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Executive Office of Energy & Environmental Affairs

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MassDEP Response to Comment Concerning:

NRG Canal 3 Development, LLC.
350 MW Simple-Cycle Combustion Turbine Project

Proposed Air Quality Plan Approval and
Draft Prevention of Significant Deterioration (PSD) Permit

Application Number: SE-16-015
Transmittal Number: X269143

Issued August 4, 2017

Introduction

Public Notices were published for the public review and comment on the Proposed Air Quality Plan Approval and Draft Prevention of Significant Deterioration (PSD) Permit for NRG Canal 3 Development LLC's ("NRG") 350 MW Simple-Cycle Combustion Turbine Project. The dates of publication were as follows:

- January 9, 2017 in the Cape Cod Times,
- January 9, 2017 in the Boston Globe, and
- January 11, 2017 issue of the MEPA Monitor (Volume 87, Issue 05)

MassDEP also held a public hearing at the Sandwich Town Hall, 130 Main St., Sandwich, MA on Wednesday, February 8, 2017. A number of interested people and organizations submitted comments during the public comment period. The public comment period closed at 5 PM on Thursday, February 9, 2017. Copies of the Proposed Air Quality Plan Approval, the Draft PSD Permit, the PSD Fact Sheet and NRG's applications were available for review at the NRG Canal Security Guard Building, on NRG Canal 3 Development's website, at the MassDEP's Southeastern Regional Office located at 20 Riverside Drive, Lakeville, MA and on the MassDEP's website.

This information is available in alternate format. Contact Michelle Waters-Ekanem, Director of Diversity/Civil Rights at 617-292-5751.
TTY# MassRelay Service 1-800-439-2370
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After careful review of all comments received, MassDEP has made a final decision to issue the Air Quality Plan Approval. MassDEP has prepared this document, known as the "Response to Comments" ("RTC"), which describes and addresses any significant issues raised during the comment period and describes any requirements of the Proposed Plan Approval that have been changed and the reasons for the changes and/or clarifications.

MassDEP's decision-making process has benefitted from the public comments and additional information submitted. Any changes to the Proposed Plan Approval are described in detail below and are contained in the Final Plan Approval.

In addition, miscellaneous edits have been made to the Final Plan Approval. These edits where necessary to correct typographical errors, clarify wording, ensure consistency between the documents, and address some of the comments.

The Final Plan Approval, PSD Permit, PSD Fact Sheet, and RTC are available on MassDEP's website at http://www.mass.gov/eea/agencies/massdep/news/comment/nrg-canal.html

MassDEP is providing copies (electronic or hard copy) of the Final Plan Approval and RTC to everyone who commented on the Proposed Air Quality Plan Approval or who requested copies of these documents. Copies of the Final Plan Approval may also be obtained by writing or calling MassDEP between the hours of 8:45 AM and 5:00 PM, Monday through Friday, excluding holidays:

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PROJECT CHANGES

The proposed Air Quality Plan Approval and the draft PSD Permit were based on a stack height of 220 feet for the combustion turbine. Subsequent to the public comment period, on July 5, 2017 the Massachusetts Department of Public Utilities, Energy Facilities Siting Board ("EFSB") issued a Final Approval (docket number EFSB 15-06)[1] for the Project. In the Final Decision, the EFSB directed NRG to increase the stack height to 250 feet.

A change in stack height has an effect on pollutant dispersion and the associated ambient impacts. By increasing the stack height, pollutant dispersion is improved and there is a decrease in ambient impacts. On July 14, 2017, NRG submitted a revised Air Quality Impact Analysis and Air Toxics Analysis to accurately establish the ambient impacts associated with the taller stack height. Tables 3, 4, 5A, and 5B of the Air Quality Plan Approval have been updated to identify the results of the revised Impact Analysis and the revised Air Toxics Analysis.

[1] http://www.mass.gov/eea/docs/dpu/siting/orders/efsb99-4a/final-decision.pdf

MassDEP Regulations at 310 CMR 7.51 "Hearings Relative to Orders and Approvals" require a public hearing for construction, substantial reconstruction or alteration of any facility regulated by the Department of Public Utilities. An increase in stack height is not considered construction, substantial reconstruction or alteration as defined in 310 CMR 7.00 because there is no accompanying increase in emissions or increase in ambient impacts. Accordingly, the revision to the stack height is not subject to public comment for the Air Quality Plan Approval.

The PSD Regulations at 40 CFR 52.21[2] require a public process for changes to a Facility that would have an effect on the PSD increment[3]. This would include a change in stack height due to its effect on ambient impacts. Because of the project change, the PSD permit must go through a second public process, which will be limited to public comments and not a hearing. MassDEP expects the second public comment period for the PSD Permit to occur in the next several weeks.

MassDEP's REVIEW OF COMMENTS and LIST OF COMMENTERS

MassDEP reviewed the significant comments received from commenters. Comments expressing general opposition to, or general support of, the proposed project have been reviewed and are reflected in the more specific comments discussed below.

In some cases, MassDEP has included original comments nearly verbatim, for the reader's convenience. In others, MassDEP has included brief summaries of those comments to remind the reader of the topics discussed. Even though each comment submitted has not been reproduced here in its entirety, and many of the details of each comment were not repeated in the summary comments, please be assured that MassDEP has carefully read and considered every comment in its entirety. The form of this RTC is simply designed to structure MassDEP's responses and make them more accessible to the general public. No significance should be attached to the form in which MassDEP cited or summarized the original comment in this RTC. The complete text of every comment as submitted is in the administrative record and available by written request.

Several comments were received that pertain solely to the Draft PSD Permit. The comments specific to the Draft PSD are not addressed in this RTC but will be included in a separate RTC that will accompany the PSD Permit upon issuance.

Testimony and Comments	
Name and Affiliation	**Date Received**
Chris Powicki, Mass350	Oral Testimony at the Public Hearing, February 8, 2017
Grace Barter, Mass350	Oral Testimony at the Public Hearing, February 8, 2017

[2] https://www.ecfr.gov/cgi-bin/text-idx?rgn=div8&node=40:3.0.1.1.1.1.1.19

[3] PSD increment is the maximum allowable increase in pollutant concentration over the ambient baseline concentration. PSD increments prevent the air quality in clean areas from deteriorating to the level set by the NAAQS.

Thomas Atkins, NRG	Oral Testimony at the Public Hearing, February 8, 2017
Dr. Anna Manatis, Physician	Oral Testimony at the Public Hearing, February 8, 2017
Misty Niemeyer	Email dated February 9, 2017
Christopher Dynega	Email dated February 9, 2017
Alicia Rinaldi Boyd	Email dated February 9, 2017
Li Ling Hamady	Email dated February 9, 2017
Natalia von Hausen	Email dated February 9, 2017
Robert Manz	Email dated February 9, 2017
Kristen Lans	Email dated February 9, 2017
Shawn Konary, NRG	Email dated February 9, 2017
George Lipka, Tetra Tech	Email dated February 9, 2017
Ida E. McDonnell, Manager USEPA Region One	Letters (2) dated February 8, 2017

In addition to the comments listed above, two additional sets of comments were provided after the deadline of 5 pm on February 9, 2017. Because the comments were received late, the Department will not be responding to the comments directly, but does note that the comments are substantively similar to comments received from other commenters.

Responses to Comments

A. Greenhouse Gas (GHG)

1. *So, I was wondering does the plant spanning Units 1, 2, and 3, how does it look against the pending state regulations for controlling electric sector emissions out to 2050? Was the pending regulation factored into the permitting?* (*Powicki, public hearing*)

   MassDEP Response for Comment 1:

   Pursuant to the directives of the Supreme Judicial Court's decision in Kain v. DEP,[4] and Executive Order No. 569,[5] MassDEP has proposed draft regulations establishing an aggregate declining GHG emissions limit on all large power plants within the borders of the Commonwealth. MassDEP proposed a formal public comment draft on December 16, 2016 and expects to promulgate final regulations by August 11, 2017. In the interim, being mindful of the emphasis in the Kain decision about the importance of meeting the GHG emissions reductions limits required by M.G.L. c. 21N, commonly known as the Global Warming Solutions Act (GWSA), MassDEP proposed a declining GHG emissions limit in the terms and conditions of the draft Plan Approval for the facility. Based on information in the record, MassDEP has determined that there is a potential condition of air pollution that could be caused by the facility in the absence of a GHG emission limit.[6] Therefore, MassDEP has determined that it is necessary to include a declining GHG emission limit in the Special Terms and Conditions of the plan approval for the facility.

   MassDEP has decided to begin that GHG emissions limit at the equivalent of a 43% capacity factor for facility operations. This results in a starting number of 810,500 tons per year (tpy) of GHG emissions in the first year of operation of the facility. The GHG emissions limit will decline by 2.5% per year thereafter, which is consistent with the rate of decline in the proposed regulations. In 2026, the GHG emissions limit will be re-set to 622,012 tpy at the equivalent of the projected facility operations capacity factor of 33%, which is also consistent with a re-set of GHG emissions limits in 2026 in the proposed regulation for new facilities. MassDEP has designed the GHG emissions limit in the facility permit to balance the need to restrict GHG emissions from the facility, which could

[4] Kain v DEP, 474 Mass. 278 (2016).
[5] *See* Executive Order No. 569 at http://www.mass.gov/governor/legislationexecorder/execorders/executive-order-no-569.html
[6] By adopting the GWSA, the Legislature has made a determination on behalf of the Commonwealth that without a significant reduction in the current level of GHG emissions by 2020 and an even more significant reduction by 2050, there will be significant harm to human health and the environment. The federal government has concurred that GHG emissions are air pollutants that endanger human health and the environment. On April 2, 2007, in a landmark decision pressed by the Commonwealth of Massachusetts as well as other states, the Supreme Court determined that GHGs, including carbon dioxide, are air pollutants covered by the Clean Air Act. *See* Massachusetts v. EPA, 549 U.S. 497 (2007). The Supreme Court required EPA, under Section 202(a) of the federal Clean Air Act (CAA), to determine if GHGs threaten public health and welfare, that is, make what is called an "endangerment" finding. On December 7, 2009, the EPA Administrator signed an endangerment finding regarding greenhouse gases under section 202(a) of the Clean Air Act that found that the current and projected concentrations of GHGs endanger the public health and welfare of current and future generations. 74 Fed. Reg. 66,496 (2009). The Administrator determined that greenhouse gas pollution threatens Americans' health and welfare by leading to long lasting changes in our climate that can have a range of significant negative effects on human health and the environment.

cause a condition of air pollution and jeopardize meeting the GWSA goals, against the important need to support intermittent renewable power and ensure grid reliability.

The Applicant proposed the declining GHG emission limits, which are included in the Air Quality Plan Approval. In evaluating the proposed declining GHG emissions limit, MassDEP took into account the restrictions associated with the New Source Performance Standards ("NSPS") Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units at 40 CFR Part 60, Subpart TTTT. Additionally, MassDEP considered the precedent established by the proposed Exelon Facility in West Medway, which is a similar type facility. As part of that effort and under the mandates of the GWSA, Massachusetts must demonstrate a reduction in GHG emissions from electricity imported into Massachusetts from the ISO-New England region as well as from electricity generated within the Commonwealth. *See* M.G.L. c. 21N, § 2.

Moreover, because MassDEP is establishing a GHG emissions limit on a single facility through permit conditions, the agency cannot set as stringent emission limits as it could in a regulation that would establish limits for multiple power plants. Trading of compliance credits can mitigate for the significant uncertainties about which power plants will be called on to run by ISO-New England in any given year or in the event of a significant disruption(s) in power supply. MassDEP could have set the starting point for the emissions limit at the 50% capacity factor allowed by the NSPS.

Therefore, in MassDEP's judgment, the GHG emissions limit as set forth in the plan approval balances the need for GHG emissions restrictions against the uncertainties about grid reliability[7], the need for support for intermittent renewable energy and the uncertainties about entry of other new facilities into the electricity market. Meanwhile, it is expected that the regulatory GHG emissions limits on all large electricity generating units, like the facility, will be effective by January 1, 2018, before the facility will commence operation. The regulations would then set the limits for annual GHG emissions from the facility.

Review of the GWSA was limited to the proposed Project, Emission Unit 3. Based on the draft Regulations, as proposed, Emission Units 1 and 2 will have declining CO_2 emission limitations, which will be applicable upon promulgation of the Regulations and the declining annual emissions limits on Unit 3 in the Plan Approval will be superseded by the final regulation.

2. *Ultimately, natural gas if it's going to continue to operate and use it to fuel fossil power plants, we're probably going to need to have carbon capture capability for the facilities. So, is there a capability for partial carbon capture at the Canal Station site?* (*Powicki, public hearing*)

MassDEP Response for Comment 2:

As discussed on page 26 of the proposed Air Quality Plan Approval, the potential available control options were carbon capture and sequestration ("CCS"), alternative electric generation technologies, the use of clean fuels, good combustion control, and efficient operation. Only the use of clean fuels, good combustion control, and efficient operation were determined to be technically feasible means of mitigating carbon emissions.

As page 22 of the Draft PSD Fact Sheet states, relative to the technical feasibility of CCS:

[7] This unit is designed to provide additional capacity to the grid during periods of peak demand.

> "CCS is a relatively new technology which requires three distinct processes: 1) isolation of CO_2 from the waste gas stream; 2) transportation of the captured CO_2 to a suitable storage location; and, 3) safe and secure storage of the captured and delivered CO_2.
>
> The first step in the CCS process is capture of the CO_2 from the process in a form that is suitable for transport. There are several methods that may be used for capturing CO_2 from gas streams, including chemical and physical absorption, cryogenic separation, and membrane separation. Exhaust streams from simple-cycle combustion turbines have relatively low CO_2 concentrations. Only physical and chemical absorption would be considered technically feasible for a high-volume, low-concentration gas stream."

In the absence of nearby storage or sequestration facilities, carbon capture alone is not viable. This too is addressed on page 22 of the PSD Fact Sheet.

> "The second step is to transport the captured CO_2 to a suitable storage location. Currently, there is no pipeline to transport captured CO_2 from the Project site to a known sequestration site in northern Michigan. This location, which is in the development phase, is over 600 miles from the Project site and is not currently operational. The Applicant concluded that CCS is not technically feasible."

MassDEP agrees with the Applicant's analysis of the technical feasibility of CCS. Based on the Department's independent review, the Department was unable to identify any combustion turbines that use CCS. As part of the Department's review of CO_2 emissions, we evaluated turbine efficiency and determined that the proposed unit is among the most efficient in its class. The Department also evaluated alternative fuels and found that the use of natural gas resulted in fewer emissions. Therefore, restrictions were placed on the use of distillate oil as a fuel.[8] Finally, the Department implemented a declining GHG emission cap, which is discussed in detail in the response to Comment 1, above.

3. *So our goal, the group's goal, is to get our local municipalities to use 100 percent renewable energy as soon as they can along with a few other state goals. And we're concerned by this project because that is not going to happen. It fails to use renewable technology, but it also increases our fossil fuel use, a lot of which Chris mentioned with a lot more detail than I have, but the pollution will be felt by our communities and will impact the rest of the world.*

4. *This project uses natural gas, which is not free of emissions, in fact it will increase the amount of emissions, it likely will use fracked gas and it commit the cape to decades of infrastructure for fossil fuels, preventing the Cape from moving towards the future of renewable energy with zero emissions. We need to be moving forward, not backwards! (Lans)*

5. *I believe opening another gas powered plant is a step backwards, yes I understand is "cleaner" than other options and more state of the art allowing an increase in the use of renewable energy. However, it still has a product of CO_2 emissions, it still relies on fossil fuels and supports continued fracking which is a process that is incredibly destructive to the environment and it commits us to infrastructure using fossil fuels for decades.*

[8] For further discussion on the basis of the restrictions on distillate oil, refer to the Air Plan Approval, page 23.

Many residents on Cape Cod want to move towards renewable energy. There are options for clean renewable energy and that is the direction we should be moving in.

I attended the hearing last night in Sandwich, and while I did hear the representative from NRG said, but I don't think they are down playing the impacts and not pushing hard enough to towards renewable energy sources. (Niemeyer)

MassDEP Response for Comment 3, 4, and 5:

MassDEP review has found that this project supports renewable technology. The discussion of Project Benefits and Social Costs on page 17 of the proposed Plan Approval states, in part:

> "With respect to Project benefits, the Application states that an important benefit of the Project is that it will add reliability to the regional electrical system and provide resources to support intermittent and variable resources, including renewable resources. Canal Station Units 1 and 2 are currently the only significant electric generating units on Cape Cod. Canal Station Units 1 and 2 each take approximately 12 hours to start up, and cannot respond to immediate power needs if there are problems with the electric supply or with the supply of intermittent renewable resources such as solar and wind. The Project will be able to provide its full electric output capability in 10 minutes. This will provide a significant public benefit in terms of providing a quick response to system outages and also to support the market penetration of renewable resources. Renewable resources such as wind and solar are intermittent resources, since they depend of wind or sunshine being available in real time. If these resources are not available, the Project can provide quick backup power to replace these intermittent renewable resources until they become available again."

With respect to the comment that the Project "increases our fossil fuel use… but the pollution will be felt by our communities and will impact the rest of the world ," MassDEP disagrees. Page 18 of the proposed Plan Approval states, in part "An additional Project benefit discussed in the Application is that since the Project will be dispatched ahead of older, less efficient generation on the electric grid, operation of the Project is projected to reduce regional CO_2 emissions." By extension, a more efficient unit will have lower emissions of all pollutants per kilowatt of electrical production.

MassDEP acknowledges the comments about fracking and the associated impacts, and notes that such comments are beyond the scope of the Department's review in this matter, which relates to the air plan approval and air PSD permit.

B. Sound Impacts

6. *In the proposed AQPA, on page 75 of 84, Table 13, Condition 11.c, we recommend that the Project noise limits be specified as the maximum dBA level contribution of the Project itself (which is independent of background) rather than as a delta above background. These values may be found in the middle column of Table 7-6 of the Consolidated Application. These values, in dBA for ST-1 through ST-7, are: 46, 46, 40, 35, 30, 38, 35. (Tetra Tech)*

MassDEP Response for Comment 6:

MassDEP believes it is important to identify the increase above the existing ambient sound impact level as currently presented in Table 13, provision 11c, which is in the format of dBA over background. The purpose of this table is to demonstrate that the predicted impacts from the operation of the Project will not cause a nuisance condition as required under the sound regulation, 310 CMR 7.10 as clarified by MassDEP Noise Policy 90-001. The Noise Policy establishes a sound level increase of 10 dBA over the ambient L_{90} level as an indicator of a condition of noise. By identifying the predicted increase in the same format, i.e. increase above existing ambient sound levels, the reader can readily compare the predicted impacts from the operation of the Project to the maximum noise impacts allowed by MassDEP Policy 90-001.

The suggestion to identify the maximum dBA level contribution of the Project itself would more clearly identify maximum allowable impacts to be used for sound impact compliance monitoring. The Department believes there is value to including both sets of information to fully identify the maximum sound impacts of the Project. The Department has added a third column to Table 13, which presents the maximum dBA level contribution of the Project itself.

C. Corrections

Two comments were made regarding corrections that should be made to the Plan Approval. The comments are as listed:

7. *In the Proposed AQPA, on page 52 of 84, Table 9, CO emissions on natural gas, 25.9 lb/hr should be replaced with 27.1 lb/hr. 25.9 lb/hr does appear in Table 2-1 of the Consolidated Application, but the correct value of 27.1 lb/hr may be found as the maximum CO lb/hr value for gas firing in Appendix B, Table B-1, Case 14. (Tetra Tech)*

8. *In the proposed AQPA, on page 81 of 84, the three lines at the top of the page we believe do not belong and should be deleted. They are:*

   These measures include:

   - *Gas compressor selection;*
   - *Fuel gas performance heating; (Tetra Tech*)

MassDEP Response for Comment 7 and 8:

MassDEP has located the CO emission rate in Appendix B of the application and adjusted the pound per hour emission rate for CO in the Plan Approval accordingly. MassDEP has inserted a corrected page, which has been provided by the applicant, into the application.

MassDEP has reviewed page 81 of the draft Plan Approval and agrees that the two bullet Items are not appropriate and have been deleted.

9. *Again, if we're going to have Unit 3, because the lights need to be kept on, which I'm not 100 percent the expert at this time about what the needs are for the Southeast region; why, again, do we need 1 and 2 to even stay on? We have fuel diversity, the solar panels are there. (Dr. Manatis)*

MassDEP Response to Comment 9:

The Department acknowledges these comments, and notes that such comments are beyond the scope of the Department's review in this matter, which relates to the air plan approval and air PSD permit. Issues pertaining to electric generation capacity and fuel diversity have not been reviewed.

Although the Department does not have a role in determining whether a particular unit should be retired, we would like to point out that Units 1 and 2 serve a different purpose than the proposed Unit 3. Unit 1 and 2 are "base load" units, which are designed to consistently generate power to help meet the minimum electrical demand of an area. Unit 3 is a "peak load" plant, which is designed to run intermittently, often on short notice, during periods of higher (peak) demand.

D. Applicable Requirements

10. *Page 11: The proposed Comprehensive Plan Approval (Approval) correctly states that any emission credits generated from the Lovett facility shutdown have to be adjusted to reflect the Clean Air Act (CAA) requirements in effect at the time of the modification's operation. Additionally, to comply with Massachusetts state implementation plan's (SIP) nonattainment new source review requirements in 310 CMR 7.00 Appendix A, Section 6(f), the emission credits from the shutdown must be properly accounted for in future emission inventories required by the CAA. New York's ozone attainment plan for the New York-N, New Jersey-Long Island, NY-NJ-CT nonattainment area should contain the necessary information to determine whether the emission reduction credits have been properly addressed. (EPA)*

MassDEP Response to Comment 10:

MassDEP is aware of the adjustment requirements of Department Regulation 310 CMR 7.00 Appendix A 6(f). Since all adjustments are done at the time they are traded, MassDEP does not view emission credit adjustments as a permit requirement. Nonetheless, the statement "MassDEP will conduct due diligence to ensure that emission credits are properly adjusted in future inventories required by the Clean Air Act" has been added to page 11 of the Air Quality Plan Approval.

This statement will serve as a reminder to the Department and as disclosure to the reader that adjustments may be required.

11. *Page 51, Section 12. Applicable Requirements: Under the SIP, this Approval addresses two Clean Air Act preconstruction permit programs; minor new source review (MNSR) and nonattainment new source (NNSR). The NNSR program is limited to NOx emissions based on the information in Table 1of the Approval.*

The MNSR program was approved into the SIP to ensure national ambient air quality standards (NAAQS) are not violated due to new construction and that new construction will allow Massachusetts to continue to maintain its air quality below the NAAQS. The Approval also contains restrictions on the source that are required under 310 CMR 7.00 but not required under the SIP. Such restrictions deal with noise, hazardous air pollutants, and ammonia (Since Massachusetts is currently designated attainment for $PM_{2.5}$).

To alleviate any confusion as to which applicable requirements are derived from state authority approved into the SIP or from other state authority, the MassDEP should label each Applicable Requirement as "Commonwealth-only" if the applicable requirement is not required by the SIP. (EPA)

MassDEP Response to Comment 11:

MassDEP disagrees with this suggestion. The purpose of a Plan Approval is to incorporate all applicable requirements of 310 CMR 7.00. Currently, MassDEP Regulations at 310 CMR 7.00 do not differentiate which requirements are derived from state-only authority from the requirements that are approved into the SIP. Moreover, it has not been the practice of MassDEP to differentiate the requirements in an Air Quality Plan Approval.

This Project is subject to the Operating Permit Requirements at 310 CMR 7.00 Appendix C. When issuing an Operating Permit for this Facility, MassDEP will identify the Applicable Requirements derived from state-only authority within the document.

12. *Page 57: MassDEP should explain why the condensable fraction of PM_{10} and $PM_{2.5}$ emissions are not included in the startup and shutdown limits in Table 9A. EPA notes condensable fraction of PM_{10} and $PM_{2.5}$ emissions under steady state operations are included in the emission limit for PM_{10} and $PM_{2.5}$ in Table 9. (EPA)*

MassDEP Response to Comment 12:

The condensable fraction is included in the startup and shutdown emission limits for PM_{10} and $PM_{2.5}$ but MassDEP acknowledges that Table 9A is not explicit. A footnote has been added to Table 9A, which clearly states that the particulate matter emission limits include both filterable and condensable particulate matter.

13. *Page 62, Table 10, No. 25: To the extent the following sentence is intended to only apply to emission reporting under the Comprehensive Environmental Response, Compensation, and Liability Act, it may have unintended consequences of appearing to be in conflict with the EPA's Startup, Shutdown, and Malfunction SIP call. EPA recommends MassDEP either remove the following sentence or clarify the sentence has no bearing on Clean Air Act requirements.*

> *"An exceedance of emission limits in Table 9 or 9-A of this Plan Approval due to emergency or malfunction shall not be deemed a federally permitted release as that term is used in 42 U.S.C. 9601(10)" (EPA)*

MassDEP Response to Comment 13:

MassDEP agrees with EPA's comment and has removed the sentence from provision number 25 in Table 10.

14. *The proposed AQPA requires the installation and operation of a continuous opacity monitoring system (COMS) in the stack to monitor the opacity from Canal 3. NRG believes that installing a COMS on this unit is unnecessary and, as discussed below, will present ongoing operational and maintenance problems, resulting in false opacity readings from the unit.*

The GE 7HA.02 combustion turbine, or equivalent, when operating on either natural gas or ultra-low sulfur distillate oil (ULSD), has an advanced and automated combustion control system that makes it very unlikely that any combustion upsets would occur that would result in any opacity deviations. Canal 3 will conduct a complete evaluation of stack opacity using EPA Method 9 as part of initial performance tests, and Canal 3 is also willing to conduct periodic Method 9 observations to confirm ongoing opacity compliance.

Since Canal 3 is a simple-cycle gas turbine that will have stack gas temperatures in the range of 800-900°F, it is expected that maintaining proper alignment of a stack mounted COMS will be very difficult, due to the significant and non-uniform expansion and contraction of the metal stack that will occur.

NRG has conducted research and believe that the air permit for Braintree Electric Light Department (BELD) Watson Units 4 and 5 is worthy of note. The BELD Watson Units 4 & 5 are each 60 MW dual fuel simple cycle peaking units, which received preconstruction approvals in 2008. These units are not required to have COMS. NRG requests that MassDEP remove the COMS requirement from the AQPA. (NRG)

MassDEP Response to Comment 14:

Opacity is used as an indicator of particulate emissions. BACT for PM /PM_{10}/$PM_{2.5}$ was determined to correspond to 0.002 grains/wet standard cubic foot (18.1 lb/hr), and 0.008 grains/wet standard cubic foot (65.8 lb/hr) while firing natural gas and ULSD, respectively. Through the use of proper combustion practice and the combustion of natural gas and ULSD, the gas turbine is not expected to result in opacity /visible emissions. Additionally, the high stack temperatures associated with the operation of the simple cycle turbine may render a COMS an unreliable indicator of the presence of opacity.

MassDEP agrees to remove the requirement for a COMS. The turbine will remain subject to the opacity limitations contained in Table 9 of the Air Quality Plan Approval. Compliance with the opacity limits will be determined by the use of Method 9 for Visual Determination of the Opacity of Emissions from Stationary Sources.

Reference to COMS in the draft Air Quality Plan Approval has been removed. Locations include, but are not limited to, Tables 10, 11, 12 and 13. EPA Method 9, as contained in 40 CFR Appendix A has been listed as an applicable test method, in locations as required.

15. *The proposed AQPA and PSD Permits require extensive initial performance stack testing for air emissions, some of which NRG believes are unnecessary, would require significant uneconomic and unnecessary operation of Canal Unit 3, which would not provide any additional information or data that is not already captured in other required testing.*

    The proposed AQPA and PSD Permit requires particulate (PM/PM_{10}/$PM_{2.5}$) testing at both 100% load and at Minimum Emission Compliance Load (MECL). While MECL is an important test load for NOx, CO and VOC, NRG believes that stack testing for particulates is only needed at 100% load on each fuel. The proposed allowable particulate (PM/PM_{10}/$PM_{2.5}$) emissions on natural gas are 18.1 lb/hr at all steady state loads, and the proposed allowable particulate emissions on ULSD are 65.8 lb/hr at all steady state loads. Since the proposed lb/hr permit limit does not decrease with load, NRG believes that 100% load clearly represents the worst-case load for testing.

NRG requests that MassDEP remove the particulate testing requirement at MECL from the AQPA and PSD Permit.

The proposed AQPA requires testing for NO_x, CO, VOC, NH_3 and opacity at MECL, 75% and 100% load on each fuel. In addition, the proposed PSD permit requires testing for NO_x at MECL, 75% and 100% load on each fuel. For NO_x, CO, VOC, NH_3, and opacity, NRG believes the 75% load performance testing requirement is unnecessary. Performance testing at MECL and 100% load will be sufficient to ensure the facility design is adequate to ensure compliance across the steady-state load range. In addition, NO_x, CO, and NH_3 will have continuous emissions monitoring systems (CEMS) to continually determine continuous compliance at all loads.

NRG requests that MassDEP remove the 75% load testing requirement for NO_x, CO, VOC, NH_3, and opacity from our proposed AQPA, and remove the 75% load testing requirement for NO_x from the PSD Permit. (NRG)

MassDEP Response to Comment 15:

The NSPS Subpart KKKK at 40 CFR 60.4400 (b) states "The performance test must be done at any load condition within plus or minus 25 percent of 100 percent of peak load. You may perform testing at the highest achievable load point, if at least 75 percent of peak load cannot be achieved in practice. You must conduct three separate test runs for each performance test. The minimum time per run is 20 minutes." Accordingly, the NSPS only requires one test, consisting of 3 runs and is specific to NOx. Testing for the additional pollutants is required by the Department to ensure compliance with the established emission limits, i.e. BACT.

In evaluating this request with respect to NO_x and CO, the Department considered the predicted impacts at the various loads as determined by the emissions modeling conducted for the Project. The "worst-case" scenario relative to the unit's impact on the NAAQS occurs either when the unit is firing at 100% of its rated capacity, has an hour with startup transitioning to 100% load, or is operating at minimum load. For these cases, the total impact on the ambient atmosphere (including background and existing Canal Station sources) will be 70% of the 1-hour NO_2 NAAQS, 25% of the annual NO_2 NAAQS and less than 20% of both the 1-hr and 8-hr CO NAAQS. 75% load is not the worst case load for any pollutant/averaging period combination. For VOC and NH_3, VOC is not subject to dispersion modeling, and NH_3 has predicted impacts of 1% of the MassDEP air toxics guideline limit.

Therefore, MassDEP agrees to remove the 75% load testing requirement for NO_x, NH_3, CO and VOC. Moreover, NO_x, NH_3 and CO will each have a certified continuous emission monitoring system (CEMS), which will provide continuous "direct-compliance" data to determine compliance with allowable limits at any actual operating load. In addition, the Plan Approval requires the Permittee to establish a VOC/CO correlation curve for purposes of continuously assessing VOC compliance. Therefore, MassDEP agrees that a performance test at MECL and 100% load for NO_x, NH_3, CO and VOC will provide sufficient documentation of compliance for NSPS Subpart KKKK and the AQPA/PSD limits.

With respect to particulates ($PM/PM_{10}/PM_{2.5}$), MassDEP agrees to remove the testing requirement at MECL. MassDEP has considered the point made by the Applicant that the same lb/hr value is the controlling emission limit at all steady state loads on each fuel. This is based on the manufacturer's guarantee for particulate emissions. Therefore, it is expected that the controlling case for particulate emission compliance will be 100% load, when a greater amount of fuel is being fired compared to

partial loads. MassDEP notes that the recent MassDEP Exelon West Medway combustion turbine approval that requires partial load performance testing for particulates, has a constant lb/MMBtu limit for ULSD firing that applies across the load range. However, Exelon West Medway also has particulate limits for natural gas firing that require lower lb/hr emissions at minimum load. The particulate limits in the proposed AQPA and PSD Permit do include lb/MMBtu values, but these are all based on the constant lb/hr value for each fuel which are controlling across the full range of loads for both natural gas and ULSD. Therefore, MassDEP agrees that particulate performance testing is only needed at 100% load.

16. *The proposed AQPA (Table 13, Special Condition 2) and proposed PSD Permit (Table 6, Special Condition 3) specify that:*

> *The Permittee shall operate the SCR serving EU 10 whenever the flue gas temperature at the inlet to the SCR is above the minimum flue gas temperature specified by the SCR manufacturer and other system parameters are satisfied for SCR operation.*

During initial firing, tuning and commissioning activities of the turbine, in order to prevent any potential damage to the air pollution control equipment, it is normal practice to not have either the SCR or oxidation catalysts systems loaded. During initial firing and commissioning, damage to the catalyst systems may potentially occur until the turbine combustion is properly tuned on both fuels. The SCR and oxidation catalyst systems will be loaded at the earliest practical time during initial commissioning and shakedown activities.

NRG requests that the following sentence be added to the AQPA, Table 13, Special Condition 2 and proposed PSD Permit Table 6, Special Condition 3:

The Permittee shall complete initial installation of the SCR and oxidation catalyst systems as soon as practicable during the initial commissioning and shakedown of the project
(NRG)

MassDEP Response to Comment 16:

It is the Department's obligation to ensure that all emissions are minimized to the extent possible to help ensure the emissions do not cause or contribute to a condition of air pollution, namely, an exceedance of the NAAQS.

During the initial firing and commissioning of the turbine, it is understood that the turbine's system parameters and emissions could be out of specification. Nonetheless, in accordance with Table 13, Special Condition 2 of the Air Quality Plan Approval and Table 6, Special Condition 3 of the PSD Permit, it is incumbent on NRG to ensure that the SCR is operational when "system parameters are satisfied for SCR operation."

NRG also has an obligation to operate the SCR as required by the NSPS subpart KKKK at 40 CFR 60.4333 (a), which states "You must operate and maintain your stationary combustion turbine, air pollution control equipment, and monitoring equipment in a manner consistent with good air pollution control practices for minimizing emissions at all times including during startup, shutdown, and malfunction." The Department cannot provide relief from NSPS requirements.

As required by the NSPS, NRG must identify and implement "good air pollution control practices for minimizing emissions." Despite the requirement to operate monitoring equipment, the Department

acknowledges that emissions monitoring equipment will not be available until they are installed and certified in accordance with 40 CFR part 75, including the compliance dates specified therein.[9]

E. Environmental Justice

Subsequent to issuance of the proposed Plan Approval, the Massachusetts Executive Office of Energy and Environmental Affairs (EEA) issued an updated Environmental Justice (EJ) Policy, dated January 30, 2017. The updated EJ Policy reinforces that all communities have a strong voice in environmental decision-making regardless of race, color, national origin, income or English language proficiency. The updated Policy further recognizes the need for those community voices in decisions on investments in the preservation and enhancement of the Commonwealth's open spaces and urban park network, and re-affirms the need for attention on communities built in and around the state's oldest areas and where there are legacies of environmental pollution.

As an Agency within the EEA, the updated Environmental Justice Policy applies to MassDEP. The Project has been reviewed for conformance with the updated Environmental Justice Policy.

Environmental Justice Populations are those segments of the population that EEA has determined to be most at risk of being unaware of or unable to participate in environmental decision-making or to gain access to state environmental resources, or are especially vulnerable. They are defined as neighborhoods (US Census Bureau census block group data for minority criteria and American Community Survey (ACS) data for state median income and English isolation criteria) that meet one or more of the following criteria:

- 25 percent of households within the census block group have a median annual household income at or below 65 percent of the statewide median income for Massachusetts; or
- 25 percent or more of the residents are minority; or
- 25 percent or more of the residents have English isolation.

Although the Environmental Justice Policy has been updated, the underlying criteria for determining applicability to the Policy remains unchanged, namely, for purposes of sources air emissions, there are no EJ populations within 5 miles of the Project. The EJ applicability determination remains valid. This applicability determination on page 7 and 47 of the proposed Air Quality Plan Approval found that there are no mapped Environmental Justice communities within 5 miles of the Canal Generating Station. The closest EJ area is to the west, in Onset MA, approximately 7.5 miles from the Project site.

The wording on the EJ discussions on pages 7 and 47 of the Air Quality Plan Approval has been updated to reflect the updated EJ Policy dated January 30, 2017.

[9] See 40 CFR 75.4 Compliance dates