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CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
FINAL ENVIRONMENTAL IMPACT REPORT

PROJECT NAME : Canal Unit 3
PROJECT MUNICIPALITY : Sandwich
PROJECT WATERSHED : Cape Cod
EEA NUMBER : 15407
PROJECT PROPONENT : NRG Canal 3 Development LLC; NRG Renew Canal 1
LLC
DATE NOTICED IN MONITOR : July 20, 2016

As Secretary of Energy and Environmental Affairs, I hereby determine that the Final Environmental Impact Report (FEIR) submitted on this project **adequately and properly** complies with the Massachusetts Environmental Policy Act (G. L. c. 30, ss. 61-62I) and with its implementing regulations (301 CMR 11.00).

Project Description

As described in the FEIR, the project consists of a fast-starting, approximately 350-megawatt (MW) peak electric generating unit at the Canal Generating Station (the Station) site on Freezer Road in Sandwich.¹ The 88-acre project site is comprised of two separate areas, the 52-acre Northern Area and the 36-Acre Southern Area. The project will include one simple-cycle combustion turbine (General Electric (GE)) 7HA.02 combustion turbine generation (CTG), or comparable unit) that is expected to

¹ The gross electrical output of the generating unit will vary from 330 MW at higher ambient temperatures to approximately 365 MW at very low ambient temperatures.

operate during times of peak energy demand, for up to 4,380 hours per year, running primarily on natural gas, with backup fueling on ultra-low sulfur distillate (ULSD) for up to 720 hours per year.

Canal Unit 3 (Unit 3) is proposed on a previously developed 12-acre portion of the Northern Area, currently occupied by warehouse space, two ammonia storage tanks, temporary trailers, and gravel parking. The project includes the following new major components and structures:

- The proposed CTG unit;
- Emissions control equipment including Selective Catalytic Reduction (SCR) and an oxidation catalyst system in modules downstream of the CTG;
- One 220-foot tall exhaust stack;
- An evaporative inlet air cooling system used under certain conditions to cool ambient air and, in turn, increase CTG efficiency and output;
- Repurposing of two existing #6 oil storage tanks (5.7-million gallon and 1.8-million gallon capacities) for storage of ULSD;
- A tempering air fan system to reduce the temperature of flue gas to allow for optimal operating temperatures for the SCR and oxidation catalyst control systems;
- A continuous emissions monitoring system (CEMS);
- A natural gas pre-heater and compressor system to maintain gas pressure from the Algonquin Gas Transmission (AGT) interconnection and prevent natural gas from condensing into a liquid;
- One 360,000-gallon aboveground storage tank for service/fire water;
- One 20,000-gallon wastewater holding tank;
- One 4,000-gallon combustion turbine wash water holding tank;
- One 1,000,000-gallon demineralized water tank;
- Hydrogen (H₂) and carbon dioxide (CO₂) storage cylinders and piping to cool the generator (H₂) and to purge the H₂ from the generator cooling system (CO₂);
- A three-winding main generator step-up (GSU) transformer;
- An auxiliary transformer;
- A power distribution center (PDC) and distributed control system (DCS) enclosure;
- An auxiliary equipment cooling fan module;
- A 500-kilowatt (kW) emergency diesel generator;
- Two emergency fire pumps (one 100-horsepower (hp) electric motor-driven and one 135-hp diesel engine-driven);
- A comprehensive and integrated fire protection and detection system; and
- A stormwater collection and infiltration system and a perimeter access road.

Certain on-site facilities will continue to support the new project. The existing training building will be used for operations and maintenance services and administrative offices. This building will be upgraded to incorporate energy-efficiency measures. Aqueous ammonia (NH₃) for the SCR system will be stored in two existing 60,000-gallon NH₃ tanks on-site. A new enclosure will be constructed around these two storage tanks. Raw water will be supplied by the existing non-potable water supply wells (Well Nos. 2 and 3).

Interconnection to the electrical grid will be provided via the existing Eversource 345-kilovolt (kV) switchyard and transmission lines located south of the property. This interconnection will require an easement across an active railroad right-of-way (ROW) owned by the Massachusetts Department of Transportation (MassDOT) and operated by the Cape Cod Central Railroad. Proposed interconnection infrastructure includes the construction of an approximately 1,850-foot, three-phase 345-kV overhead circuit from a circuit breaker at the new GSU transformer to the Eversource switchyard. New equipment to be added to the Eversource substation will include:

- A 3,000-A disconnect switch (with ground switch);
- An overhead rigid bus from the existing bus to the disconnect switch;
- Three capacity voltage transformers for metering purposes;
- Bus support insulators;
- Gateway bridge structures;
- Terminal structure string insulators; and
- A riser cable from the disconnect switches to the bridge structure.

Natural gas will be delivered to the property via an interconnection to the AGT pipeline. The Proponent will construct a 3,590-foot natural gas pipeline running west to east across the Station property from the existing natural gas meter station to the proposed compressor building and gas (dew point) heater. The Proponent indicates this is necessary because the existing connection to the AGT pipeline cannot provide natural gas at a reliably consistent pressure. ULSD will be transported by barge via the Cape Cod Canal. Delivery practices will be consistent with those currently used. The Proponent will construct a new unloading pipe adjacent to the existing unloading pipe. An approximately 4,000-foot pipeline within the Station site will be constructed to connect the ULSD storage tank, the ULSD day tank, and the CTG.

Project Area

As noted previously, the 88-acre project site is comprised of the 52-acre Northern Area and the 36-acre Southern Area. The Northern Area includes 48 acres of upland and 4 acres of land under water (LUW) (within the Cape Cod Canal) and is bounded by Freezer Road and land owned by the United States Army Corps of Engineers (ACOE) to the east, by Canal Service Road and the Cape Cod Canal to the north, the Town of Bourne to the west, and Rickey's Road and a railroad ROW owned by MassDOT to the south. It contains the existing Canal Generating Station, which has a capacity of 1,120 MW. The facility consists of two dual-fueled electric generation units, a 498-foot high exhaust stack, above ground oil and ammonia storage tanks, and associated infrastructure.

The Southern Area is bounded by the Town of Bourne to the West, Route 6A and Tupper Road to the south, the railroad ROW to the north, and undeveloped property owned by Eversource to the east. The northern portion of the Southern Area contains two large aboveground oil storage tanks associated with the Station and the eastern portion of the Southern Area includes a 360-foot wide transmission corridor, held by Eversource under easement, and high-voltage transmission infrastructure. The remainder of the Southern Area is a mix of open fields, scrub/shrub vegetation, and wooded vegetation.

The project is located in the Massachusetts Coastal Zone. Portions of both the Northern and Southern Areas are located in the 100-year flood zone (Land Subject to Coastal Storm Flowage

(LSCSF)). The flood zone is identified by the Federal Emergency Management Agency (FEMA) as Zone AE, elevation 14 North American Vertical Datum of 1988 (NAVD 88), and shown on the Flood Insurance Rate Map (FIRM) issued in July 2014 (Map 25001C0319J).² The project site is not located in a velocity zone.

Jurisdiction and Permitting

The project is undergoing MEPA review and is subject to a Mandatory EIR pursuant to 301 CMR 11.03(7)(a)(1) and (8)(a)(2) because it includes construction of a new electric generating facility with a capacity of 100 or more MW, and it requires modification of an existing Stationary Source with federal potential emissions that collectively will result, after construction and the imposition of required controls, of 75,000 tons per year (tpy) of greenhouse gases (GHGs) based on CO₂ equivalent. The project also exceeds two Environmental Notification Form (ENF) thresholds: alteration of one-half or more acres of any other wetlands (i.e., LSCSF) (301 CMR 11.03(3)(b)(1)(f)) and modification of an existing major stationary source resulting in a 'significant net increase' in actual emissions, provided that the stationary source or facility is major for the pollutant, emission of which is increased by: 15 tpy PM₁₀; 100 tpy of carbon monoxide (CO); 40 tpy of sulfur dioxide (SO₂); 25 tpy of volatile organic compounds (VOC) or nitrogen oxides (NO_x); 0.6 tpy of lead (301 CMR 11.03 (8)(b)(2)).

The project will require several permits from the Massachusetts Department of Environmental Protection (MassDEP) including: New Source Review/Air Plan Approval/Title V Operating Permit Modification; Federal Prevention of Significant Deterioration (PSD) Permit; a Section 401 Water Quality Certification; and a Chapter 91 (c. 91) License for fuel-delivery infrastructure. The project will require an Approval of Petition to Construct from the Energy Facilities Siting Board (EFSB) and an Approval of Request for Exemptions from Zoning from the Department of Public Utilities (DPU).

The project will require Fuel Oil Tank Approval from the Massachusetts Department of Public Safety for the aboveground storage tanks and Hazardous Substance Tank Approval from the Massachusetts State Fire Marshal. The project may require Federal Consistency Review by the Office of Coastal Zone Management (CZM). The project is subject to review under the May 2010 MEPA GHG Emissions Policy and Protocol ("the GHG Policy").

The project requires an Order of Conditions from the Sandwich Conservation Commission (or in the case of an appeal, a Superseding Order of Conditions from MassDEP). The project will be subject to review as a Development of Regional Impact (DRI) by the Cape Cod Commission (CCC) and will require a Certificate of Appropriateness from the Town of Sandwich Old King's Highway Historic District Committee.

The project also requires National Pollutant Discharge Elimination System (NPDES) Permits from the U.S. Environmental Protection Agency (EPA) for the construction and operation of the facility and a Notice of Construction for the Federal Aviation Administration (FAA) for construction of the stack.

² The terms 100-year floodplain and Land Subject to Coastal Storm Flowage (LSCSF) are used interchangeably within this Certificate.

As the project requires approval from the EFSB, MEPA jurisdiction over this project is broad and extends to all aspects of the project that are likely, directly or indirectly, to cause Damage to the Environment as defined in the MEPA regulations.

Project Changes Since the DEIR

The project remains substantially unchanged from the DEIR, with the exception of refinement of the electrical transmission line route. The route has been shortened by 250 feet to 1,850-feet long and the number of poles has been reduced from nine to six. The entire wetland resource area (Wetland F) will continue to be spanned and one of the two poles previously proposed in the 100-foot buffer zone to Bordering Vegetated Wetlands (BVW) has been eliminated.

Environmental Impacts and Mitigation

The project includes modification of an existing Stationary Source. Upon completion, the facility will generate a maximum total of 932,325 tpy of GHG emissions CO₂ equivalent (CO_{2e}). Unit 3 will generate an additional 104.3 tpy of NO_x, 71.5 tpy of particulate matter (PM) as PM₁₀, 11.1 tpy of SO₂, 101.5 tpy of CO, 23.4 tpy of VOC, 12 tpy of sulfuric acid (H₂SO₄), 50.3 tpy of NH₃, 0.004 tpy of lead (Pb) and 3.9 tpy of total hazardous air pollutants (HAPs or air toxics). The project will alter approximately 10.6 acres of LSCSF. Impervious area on the Station property will be reduced by 1,850 square feet (sf) to 141,350 sf. The project is not anticipated to increase average daily vehicle trips (adt) or parking spaces. The project will increase water withdrawals by approximately 0.125 million gallons per day (mgd) and generate an additional 2,673 gallons per day (gpd) of wastewater.

To meet applicable State and federal air emissions requirements the project will apply Lowest Achievable Emissions Rate (LAER) and Best Available Control Technologies (BACT). These technologies include, but are not limited to, the use of dry-low-NO_x (DLN) burners and a SCR system during natural gas firing and water demineralized water injection and SCR during ULSD firing. An oxidation catalyst system will control CO and VOC emissions. Exhaust gases will be directed to the stack which will be equipped with a CEMS to allow for real-time emissions concentration monitoring signaling if concentrations approach or exceed permit levels for NO_x, CO, oxygen (O₂), and opacity. The Proponent will continue to evaluate additional balance of plant GHG emissions reduction measures during final design. The project will be required to obtain NO_x offsets at minimum ratio of 1.26:1 (or 131.4 tpy) prior to issuance of Air Plan Approval from MassDEP. Unit 3 will utilize a previously developed water supply well for water withdrawal and avoid discharges to the Cape Cod Canal by recycling wastewater in a near-zero liquid discharge system. Unit 3 will not require steam condenser cooling; it will use air-cooled fin-fan coolers for ancillary equipment cooling. The project will not require in-water work and no work is proposed within filled tidelands or designated rare species habitat. Placement of the turbine in an acoustically treated enclosure, along with numerous other noise dampening design features, is proposed to mitigate potential noise impacts. Stack height has been minimized to the extent practicable to minimize visual impacts. Portions of the project site will be elevated two feet above the 100-year flood elevation in response to potential climate change-induced sea level rise and storm related impacts. Stormwater will be managed on-site using best management practices (BMPs) consistent with the MassDEP stormwater management standards. A separate 1.5-MW community solar photovoltaic (PV) system on a 10-acre portion of the Southern Area was approved as part of a Phase I waiver granted on October 9, 2015.

Review of the FEIR

The purpose of MEPA review is to evaluate the environmental impacts of a proposed project in light of the Proponent's objectives. Identification of a project's purpose and need provides context for MEPA review and the alternatives analysis; however, the emphasis of MEPA is identification of the project's environmental impacts, and consideration of alternatives and evaluation of measures to avoid, minimize and mitigate Damage to the Environment. It does not proscribe to a Proponent what, where, or how a project should be designed or built.

The FEIR adequately disclosed potential environmental impacts associated with the Preferred Alternative. Upon completion of MEPA review, a more detailed technical review of the project and analysis of consistency with standards and requirements will be conducted through project permitting. Comments received from MassDEP state that the Proponent has adequately addressed all air permitting issues raised during MEPA review and that remaining details will be resolved during the permitting process.

Project Description and Permitting

The FEIR included a detailed description of the project, updated site plans, and a discussion of permitting requirements associated with the project. The FEIR summarized the status of federal, State and local permitting processes. I note that the EFSB review process is ongoing and that applications to MassDEP for air quality permitting approval have been submitted.

Alternatives Analysis

The FEIR provided additional data and discussion of environmental resources and existing natural gas, ULSD, and electric interconnection infrastructure for both the Middletown, CT and Canal Generation Station sites. The FEIR compared various site and environmental characteristics to support the selection of Canal Station as the preferred project site. According to the FEIR, while the Middletown site met many project criteria and provides a greater distance to sensitive areas than the Canal Station site, it was not considered a favorable alternative due to the current zoning of the site, the proximity of complex terrain that might affect air quality modeling, the need to address a closed ash pond during construction, a narrow layout configuration, and limited space for on-site laydown. Finally, as noted by the Proponent, the Middletown site is not located within the SEMA/RI subregion. The Canal Station site was considered more preferable based on ability to design a project consistent with existing zoning and land uses, availability of cleared areas and laydown space, and its proximity to the electric load.

Air Quality

The FEIR discussed the project's proposed method to obtain NO_x offsets in accordance with the Massachusetts Air Pollution Control Regulations (301 CMR 7.00 Appendix A). The Proponent's preferred compliance path to meet offset requirements is to use Emissions Reduction Credits (ERCs) created by the permanent closure of Lovett Generating Station in Tomkins Cove, New York. According to the FEIR, 4,209.2 tpy of ERC's were created from the shutdown of Lovett Station and have been

approved by the New York State Department of Environmental Conservation (NYSDEC). The FEIR discussed the potential use of these ERC's to meet the NO_x offset requirements for Unit 3 and consistency with emissions offset requirements outlined in the Air Pollution Control Regulations. These requirements include that the offsets be obtained from a source within the same Ozone Transport Region. The FEIR indicated that both Massachusetts and New York are in the same Ozone Transport Region. Furthermore, the regulations state that emission offsets must occur and be obtained from a source in the same nonattainment area (in this case ambient ozone (O₃)), unless:

- Requirement #1 - the emission reductions are obtained from another area that has an equal or higher nonattainment classification than the nonattainment in which the new source is proposed; and
- Requirement #2 - when the new source or modified source is proposed in a nonattainment area, emissions from the other area contribute to a violation of a NAAQS in the nonattainment area in which the new or modified source would be constructed (i.e., from an upwind nonattainment area).

According to the FEIR, Requirement #1 is met because Rockland County, New York, where Lovett Station was located, has an equal or higher nonattainment classification (Moderate/Marginal) compared to Barnstable County (Unclassifiable/Attainment).³ The FEIR also concluded that Requirement #2 is met because New York State is considered "upwind" from Massachusetts for weather conditions associated with elevated ground-level O₃ concentrations.

The FEIR indicated that Massachusetts and New York do not currently have a Memorandum of Understanding (MOU) in place to address ERC transfers between the states. Each of these states has MOUs for similar types of transfers with other states in the northeast indicating a precedent for such agreements. As such, the Certificate on the DEIR requested that the Proponent evaluate potential alternative compliance paths. According to the FEIR, there are currently an insufficient number of unexpired NO_x "Rate Bank" ERCs in the MassDEP ERC Registry to meet the offset requirements for Canal Unit 3 (131.4 tpy). New ERCs may be certified in the future, from over-control or the shutdown of an existing facility, which may be available to the Proponent to meet offset requirements; however, approved NO_x offsets must be obtained before MassDEP will issue Air Plan Approval. Another alternative includes obtaining "Mass Bank" ERCs (or "discrete" ERCs) which must be obtained and used for each year of operation of a new source. The FEIR indicates that sufficient ERCs are available to support operation of the project for more than 40 years; however, the Proponent considers this the least preferable option.

Greenhouse Gas Emissions

The FEIR provided an updated comparison of potential GHG emissions between:

- A simple-cycle frame design, based on the GE 7HA.02, reflective of the most advanced frame technology currently available (the Preferred Unit); and

³ Barnstable County 2008 8-hour O₃ standard = Unclassifiable/Attainment; Rockland County 1997 8-hour O₃ standard = Moderate and 2008 8-hour O₃ standard = Marginal.

- Fast-start combined-cycle design, based on the Siemens SGT6-5000F “Flex Plant” 10 (Flex Plant 10), capable of providing approximately 50 percent of its design output in ten minutes.

This comparison identified GHG emissions for the 2019-2029 period assuming a similar operating profile, and the projected annual emissions for all three operating capacity scenarios described below:

- A Likely Operating Scenario – natural gas firing at full load for 1,500 hours per year and ULSD firing for 200 hours per year based on the results of the dispatch analysis for the EFSB Petition;
- A Maximum MassDEP Permitting Scenario for any 12-month Period (4,380 hours of operation at full load; 3,660 hours firing on natural gas and 720 hours on ULSD); and
- A Maximum MassDEP Permitting Scenario for any 36-month Rolling Average Period (Base Case) (3,500 hours per year average operation at full load; 2,780 hours firing on natural gas and 720 hours per year on ULSD).

The results of this comparison were presented as follows in the FEIR:

Turbine	Operating Scenario	Annual Net MW-hrs	Hours per Year on Natural Gas	Hours per Year on ULSD	Capacity Factor (%)	Annual CO _{2e} (tpy)
GE 7HA.02 Simple-Cycle Preferred CTG Unit Alternative	Likely Operating Scenario ¹	576,852	1,500	200	19.4	355,505
	Maximum MassDEP Permitting Scenario for any 12-month Period	1,490,367	3,660	720	50	932,325
	Maximum MassDEP Permitting Scenario for any 36-month Rolling Average Period	1,193,847	2,780	720	40	757,765
	2019-2029 10-year Operating Scenario	585,289	1,737	0	19.8	331,607
Flex Plant 10⁵ Combined-Cycle CGT Unit Alternative	Likely Operating Scenario	576,852	1,740	227	22.5	296,866
	Maximum MassDEP Permitting Scenario for any 12-month Period	1,490,367	4,346	720	57.8	772,024
	Maximum MassDEP Permitting Scenario for any 36-month Rolling Average Period	1,193,847	3,345	720	46.4	628,596
	2019-2029 10-year Operating Scenario	585,289	1,995	0	22.8	286,792

¹The operating scenarios analyzed for a single Flex Plant 10 are based on the equivalent annual net MW-hrs corresponding to the Preferred CTG Unit Alternative scenarios

The FEIR indicated that the comparison between the two plant types assumes that they produce the same annual MW-hours for each scenario with the reduced MW produced during the first hour of the Flex Plant 10 included in the calculation. Therefore, annual operating hours are greater for the Flex Plant 10 in order to produce the same annual MW-hours as the Preferred Unit and allows for a comparison of GHG emissions based on the production of the same annual quantity of electricity.

The FEIR concluded that a single Flex Plant 10 would have approximately 17% lower annual GHG emissions than the Preferred Unit for cases when the Preferred Unit marginal firing rates are used. In the 2019-2029, 10-year Operating Scenario when design firing rates are used for both turbines, the

difference in annual emissions is 14%. According to the FEIR, a single Flex Plant 10 will not be capable of meeting the project's design objective of providing 300+ MW within 10 minutes, limiting the project's ability to participate in the Ten Minute Non-Spinning Reserve (TMNSR) Market. The Preferred Unit is capable of producing 328.6 MW at Independent System Operator New England (ISO-NE) conditions within 10 minutes, while a single Flex Plant 10 can produce 150 MW in 10 minutes under similar conditions. Two Flex Plant 10 units would produce 300 MW, less than one Preferred Unit. The FEIR also noted that over the first hour of operation, the Preferred Unit heat rate and GHG emissions (lb/MW-hr) on ULSD at ISO conditions are lower (1,589) than the Flex Plant 10 (1,637) because the steam turbine portion of the Flex Plant 10 does not become effective until after the first hour. The FEIR concluded that because the project intends to operate in the TMNSR market and it is common for 10-minute resources to be dispatched for the minimum operating period of one hour, the Preferred Unit will provide superior GHG reductions compared to the Flex Unit 10 based on the operating structure of the TMNSR. The FEIR stated that operation of the project is expected to displace approximately 143,619 tons of GHG over the 2019-2029 period through the avoided operation of older, less-efficient generators. Finally, the FEIR concluded that the Preferred Unit will be able to provide a greater 10-minute capacity at a significantly lower capital cost (measured as \$ per kilowatt of 10-minute output) compared to the Flex Plant 10.

The FEIR provided a detailed discussion of GHG mitigation measures that will be adopted or will continue to be evaluated by the Proponent prior to commissioning of the project. These GHG reduction measures were compared to a Base Case plant design. The FEIR described each individual GHG mitigation measure, design and operational assumptions, and quantified potential GHG reductions on an annual basis. GHG mitigation measures evaluated as part of this balance of plant efficiency evaluation include:

- Evaporative cooling (adopted);
- Gas compressor selection (under study);
- Fuel gas performance heating (under study);
- Gas dew point heating using waste heat (under study);
- Electric motors aside from gas compressor NEMA (premium high efficiency motors adopted);
- SCR ammonia vaporizer (use of waste heat under study); and
- Miscellaneous auxiliaries (highest efficiency alternatives adopted).

According to the FEIR, the adopted GHG mitigation measures will reduce CO₂e emissions by 605 tpy compared to a Base Case plant, with a potential to reduce CO₂e emissions by an additional 6,458 tpy if all measures under study are implemented. I expect the Proponent will consider the GHG reduction benefits identified in the balance of plant analysis when finalizing the project design.

As noted by MassDEP, the recent Massachusetts Supreme Judicial Court decision (*Kain v. Department of Environmental Protection*, 474 Mass. 278 (2016)) ("*Kain*") held that Section 3(d) of the Global Warming Solutions Act (GWSA) required MassDEP to "promulgate regulations that address multiple sources or categories of sources of greenhouse gas emissions, impose a limit on emissions that may be released, limit the aggregate emissions released from each group of regulated source or categories of sources, set emission limits for each year, and set limits that decline on an annual basis." MassDEP is in the process of identifying sources and categories of sources, and developing appropriate

draft regulations pursuant to the Kain decision. MassDEP indicated that it intends to put these draft regulations out for public comment by the end of this calendar year. As stated in the FEIR, the project will comply with any GHG emissions reduction required by these implementing regulations, as applicable.

The project will participate in the Regional Greenhouse Gas Initiative (RGGI) through the acquisition of RGGI allowances. A portion of these funds are expected to be used to support energy conservation measures. The Proponent will continue to work with the Town of Sandwich to develop a package of local support measures, including localized GHG reduction measures.

Climate Change Adaptation and Resiliency

The FEIR included a grading plan depicting proposed site elevations and areas and depths of cut and fill on-site. Grades will be raised to protect critical infrastructure during flood events and anticipated sea level rise. As proposed in the FEIR, the perimeter roadway will be raised approximately one foot to elevation 11, and an additional five feet to elevation 15 on the two interior east/west roadways. Critical project infrastructure will be raised to elevation 16 in three discrete areas north (near the gas compressor), central (the CTG unit and associated equipment) and south (the fan module, demineralized water system, service/fire water storage tank, etc.). Transitional grading will be provided between high points and the roadways, with stormwater basin bottoms located at elevation 9. The grades surrounding Units 1 and 2 will remain unchanged at elevation 10.

The discussion provided in the FEIR stated that the proposed changes in grading will not back-up water from flooding caused by coastal flooding or rain events. The FEIR concluded that because the flooding will occur within the coastal floodplain, the volumetric changes related to the project will not displace flood waters in a manner that will increase flood elevations on or adjacent to the site; elevated areas will drain to proposed on-site drainage basins or to the Cape Cod Canal. The FEIR also noted that the project site is not located within an area potentially subject to high velocity or moderate wave action. The FEIR stated that the project does not include alteration of the majority of the site along the northeast face of Unit 3, thereby allowing flood waters to continue to flow across a natural landform without obstructions or impediment. No mitigation to adjacent properties, or land occupied by Units 1 and 2, is proposed in conjunction with proposed changes. Comments from CZM highlight concerns regarding the potential for fill and/or project components to alter the flow velocity and depth during flooding events. The Proponent should meet with representatives from CZM prior to completion of final grading design and permitting processes to discuss potential project-related impacts to adjacent properties during flood events and appropriate additional mitigation measures, if necessary.

The FEIR described resiliency measures that will be implemented to ensure that critical project components are adequately protected during flooding events. As noted previously, a key measure includes raising the overall elevation of portions of the Unit 3 project area. Furthermore, all critical infrastructure will be located on foundations that will be anchored to piles. The FEIR identified infrastructure that will be shared with Units 1 and 2. This includes the existing training building, ammonia tank, docking facility, Well Nos. 2 and 3, and the site access roads. The training building will be located at approximately elevation 11, but real time control of Unit 3 will occur either in the main station control room or the local DCS enclosure, both of which are located above elevation 16. The ammonia tank will be enclosed, with the enclosure constructed on a containment wall with an elevation

of 16 feet and secured on a foundation. The docking facility will not be used during severe storm events. According to the FEIR, Well Nos. 2 and 3 draw groundwater through a screening in excess of 90 feet below ground and there is a confining layer that separates the underlying aquifer from the surface and potential flooding influences. The FEIR noted that the wells have historically not experienced salt water intrusion despite numerous storm events (i.e., Blizzard of '78, Hurricane Bob, 1991 No-Name Storm, etc.). The FEIR acknowledged that during certain storm events, some of the site access roads may become impassible as portions are located below the 100-year flood elevation. The Proponent anticipates that due to the coastal nature of likely flooding, flood waters will recede back into the ocean relatively quickly depending upon the storm duration and tide cycle, restoring access to the site.

The FEIR indicated that precipitation frequency estimates from the United States Weather Bureau's Technical Paper 40 (TP40) were used to model proposed on-site stormwater conditions. Use of TP40, while consistent with MassDEP wetland regulations and the Massachusetts Stormwater Handbook, was issued in 1961. The FEIR stated that newer precipitation frequency data in the NOAA Atlas 14 (September 2015) and the Northeast Regional Climate Change Center (2008 and updated yearly) are available, but in some design storms precipitation data are higher than TP40 while in others the data are lower. Due to the critical nature of the project and the inherent need for the facility to operate during, or immediately following, an extreme storm event, I encourage the Proponent to use the highest precipitation estimate of the three sources for each design storm as a conservative measure when finalizing the stormwater system design.

Water Supply

The FEIR summarized estimated water usage for three potential operating conditions (i.e., Likely Operating Scenario, Maximum MassDEP 12-month Permitting Scenario, and Maximum MassDEP 36-month Rolling Average Scenario). Estimates were based on expected maximum annual hours of operation, hours of evaporative cooling, and ambient temperature. Projected water use is as follows:

Operating Scenario	Natural Gas Firing (hours/year)	Natural Gas-Firing Water Use (gallons/hour)	ULSD Firing (hours/year)	ULSD-Firing Water Use (gallons/hour)	Annual Water Use (gallons)	Daily Average Water Use (mgd)
Likely Operating Scenario	1,500	1,665 ^a	200	28,320 ^c	8,161,500	0.022
Maximum MassDEP 12-month Permitting Scenario	3,660	2,220 ^b	720	28,320 ^c	28,515,600	0.078
Maximum MassDEP 36-month Permitting Scenario	2,780	2,220 ^b	720	28,320 ^c	26,562,000	0.073

^a Based on 1,125 hours with evaporative cooling on at 90°F (37 gallons per minute (gpm)) and 375 hours without evaporative cooling (0 gpm).

^b Based on all hours with evaporative cooling on at 90°F (37 gpm).

^c Based on all hours at 50°F (472 gpm).

Emergency water supply backup will be provided by the 1,000,000 gallon storage tank and a 10-inch pipe connection to the Sandwich Water District. MassDEP comments indicate that the FEIR is responsive to comments raised on the DEIR and data supports the conclusion that additional water withdrawals can be accommodated within its MWA registration (#42226109).

Hazardous Materials

According to the FEIR, delivery of ULSD will be transported to the site by barge, using the existing dock on Cape Cod Canal, following existing delivery practices used by Canal Station. A new 12-inch diameter fuel line will be constructed immediately adjacent to the existing fuel delivery line within the footprint of the bridge located between the shoreline and unloading dock. The FEIR estimated deliveries of ULSD up to 17 times per year assuming operations at its maximum 720 hours per year permitting limit. In the Likely Operating Scenario (200 hours of ULSD operations per year) annual deliveries will be reduced to five.

The FEIR included a table identifying current and future quantities of hazardous materials stored on-site. These materials will be stored in accordance with applicable local, State and federal requirements with secondary containment, as necessary.

Mitigation and Section 61 Findings

The FEIR provided draft Section 61 Findings for use by State Agencies. These draft Section 61 Findings should be revised in response to this Certificate and provided to State Agencies to assist in the permitting process and issuance of final Section 61 Findings. Environmental mitigation commitments include:

Air Quality

- Use of natural gas as primary fuel, with restriction of ULSD (backup fuel) to periods when natural gas is not reasonably available, and for no more than 720 hours per year;
- Use of emissions controls to meet New Source Performance Standards (NSPS), BACT and LAER requirements, as applicable.
 - Control NO_x emissions through the use of DLN burners and an SCR system;
 - Minimize emissions of SO₂, PM₁₀/PM_{2.5} and H₂SO₄ through the use of natural gas as the primary fuel and limited firing with 15 ppm ULSD;
 - Injection of demineralized water into the combustion chamber during ULSD firing to lower the flame temperature and associated thermal NO_x formation;
 - Use of an oxidation catalyst system to control CO and VOC emissions;
 - Use of an NH₃ injection grid before reaching the SCR system to control NO_x;
 - Direct exhaust gases to the stack equipped with CEMS to allow for real-time emissions concentration monitoring to signal if concentrations approach or exceed permit levels for NO_x, CO, O₂, and opacity;
 - Obtain NO_x offsets at minimum ratio of 1.26:1 (or 131.4 tpy) prior to issuance of Air Plan Approval from MassDEP; and

- Emergency engines will use ULSD for a maximum of 300 hours per year and meet EPA Tier 4 or Tier 3 engine emissions requirements consistent with 40 CFR 60 Subpart III.
- Meet air permit emissions limits through a combination of testing, monitoring, and recordkeeping including:
 - CEMS;
 - Periodic stack testing;
 - Continual tracking of operating parameters;
 - Fuel sampling; and
 - Emissions factors and manufacturers' certification.

Greenhouse Gas Emissions

- Use of a high-efficiency combustion turbine capable of meeting the project's stated goal of participating in the TMNSR market.
- Adoption of evaporative cooling, high-efficiency auxiliary power sources and premium high-efficiency motors to achieve an additional 605 tpy GHG reduction compared to a Base Case Plant.
- Commitment to continue to evaluate additional balance of plant measures, that if adopted in their entirety, may reduce GHG emissions an additional 6.458 tpy. These measures include:
 - Gas compressor selection;
 - Fuel gas performance heating;
 - Gas dew point heating using waste heat; and
 - SCR ammonia vaporizer (use of waste heat).
- Construct, operate and maintain the on-site natural gas pipeline in accordance with all applicable regulatory requirements to reduce potential fugitive methane emission. The Proponent will prepare and implement an operating and maintenance plan, perform periodic leak checks and promptly repair leaks, and will be responsible for the inspection, maintenance and repair of the pipeline.
- Adoption of energy efficiency measures as part of the repurposing of the existing 4,000-sf Training Building that will reduce building-related GHG emissions by 20 tpy from 66 tpy to 46 tpy. These energy efficiency measures include:
 - Increase roof insulation (R-38);
 - Improve window performance (insulated low-e windows (R-3.5));
 - Increase wall insulation (R-35);
 - Installation of new exterior insulated doors with gasketing (R-13);
 - Installation of new entrance doors and curtainwall (R-3.5);
 - Add sunshades on windows;
 - Installation of new LED lighting fixtures with motion controls and dimmers;
 - Installation of new WaterSense plumbing fixtures; and
 - Replace all four existing HVAC units (energy efficiency rating (EER 9.5)) with new units with similar output and EER 12.1.

Noise

- Increased casing thickness for the SCR and an acoustic shroud that will envelop the exhaust gas diffuser and the transition duct from the combustion turbine exhaust to the SCR casing;
- Additional exhaust silencing to reduce stack outlet noise;
- Enclosures around the gas turbine, lube oil skid, and generator;
- Lowered height of the tempering air fan inlet plenum box from 50 feet above grade to 35 feet above grade;
- Orientation of the tempering air inlet away from sensitive receptor locations;
- A noise barrier near the tempering air fans;
- Use of low-noise fans for the cooling module and an associated noise barrier;
- Use of acoustically-treated walls for the fuel gas compressor enclosure;
- Use of a low-noise generator step-up transformer;
- Use of turbine inlets equipped with an 8-foot silencer with an acoustically-lined weather hood; and
- Improvements to Units 1 and 2 to ensure minimization of cumulative noise impacts. These may include:
 - Installing lagging or partial enclosures for the Unit 1 and 2 hopper vibrator systems;
 - Refurbishment of lined inlet and noise baffling system for the Unit 2 FD fans; and
 - Installation of noise barrier walls for Units 1 and 2 service and main transformers.
- Conduct post-construction noise monitoring to demonstrate compliance with the applicable noise policies/bylaw and the results of the noise assessment. The Proponent will require noise guarantees from major equipment vendors and the Engineering, Procurement and Construction (EPC) contractor. Near-field measurements of sound levels from major equipment and at the Station property boundary will be required by the Proponent to demonstrate noise compliance prior to accepting the project.

Wetlands and Waterways

- Avoidance of impacts to BVW through design layout and use of erosion and sedimentation control measures;
- Subject to approval by Sandwich Conservation Commission, maintain the heights of overstory trees to 15-20 feet and establish an understory scrub-shrub wetland community under the proposed transmission line from the Station site to the Eversource switchyard.

Stormwater

- Installation of stormwater best management practices (BMPs) including deep sump catch basins, vegetated water quality swales, vegetated water quality swales, permeable pavement, vegetated strips and infiltration basins with sediment forebays, and leaching catch basins;
- Construct a stormwater management system capable of providing sufficient volumes of stormwater recharge to groundwater, adequate removal of total suspended solids (TSS), and consistency with total maximum daily load (TMDL) requirements established for the Cape Cod Canal;

- Preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) consistent with coverage under an EPA Multi Sector General Permit (MSGP).

Climate Change Adaptation and Resiliency

- Raising site grades with:
 - The minimum elevation of the perimeter roadway set at elevation 11 feet above mean sea level (amsl) (existing grade is approximately 10 feet amsl);
 - The minimum elevation of equipment and electrical equipment foundations set at elevation 16 feet amsl, or approximately six feet above the lowest elevation on-site and 2.0 feet above the existing 100-year flood zone elevation; and
 - The areas between access roadways and the building foundations graded to drain stormwater and direct it to the infiltration basins.
- Anchoring all critical infrastructure foundations to piles.

Water and Wastewater

- Use of air-cooled fin fan coolers for ancillary equipment cooling;
- Evaporative cooler blowdown will be minimized by optimizing the operating cycles of concentration, while following the turbine vendor guidelines for circulating water quality;
- Use of a near-zero liquid discharge design that treats and recycles on-site process stream wastewater.
 - Process drains and wash down water within the power block area will be collected and conveyed to an oil/water separator with the accumulated oil trucked off-site for disposal and the remaining effluent chemically conditioned and filtered prior to discharge to the service/fire water storage tank for re-processing.
 - Turbine wash water will be collected in a 4,000-gallon holding tank before being trucked off-site for disposal.
 - Other liquid streams that cannot be recycled will be collected in a 20,000-gallon holding tank and transported off-site for disposal.
- Sanitary wastewater from staff facilities will be discharged to the septic system.

Hazardous Materials

- Provide secondary containment in the form of curbs, berms, and concrete pits where hazardous chemicals are stored or unloaded. Bulk tanks will be equipped with secondary containment to contain leaks or spills; and
- All materials will be handled, stored, marked or segregated in accordance with all applicable standards, including but not limited to, those required by the Occupational Health and Safety Administration (OSHA), the Resource Conservation and Recovery Act (RCRA) and/or the National Fire Protection Association (NFPA).

Construction Period

- Compliance with the MassDEP's Clean Air Construction Initiative, including but not limited to: use of ULSD in all diesel powered non-road vehicles, ensuring that all non-road engines

meet applicable emissions standards pursuant to 40 CFR 89.122, ensuring that all diesel powered non-road engines greater than 50 hp used for 30 or more days over the course of the construction period have EPA-verified (or equivalent) emissions control devices, that all diesel engines on equipment not in active use are turned off, that all dump trucks idling for 5 minutes or more are turned off, and establishing a staging area for truck waiting to load or unload material;

- Noise mitigation measures will include, but not be limited to: the use of mufflers, using less noisy construction techniques (where feasible), and selecting the quietest equipment alternatives (where feasible), scheduling the noisiest construction activities during daylight hours, turning off idling equipment, and locating noisy equipment at locations that protect sensitive locations through shielding or distance;
- Construction equipment will comply with the construction hour limits specified by the Town of Sandwich Noise Bylaw;
- Use suppression measures such as water trucks to wet surfaces, stabilization of soils, creation of wind breaks, and stabilized entrance/exit points to control fugitive dust;
- Preparation and implementation of an erosion and sediment control plan that meets current EPA, MassDEP, CCC and Town of Sandwich requirements and guidelines and addresses, at a minimum, storage and handling of hazardous materials, inspection/maintenance/recordkeeping requirements, and construction sequencing;
- Contractors will meet all applicable regulatory requirements regarding handling and disposal of construction waste and debris and recycling procedures and goals will be set in contracts in compliance with the goals of the Massachusetts Solid Waste Master Plan and Proponent (NRG) sustainability requirements;
- Implementation of a traffic construction management plan in coordination with the Town of Sandwich. This plan will include, but not be limited to, construction of a dedicated construction site entrance separate from the existing Station entrance, establishment of programs to encourage carpooling by construction workers, designation of on-site construction-worker parking, establishment of on-site waiting and staging areas for material deliveries to manage truck traffic, and scheduling of material deliveries during off-peak travel periods; and
- Construction of a temporary walkway and subsequent repair, in kind, of a small section of Canal Service Road to connect underground ULSD pipe from the Canal Station dock.

Conclusion

Based on a review of the FEIR, comment letters and consultation with State Agencies, I find that the FEIR adequately and properly complies with MEPA and its implementing regulations. Outstanding issues will be addressed during State and local permitting processes. The Proponent and State Agencies should forward copies of the final Section 61 Findings to the MEPA Office for publication in accordance with 301 CMR 11.12.



August 26, 2016

Date

Matthew A. Beaton

Comments received:

7/13/2016	Division of Marine Fisheries
8/8/2016	Cape Cod Commission
8/15/2016	Association to Preserve Cape Cod
8/19/2016	Massachusetts Office of Coastal Zone Management
8/22/2016	Department of Energy Resources
8/23/2016	Massachusetts Department of Environmental Protection – Southeast Regional Office (MassDEP- SERO)

MAB/HSJ/hsj

