

Massachusetts Institute of Technology's Central Utility Plant  
Combustion Turbine Expansion Project

Prevention of Significant Deterioration Permit  
Permit Number NE-15-018  
Transmittal Number X262144

**Response to Comments**

Massachusetts Department of Environmental Protection (MassDEP)  
Northeast Regional Office  
June 21, 2017

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## I. Summary of the Formal Public Participation Process

On April 11, 2017, MassDEP issued a Proposed Comprehensive Plan Application (CPA) Approval under Massachusetts Regulation 310 CMR 7.02 and a Draft Prevention of Significant Deterioration (PSD) Permit under Federal Regulation 40 CFR 52.21 for the Massachusetts Institute of Technology (MIT) Central Utility Plant (CUP) Combustion Turbine Expansion Project. A notice of Public Hearing and Public Comment Period on the Proposed CPA Approval and Draft PSD Permit & Notice of Section 61 Findings was published in the Environmental Monitor, the Boston Globe and several other local newspapers in the area of MIT as well as online for public review and comment. MassDEP also held a public hearing at MIT Building 4-270 located at the rear of 182 Memorial Drive in Cambridge, Massachusetts at 7:00 PM on Monday, May 22, 2017. No persons testified at the public hearing. The public comment period closed at 5:00 PM on May 23, 2017. Two comment letters were received by MassDEP during the public comment period. One comment letter pertained to both the Proposed CPA Approval and the Draft PSD Permit and the second comment letter pertained solely to the Proposed CPA Approval, as identified by the Commenters.

After careful review of the single comment applicable to the Draft PSD Permit, MassDEP has made a final decision to issue the PSD Permit. As required by 40 CFR Part 124 (Procedures for Decision making), MassDEP has prepared this document, known as the "Response To Comments" (RTC). Section A of this RTC describes and addresses any significant issues raised during the comment period which pertain to the Draft PSD Permit and describes any requirements of the Draft PSD Permit that have been changed and the reasons for the changes and/or clarifications.

In addition, for completeness in addressing public comments for this Project, Section B of this document describes and addresses any significant issues raised during the comment period which pertain to the Proposed CPA Approval exclusively and as such Section B is therefore not relative to the PSD Permit.

MassDEP's decision-making process has benefitted from the public comments submitted. Any changes to the Draft PSD Permit are described in detail below and are contained in the PSD Permit. The analyses underlying any changes are explained in the responses to comments that follow.

MassDEP is providing copies (electronic or hard copy) of the PSD Permit and RTC document to everyone who commented on the Draft PSD Permit or who requested copies of these documents. Copies of the PSD Permit 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:

Edward Braczyk, Environmental Engineer  
MassDEP, Northeast Regional Office  
205B Lowell Street  
Wilmington, MA 01887  
Telephone number: (978) 694-3200  
[edward.braczyk@state.ma.us](mailto:edward.braczyk@state.ma.us)

The PSD Permit and RTC document are also available on MassDEP's website for the Project at <http://www.mass.gov/eea/agencies/massdep/air/approvals/mit.html>.

## A. Federal Prevention of Significant Deterioration (PSD) Permit

### 1. MassDEP's Review of Public Comments and List of Commenters on the Draft PSD Permit

MassDEP reviewed the single comment letter received from a commenter regarding the Draft PSD Permit. MassDEP has summarized the comment to remind the reader of the topics discussed. Even though the comment submitted has not been reproduced here in its entirety, and some details of the comment may not have been repeated in the summary of comments, please be assured that MassDEP has carefully read and considered the comment in its entirety. The form of this RTC is designed to structure MassDEP's responses to 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 the comment, as submitted, is in the administrative record and is available by request.

DRAFT PSD PERMIT		
COMMENT	COMMENTS NAME & AFFILIATION	DATE RECEIVED & FORM
1	Mr. Louis DiBerardinis, MIT, Director EHS Office, Applicant	May 23, 2017 Hard copy

### 2. MassDEP's Response to Public Comments on the Draft PSD Permit

This section summarizes the public comment received by MassDEP and provides our response to the comment.

**Comment 1:** "Thank you for the opportunity to review and provide comments on the proposed Plan Approval and draft Prevention of Significant Deterioration (PSD) permit... The project description ... states that each combustion turbine will have a separate burner with wet injection for control of NO<sub>x</sub> during ULSD firing. MIT has recently worked with Solar to finalize plans to improve the project by using dry low-NO<sub>x</sub> burners for ULSD firing, while meeting the same stringent emission limits. This results in an environmental improvement associated with reduced water consumption, and is consistent with the Mitigation/Section 61 Findings in Section 10 of the proposed Plan Approval ("CTs include option to use low-NO<sub>x</sub> combustors instead of water injection"). We request that the final documents reflect this improvement."

**Response:** MassDEP is encouraged that Solar has improved its burner technology to include Dry Low NO<sub>x</sub> combustion for ultra low sulfur diesel (ULSD) firing, given that there will be no

increase in emission rates and that this technology provides the environmental benefit over wet injection of reduced water consumption. MassDEP has reviewed the comment and concurs with the commenter, as reflected in the PSD Permit, that the use of Dry Low NO<sub>x</sub> burners during ULSD firing provides for an environmental benefit while also being consistent with the Section 61 Findings of the Certificate on the SEIR issued by the Secretary on July 1, 2016 under M.G.L. Chapter 30 Sections 61-62I.

### 3. Revisions in the PSD Permit

The following is the list of revisions based upon the comment received as well as administrative revisions that MassDEP made to the Draft PSD Permit as reflected in the PSD Permit:

- Throughout- revised to reflect that the PSD Permit is no longer “Draft”
- Page 5- revisions in Table 1 to reflect use of Dry Low NO<sub>x</sub> Combustors during both natural gas and limited backup ULSD firing in CTG 200 and CTG 300

### 4. Revisions in the PSD Fact Sheet

The following is the list of revisions based upon the comment received as well as administrative revisions that MassDEP made to the Draft PSD Fact Sheet as reflected in the PSD Fact Sheet:

- Throughout- reference to Draft PSD Permit and Draft PSD Fact Sheet revised to reflect that PSD Permit and PSD Fact Sheet are no longer “Draft”
- Page 9 - revised to reflect that the CPA Approval is no longer “Proposed”
- Page 13- revisions to reflect use of Dry Low NO<sub>x</sub> Combustors during both natural gas and limited backup ULSD firing in CTG 200 and CTG 300
- Page 44- revised to reflect that public participation efforts with regard to Notice of Public Hearing and Public Comment Period have been completed

### 5. Conclusion regarding the PSD Permit

MassDEP appreciates and extends our gratitude to the people who took the time to review the Draft PSD Permit and Draft PSD Fact Sheet and to those who provided written comments during the public comment period. MassDEP's review and the final document benefited from your participation in the permitting process.

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*The following pertains only to the Massachusetts CPA Approval and not to the federal PSD Permit*

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## **B. Massachusetts Comprehensive Plan Application (CPA) Approval**

### **1. MassDEP's Review of Public Comments and List of Commenters on the Proposed CPA Approval**

MassDEP reviewed the two comment letters received from commenters pertaining to the Proposed CPA Approval. MassDEP has summarized the 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 may not have been repeated in the summary of comments, please be assured that MassDEP has carefully read and considered every comment in its entirety. The form of this RTC is 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 request.

PROPOSED CPA APPROVAL		
COMMENT	COMMENTS NAME & AFFILIATION	DATE RECEIVED & FORM
1	Mr. Louis DiBerardinis, MIT, Director EHS Office, Applicant	May 23, 2017 Hard copy
2	Adam Hasz, Amber Houghstow, Patrick Brown, and Alison Takemura, self-identified as students and recent graduates of MIT	May 23, 2017 Email

### **2. MassDEP's Response to Public Comments on the Proposed CPA Approval**

This section summarizes the public comments received by MassDEP and provides our responses to the comments.

**Comment 1:** "Thank you for the opportunity to review and provide comments on the proposed Plan Approval and draft Prevention of Significant Deterioration (PSD) permit... The project description ... states that each combustion turbine will have a separate burner with wet injection for control of NO<sub>x</sub> during ULSD firing. MIT has recently worked with Solar to finalize plans to improve the project by using dry low-NO<sub>x</sub> burners for ULSD firing, while meeting the same stringent emission limits. This results in an environmental improvement associated with reduced water consumption, and is consistent with the Mitigation/Section 61 Findings in Section 10 of

the proposed Plan Approval (“CTs include option to use low-NO<sub>x</sub> combustors instead of water injection”). We request that the final documents reflect this improvement.”

**Response:** MassDEP is encouraged that Solar has improved its burner technology to include Dry Low NO<sub>x</sub> combustion for ultra low sulfur diesel (ULSD) firing, given that there will be no increase in emission rates and that this technology provides the environmental benefit over wet injection of reduced water consumption. MassDEP has reviewed the comment and concurs with the commenter, as reflected in the CPA Approval, that the use of Dry Low NO<sub>x</sub> burners during ULSD firing provides for an environmental benefit while also being consistent with the Section 61 Findings of the Certificate on the SEIR issued by the Secretary on July 1, 2016 under M.G.L. Chapter 30 Sections 61-62I.

**Comment 2:** “Please accept our public comment on the Comprehensive Plan Approval for the MIT Central Utilities Plant upgrade. Thank you for your consideration... We are writing to express our concern over your intention to approve the MIT Central Utilities Plant proposed CoGeneration Expansion. This project and the corresponding greenhouse gas emissions does not fit within the narrow pathway needed to reach 80 % economy-wide GHG emission reductions by 2050, as required by the Massachusetts Global Warming Solutions Act. As such, the Comprehensive Plan Application should not be approved until MIT demonstrates how it will reduce the plant’s emission rate to a level below the grid average required for 2030... The proposed CoGen facility’s emission rate... clearly falls short of reductions on the order needed to comply with the Global Warming Solutions Act and larger regional ...commitment of 80 % reductions by 2050...DEP should require a reassessment of Best Available Control Technologies, including a “no action” case of utilizing a decarbonized regional electric grid, before approving the Comprehensive Plan for the project. We recommend that the alternatives section in the SEIR be expanded to include a more thorough analysis of the potential for campus heat pumps and building technologies based on electrification...”

**Response:** Comment 2 focuses on an overarching concern regarding the state-only *Massachusetts Global Warming Solutions Act* (GWSA). Comment 2 specifically requests an expansion of the scope of the alternatives analysis contained in the Project’s Single Environmental Impact Report (SEIR) and a reassessment of Best Available Control Technology (BACT), including a “no action” case. Responses are organized below with respect to the GWSA, the SEIR and BACT comments.

### Massachusetts Global Warming Solutions Act

Comment 2 states that the “... project and the corresponding greenhouse gas emissions does not fit within the narrow pathway needed to reach 80% economy-wide GHG emission reductions by 2050, as required by the Massachusetts Global Warming Solutions Act,” “the Comprehensive Plan Application should not be approved until MIT demonstrates how it will reduce the plant’s emission rate to a level below the grid average required for 2030,” and “it clearly falls short of reductions on the order needed to comply with the Global Warming Solutions Act and larger regional... commitment of 80% reductions by 2050.” These comments imply that the MIT Project is directly subject to the GWSA and is required to reduce its Greenhouse Gas (GHG) emissions accordingly in order to meet the goals of the GWSA.

The GWSA is a comprehensive statutory framework to address climate change in Massachusetts. The Act mandates that the Commonwealth reduce its statewide GHG emissions by 10 to 25 % below 1990 levels by 2020, and by at least 80 % below 1990 levels by 2050, M.G.L. c. 21N, § 3(b), and designates the Secretary of the Massachusetts Executive Office of Energy and Environmental Affairs (“Secretary”) and MassDEP as the entities primarily responsible for implementing the GWSA. M.G.L. c. 21N, §§ 2-5. Section 3(d) of the GWSA requires MassDEP to promulgate regulations setting declining annual aggregate GHG emissions limits for sources or categories of sources that emit GHGs, to achieve the 2020 limit.

Pursuant to the GWSA, the Secretary set a statewide GHG emissions reduction limit of 25% and also issued the Massachusetts Clean Energy and Climate Plan for 2020 (2020 CECP) in 2010, establishing strategies and policies to achieve the 2020 limit, which was updated in 2015. In May 2016, the Massachusetts Supreme Judicial Court issued a decision finding that MassDEP had not yet issued the GHG-reduction regulations required by GWSA Section 3(d), and it required MassDEP to do so. See *Kain v. Department of Environmental Protection*, 474 Mass. 278 (2016). In 2016, Governor Baker signed Executive Order 569 which, among other things, directed MassDEP to promulgate regulations that satisfy the mandate of Section 3(d) of Chapter 21N of the General Laws by August 11, 2017. MassDEP issued draft regulations on December 16, 2016, and is in the process of issuing final regulations by August 11, 2017. These regulations address the source category of Electric Generating Units (EGUs) that produce electricity for retail sale to the electric grid operated by the New England Power Pool (NEPOOL), and managed by ISO-New England. The MIT Project is not designed to produce electricity for retail sale to the electric grid.

The GWSA does not directly apply to each and every source of GHG emissions. Instead, the GWSA imposes obligations on the Secretary and MassDEP. The legislation requires MassDEP to promulgate regulations that will achieve that goal. While achieving the important goals of the GWSA, MassDEP’s regulations do not require that the MIT Project, as an individual source, reduce its GHG emissions by any particular amount. MassDEP has not included any revisions in the CPA Approval with respect to the comments about the GWSA.

#### Alternatives Section in the SEIR

With respect to the comment relating to the scope of the alternatives analysis contained in the SEIR, Comment 2 recommends “that the alternatives section in the SEIR be expanded to include a more thorough analysis of the potential for campus heat pumps and building technologies based on electrification.” The SEIR was prepared and filed pursuant to the Massachusetts Environmental Policy Act (MEPA), M.G.L. c. 30§§ 61 – 62I, and 301 CMR 11.00 *et seq*, which is a program administered by the Secretary of Energy and Environmental Affairs through the MEPA Office, not by MassDEP. On July 1, 2016, the Secretary issued a Certificate on the SEIR, finding that the SEIR, including the alternatives analysis, properly complies with MEPA. The Secretary’s Certificate was not appealed. Accordingly, the Project review under MEPA has been concluded. As such, MassDEP has not included any revisions in the CPA Approval regarding the SEIR.



### Best Available Control Technology

As part of the commenters' concern regarding the GWSA, Comment 2 asks that MassDEP "require a reassessment of Best Available Control Technologies, including a "no action" case of utilizing a decarbonized regional electric grid, before approving the Comprehensive Plan for the project." Applicable federal and state law and guidance on BACT analyses make clear that the analysis must include alternative technologies. BACT regulations and federal and state guidance on implementing BACT analyses do not require evaluation of any such "no action" alternative. The fundamental scope and purpose of the Project is to provide reliable and responsive electrical and thermal energy to support the MIT campus by utilizing two dual fuel fired Combined Heat and Power (CHP) systems, each comprised of a combustion turbine generator (CTG) and Duct Burner-equipped heat recovery steam generator (HRSG), to provide the ability to efficiently balance thermal and electrical output to meet campus needs, to respond quickly to system upsets, and to start and operate independently from any external energy supply during emergencies. Therefore any such "no action" alternative utilizing a decarbonized regional electric grid would constitute "redefining the source," which would be inconsistent with federal and state BACT guidance. As such, MassDEP has not included any revisions to that effect in the CPA Approval.

### **3. Revisions in the CPA Approval**

The following is the list of revisions based upon comments received as well as administrative revisions that MassDEP made to the Proposed CPA Approval as reflected in the CPA Approval:

- Throughout- revised to reflect that the CPA Approval is no longer "Proposed"
- Throughout- revised to reflect use of Dry Low NO<sub>x</sub> Combustors during both natural gas and limited backup ULSD firing in CTG 200 and CTG 300
- Page 2- reference to Draft PSD Permit and Draft PSD Fact Sheet revised to reflect that PSD Permit and PSD Fact Sheet are no longer "Draft"
- Pages 17, 18, 46, 53, 54- revised to reflect that public participation efforts with regard to Notice of Public Hearing and Public Comment Period have been completed
- Page 54- revised to include Appeal Process section
- Page 56- revised to include Commenters on copy list

### **4. Conclusion regarding the CPA Approval**

MassDEP appreciates and extends our gratitude to the people who took the time to review the Proposed 310 CMR 7.02 Major Comprehensive Plan Application Approval and to those who provided written comments during the public comment period. MassDEP's review and the final document benefited from your participation in the permitting process.