposed Facility. These policies, except for those discussed above, and the Company's compliance therewith, are summarized below.

As discussed in Section IV.B, above, the MassDEP, in conjunction with the USEPA, extensively regulates emissions of criteria and non-criteria air pollutants from new sources such as the proposed Facility. The Company has demonstrated that operation of its proposed Facility, with the conditions imposed, would be consistent with all applicable MassDEP and USEPA standards.

As discussed in Section IV.C, above, the MassDEP, in conjunction with the USEPA, extensively regulates various environmental issues related to water, as well as construction in wetlands and waterway areas. The Company has demonstrated that construction and operation of the Facility would be consistent with applicable MassDEP and USEPA standards.

As discussed in Section IV.E, above, the Company has addressed operational and construction noise. As part of the Board's approval of the Petition, the Board directed the Company to develop an operational noise protocol, to work with certain residents on developing off-site noise mitigation and has imposed restrictions on the hours when noisy construction may take place. The Company will meet the MassDEP Noise Policy by limiting off-site noise operational increases to ten dBA or less at the nearest residences and property lines; the Company has also committed to not operating the Facility concurrently with the existing facility during the hours of 11:00 p.m. to 6:00 a.m. With these conditions, the construction and operation of the Project would be consistent with the policies of the Commonwealth regarding noise impacts.

E. Conclusion with Respect to Consistency with Policies of the Commonwealth

Accordingly, for the reasons set forth above, the Siting Board finds that plans for construction of the proposed Project are consistent with current health and environmental protection policies of the Commonwealth and with such energy policies of the Commonwealth as have been adopted for the specific purpose of guiding the decisions of the Siting Board.

VI. ANALYSIS UNDER G.L. C. 40A § 3 – ZONING EXEMPTIONS

Pursuant to G.L. c. 40A, § 3, the Company requests individual zoning exemptions from the Town of Medway Zoning Bylaw (Exh. EX-2).

A. Standard of Review

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

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

Thus, a petitioner seeking exemption from a local zoning by-law under G.L. c. 40A, § 3, must meet three statutory-based criteria. First, the petitioner must qualify as a public service corporation. Second, the petitioner must demonstrate that its present or proposed use of the land or structure is reasonably necessary for the convenience or welfare of the public. Finally, the petitioner must establish that it requires exemption from the zoning ordinance or by-law. New England Power Company d/b/a National Grid, D.P.U. 15-44/15-45, at 4-5 (2016) (“MVRP”); NSTAR Electric Company d/b/a Eversource Energy, D.P.U 15-02, at 3-4 (2015) (“Eversource Hopkinton”); Save the Bay, Inc. v. Department of Public Utilities, 366 Mass. 667 (1975) (“Save the Bay”).

Additionally, the Siting Board favors the resolution of local issues on a local level whenever possible, to reduce concern regarding any intrusion on home rule. The Siting Board believes that the most effective approach for doing so is for a petitioner to consult with local officials regarding its project before seeking zoning exemptions pursuant to G.L. c. 40A, § 3. New England Power Company d/b/a National Grid, 20 DOMSB 129, 235 (2014) (“Salem Cables”); Russell Biomass LLC/Western Massachusetts Electric Company, 17 DOMSB 1, 67-68 (2009) (“Russell Biomass/WMECo”); MVRP at 62. Thus, the Siting Board encourages petitioners to consult with local officials, and in some circumstances, to apply for local zoning

permits, prior to seeking zoning exemptions from the Department under G.L. c. 40A, § 3. Salem Cables at 135; Russell Biomass/WMECo at 68.¹¹⁴

B. Public Service Corporation

1. Standard of Review

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

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

Save the Bay, 366 Mass. at 680; MVRP at 5; Eversource Hopkinton at 4-5; see also Berkshire Power Development, Inc., D.P.U. 96-104, at 26-36 (1997) (“Berkshire Power”).¹¹⁵

¹¹⁴ G.L. c. 40A, §3 authorizes the Department, not the Siting Board, to grant zoning exemptions. On April 16, 2015, the Chair of the Department referred the Company’s zoning exemption petition to the Siting Board for review and decision. G.L. c. 25, § 4. In accordance with G.L. c. 164, § 69H, the Siting Board applies Department and Siting Board standards “in a consistent manner”. G.L. c. 164, § 69H(3). Thus, the Department and the Siting Board implement G.L. c. 40A, §3 using consistent standards of review. Consequently, the standard of review, and this Decision, cites to both Siting Board Decisions and Department Orders interpreting G.L. c. 40A, §3.

¹¹⁵ The Department interprets this list not as a test, but rather, as guidance to ensure that the intent of G.L. c. 40A, § 3, will be realized, i.e., that a present or proposed use of land or structure that is determined by the Department to be “reasonably necessary for the convenience or welfare of the public” not be foreclosed due to local opposition. Berkshire Power at 30; Save the Bay, 366 Mass. at 685-686; Town of Truro v. Department of Public Utilities, 365 Mass. 407, at 410 (1974) (“Town of Truro”); MVRP at 5-6; Eversource Hopkinton at 4-5. The Department has interpreted the “pertinent considerations” as a “flexible set of criteria which allow the Department to respond to changes in the environment in which the industries it regulates operate and still provide for the public welfare.” Berkshire Power at 30; MVRP at 6; see also Dispatch Communications of New England d/b/a Nextel Communications, Inc., D.P.U./D.T.E. 95-59B/95-80/95-112/96-113, at 6 (1998). The Department has determined that it is not necessary for a petitioner to demonstrate the existence of “an appropriate franchise” in order to establish PSC status. Berkshire Power at 31; MVRP at 6; Eversource Hopkinton at 4-5.

2. Analysis and Findings

Pursuant to Department and Siting Board precedent, “any corporation that owns generating assets in Massachusetts, and makes those assets available to serve the New England market, is a public service corporation.” USGen New England, Inc., D.T.E. 03-83, at 15 n.9 (2004); accord, Brockton Power at 99-100; Russell Biomass LLC, D.T.E./D.P.U. 06-60, at 15 (2008) (“Russell Biomass 2008”).

Exelon states that its parent company, Exelon Generation Company LLC (“Exelon Generation”) is in the business of acquiring, owning, and operating, as well as investing in and developing, electric generating facilities, including facilities in Massachusetts that serve the electric power needs of Massachusetts and the New England region (Exhs. EX-2, at 14; EFSB-Z-7). The Company states that the output of the proposed Facility, which will be owned and operated by Exelon West Medway II, LLC will be used to meet capacity shortages identified by ISO-NE in the SEMA/RI region (Exh. EX-2, at 7, 14). Exelon has an ISO capacity supply obligation beginning in June 2018, and thus the Facility will begin serving the need for electric power in Massachusetts and in the New England market at that time (id. at 14).

Accordingly, we find that Exelon meets the criteria for public service corporation status as developed and applied by the Department and the Siting Board under G.L. c. 40A, §3.

C. Public Convenience and Welfare

1. Standard of Review

In determining whether the present or proposed use is reasonably necessary for the public convenience or welfare, the Department must balance the interests of the general public against the local interest. Save the Bay at 680; Town of Truro at 407. Specifically, the Department is empowered and required to undertake “a broad and balanced consideration of all aspects of the general public interest and welfare and not merely [make an] examination of the local and individual interests which might be affected.” New York Central Railroad v. Department of Public Utilities, 347 Mass. 586, 592 (1964) (“NY Central Railroad”). When reviewing a petition for a zoning exemption under G.L. c. 40A, § 3, the Department is empowered and required to consider the public effects of the requested exemption in Massachusetts as a whole and upon the territory served by the applicant. Save the Bay at 685; NY Central Railroad at 592.

Therefore, when making a determination as to whether a petitioner's present or proposed use is reasonably necessary for the public convenience or welfare, the Department examines: (1) the need for, or public benefits of, the present or proposed use; (2) the present or proposed use and any alternatives or alternative sites identified;¹¹⁶ and (3) the environmental impacts or any other impacts of the present or proposed use. The Department then balances the interests of the general public against the local interest and determines whether the present or proposed use of the land or structures is reasonably necessary for the convenience or welfare of the public.

Boston Gas, D.T.E. 00-24, at 2-6; Massachusetts Electric Company, D.T.E. 07-77, at 5-6 (2002); Tennessee Gas Pipeline Company, D.T.E. 01-51, at 5-6 (2002); Tennessee Gas Company, D.T.E. 98-33, at 4-5 (1998).

2. Analysis and Findings

With respect to energy and reliability benefits, the Siting Board found in Section III, above, that construction of this Facility, including the selection of GE LMS100 technology, contributed on balance to a reliable, low-cost, diverse regional energy supply with minimal environmental impacts.

The Siting Board also reviewed the Company's site selection process in Section II, and determined that its description of the site selection process used is accurate. Finally, regarding Project environmental impacts, in Section IV the Siting Board reviewed the environmental impacts of the Project and while some potential local environmental impacts were identified, the Siting Board found that the environmental impacts of the Project would be minimized with the implementation of certain mitigation measures and conditions.

¹¹⁶ With respect to the particular site chosen by a petitioner, G.L. c. 40A, § 3 does not require the petitioner to demonstrate that its primary site is the best possible alternative, nor does the statute require the Department to consider and reject every possible alternative site presented. Rather, the availability of alternative sites, the efforts necessary to secure them, and the relative advantages and disadvantages of those sites are matters of fact bearing solely upon the main issue of whether the primary site is reasonably necessary for the convenience or welfare of the public. Martarano v. Department of Public Utilities, 401 Mass. 257, 265 (1987); NY Central Railroad at 591.

Based on the foregoing, the Siting Board finds that the general public interest in constructing the Project outweighs identifiable adverse local impacts. Accordingly, the Siting Board finds that the Project is reasonably necessary for the convenience or welfare of the public.

D. Individual Exemptions Required

1. Standard of Review

In determining whether an exemption from a particular provision of a zoning by-law is “required” for purposes of G.L. c. 40A, § 3, the Department determines whether the exemption is necessary to allow construction or operation of the petitioner’s project. MVRP at 7; Eversource Hopkinton at 6; Tennessee Gas Company, D.P.U. 92-261, at 20-21 (1993). It is a petitioner’s burden to identify the individual zoning provisions applicable to the Project and then to establish on the record that exemption from each of those provisions is required:

The Company is both in a better position to identify its needs, and has the responsibility to fully plead its own case . . . The Department fully expects that, henceforth, all public service corporations seeking exemptions under [G.L.] c. 40A, § 3 will identify fully and in a timely manner all exemptions that are necessary for the corporation to proceed with its proposed activities, so that the Department is provided ample opportunity to investigate the need for the required exemptions.

New York Cellular Geographic Service Area, Inc., D.P.U. 94-44, at 18 (1995); MVRP at 7-8; Eversource Hopkinton at 6.

2. Exemptions Sought

Exelon seeks individual zoning exemption from two provisions of Section 6.1 of the Medway Zoning Bylaw: (1) the 40-foot height limitation, and (2) the setback requirements (the 30-foot front and rear setback requirements, and the 20-foot side setback requirement).

a. Section 6.1 40-Foot Height Limitation

The proposed Facility would be located in an Industrial II zoning district, in which electric generation is an allowable use (Exhs. EX-1, at 8; EX-2(1), at 5.4, Table 1). Section 6.1 of the Bylaw limits the height of “each use, building, or structure” in an Industrial II district to 40 feet (Exhs. EX-1, at 4; EX-2 (1), at 50 and Table 2). Exelon stated that “the vast majority” of

the Facility's building heights would not exceed the 40-foot height limit, but that certain Facility components, including the two 160-foot high exhaust stacks and the 55-foot high sound wall that would exceed this limit (Exh. EX-2, at 8). In total, the Company identified, in Attachment A to its zoning petition, twelve Facility components that would exceed the 40-foot limit, each of which Exelon describes as "essential" elements of the Facility (id. at 4 and Att. A ("Attachment A")).

Exelon stated that it is possible that not all of the Facility components listed in Attachment A would be subject to the height limit in Section 6.1; but, the Company reasoned, the granting of an exemption from this provision for all twelve components would remove all doubt as to the Facility's compliance with the Bylaw (Exh. EX-2, at 4). The Company noted that if any of these components were to be considered a "building," a variance would be required (id.). The Company asserted that the legal standard for obtaining variances is difficult to meet and, even if met, a variance would be appealable and therefore a potential source of project delay, burden, and undue expense (id.). The Company stated that, without either a variance or a zoning exemption, it cannot obtain site plan approval or a building permit for the project (id. at 10). Exelon stated that engaging in the variance process, including possible appeals, likely would jeopardize its ability to complete construction of the Facility in time to meet its ISO-NE capacity supply obligation by the required on-line date of June 2018 (id.).

The Siting Board finds that exemption from the 40-foot height limitation in Section 6.1 of the Town of Medway Zoning Bylaw is required for those structures listed in Attachment A to the Company's Second Revised Zoning Petition, within the meaning of G.L. c. 40A, §3.

b. Section 6.1 30-Foot Front Setback Requirement

Section 6.1 of the Bylaw requires that "each use, building, or structure" in a particular zoning district meet certain front, rear, and side setback distances. In an Industrial II district, the use, building or structure must have a front and rear setback of 30 feet, and a side setback of 20 feet (Exhs. EX-1, at 8; EX-2 (1) at 50 and Table 2). Exelon stated that one Facility component, the proposed 20-foot high sound wall, would not meet the 30-foot front setback requirement, as it would be located at the Property line, immediately adjacent to the abutting

daycare center (Exh. EX-2, at 8).¹¹⁷ As with the requested exemption from Section 6.1's height limit, Exelon requested exemption from the Section 6.1 setback requirements to avoid the necessity for a variance. Exelon reiterated that, in addition to the difficulty in obtaining variances, once obtained, variances are subject to appeal, and thus would present a potential source of project delay, burden, and undue expense (id. at 5). Exelon noted again, that such delay could jeopardize its obligation to ISO-NE to have the Facility in operation by June 2018 (id. at 5, 10).

The Siting Board finds that exemption from the 30-foot front setback requirement in Section 6.1 of the Town of Medway Zoning Bylaw is required for the proposed Facility's 20-foot high sound wall, within the meaning of G.L. c. 40A, §3.

E. Consultation with the Municipality

Exelon stated that, prior to the filing of its Zoning Petition, it met with Medway officials on a number of occasions to discuss the proposed Facility. The Company met with the Town Administrator, the Board of Selectmen, and the Planning Director (Exh. EX-2, at 10). Exelon stated that it also consulted with the Medway Building Commissioner and Zoning Enforcement Officer regarding the Company's need for zoning relief from the 40-foot height limit in Section 6.1 of the Bylaw. Exelon stated that, in the opinion of the Building Commissioner, it was unclear whether the Facility components that exceeded 40 feet in height would constitute a "building" subject to the 40-foot height limit (id.). Exelon stated that the Building Commissioner agreed that if any of the components was considered to be a "building," a variance from Section 6.1 would be required (id. at 10-11). Similarly, Exelon stated that the Building Commissioner was unsure whether the 20-foot sound wall to be located on the property line between the Facility site and the abutting daycare center would constitute a "structure" subject to the 30-foot front setback requirement in Section 6.1, but that if it was considered to constitute a "structure," a variance from Section 6.1 would be required (id. at 11). The record shows that Medway supports the requested exemptions (Exh. EFSB-MED-6).

Exelon stated that it has agreed to site plan review for the proposed Facility under Section 3.5 of the Bylaw, under which the Facility will be classified as a Major Site Plan Project

¹¹⁷ As described in Section IV.E, above, the purpose of the 20-foot sound wall is to provide noise mitigation for the daycare center.

(Exh. EX-2, at 11). Exelon stated that, as a Major Site Plan Project, the Facility will be subject to review by various Medway departments and boards, outside consultants, and the public (id.).

The record shows that Exelon has consulted and worked cooperatively with the Town of Medway with respect to zoning. Prior to seeking zoning relief from the Department, the Company apprised Medway of its proposed Project. The record shows that Medway is in agreement with the Company that the applicability of the height and setback requirements of Section 6.1 of the Bylaw to some Facility components is unclear and that, if Section 6.1 were to apply, then variances would be required. The record shows that Medway does not oppose Exelon's decision to seek exemptions from Section 6.1.

Exelon has not requested a comprehensive zoning exemption. Rather, consistent with honoring the principle of home rule authority, the Company has narrowly tailored its zoning exemption request. The Company has agreed to comprehensive Town of Medway review of the Project through the site plan review process before the Planning and Economic Development Board, which has the authority to impose conditions and mitigation measures. See Bylaw at Section 3.5. The Company has represented that it is committed to complying with all reasonable conditions and recommendations of the Planning Board (Exh. EX-2, at 11).

Based on the foregoing, the Siting Board finds that the Company made a good faith effort to consult with municipal authorities regarding its proposal to seek zoning relief for construction of the proposed Project under G.L. c. 40A, § 3, and that the Company's communications have been consistent with the spirit and intent of Russell Biomass.

F. Conclusion on Request for Individual Zoning Exemptions

The Siting Board found above that: (1) the Company is a public service corporation; (2) the proposed use is reasonably necessary for the public convenience or welfare; and (3) the specifically named zoning exemptions are required for construction of the Project, within the meaning of G.L. c. 40A, § 3. Additionally, the Siting Board found that the Company engaged in good faith consultation with the Town of Medway.

Accordingly, the Siting Board grants the Company's request for the individual zoning exemptions described above, subject to the conditions in this Decision.

VII. SECTION 61 FINDINGS

MEPA provides that “[a]ny determination made by an agency of the commonwealth shall include a finding describing the environmental impact, if any, of the Project and a finding that all feasible measures have been taken to avoid or minimize said impact” (“Section 61 Findings”). G.L. c. 30, § 61. Pursuant to 301 C.M.R. § 11.01(3), Section 61 Findings are necessary when an EIR is submitted to the Secretary of EEA and Section 61 Findings should be based on such EIR. Where an EIR is not required, Section 61 Findings are not necessary. 301 C.M.R. § 11.01(4). On April 30, 2015, the Company submitted an ENF to the Secretary (Exh. EX-3). The record indicates that on June 19, 2015, the Secretary issued a Certificate on the Company’s ENF requiring the Company to file a DEIR and an FEIR (Exh. EX-5). Therefore a finding under G.L. c. 30, § 61 is necessary for the Company’s Zoning Petition.¹¹⁸ The Company submitted its FEIR on February 1, 2016 (Exh. EX-19). The Secretary issued the Certificate on March 18, 2016, determining that the FEIR adequately and properly complies with MEPA and its implementing regulations (Exh. EX-20).

The Siting Board recognizes the Commonwealth’s policies relating to GHG emissions, including G.L. c. 30, § 61 and MEPA’s GHG Policy. The Secretary’s Certificate on the ENF states: “This Project is subject to MEPA Greenhouse Gas Policy and Protocol (GHG Policy). The GHG Policy requires identification of GHG emissions associated with the Project and adoption of all feasible measures to avoid, minimize and mitigate these increases” (Exh. EX-5, at 6). In Section IV.B.2 above, the Siting Board conducted an analysis on the Project’s proposed GHG emissions, requirements of the 2020 CECP and the 2020 CECP Update, and compliance with the GWSA, and found that the proposed Project is consistent with the GWSA. In Section IV above, the Siting Board conducted a comprehensive analysis of the environmental impacts of the proposed Project, and found that the Company’s plans for the construction of the proposed Project would minimize the environmental impacts of the Project consistent with the minimization of costs associated with the mitigation, control, and reduction of the environmental impacts of the Project. Based upon the record in this case, implementation of the required

¹¹⁸ The Siting Board generally is not required to make a G.L. c. 30, § 61 finding in a G.L. c. 164, § 69J ¼ proceeding, as the Siting Board is exempt by statute from MEPA requirements. G.L. c. 164, § 69I. However, the Board must comply with MEPA in this case. See footnote 42, above. Accordingly, the Siting Board in this proceeding has conducted the review and made the findings required by MEPA.

mitigation measures, and compliance with all applicable federal, state, regional and local laws and regulations, the Siting Board finds that the Company has taken all feasible measures to avoid or minimize the environmental impacts of the Project.

VIII. RULING ON MOTION TO FILE SUPPLEMENTAL BRIEFING

A. Procedural Background

On May 17, 2017, the Massachusetts Supreme Judicial Court (“Court”) issued a decision in Kain v. Department of Environmental Protection, 474 Mass. 278 (2016). On the same day that Kain was issued, CLF filed a three-page letter with the Siting Board (“CLF May 17 Letter”). Attached to the letter was a copy of the Kain decision. In its letter, CLF stated, among other things, that the Court’s decision is “binding authority that is directly relevant to the Board’s decision on the merits” of this case (CLF May 17 Letter at 1). On May 20, 2016, Exelon filed a three-page letter in response (“Exelon May 20 Letter”). In its letter, Exelon stated, among other things, that Kain “has no legal impact on the Siting Board’s review of Exelon’s Petition to Construct” in this proceeding (Exelon May 20 Letter at 1).

On July 20, 2016, approximately six months after the close of evidentiary hearings and four months after the completion of briefing, CLF filed a motion with the Siting Board (“CLF Motion”), seeking leave to file supplemental briefing “on the impact of the Kain decision on the Board’s consideration of [Exelon’s] Petition” (CLF Motion at 2).¹¹⁹ CLF attached its proposed supplemental brief (“Proposed Brief”) as Exhibit 1 to its Motion. On July 21, 2016, the Presiding Officer issued notice to all parties and the limited participant in the proceeding that anyone wishing to file a response to the CLF Motion would be permitted to do until the close of business on July 25, 2016. On July 25, Exelon filed a response to the CLF Motion (“Exelon Response”).

B. Analysis and Findings

The premise underlying CLF’s request for supplemental briefing is that the issuance of Kain changed applicable law in ways that directly and materially affect the Board’s review of

¹¹⁹ CLF characterizes its request as a response to the Company’s May 20, 2016 “briefing submitted without permission.” CLF’s response is nearly two months late.

Exelon's proposed generating facility in this proceeding. Specifically, CLF asserts that, as a result of the Court's decision in Kain: (1) the Board cannot approve Exelon's proposed facility, or any other fossil-fueled generating facility, until MassDEP has issued the regulations required by Section 3(d) of the GWSA; and (2) the Company's displacement analysis, to the extent that it shows only regional, and not in-state, reductions in GHG emissions, is an insufficient basis for demonstrating the proposed facility's consistency with the GWSA (see CLF Proposed Brief at 1-2). Exelon responds that, even if the procedural irregularity of CLF's proposed supplemental submission is set aside, CLF misstates the relevance of Kain, which, the Company asserts, "does not require or imply any need to change or adjust how the Siting Board discharges its statutory duty to determine the consistency of the facility with the GWSA" (Exelon Response at 1-3).

A close reading of CLF's Proposed Brief shows that the two arguments CLF seeks to make at this point in actuality do not depend on the issuance of Kain, and could have been made by CLF well before Kain was issued.¹²⁰ Accordingly, as discussed further below, CLF's motion to file supplemental briefing is denied.

1. GWSA Section 9 Argument

The Court in Kain did not decide, or even address, the interrelationship of the GWSA and the Siting Board's authority and mandates under its statute.¹²¹ Further, as CLF itself explains in its Proposed Brief, the argument that the Siting Board is precluded from approving a fossil-fueled generating facility until MassDEP has promulgated the regulations required by GWSA Section 3(d) is grounded in the statutory language of GWSA Section 9, not in the Court's decision in Kain (see Proposed Brief at 2, arguing that the plain text of the GWSA allows for construction of a new electric generating facility only after the Section 3(d) regulations have been issued). Accordingly, this argument has been available to CLF since enactment of the

¹²⁰ In fact, one of the two arguments was raised by CLF on brief. See Section VIII.B.2, below.

¹²¹ G.L. c. 164, §§ 69G-69S.

GWSA in 2008, and not, as CLF would suggest, available only since Kain was issued in May of this year.

CLF's request for supplemental briefing regarding the legal effect of GWSA Section 9 on the Siting Board's ability to carry out its statutory mandates is in actuality a request to raise a new legal argument after the close of hearings and the close of the briefing period in this case. Thus, while it may be labeled a request for supplemental briefing, the CLF Motion constitutes more accurately a request to re-open the proceeding to introduce this new argument. Requests to re-open a completed adjudicatory proceeding are to be granted sparingly, for good cause only, and only where the matter sought to be introduced could not have been presented in a timely manner during the proceeding. 980 C.M.R. § 1.09(1); Cape Wind Associates, LLC and Commonwealth Electric Company, EFSB 02-2/D.T.E. 02-53, Ruling on Motion to Re-Open Adjudicatory Hearing (May 17, 2006).

CLF could have raised its GWSA Section 9 argument at any time during this proceeding, irrespective of the issuance of Kain. CLF fails to demonstrate good cause for raising the argument now, after hearings and briefing have been completed. CLF's motion for leave to file supplemental briefing with respect to this issue consequently is denied.

2. Adequacy of Displacement Analysis

The Court in Kain did not decide, or address in any way, whether or to what extent a generating facility proponent may point to net regional GHG emissions reductions as a basis for demonstrating consistency with the health, environmental protection or energy policies of the Commonwealth, including the GWSA, under Section 69J¼ of the Siting statute. This issue was, however, raised by CLF during the proceeding (see CLF Brief at 41-42; CLF Reply Brief at 9-10).

After raising the legitimacy of the Company's GHG-emissions displacement analysis during the proceeding, CLF in its Motion now seeks to augment its earlier arguments. Significantly, CLF seeks to do so not only by further legal reasoning, but by the addition of new quantitative analysis and a number of new reference documents not previously offered or entered into evidence (see e.g., CLF Proposed Brief at 12, n. 52; 13, n. 54, 57, 58). It is indisputable that the displacement argument was available to CLF prior to the issuance of Kain in May 2016, and prior to the conclusion of this proceeding, since CLF made this argument in the briefs that it filed

in February and March 2016. CLF fails to demonstrate good cause to support the re-opening of the record to allow further argument and evidence on this issue based on the issuance of the Kain decision, or on any other basis. 980 C.M.R. § 1.09(1). Cape Wind Associates, LLC and Commonwealth Electric Company, EFSB 02-2/D.T.E. 02-53, Ruling on Motion to Re-Open Adjudicatory Hearing (May 17, 2006). CLF's motion for leave to file supplemental briefing with respect to this issue consequently is denied.

C. Conclusion

The Motion of the Conservation Law Foundation for Leave to File Supplemental Briefing, dated July 22, 2016, is denied in its entirety. The four documents referenced above that CLF and the Company have filed pertaining to the Kain decision will not be considered by the Siting Board in its deliberations and in the issuance of a tentative and final decision on this matter.

IX. DECISION

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

In Section II, above, the Siting Board found that Exelon provided an accurate description of its site selection process and that the Company's site selection process contributed to minimizing the environmental impacts of the proposed Project.

In Section III, above, the Siting Board found that the Company's technology selection on balance contributes to a reliable, low-cost, diverse regional energy supply with minimal environmental impacts.

In Section IV, above, the Siting Board found that with the implementation of the listed conditions relative to air, water, visual, noise, traffic, safety, and hazardous and solid waste, plans for the construction of the proposed generating Facility would minimize the environmental

impacts of the proposed Project consistent with the minimization of costs associated with the mitigation, control, and reduction of the environmental impacts of the proposed Project.

In Section V, above, the Siting Board found that the plans for the construction of the proposed Project are consistent with current health and environmental protection policies of the Commonwealth, and with such energy policies of the Commonwealth as have been adopted by the Commonwealth for the specific purpose of guiding the decisions of the Siting Board.

Accordingly, the Siting Board finds that, upon compliance with the conditions set forth above and listed below, the construction and operation of the proposed Project will provide a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.

Accordingly, the Siting Board APPROVES the Petition of Exelon West Medway, LLC and Exelon West Medway II, LLC to construct a 200 MW simple-cycle dual-fueled electric generating facility and ancillary facilities on Summer Street in the town of Medway, subject to the conditions below.

- A. The Siting Board directs Exelon to submit, in consultation with Medway, to the Siting Board, prior to commercial operation, a PM reduction plan including: (1) identification and description of feasible and cost-effective PM reduction measures that could be implemented in the vicinity of the Project; (2) the cost of such potential measures; and (3) a proposal for the Company's participation in the implementation of such reduction measures.
- B. The Siting Board directs the Company to limit operation of the Facility on ULSD consistent with MassDEP's requirements specified in the Proposed Air Plan Approval, or, as otherwise included in the final Air Plan Approval, when issued.
- C. The Siting Board directs that all diesel-powered non-road construction equipment with engine horsepower ratings of 50 and above, and that are to be used for 30 or more days over the course of Project construction, have USEPA-verified (or equivalent) emission control devices, such as oxidation catalysts or other comparable technologies (to the extent that they are commercially available) installed on the exhaust system side of the diesel combustion engine.
- D. The Siting Board directs the Company to submit a copy of the final Air Plan Approval and final PSD Permit for the Facility when issued by MassDEP, for Siting Board review.
- E. The Siting Board directs Exelon to install and maintain continuous emission monitoring system in compliance with the requirements of the MassDEP and USEPA. In the event that there is a lapse in compliance with any air emissions requirement

- during the operation of the proposed facility, Exelon shall provide to the Medway Board of Health copies of: (1) any excess emissions reports or reports of deviations which Exelon files with either MassDEP or USEPA, and (2) any notice of violation or notices of non-compliance that MassDEP or USEPA issues to the proposed Facility, within ten business days of filing or receipt, as applicable.
- F. The Siting Board directs the Company to provide a copy of the water-supply contract between the Company and the Town of Millis prior to construction.
 - G. The Siting Board directs the Company, prior to construction of the Facility, to retrofit the existing facility's stormwater management system to promote groundwater recharge, consistent with the MassDEP Stormwater Handbook and the Medway Stormwater Regulations.
 - H. The Siting Board directs the Company to perform regular leak detection surveys along Medway's distribution piping to the Facility, and provide the results to Medway. Furthermore, the Company shall work with Medway to identify cost effective water distribution maintenance Projects and water conservation programs that could be funded through the PILOT program and ULSD burning fee that would be collected from the HCA.
 - I. The Siting Board directs the Company to submit to the Siting Board the renewed Millis WMA permit, when issued.
 - J. If the Company wishes to deliver water to the Facility by any other means or location other than by underground water lines on Main Street or Village Street, the Company shall file a notice of Project change.
 - K. The Siting Board directs that Exelon, prior to commencing construction, shall file with the Siting Board a copy of the inter-municipal agreement with the towns of Millis and Medway regarding the delivery of water from Millis's water system to Medway's water system.
 - L. The Siting Board directs Exelon to limit the use of trucked-in water to a temporary, contingency-related, back-up measure only. If the Company at any time decides to incorporate the use of any other water supply source, including trucked-in water, as a planned, regular component of its water supply plan for the Facility, as opposed to a contingency related back up measure only, the Company shall file a notice of Project change with the Siting Board.
 - M. The Siting Board directs Exelon to submit an annual report for the first three years of the Facility's operation that provides the following information on a monthly basis: (a) withdrawals from the on-site well; (b) purchases from Millis's municipal system; and (c) purchases from water trucking companies.
 - N. The Siting Board directs the Company to provide, as requested by individual property owners or appropriate municipal officials, reasonable off-site mitigation of visual

- impacts, including shrubs, trees, window awnings, or other measures that would screen views of the proposed generating Facility and related facilities at affected residential properties and roadways up to one-half mile from the 94-acre Summer Street site boundary where the Facility impacts views. The Siting Board chooses a one-half mile setback from the 94-acre Summer Street site boundary for required visual mitigation measures after a review of mapping data, the number of residences that would be affected by the proposed power plant, the density of homes within the area, as well as Siting Board precedent. In implementing this requirement, the Company: (1) shall provide shrub and tree plantings, window awnings, or other reasonable mitigation on private property, only with the permission of the property owner, and along public ways, only with the permission of the appropriate municipal officials; (2) shall provide written notice of this requirement to appropriate officials and to all owners of property within one-half mile of the 94-acre Summer Street site boundary, prior to the commencement of construction; (3) may limit requests for mitigation measures to a specified period ending no less than six months after initial operation of the Facility; (4) shall complete all agreed-upon mitigation measures within one year after completion of construction, or if based on a request filed after commencement of construction, within one year after such request; and (5) shall provide a warranty to property owners to ensure that all plantings are established and replaced if needed at the end of one year from the date of planting, provided that the property owner reasonably maintains the plantings.
- O. The Siting Board directs the Company at least three months before the start of physical Project construction to demonstrate to the Siting Board: (1) the pending or effected purchase of 5 Summer Street; or (2) completed plans and documentation for construction of the L-shaped sound wall, incorporating reasonable visual mitigation found acceptable to the property owner.
- P. The Siting Board directs the Company to maintain the good appearance of the Facility, including the stacks, the vegetation atop the berm and the berm itself along the south-to-southeast perimeter of the Exelon property, as well as other on-site landscaping, for the life of the Project.
- Q. The Siting Board directs the Company to work with property owners at R2 and neighboring properties within 300 feet of R2, should the property owners so desire, to choose and implement any mutually acceptable measures to limit nighttime noise impacts.

The Siting Board directs the Company to consult with Medway and MassDEP to develop an operational noise monitoring protocol, which shall consist of an ongoing periodic noise monitoring program and reporting procedure. The protocol shall include the collection of additional baseline noise measurements, taken on a schedule chosen in consultation with MassDEP and Medway. The periodic noise monitoring program shall begin within six months of the commencement of the Project's commercial operation. The reporting procedure should

provide for submission of all periodic monitoring results to Medway; and relevant results to any persons whose property is affected by noise increases from the Project of three dBA or more.

The Company shall submit a copy of the noise monitoring protocol to the Siting Board prior to commencement of commercial operation, and shall submit copies of the monitoring results when provided to Medway or affected persons in accordance with the noise monitoring protocol.

- R. The Siting Board directs Exelon, as set forth in the HCA, to establish, prior to commencement of construction, a construction noise testing protocol in Medway with MassDEP and Medway's designated representative, and to respond, as best it can to complaints to the Company or Medway about noise from Project construction.
- S. The Company's typical work days may begin at 6:00 a.m. and end at 6:00 p.m., Monday through Friday; the Company shall, however, limit Project-related construction activities that generate significant noise levels to no earlier than 8:00 a.m. and no later than 4:00 p.m. Saturday work and extended weekday work shall occur only to replace one or more lost weather days, to complete tasks requiring a continuous process once started, or to handle schedule-sensitive work activities; furthermore, with respect to Saturday work, the Company shall limit any construction-related activities for the Project that may generate significant noise levels to the hours between 9:00 a.m. and 3:00 p.m. Extended work weeks or days shall occur only as approved in advance and in writing by Medway.
- T. The Siting Board directs the Company to develop and adopt a clear and strict policy for its workers and contractors to minimize vehicular noise and visual impacts to neighborhoods adjacent to the Project. The policy should include designated speed limits, staggered arrival and departure times, proper maintenance of vehicles, a provision against the use of high beams and loud sound systems, and carpooling incentives, as well as additional mitigation measures that may be useful. Furthermore, if work crew arrivals and departures prove disruptive, the Siting Board directs the Company to arrange for assistance from traffic control detail or personnel at Medway's request.
- U. The Siting Board directs the Company, in consultation with Medway, to develop an outreach plan for Project construction, to be made available to the public no later than one month after the date of this decision. This outreach plan should, at a minimum, set forth procedures for providing prior notification to affected residents of: (1) the scheduled start, duration, and hours of construction; (2) any construction the Company intends to conduct that must take place outside of the hours detailed above; and (3) complaint and response procedures including contact information, the availability of web-based project information, a dedicated project hotline for complaints, and protocols for notifying all potentially affected residents as well as educational institutions, community organizations, and public centers of upcoming construction.

- V. The Siting Board directs the Company to submit the updated SPCC, including the Facility Response Plan, prior to commencement of construction.
- W. The Siting Board directs the Company to develop an Emergency Response Plan for the proposed Facility in consultation with Medway.
- X. The Siting Board directs the Company to utilize traffic control detail or personnel at the construction worker parking lot entrance and on West Street during the predicted arrival and departure hours when the Company anticipates more than 100 vehicles would be using the lot.
- Y. The Siting Board directs the Company to provide outreach to all residences on West Street between Milford Avenue/Route 109 and Hartford Avenue/Route 126 and on Beech Street between West Street and Hartford Avenue/Route 126 detailing the specifics of the construction working parking lot; including location of the driveway, expected arrival and departure times, description of the worker identification process, and number of vehicles expected during each stage of Project construction. The outreach shall contain Company contact information and a proposed construction schedule, and shall be in addition to any community outreach or communication regarding large deliveries or other general construction-related impacts.
- Z. The Siting Board directs the Company to repair any roadway damage attributable to construction-related traffic in Bellingham on Hartford Avenue/Route 126 between I-495 and the Medway town line and on Beech Street between West Street and Hartford Avenue/Route 126, within six months following completion of construction. Within 60 days after completing road repairs, Exelon shall provide the Siting Board with verified records of all road repairs made in Medway and Bellingham.
- AA. The Siting Board directs the Company to work collaboratively with Bellingham in coordinating construction traffic. Specifically, the Company shall: (1) submit the TMP to Bellingham after it has been drafted with Medway and invite Bellingham to review and suggest additional measures; (2) incorporate appropriate mitigation or measures as Bellingham requests; (3) provide the Siting Board a copy of Bellingham's requests and subsequent changes to the TMP; and (d) provide Bellingham with a copy of the final TMP. Lastly, the Siting Board directs the Company to submit the TMP to the Board prior to commencement of construction.
- BB. The Siting Board directs that Exelon and its contractors and subcontractors comply with all applicable federal, state, and local laws, regulations, and ordinances from which the Company has not received an exemption.
- CC. The Siting Board directs the Company, within 90 days of Project completion, to submit a report to the Siting Board documenting compliance with all conditions contained in this Decision, noting any outstanding conditions yet to be satisfied and the expected date and status of such resolution.

Because issues addressed in this Decision relative to this Facility are subject to change over time, construction of the project must be commenced within three years of the date of the decision.

In addition, the Siting Board notes that the findings in this decision are based upon the record in this case. Project proponents have an absolute obligation to construct and operate the project in conformance with all aspects of the proposal as presented to the Siting Board. Therefore, the Siting Board requires Exelon and/or its successors in interest, to notify the Siting Board of any changes other than minor variations to the proposal so that the Siting Board may decide whether to inquire further into a particular issue. Exelon or its successors in interest are obligated to provide the Siting Board with sufficient information on changes to the proposed Project to enable the Siting Board to make these determinations.

The Secretary of the Department shall transmit a copy of this Decision and the Section 61 findings herein to the Executive Office of Energy and Environmental Affairs and the Company shall serve a copy of this decision on the Town of Medway Board of Selectmen, the Town of Medway Planning Board, and the Town of Medway Zoning Board of Appeals within five days of its issuance. The Company shall certify to the Secretary of the Department within ten business days of issuance that such service has been made.

A handwritten signature in cursive script that reads "M. Kathryn Sedor". The signature is written in dark ink and is positioned above a horizontal line.

M. Kathryn Sedor
Presiding Officer

Dated this November 4, 2016

[Action Voted] by the Energy Facilities Siting Board at its meeting on November 17, 2016 , by the members present and voting. [Recorded Vote of EFSB members].

Ned Bartlett, Chairman
Energy Facilities Siting Board

Dated this _____

Appeal as to matters of law from any final decision, order or ruling of the Siting Board may be taken to the Supreme Judicial Court by an aggrieved party in interest by the filing of a written petition praying that the order of the Siting Board be modified or set aside in whole or in part. Such petition for appeal shall be filed with the Siting Board within twenty days after the date of service of the decision, order or ruling of the Siting Board, or within such further time as the Siting Board may allow upon request filed prior to the expiration of the twenty days after the date of service of said decision, order or ruling. Within ten days after such petition has been filed, the appealing party shall enter the appeal in the Supreme Judicial Court sitting in Suffolk County by filing a copy thereof with the clerk of said court. Massachusetts General Laws, Chapter 164, Sec. 69P; Chapter 25, Sec. 5.