APPENDIX G-4 – PERMIT APPLICATION FOR STATIONARY SOURCES OF AIR POLLUTION – NEW SOURCE REVIEW

Permit Application for Stationary Sources of Air Pollution - New Source Review

Killingly Energy Center

April 2016

Prepared for:

NTE Connecticut, LLC
24 Cathedral Place, Suite 300
Saint Augustine, FL 32084

For Submittal to:

Connecticut Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106

Prepared by:

Tetra Tech, Inc.
2 Lan Drive, Suite 210
Westford, MA 01886

TETRA TECH

Killingly Energy Center
an NTE Energy Project

TABLE OF CONTENTS

LIST OF TABLES

ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
°F	degrees Fahrenheit
%	percent
ACC	air cooled condenser
AP-42	USEPA's Compilation of Air Pollution Emission Factors
BACT	Best Available Control Technology
bhp	brake horsepower
Btu/kW-hr	British thermal units per kilowatt-hour
C	carbon
CARB	California Air Resources Board
CCS	carbon capture and storage
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_{2e}	carbon dioxide equivalent
CTG	combustion turbine generator
DB	duct burner
DEEP	Connecticut Department of Energy and Environmental Protection
DLN	dry-low-NO_x
DPF	diesel particulate filter
ERC	emission reduction credit
FGR	flue gas recirculation
GE	General Electric
GHG	greenhouse gas
g/bhp-hr	grams per break-horsepower-hour
g/kW-hr	grams per kilowatt-hour
gr S/100 scf	grains of sulfur per 100 standard cubic feet
H_2	hydrogen
H_2SO_4	sulfuric acid
HAP	hazardous air pollutant
HHV	higher heating value
HRSG	heat recovery steam generator
ISO	International Organization for Standardization

Acronyms/Abbreviations	Definition
ISO-NE	Independent System Operator New England
kW	kilowatt
kW-hr	kilowatt-hour
LAER	Lowest Achievable Emission Rate
lb/MMBtu	pounds per million British thermal units
lb/MW-hr	pounds per megawatt-hour
lb/hr	pounds per hour
lbs	pounds
LNB	low-NO_x burner
LNG	liquefied natural gas
MACT	Maximum Achievable Control Technology
MASC	Maximum Allowable Stack Concentration
MECL	minimum emissions compliance load
MMBtu	million British thermal units
MMBtu/hr	million British thermal units per hour
MRCSP	Midwest Regional Carbon Sequestration Partnership
MW	megawatt
MW-hr	megawatt-hour
N_2	nitrogen
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standard for Hazardous Air Pollutants
NH_3	ammonia
NO	nitric oxide
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NMHC	nonmethane hydrocarbon
NNSR	Nonattainment New Source Review
NSPS	New Source Performance Standards
NSR	New Source Review
NSR Manual	USEPA's New Source Review Workshop Manual: Prevention of Significant Deterioration and Nonattainment Area Permitting
NTE	NTE Connecticut, LLC
O_2	oxygen
O_3	ozone

Acronyms/Abbreviations	Definition
Pb	lead
PM	particulate matter
$PM_{2.5}$	particulate matter with an aerodynamic diameter of 2.5 micrometers or less
PM_{10}	particulate matter with an aerodynamic diameter of 10 micrometers or less
ppm	parts per million
ppmvd	parts per million volume dry
ppmvdc	parts per million volume dry corrected to 15% oxygen
ppmw	parts per million weight
the Project	a nominal 550-megawatt combined cycle electric generating facility proposed to be located on Lake Road in Killingly, Connecticut
PSD	Prevention of Significant Deterioration
RACT	Reasonably Achievable Control Technology
RCSA	Regulations of Connecticut State Agencies
RBLC	RACT/BACT/LAER Clearinghouse
SCR	selective catalytic reduction
SER	significant emission rate
SF_6	sulfur hexafluoride
SIP	State Implementation Plan
SJVAPCD	San Joaquin Valley Air Pollution Control District
SO_2	sulfur dioxide
SO_3	sulfur trioxide
STG	steam turbine generator
SU/SD	start-up and shutdown
tpy	tons per year
ULNB	ultra-low NO_x burner
ULSD	ultra-low sulfur distillate
USEPA	United States Environmental Protection Agency
USGS	United States Geologic Survey
VOC	volatile organic compound

PERMIT APPLICATION FOR STATIONARY SOURCES OF AIR POLLUTION

Provided on the following pages is a completed Permit Application for Stationary Sources of Air Pollution Form (DEEP-NSR-APP-200).

CPPU USE ONLY

Program: Air Engineering

Connecticut Department of
Energy & Environmental Protection
Bureau of Air Management
Engineering & Enforcement Division

Permit Application for Stationary Sources of Air Pollution - New Source Review

Please complete this form in accordance with the instructions (DEEP-NSR-INST-200) to ensure the proper handling of your application. Print or type unless otherwise noted. You must submit the permit application fee(s), a copy of the public notice, and the *Certification of Notice Form* (DEP-APP-005A) along with this form.

Note: If you are applying for a *minor modification* or a *revision* to an existing New Source Review permit, please use the appropriate *Minor Modification Application Form* (DEEP–NSR-APP-200MM) or *Revision Application Form* (DEEP-NSR-APP-200R).

Questions? Visit the Air Permitting web page or contact the Air Permitting Engineer of the Day at 860-424-4152.

Applicant Name:	NTE Connecticut, LLC	Town Where Site is Located:	Killingly, CT

Part I: Application and Source Type Summary

More than one permit may be applied for using one application form if the sources are located at the same premises. Complete and attach the appropriate supplemental application forms for each unit included in this application package. *Each* unit or process line requires a separate permit.

Unit No.	Source Type	Application Type	Existing Permit or Registration No. (If applicable)	DEEP Use Only	
				Application No.	Permit No.
CT1	Combustion Turbine	☒ *New* ☐ *Non-Minor Mod*			
DB1	Duct Burner	☒ *New* ☐ *Non-Minor Mod*			
AB	Auxiliary Boiler	☒ *New* ☐ *Non-Minor Mod*			
EG	Emergency Generator Engine	☒ *New* ☐ *Non-Minor Mod*			
FP	Emergency Fire Pump Engine	☒ *New* ☐ *Non-Minor Mod*			
GH	Natural Gas Heater	☒ *New* ☐ *Non-Minor Mod*			

☐ **Check here if additional sheets are necessary to identify all sources that are included in this application package, and label and attach them to this sheet.**

Brief Description of Project:	Combined-cycle combustion turbine electric power generating plant firing natural gas as the primary fuel with ultra low sulfur diesel fuel as backup. Supplemental firing of the HRSGs with natural gas fired duct burners will be conducted.

Part II: Fee & Public Notice Information

1. FEE INFORMATION		
A permit application fee of $940.00 [#195] is to be submitted with this application form for ***each*** source listed in Part II. For municipalities, as defined in CGS section 22a-170, a 50% reduction applies. The application will not be processed until the application fee is received. The fee shall be paid by check or money order to the Department of Energy and Environmental Protection or by such other method as the commissioner may allow. The permit fee(s) will be calculated subject to the provisions of RCSA section 22a-174-26 and billed at a later date.	**Number of Sources from Part I**	**6**
	Application Fee per source	**$940**
	Municipality	☒ No ☐ Yes, 50% disc.
	Total Enclosed	**$5,640**
2. PUBLIC NOTICE INFORMATION		
The public notice of application must be published ***prior*** to submitting an application, as required in CGS section 22a-6g. A copy of the public notice of application and the completed *Certification of Notice Form* (DEP-APP-005A) must be included as Attachment AA to this application. Your application will ***not*** be processed if Attachment AA is not included.	**Date of Publication**	

Part III: Applicant Information

- *******If an applicant is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, it must be registered with the Secretary of State. If applicable, the applicant's name shall be stated* ***exactly*** *as it is registered with the Secretary of State. Please note, for those entities registered with the Secretary of State, the registered name will be the name used by DEEP. This information can be accessed at the Secretary of State's database (CONCORD).* **(www.concord-sots.ct.gov/CONCORD/index.jsp)**

- *If an applicant is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).*

- *If there are any changes or corrections to your company/facility or individual mailing or billing address or contact information, please complete and submit the Request to Change Company/Individual Information to the address indicated on the form. If there is a change in name of the entity holding a DEEP license or a change in ownership, contact the Office of Planning and Program Development (OPPD) at 860-424-3003. For any other changes you must contact the specific program from which you hold a current DEEP license.*

1. APPLICANT INFORMATION						
Applicant Name	**NTE Connecticut, LLC** Check at least one: ☒ equipment owner ☐ equipment operator *The applicant must be either the owner or operator of the equipment.*					
Mailing Address	**24 Cathedral Place, Suite 300**					
City/Town	**Saint Augustine**	**State**	**FL**	**Zip Code**	**32084**	
Business Phone No.	**(904) 687-1857**	**Extension No.**				
Contact Person	**Mark Mirabito**					
Title	**Chief Operating Officer**					
Email	**mmirabito@nteenergy.com** By providing this e-mail address you are agreeing to receive official correspondence from DEEP, at this electronic address, concerning the subject application. Please remember to check your security settings to be sure you can receive e-mails from "ct.gov" addresses. Also, please notify DEEP if your e-mail address changes.					

Part III: Applicant Information (continued)

Applicant Type	☒ business entity ☐ municipality ☐ individual ☐ federal agency ☐ state agency ☐ tribal	
	If a business entity: **Business Type**	☐ corporation ☒ limited liability company ☐ limited partnership ☐ limited liability partnership ☐ statutory trust ☐ Other:
	Secretary of the State business ID No.	Pending ☐ Check here if your business is **NOT** registered with the Secretary of State's office.
	This information can be accessed at the Secretary of State's database (CONCORD). (**www.concord-sots.ct.gov/CONCORD/index.jsp**)	
Applicant's interest in property at which the proposed activity is to be located	☒ site owner ☐ option holder ☐ lessee ☐ easement holder ☐ Other:	
Are there co-applicants?	☐ Yes ☒ No If "Yes", attach additional sheet(s) with the required information as above.	
Did the Applicant attend a Pre-Application Meeting or an Application Review Meeting with DEEP air staff? (check all that apply)	☐ No ☒ Yes, Pre-Application Meeting: Date of Meeting: March 2, 2016 Air Staff Name(s): Kiernan Wholean ☒ Yes, Application Review Meeting: Date of Meeting: April 13, 2016 Air Staff Name(s): Kiernan Wholean	

2. BILLING CONTACT (If different than the applicant)					
Name					
Mailing Address					
City/Town		**State**		**Zip Code**	
Contact Person					
Business Phone No.		**Extension No.**			
Email					
3. PRIMARY CONTACT FOR DEPARTMENTAL CORRESPONDENCE AND INQUIRIES (if different than the applicant)					
Name					
Title					
Company/Individual Name					
Mailing Address					
City/Town		**State**		**Zip Code**	
Business Phone No.		**Extension No.**			
Email					
By providing this e-mail address you are agreeing to receive official correspondence from DEEP, at this electronic address, concerning the subject application. Please remember to check your security settings to be sure you can receive e-mails from "ct.gov" addresses. Also, please notify DEEP if your e-mail address changes.					

Part III: Applicant Information (continued)

4. EQUIPMENT OWNER OR EQUIPMENT OPERATOR (Only complete if applicant is not both equipment owner and operator)					
Name	Check one: ☐ equipment owner ☐ equipment operator				
Title					
Company/Individual Name					
Mailing Address					
City/Town		**State**		**Zip Code**	
Business Phone No.		**Extension No.**			
Email					
5. ENGINEER(s) OR CONSULTANT(s) EMPLOYED OR RETAINED TO ASSIST IN PREPARING THIS APPLICATION (If different than the applicant)					
Name	**Steven J. Babcock, P.E.**				
Title	**Consulting Engineer**				
Company/Individual Name	**Tetra Tech, Inc.**				
Mailing Address	**160 Federal St. 3rd Floor**				
City/Town	**Boston**	**State**	**MA**	**Zip Code**	**02110**
Business Phone No.	**617-443-7500**	**Extension No.**	**7533**		
Email	**steven.j.babcock@tetratech.com**				
Service Provided	**Preparation of application text, forms, and calculations**				

☐ **Check here if additional sheets are necessary. Label and attach them to this sheet.**

Part IV: Site Information

1. SITE NAME AND LOCATION					
Name of Site	**Killingly Energy Center**				
Street Address or Location Description	**Lake Road**				
City/Town	**Killingly**	**State**	**CT**	**Zip Code**	**06241**

2. SITE OWNERSHIP INFORMATION	
For site locations that *do not* currently have an air permit or registration associated with it:	
Please provide the date the owner or operator established a presence at this site.	**March 4, 2016**
For site locations that *do* currently have an air permit or registration associated with it:	
Does this site have a new owner or operator?	☐ Yes ☐ No
If yes, is this new owner or operator replacing the existing owner of the site or will it be co-located with the existing owner?	☐ Replacing ☐ Co-Located
If yes, please provide the date the new owner or operator established a presence at this site.	
3. INDIAN LANDS	
Is or will the premises be located on federally recognized Indian lands?	☐ Yes ☒ No
4. COASTAL MANAGEMENT ACT CONSISTENCY	
Is or will the activity which is the subject of this application be located within the coastal boundary as delineated on DEEP approved coastal boundary maps? Information on the coastal boundary is available at www.lisrc.uconn.edu. (Click on the upper tab or left hand column labeled "Maps", then "Coastal Connecticut") or the local town hall or on the "Coastal Boundary Map" available at DEEP Maps and Publications (860-424-3555).	☐ Yes ☒ No
If yes, Is this an application for a new permit or a modification of an existing permit where the physical footprint of the subject activity is modified?	☐ Yes ☐ No If yes, and if the activity which is the subject of this application is located within the coastal boundary as delineated on DEEP approved coastal boundary maps, you must complete and submit a *Coastal Consistency Review Form* (DEP-APP-004) with your application as Attachment O.
If the activity is not located within the coastal boundary, is the activity which is the subject of this application located within the coastal area? (see town list in the instructions)	☐ Yes ☒ No

Part IV: Site Information (continued)

5. NATURAL DIVERSITY DATA BASE (NDDB) - ENDANGERED AND THREATENED SPECIES	
According to the most current "State and Federal Listed Species and Natural Communities Map", is the activity which is the subject of this application located within an area identified as a habitat for endangered, threatened or special concern species?	☒ Yes ☐ No Date of Map:
Is this an application for a new permit or a modification of an existing permit where the physical footprint of the subject activity is modified? For more information visit the DEEP website at http://www.ct.gov/deep/nddbrequest or call the NDDB at 860-424-3011.	☒ Yes ☐ No If yes, and if the project site is located within an area identified as a habitat for endangered, threatened or special concern species, complete and submit a *Request for NDDB State Listed Species Review Form* (DEP-APP-007) to the address specified on the form. **Please note NDDB review generally takes 4 to 6 weeks and may require additional documentation from the applicant.** The CT NDDB response ***must*** be submitted with this completed application as Attachment P.
6. AQUIFER PROTECTION AREAS	
Is the site located within a town required to establish Aquifer Protection Areas, as defined in CGS sections 22a-354a through 354bb? To view the applicable list of towns and maps visit the DEEP website at www.ct.gov/deep/aquiferprotection	☒ Yes ☐ No
If yes, is the site within an area identified on a Level A or B map?	☐ Level A ☐ Level B If your site is on a Level A map, check the DEEP website, Business and Industry Information (www.ct.gov/deep/aquiferprotection) to determine if your activity is required to be registered under the Aquifer Protection Area Program. If your site is on a Level B map, no action is required at this time, however you may be required to register under the Aquifer Protection Area Program in the future when the area is delineated as Level A.
7. CONSERVATION OR PRESERVATION RESTRICTION	
Is the premises subject to a conservation or preservation restriction?	☐ Yes ☒ No If yes, proof of written notice of this application to the holder of such restriction or a letter from the holder of such restriction verifying that this application is in compliance with the terms of the restriction, must be submitted as Attachment Q.

Part IV: Site Information (continued)

8. ENVIRONMENTAL JUSTICE COMMUNITY	
Does the site include an applicable facility which is located within an Environmental Justice Community, as defined in the Environmental Justice Public Participation Guidelines (Guidelines)?	☒ Yes ☐ No If yes, and this application is for a new or expanded permit, ***prior*** to submitting this application prepare an *Environmental Justice Public Participation Plan* (DEEP-EJ-PLAN-001) in accordance with the Guidelines and submit such plan to: Environmental Justice Program Office of the Commissioner Department of Energy and Environmental Protection 79 Elm Street Hartford, CT 06106-5127 Once you have received written approval for your Environmental Justice Public Participation Plan from the DEEP, submit this completed application with a copy of the Plan approval as Attachment R.
9. AIR QUALITY STATUS	
Indicate the air quality status of the area in which the premises is or will be located. (See instructions for the air quality attainment status of Connecticut municipalities).	Ozone: ☐ Severe Non-Attainment ☒ Serious Non-Attainment
10. MAJOR STATIONARY SOURCE	
Is the premises a major stationary source?	☐ Yes ☐ No If yes, indicate the pollutant(s), if any, for which the premises exceeds the major stationary source threshold: ☒ PM ☒ PM_{10} ☒ $PM_{2.5}$ ☐ SO_2 ☒ NOx ☒ CO ☐ VOC ☐ Pb ☒ CO_2 ☐ HAPs
Is the premises operating under the GPLPE?	☐ Yes ☒ No If yes, indicate the Approval of Registration No.: -GPLPE
11. SIC CODES	Primary **4911** Secondary Other Other
12. NAICS CODE	**221112**

Part V: Attachments

Check the applicable box below for each attachment being submitted with this application form. When submitting any supporting documents, please label the documents as indicated in this Part (e.g., Attachment A, etc.) and be sure to include the applicant's name as indicated on this application form.

All referenced forms may be accessed electronically, in **WORD** and PDF versions, on the Air Emissions Permits webpage.

Attachment	Attachment Name	Form No.	Required?	Attached
AA	*Copy of Public Notice of Application and Original Certification of Notice Form*	DEP-APP-005A	**Required**	☒
A	*Executive Summary*	DEEP-NSR-APP-222	**Required**	☒
B	*Applicant Background Information*	DEP-APP-008	**Required**	☒
C	*Site Plan* - An 8 ½" X 11" copy of the Site Plan	*No DEEP form*	**Required**	☒
D	*USGS Map* - An 8 ½" X 11" copy of the relevant portion of a USGS Quadrangle Map indicating the exact location of the facility or site	*No DEEP form*	**Required**	☒
E	*Supplemental Application Forms*			--
	Select the appropriate forms for the source types listed in Part II of this form.			
	E201: *Manufacturing or Processing Operations*	DEEP-NSR-APP-201	If Applicable	☐
	E202: *Fuel Burning Equipment*	DEEP-NSR-APP-202	If Applicable	☒
	E203: *Incinerators or Landfill Flares*	DEEP-NSR-APP-203	If Applicable	☐
	E204: *Volatile Liquid Storage*	DEEP-NSR-APP-204	If Applicable	☐
	E205: *Surface Coating or Printing Operations*	DEEP-NSR-APP-205	If Applicable	☐
	E206: *Metal Plating or Surface Treatment Operations*	DEEP-NSR-APP-206	If Applicable	☐
	E207: *Metal Cleaning Degreasers*	DEEP-NSR-APP-207	If Applicable	☐
	E208: *Concrete, Asphalt Concrete, Mineral Processing or Other Similar Equipment*	DEEP-NSR-APP-208	If Applicable	☐
	E209: *Site Remediation Equipment*	DEEP-NSR-APP-209	If Applicable	☐
	E210: *Air Pollution Control Equipment*	DEEP-NSR-APP-210	If Applicable	☒
	E211: *Stack Parameters*	DEEP-NSR-APP-211	**Required**	☒
	E212: *Unit Emissions*	DEEP-NSR-APP-212	**Required**	☒
F	*Premises Information Form*	DEEP-NSR-APP-217	**Required**	☒
G	*BACT Determination Form*	DEEP-NSR-APP-214	**Required**	☒
H	*Major Modification Determination Form*	DEEP-NSR-APP-213	If Applicable	☐
I	*Prevention of Significant Deterioration (PSD) of Air Quality Form*	DEEP-NSR-APP-216	If Applicable	☒
J	*Non-Attainment Review Form*	DEEP-NSR-APP-215	If Applicable	☒
K	Operation and Maintenance Plan	*No DEEP form*	If Applicable	☐
L	*Ambient Air Quality Analysis Form*	DEEP-NSR-APP-218	**Required**	☒
M	*Applicant Compliance Information*	DEP-APP-002	**Required**	☒

Part V: Attachments (continued)

Attachment	Attachment Name	Form No.	Required?	Attached
N	Marked Up Permit - For non-minor modifications, attach a marked up copy of the current NSR permit noting proposed changes	---	If Applicable	☐
O	*Coastal Consistency Review Form*	DEP-APP-004	If Applicable	☐
P	***Copy of Response** to Request for Natural Diversity Data Base (NDDB) State Listed Species Review Form* and additional documentation	---	If Applicable	☒
Q	Conservation or Preservation Restriction Information	*No DEEP form*	If Applicable	☐
R	Copy of the Written Environmental Justice Public Participation Plan Approval Letter	---	If Applicable	☒

Part VI: Applicant Certification

The authorized representative **and** the individual(s) responsible for actually preparing the application must sign this part. An application will be considered insufficient unless all required signatures are provided.

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that any false statement made in the submitted information may be punishable as a criminal offense under section 22a-175 of the Connecticut General Statutes, under section 53a-157b of the Connecticut General Statutes, and in accordance with any applicable statute.

I certify that this application is on complete and accurate forms as prescribed by the commissioner without alteration of the text.

I certify that I have complied with all notice requirements as listed in section 22a-6g of the General Statutes."

APPLICANT:			
Signature of Applicant	Seth Shortlidge	**Date**	4/14/2016
Name of Applicant (print or type)	Seth Shortlidge		
Title (if applicable)	Authorized Representative		
PREPARER:			
Signature of Preparer	Lynn Gresock	**Date**	4/14/2016
Name of Preparer (print or type)	**Lynn Gresock**		
Title (if applicable)	**Vice President**		

Submit one hardcopy or electronic copy (in the form of a CD) of the completed application package. If submitting an electronic copy, DEEP-NSR-APP-200 and DEP-APP-005A must be submitted as a hardcopy with original signatures along with the CD and such form should also be scanned and included in the CD. The Department of Energy and Environmental Protection (DEEP) encourages all applicants to submit their application electronically.

Submit completed form to:

CENTRAL PERMIT PROCESSING UNIT
DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD, CONNECTICUT 06106-5127

Note: A *Permit Application Transmittal Form* (DEP-APP-001) is **not** required with this application form.

A copy of the published notice of the permit application must also be sent to the chief elected official of the municipality in which the regulated activity is proposed.

ATTACHMENT AA – COPY OF PUBLIC NOTICE AND CERTIFICATION FORM

Provided on the following page is a copy of the Public Notice of Application and Original Certification of Notice Form (DEEP-APP-005A). The provided copy of the Public Notice of Application is a photocopy of the notice published in the Norwich Bulletin on April 11, 2016.

Connecticut Department of Energy & Environmental Protection

Certification of Notice Form - Notice of Application

DEEP USE ONLY
Division
Application No.

I , **NTE Connecticut, LLC** , certify that
(Name of Applicant)

the attached notice represents a true copy of the notice that appeared in **the Norwich Bulletin**
(Name of Newspaper)

on **Monday, April 11, 2016**
(Date)

I also certify that I have provided a copy of said notice to the chief elected municipal official listed below as required by section 22a-6g CGS.

David Griffiths	**Chairman Councilor at Large**
Name of Official	*Title of Official*
172 Main Street	
Address	

Danielson, Killingly	**CT**	**06239**
City/Town	*State*	*Zip Code*

[signature]	**4/14/2016**
Signature of Applicant	*Date*
Seth Shortlidge	**Authorized Representative**
Name of Applicant (print or type)	*Title (if applicable)*

PUBLISHER'S CERTIFICATE

Notice of Permit Application
Town: Killingly

ereby given that NTE Connecticut, LLC (the applicant) edral Place, St. Augustine, FL 32084 will submit to the nt of Energy and Environmental Protection an under Section 22a-174 of the Connecticut General r a permit to construct, install, enlarge or establish an inant source and to operate such air contaminant ulated under the federal Clean Air Act.

, the applicant proposes to construct and operate an tely 550-megawatt electric generating facility. The activity will be located on an approximately 70-acre 89 Lake Road, Killingly, Connecticut.

sed activity will potentially affect air resources.

persons may obtain copies of the application from Lynn etra Tech, 2 Lan Drive, Suite 210, Westford, MA 01886)3-5352.

cation will also be available for inspection at the nt of Energy and Environmental Protection, Bureau of ement, Engineering and Enforcement Division, 79 Elm rtford, CT 06106-5127, (860) 424-4152, from 8:30 to day through Friday. Please call in advance to schedule he application.

State of Connecticut,

ss. Norwich

County of New London,

On this **12TH** day of **APRIL** **2016**

personally appeared before the undersigned, a Notary Public, within and for said County and State

Whitney Seidl, Proof of Publication

of the "THE BULLETIN" a daily newspaper published at Norwich, County of New London, State of Connecticut, who, being duly sworn, states on oath that

NOTICE OF PERMIT APPLICATION

TOWN OF KILLINGLY

NTE CONNECTICUT, LLC

SECTION 22A-174

a true copy of which is hereto annexed, was published in said newspaper in its issue of the

11TH day of **APRIL** **2016**

W Seidl

Subscribed and sworn to before me this 12th day

of April A.D. 2016

Michele Rafuse

Notary Public

My Commission Expires 9/30/2020

NOTICES Starts Here

Happy Grams

Happy Birthday
Amie OBrien
of Lisbon

Happy Birthday
Greg Pardo
of Bozrah

Notices

CT SCRAP: Will buy your scrap steel, copper, & aluminum, 33 Pequot Rd Uncs. 860-848-3366

SERVICES Starts Here

Services Offered

Bilodeau
Lawncare & Handyman Services, LLC
Call Now
to Schelude
Spring Clean ups
And Lawn Cuts
Weekly, bi-weekly, & as needed
Lic & Ins #0630506
860-428-5617

ELECTRICAL: Service upgrades, Generators & Re-wiring Lic. 104212 860-889-7581.

Michael's Maintenance
Landscaping, Tree & brush removal, Painting, Powerwashing, Spring Clean-ups, etc.
860-391-9201

Notice
The state of Connecticut requires home improvement contractors to include their license number in all forms of advertising. To apply for an application for registration go to:
www.dcp.state.ct.us /licensing
or call
860-713-6000
or 800-842-2649

TREES R US: Expert Tree Service Lic & Ins. #0627434 Free Estimates Call Ed 860-608-1571

TWINS CONCRETE
Floors, patios, sidewalks, driveways, millings
Lic. # 579391
860-861-1159

Paint and Paper

A-1
JOHN COMBS
Since 1969
Painting
Interior & Exterior
Free Estimates
Lic. & Ins. 545992
860-887-8539

E&H PAINTING LLC: Over 27 years experience - Int./Ext. - Free Estimate Call Henry 860-867-6444 Lic.# HIC 06287222

MULHERN'S PAINTING & HOME IMPROVEMENT
Interior/Exterior
Wallpaper
Restoration
NO JOB TOO BIG OR SMALL!
COMPETITIVE PRICES
FREE ESTIMATES
(860)215-1484
Lic & Ins.
LIC HIC.0644733

Lawn Care

#1
A&A Services
★★★★★★★★★
Spring Clean-ups, Mowing, Hedges, Powerwashing, Deck Staining, House Clean-outs & More!
★★★★★★★★★
Senior Discounts
Lowest Prices
Lic #0604368
Call Jim at
860-823-0452

A1 LAWN WIZARD: Spring Clean-Ups, Lawn Cutting, Hedge Trimming, Mulch Free Estimates! Call Ron (860) 823-9965 Mike (860) 887-8895

All Seasons Lawn Care
Spring clean-up, Dump Runs,Tree Removal, Interior Painting, Power Washing, Odd Jobs
Your Go-To Handyman!
860-886-3302
Lic# 0642369

BENSONS SERVICES LLC
Full service landscape, prop. maint.
Now accepting new customers!
WE DO IT ALL
Ins.& Lic#0982073
860-917-0456

Screened Topsoil
4 yds $150 Delvd
Cyr Construction
860-608-0660

MISCELLANOUS STUFF Starts Here

Livestock

HAY:
Quality Hay
Round bales
$50 per bale
860-886-3943

Household Goods

DINING SET: Calligaris Italian glass top w/ integrated leaf. High end in great cond. $1000 Call 860-204-2768

Legals

Antiques & Collectibles

CASH PAID: For Antiques, guitars, Silver, Gold, Old Toys Musical Instr uments, Trains, Military items, watches, paintings, anything old, 1 item or entire estate.
call 860-707-9350

FURN. SETS: Hendradon Sq walnut end tables w/ glass top $100/ea matching sofa table $100. Glass top sq coffee table, gold frame & legs $75. Lg trad. style hunter green italian leather Sofa & Chair $1300. Antique doll bed $100. Chandelier NEW Gold leaf w/ black shades $450. Maple bench w/ cushion $75. All items in excellent cond. Hand-made cradle $100. Colonial style high-chair $50. Call 860 822 9061

Heating Supplies

FIREWOOD: Cut, split and Delivered. 860-886-2146

Misc. For Sale

ARBORVITAE SPRING SALE!: Green giants or emeralds, beautiful privacy borders, FREE delivery and planting, Starting @ $59 (860)712-5359 or www.cttrees.com

SCANNER: Uniden Bear Cat Model# 536P2 $350 Call 860-887-5892

Wanted To Buy

$CASH PAID$: Vintage Electronics Guitars, Amps, Pro & Vac Tube Audio, All Radios; Ham Equip., CB's, 860-707-9350

CT SCRAP: Will buy your scrap steel, copper, & aluminum, 33 Pequot Rd Uncs. 860-848-3366

Legals

CAREERS Starts Here

Career Training

CNA TRAINING: Class 2 wk days or 10 wk Evening. ETWN, 88 Howard St, Suite B, New London 860-447-8673

HOMES Starts Here

Rentals / Rooms & Roommates

WATERFORD: Oakdell Motel 1 mi from Crystal Mall Semi-efficiencies Free wi-fi Daily/ Weekly 860-442-9446

Rentals - Apartments

Discounts!
BALTIC
1, 2 & 3 Bedrooms
Several apartments to choose from!
Starting at $625
Private yard, & off St. parking
No Pets
Call Today
860-886-0558 or 401-741-1046

JEWETT CITY: 2 BR 2nd floor, off st park, big yard, front porch, $700 330-329-7989

WOW!
JEWETT CITY: Lovely 2 br Duplex, hookups, bsmt. off st. park, porch, $900. 860-334-0774

NORWICH: 1st fl.,1 br, heat & hw, sec & parking, no pets. $800 Call 860-440-3427

Vehicles Wanted

ROSS RECYCLING: will buy your junk cars, trucks & trailers! Pick-up available. 860-928-7165

Legals

For Sale Homes

A Publishers Notice
All Real Estate advertised in this newspaper is subject to the State and Federal Fair Housing Acts which makes it illegal to advertise any preference, limitation, or discrimination or any intention to make any such preference, limitation or discrimination based on race color, religion, sex, familial status, national origin, handicap, ancestry, marital status, age, lawful source of income and sexual orientation. This newspaper will not knowingly accept any advertising for real estate which is in violation of the law.

CARS Starts Here

Automotive Accessories

Boyd's Used Auto Parts
Battery Special $20
Tires, Engines, Transmissions & much more!
Nobody Beats
Boyd's
860-887-3153

Vehicles Wanted

Nobody Beats
BOYD'S
BUYS JUNK CARS
Top Cash Paid for Junk Cars & Trucks
Free Towing
860-887-3153
BOYD'S
Used Auto Parts
133 Corning Road in Norwich

Legals Starts Here

KILLINGLY PLANNING AND ZONING COMMISSION
LEGAL NOTICE - HEARINGS

The Commission will hold a public hearing on MONDAY, APRIL 18, 2016 in the Killingly Town Meeting Room, 2nd Floor, Killingly Town Hall, 172 Main Street, Killingly, on the following:

1. Zone (Map) Change Application #16-1127 of the Killingly Planning & Zoning Commission to change the following parcels along Hartford Pike, Chestnut Hill Road, Valley Road, and Bailey Hill Road as follows:

The properties under consideration for rezoning from Village Commercial to Medium Density are as follows:

ADDRESS	OWNER(S)	MAP & LOT	ACREAGE +/-
1296 Hartford Pike	Martin, Michelle A. & Peter J.	101/14	~1.30
1302 Hartford Pike	Stockford, David R. & Pamela M.	101/15	~0.60
1370 Hartford Pike	Miller, Francis J.	100/19	Portion of~1.07

The properties under consideration for rezoning from Low Density to Medium Density are as follows:

ADDRESS	OWNER(S)	MAP & LOT	ACREAGE +/-
1293 Hartford Pike	Norgren, Robert W. & Paula J.	101/42	~0.69
1301 Hartford Pike	St. Martin, Brian P. & Tammy L.	101/41	~0.87
1305 Hartford Pike	Krogul, John P. & Mildred E.	101/40	~0.60
1306 Hartford Pike	Austin, Dawn & William	101/16	~0.37
1309 Hartford Pike	Merrill, Martin	101/39	~0.41
1310 Hartford Pike	Jeffs, Lindsay A. & William H.	101/17	~0.75
1315 Hartford Pike	Bourgalt, John	101/38	~0.31
1316 Hartford Pike	Graff, Barbara A.	101/18	~0.22
1322 Hartford Pike	Shekleton, James	101/19	~0.65
1357 Hartford Pike	Union Baptist Church	100/72	~0.22
11 Chestnut Hill Road	Paquin, Kenneth A. & Lynn A.	101/20	~5.4
19 Chestnut Hill Road	Shekleton, James A.	101/21 (portion of)	~6.0 acres out of ~11.3 acres
628 Valley Road	Kruckas, Mary B. & Lamont, Robin	101/37	~1.10

The property under consideration for rezoning from Mill Mixed Use Development to Medium Density is as follows:

ADDRESS	OWNER(S)	MAP & LOT	ACREAGE +/-
963 Bailey Hill Road	Bailey Hill Management, LLC	100/66 (portion of)	~3.6 acres out of ~53 acres

All interested parties are urged to attend and be heard. Written comments may be submitted prior to the close of the public hearing. Files are available for inspection in the Planning and Development office, Room 107, Killingly Town Hall, during normal business hours.

Dated this 30th, day of March, 2016.

Keith Thurlow
Chairperson

Sheila Roddy
Secretary

NC-00211984

Notice of Permit Application
Town: Killingly

Notice is hereby given that NTE Connecticut, LLC (the applicant) of 24 Cathedral Place, St. Augustine, FL 32084 will submit to the Department of Energy and Environmental Protection an application under Section 22a-174 of the Connecticut General Statutes for a permit to construct, install, enlarge or establish an air contaminant source and to operate such air contaminant source regulated under the federal Clean Air Act.

Specifically, the applicant proposes to construct and operate an approximately 550-megawatt electric generating facility. The proposed activity will be located on an approximately 70-acre parcel at 189 Lake Road, Killingly, Connecticut.

The proposed activity will potentially affect air resources.

Interested persons may obtain copies of the application from Lynn Gresock, Tetra Tech, 2 Lan Drive, Suite 210, Westford, MA 01886 or (978) 203-5352.

The application will also be available for inspection at the Department of Energy and Environmental Protection, Bureau of Air Management, Engineering and Enforcement Division, 79 Elm Street, Hartford, CT 06106-5127, (860) 424-4152, from 8:30 to 4:30, Monday through Friday. Please call in advance to schedule review of the application.

INVITATION TO BID

The Thames Valley Council for Community Action, Inc. (TVCCA) will receive sealed bids in Lieu of Windham Child Care Center in duplicate on or before May 6, 2016 at 2:00 PM at their office at 401 West Thames Street - Unit 201, Norwich CT 06360 Attention: Stephen Einhellig said bids will be opened and recorded.
The contract consists of work being performed at the Windham Child Care Center located at 478 Valley Street Willimantic, Ct. 06226. The specifications of the work to be performed can be obtained by contacting Stephen Einhellig at TVCCA phone 860-425-6555 or seinhellig@tvcca.org

The project will consist of replacing exterior windows and the replacement of concrete lentils that they sit on top of, as well as bids for window laminating after the new window are installed. Project will commence on or around May 23, 2016 and will need to be completed by June 30, 2016.
There will be a bid conference at the site located at 478 Valley Street on Monday April 25, 2016 at 10 am for all work conducted at the site.

All bids exceeding $25,000 will require having a performance bond. The contractor awarded the work will need to have a certificate of insurance and proof of performance bond at the time of the contract signing.
Windham Childcare center reserves the right to reject any or all bids, in whole or in part, to award and item, group of items or total bid, and waive any informalities in the bids received if it deems it to be in the best interest of the project to do so. All bids must be complete when the bids are submitted. No bidder may with draw their bid within thirty days after the actual date of bid opening.

The Windham Child Care Center is an affirmative action, equal opportunity employer. Minority/Women's Business Enterprises are encouraged to apply.

Fun and Games

HOROSCOPE

ARIES (March 21-April 19): Work to improve your relationships. Strive to build a healthy, happy future that will offer stability and satisfaction. Interviews, sharing your ideas and working alongside someone you love will lead to contentment. Embrace love and strive for equality. 4 stars
TAURUS (April 20-May 20): Be progressive. Make a move or take on a challenge. Show courage and stand behind your beliefs. Strive to be noticed for what you do to help those less fortunate than you. Networ k and mingle with people who can offer valuable information. 3 stars
GEMINI (May 21-June 20): Check your emotions at the door or you will end up in a regretful spat. A secretive approach will help you buy time in order to figure out the most strategic moves. Don't put yourself in a poor financial position. 3 stars
CANCER (June 21-July 22): Be a self-starter. Don't let anyone bamboozle you into a situation that can upset your reputation or current position. Protect your rights by taking action before someone else does. 3 stars
LEO (July 23-Aug. 22): Don't allow stubbornness to be your downfall. Be open to what others do and say, and you will learn something and find a way to enhance what you want to do. Romance will help to stabilize your personal life. 4 stars
VIRGO (Aug. 23-Sept. 22): Separate business and personal matters. Your concern should be with maintaining balance and productivity. An emotional situation must not be allowed to interfere with responsibilities that can affect your income. Be forceful in your convictions and avoid indulgence. 2 stars
LIBRA (Sept. 23-Oct. 22): Take an interest in the things your children, friends or romantic partner are into. Being versatile and playful will help you attract interest in your life, projects and hobbies. Romance will encourage a better relationship and future. 5 stars
SCORPIO (Oct. 23-Nov. 21): Don't wait until it is too late. Ask for advice and discuss financial options with an expert. Take control and make the necessary adjustments to ensure you have enough to enjoy life and maintain your standard of living. 3 stars
SAGITTARIUS (Nov. 22-Dec. 21): Ask questions and do your own research. You are advised to stay informed and be aware that other circumstances can alter the outcome of a deal or project you want to pursue. Proceed with caution. Make physical activity and romance a priority. 3 stars
CAPRICORN (Dec. 22-Jan. 19): Don't feel too eager to bring about change. Watch and see what others do and rely on your own strategy to win. Avoid taking physical or financial risks. Share your thoughts, but don't force your will. 3 stars
AQUARIUS (Jan. 20-Feb. 18): You can make a difference to someone in need. Your sensitivity to a situation that affects your household will lead to workable solutions. Offer suggestions and physical assistance to others in lieu of cash. An affectionate gesture could lead to romance. 5 stars
PISCES (Feb. 19-March 20): Stay in the loop. Listen to what's being said and don't overreact or make assumptions. Be aware of what's happening and control your emotions to avoid a costly mistake. Don't offer anything you don't want to part with. 2 stars

JUMBLE

THAT SCRAMBLED WORD GAME
by David L. Hoyt and Jeff Knurek

Unscramble these four Jumbles, one letter to each square, to form four ordinary words.

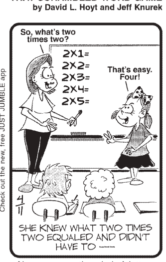
TAHEW

NIRKB

CLEANC

GRIBTH

Check out the new, free JUST JUMBLE app



Now arrange the circled letters to form the surprise answer, as suggested by the above cartoon.

Answer here:

(Answers tomorrow)

Saturday's Jumbles: SKIER GLOAT WINERY DECENT
Answer: The four-star general opened his own restaurant and loved — TAKING ORDERS

4-11 **CRYPTOQUOTE**

VBMIXL PQXM OBGM; ECOUQGO OUIO SQLLCZCKCOH, DIOGBM EQGKV DQO CDPCOM GL OQ UIRM OUMX. — NQUD GSVCJM

Saturday's Cryptoquote: MATHEMATICS IS A GAME PLAYED ACCORDING TO CERTAIN SIMPLE RULES WITH MEANINGLESS MARKS ON PAPER. — DAVID HILBERT

ATTACHMENT A – EXECUTIVE SUMMARY

Provided on the following pages is a completed Executive Summary form (DEEP-NSR-APP-222). Prior to the form, a brief project description is provided outlining:

- A description of the proposed regulated activities;
- A synopsis of the environmental and engineering analyses, including a summary or cross-reference to appropriate data analyses; and
- A conclusion of any environmental impacts and the proposed timeline for construction.

I. LOCATION OF THE FACILITY

NTE Connecticut, LLC (NTE) proposes to construct and operate a nominal 550-megawatt (MW) combined cycle combustion turbine electric generating facility (the Project) located in Killingly, Connecticut. The proposed Project will be constructed on an approximately 70-acre parcel at a greenfield location in Killingly, Connecticut. The site is located in Windham County, southeast of the Quinebaug River, west of Interstate 395 and Alexander Lake, and north of the Hartford Providence Turnpike. The exact location of the proposed Project and equipment can be found in Attachments C and D of this application.

II. PROJECT DESCRIPTION

NTE is proposing to install a Siemens Model SGT6-8000H, Mitsubishi M501GAC, or equivalent combustion turbine generator (CTG) in size and emissions performance. The Project will consist of one CTG exhausting through a heat recovery steam generator (HRSG) equipped with duct burners for supplemental firing. The CTG will be fired primarily with natural gas, with limited use of ultra-low sulfur distillate (ULSD) oil as backup fuel; the duct burners will be fired solely with natural gas and duct firing will only occur when the CTG is firing natural gas. The steam produced from the HRSG will power one steam turbine generator (STG). The STG exhaust steam will be condensed via a multi-fan air cooled condenser (ACC). The balance of the Project will include an auxiliary boiler, emergency generator engine, emergency fire pump engine, natural gas-fired dew point heater, ULSD storage tank and an aqueous ammonia (NH_3) storage tank.

Air pollutant emissions from the Project will consist primarily of products of combustion from the CTG and duct burners. Windham County is designated as attainment with respect to the National Ambient Air Quality Standards (NAAQS) for all criteria pollutants with the exception of ozone (O_3); Windham County is a moderate nonattainment area for the 1997 O_3 standard and a marginal nonattainment area for the 2008 O_3 standard.

The Project will have potential emissions above the Prevention of Significant Deterioration (PSD) major source threshold for nitrogen oxides (NO_x), carbon monoxide (CO), particulate matter ($PM/PM_{10}/PM_{2.5}$) and greenhouse gases (GHGs); it will also have potential NO_x emissions above the nonattainment new source review (NNSR) threshold. As a proposed new major PSD source, the Project is also subject to PSD requirements for each pollutant with potential emissions above their respective significant emissions rate (SER). The Project will have potential emissions of volatile organic compounds (VOCs) and sulfuric acid mist (H_2SO_4) above their respective SER.

Emissions of sulfur dioxide (SO_2) will be below its SER, but above the Connecticut Department of Energy and Environmental Protection's (DEEP's) *de minimis* permitting threshold based on potential emissions as specified in Regulations of Connecticut State Agencies (RCSA) Section 22a-174-3a(a)(1)(D). Emissions of NH_3 are not regulated under the PSD and NNSR programs, but are regulated under DEEP's air permitting program and will be above the *de minimis* permitting threshold under RCSA Section 22a-174-3a(a)(1)(D). As a result, SO_2 and NH_3 emissions will trigger DEEP's Best Available Control Technology (BACT) requirements under RCSA Section 22a-174-3a(j)(1)(C).

NTE is applying for a Permit to Construct and Operate from the DEEP for the Project, as required under RCSA Section 22a-174-3a for abatement of air pollution. This document, along with the accompanying DEEP forms and other appended materials, is the PSD and NNSR application for the Project.

Emissions of NO_x are subject to NNSR, and the Project is required to implement Lowest Achievable Emission Rate (LAER) controls for this pollutant. The CTG will be equipped with dry-low-NO_x (DLN) burners, water injection, and selective catalytic reduction (SCR) to control NO_x emissions. An oxidation catalyst will be installed to satisfy BACT requirements for CO and VOC emissions. The Project will fire natural gas as the primary fuel, with limited use of ULSD to minimize $PM/PM_{10}/PM_{2.5}$, SO_2, and H_2SO_4 emissions. Advanced combined cycle CTG technology will be used to satisfy BACT for GHG emissions. The proposed PSD BACT emission rates for the CTG are provided in Table A-1. The basis for the PSD BACT emission rates are provided in Attachment I, including a completed PSD of Air Quality form (DEEP-NSR-APP-216). The basis for the NO_x LAER emission rates is provided in Attachment J, including a completed Non-Attainment Review of Air Quality form (DEEP-NSR-APP-215).

Table A-1: Proposed CTG LAER and BACT Emission Rates

Pollutant	Natural Gas Firing (without duct firing)	Natural Gas Firing (with duct firing)	ULSD Firing
NO_x	2.0 ppmvdc	2.0 ppmvdc	5.0 ppmvdc
VOC	1.0 ppmvdc	2.0 ppmvdc	2.0 ppmvdc
CO	2.0 ppmvdc	2.0 ppmvdc	2.0 ppmvdc
$PM_{10}/PM_{2.5}$	0.0055 lb/MMBtu	0.0059 lb/MMBtu	0.0155 lb/MMBtu
H_2SO_4	0.00056 lb/MMBtu	0.00053 lb/MMBtu	0.00054 lb/MMBtu
GHG	7,273 Btu/kW-hr (net, annual, natural gas firing at ISO full load, no supplemental firing)		
SO_2	0.0015 lb/MMBtu (≤0.5 gr S/100 scf)	0.0015 lb/MMBtu (≤0.5 gr S/100 scf)	0.0015 lb/MMBtu (≤15 ppmw S)
NH_3	2.0 ppmvdc	2.0 ppmvdc	5.0 ppmvdc

ppmvdc = parts per million volume dry basis corrected to 15% oxygen (O_2)
lb/MMBtu = pounds per million British thermal units of fuel fired
Btu/kWh = British thermal units of fuel fired per kilowatt-hour of electricity generated
gr S/100 scf = grains of sulfur per 100 standard cubic feet of natural gas
ppmw = parts per million weight
$PM/PM_{10}/PM_{2.5}$ lb/MMBtu emission rates cover all operating loads at or above minimum emissions compliance load (MECL)

A dispersion modeling analysis will be conducted in accordance with DEEP and United States Environmental Protection Agency (USEPA) regulations, standards and guidance. The proposed LAER and BACT emission rates will be used in the analysis. The analysis will show that the predicted ambient concentrations are in compliance with all applicable ambient air quality standards. A complete discussion of the dispersion modeling analysis will be provided in Attachment L at a later date.

The Project is proposed to begin construction in the third quarter of 2017, with commencement of operation in 2020.

Attachment A: Executive Summary

Applicant Name: **NTE Connecticut, LLC**

Complete this form in accordance with the instructions (DEEP-NSR-INST-200) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this attachment to provide information for the project which is the subject of this application package.

Questions? Visit the Air Permitting web page or contact the Air Permitting Engineer of the Day at 860-424-4152.

Part I: Location of Facility or Activity	**Lake Road, Killingly, CT**

Part II: Application Table of Contents

Provide a Table of Contents of the application which includes the *Permit Application for Stationary Sources of Air Pollution Form* (DEEP-NSR-APP-200), and a list of all supplemental application forms, plans, drawings, reports, studies, or other supporting documentation which are attached as part of the application, along with the corresponding attachment label and the number of pages (e.g., Executive Summary - Attachment A - 4 pgs.).

Appendix B: Manufacturer Information - 10 pages

☐ Check here if additional sheets are necessary, and label and attach them to this sheet.

Attachment A: Executive Summary (continued)

Part III: Project Description

Provide a brief project description which includes:

- a description of the proposed regulated activities;
- a synopsis of the environmental and engineering analyses;
- summaries of data analysis;
- a conclusion of any environmental impacts and the proposed timeline for construction; and
- for a renewal or modification provide a list of changes in circumstances or information on which the previous permit or registration was based.

See attached text

☐ Check here if additional sheets are necessary, and label and attach them to this sheet.

ATTACHMENT B – APPLICANT BACKGROUND INFORMATION

Provided on the following pages is a completed Applicant Background Information form (DEEP-APP-008).

Connecticut Department of
Energy & Environmental Protection

Applicant Background Information

Check the box by the entity which best describes the applicant and complete the requested information. **You must choose one of the following: corporation, limited liability company, limited partnership, general partnership, voluntary association and individual or business type.**

☐ **Corporation**

☐ Check the box if additional sheets are necessary. If so, label and attach additional sheet(s) to this sheet with the required information.

1. Parent Corporation
   Name:
   Mailing Address:
   City/Town: State: Zip Code:
   Business Phone: ext.:
   Contact Person: Phone: ext.
   E-mail:
2. Subsidiary Corporation:
   Name:
   Mailing Address:
   City/Town: State: Zip Code:
   Business Phone: ext.:
   Contact Person: Phone: ext.
   E-mail:
3. Directors:
   Name:
   Mailing Address:
   City/Town: State: Zip Code:
   Business Phone: ext.:
   E-mail:
4. Officers:
   Name:
   Mailing Address:
   City/Town: State: Zip Code:
   Business Phone: ext.:
   E-mail:

Applicant Background Information (continued)

☒ **Limited Liability Company**

☐ Check the box if additional sheets are necessary. If so, label and attach additional sheet(s) to this sheet with the required information.

1. List each member.

Name: **NTE Connecticut, LLC**
Mailing Address: 24 Cathedral Place, Suite 300
City/Town: Saint Augustine State: FL Zip Code: 32084
Business Phone: (904) 687-1857 ext.:
E-mail:

Name:
Mailing Address:
City/Town: State: Zip Code:
Business Phone: ext.:
E-mail:

Name:
Mailing Address:
City/Town: State: Zip Code:
Business Phone: ext.:
E-mail:

2. List any manager(s) who, through the articles of organization, are vested the management of the business, property and affairs of the limited liability company.

Name: **NTE Connecticut Holdings, LLC**
Mailing Address: 24 Cathedral Place, Suite 300
City/Town: Saint Augustine State: FL Zip Code: 32084
Business Phone: (904) 687-1857 ext.:
E-mail:

Name:
Mailing Address:
City/Town: State: Zip Code:
Business Phone: ext.:
E-mail:

Name:
Mailing Address:
City/Town: State: Zip Code:
Business Phone: ext.:
E-mail:

Applicant Background Information (continued)

☐ **Limited Partnership**

☐ Check the box if additional sheets are necessary. If so, label and attach additional sheet(s) to this sheet with the required information.

1. General Partners:

Name:
Mailing Address:
City/Town: State: Zip Code:
Business Phone: ext.:
Contact Person: Phone: ext.
E-mail:

Name:
Mailing Address:
City/Town: State: Zip Code:
Business Phone: ext.:
Contact Person: Phone: ext.
E-mail:

Name:
Mailing Address:
City/Town: State: Zip Code:
Business Phone: ext.:
Contact Person: Phone: ext.
E-mail:

2. Limited Partners:

Name:
Mailing Address:
City/Town: State: Zip Code:
Business Phone: ext.:
Contact Person: Phone: ext.
E-mail:

Name:
Mailing Address:
City/Town: State: Zip Code:
Business Phone: ext.:
Contact Person: Phone: ext.
E-mail:

☐ General Partnership

☐ Check the box if additional sheets are necessary. If so, label and attach additional sheet(s) to this sheet with the required information.

1. General Partners:

Name:
Mailing Address:
City/Town: State: Zip Code:
Business Phone: ext.:
Contact Person: Phone: ext.
E-mail:

Name:
Mailing Address:
City/Town: State: Zip Code:
Business Phone: ext.:
Contact Person: Phone: ext.
E-mail:

Name:
Mailing Address:
City/Town: State: Zip Code:
Business Phone: ext.:
Contact Person: Phone: ext.
E-mail:

Name:
Mailing Address:
City/Town: State: Zip Code:
Business Phone: ext.:
Contact Person: Phone: ext.
E-mail:

Name:
Mailing Address:
City/Town: State: Zip Code:
Business Phone: ext.:
Contact Person: Phone: ext.
E-mail:

Applicant Background Information (continued)

☐ **Voluntary Association**

☐ Check box if additional sheets are necessary. If so, label and attach additional sheet(s) to this sheet with the required information.

1. List authorized persons of association or list all members of association.

Name:
Mailing Address:
City/Town: State: Zip Code:
Business Phone: ext.:
E-mail:

Name:
Mailing Address:
City/Town: State: Zip Code:
Business Phone: ext.:
E-mail:

Name:
Mailing Address:
City/Town: State: Zip Code:
Business Phone: ext.:
E-mail:

Name:
Mailing Address:
City/Town: State: Zip Code:
Business Phone: ext.:
E-mail:

☐ **Individual or Other Business Type**

☐ Check the box, if additional sheets are necessary. If so, label and attach additional sheet(s) to this sheet with the required information.

1. Name:
Mailing Address:
City/Town: State: Zip Code:
Business Phone: ext.:
E-mail:

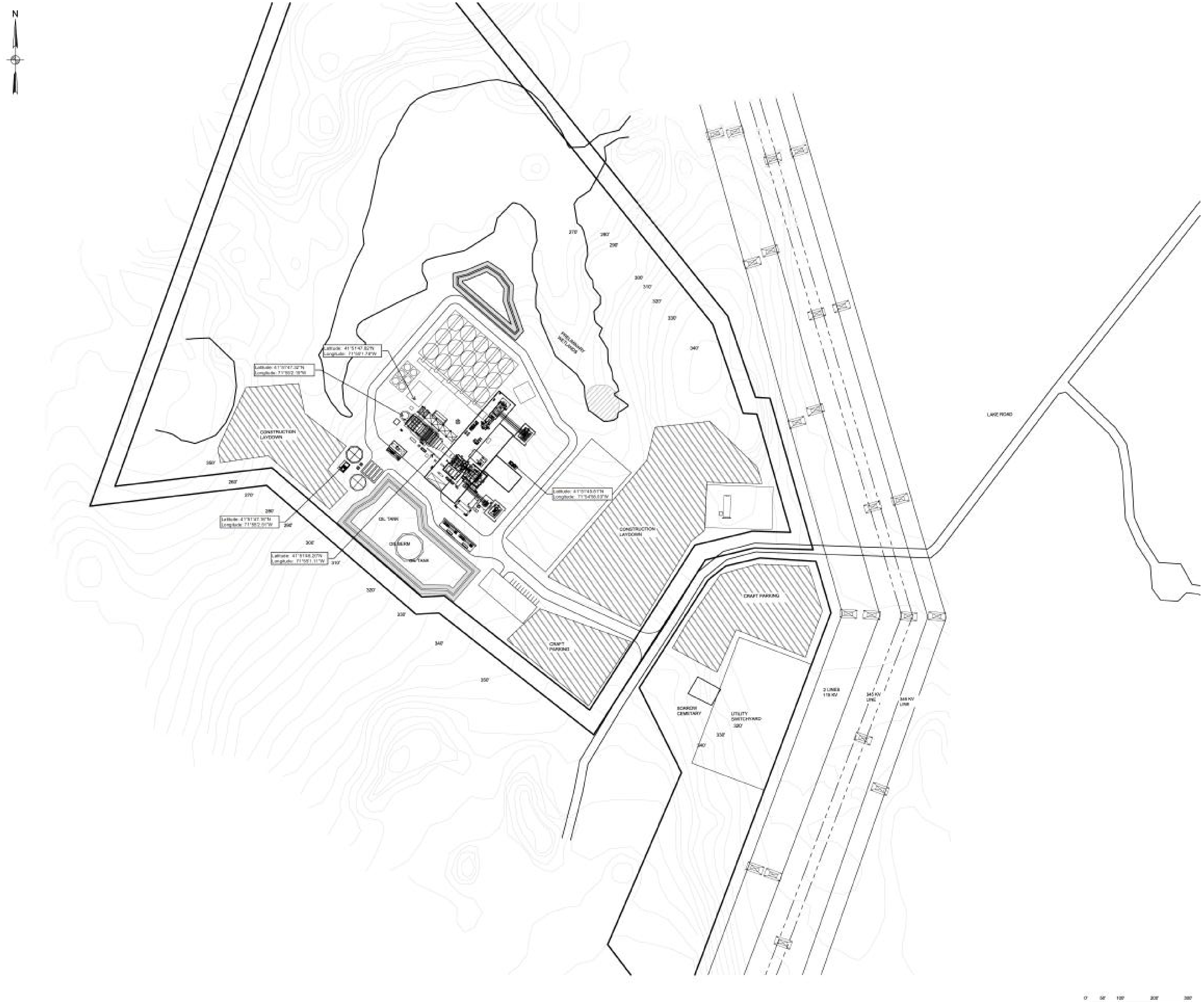
2. State other names by which the applicant is known, including business names.
Name:

ATTACHMENT C – SITE PLAN

Provided on the following page is an 8½" x 11" drawing to scale showing the location of the Project. Additional plans and drawings are provided that include the following requested:

- The north meridian arrow and the scale shown as a bar scale;
- The exact location of each stack from which the sources will exhaust;
- The latitude and longitude of each exhaust stack;
- A boundary lines of the property and measurements (identified by use of drawing scales);
- The horizontal distance from the stack base to the nearest property line (identified by use of scales);
- The top view of all buildings or structures, indicating actual dimensions; and
- The final grade elevation (i.e., height) of all structures on the property.

Due to the amount of detail in these drawings, an 11" x 17" version is also provided.



Notes

Legend

Reference Drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd
C	04/12/16	AP	FOR CLIENT REVIEW	KP	JW
B	04/11/16	AP	FOR CLIENT REVIEW	KP	JW
A	04/07/16	AP	FOR CLIENT REVIEW	KP	JW

Mott MacDonald

Client

NTE ENERGY

KILLINGLY ENERGY CENTER
KILLINGLY CONNECTICUT

Title

PRELIMINARY NOT FOR CONSTRUCTION
REPLACE WITH ENGINEERS STAMP AT CONSTRUCTION AND/OR FABRICATION

Designed	-	Eng check	jw
Drawn	ap	Approved	-
Dwg check	ap	Project Mngr	jw
Scale at ANSI E: 1" = 100'-0"		Date: 04/07/16	Rev: C

Drawing Number
334954CT-SA-203

Notes

Legend

1. COMBUSTION TURBINE (GT)
2. COMBUSTION TURBINE GENERATOR (GTG)
3. HEAT RECOVERY STEAM GENERATOR (HRSG)
4. CLOSED COOLING WATER
5. STEAM TURBINE (ST)
6. EXHAUST STACK
7. STEAM TURBINE GENERATOR (STG)
8. GENERATOR STEP-UP TRANSFORMER (GSU)
9. STG STEP-UP TRANSFORMER
10. AIR INLET FILTER HOUSE (NOT SHOWN)
11. AUXILARY BOILER
12. UNIT AUXILARY TRANSFORMER
13. AIR COOLED CONDENSER (ACC) & CONDENSATE COLLECTION ENCLOSURE
14. TURBINE BUILDING
15. ADMIN/ WAREHOUSE/ WATER TREATMENT BUILDING
16. RAW / FIRE WATER STORAGE TANK & RW PUMPS
17. FIRE PUMPS ENCLOSURE
18. DEMINERALIZED WATER STORAGE TANK & PUMPS
19. DEMINERALIZED WATER TRAILERS AREA
20. FUEL GAS METERING
21. FUEL GAS HEATER
22. DIESEL GENERATOR
23. PLANT SWITCHYARD
24. AMMONIA STORAGE TANK, PUMPS, & UNLOADING AREA
25. BOILER FEED PUMPS
26. STG LUBE OIL SKID
27. AIR COMPRESSORS, RECEIVERS & DRYERS SKID
28. FUEL GAS FINAL FILTER
29. DUCT BURNER SKID
30. DETENTION POND
31. STG DRAINS TANK & SUMP
32. HRSG BLOW OFF TANK & DRAINS PUMPS
33. HRSG BLOWDOWN SUMP
34. STORM WATER RETENTION POND
35. CIVIL OIL WATER SEPARATOR (NOT SHOWN)
36. BOP MOTOR CONTROL CENTER (MCC)
37. PLANT GATE (NOT SHOWN)
38. NOT USED
39. CTG ELECTRICAL PACKAGE
40. CENTRAL CONTROL ROOM / ELECTRICAL
41. AMMONIA INJECTION SKID
42. CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS)
43. PIPE RACK
44. FUEL OIL UNLOADING
45. FUEL OIL TANK
46. FUEL OIL BERM
47. GT LUBE OIL SKID
48. FUEL GAS COMPRESSORS

Reference Drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd
C	04/12/16	AP	FOR CLIENT REVIEW	KP	JW
B	04/11/16	AP	FOR CLIENT REVIEW	KP	JW
A	04/07/16	AP	FOR CLIENT REVIEW	KP	JW

Mott MacDonald

One University Avenue
Suite 100, North Lobby
Westwood, MA 02090
United States
T +1 (781) 915-0010
F +1 (781) 915-0001
W www.mottmac.com

Client

NTE ENERGY

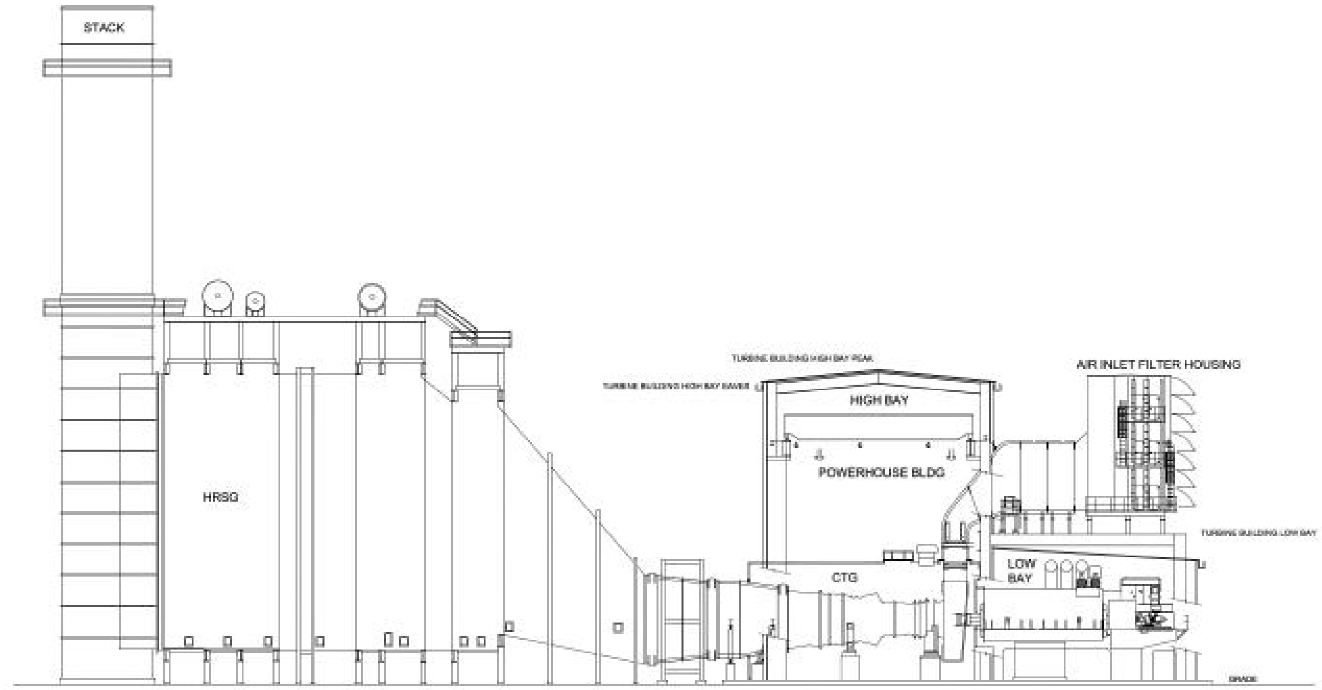
KILLINGLY ENERGY CENTER
KILLINGLY CONNECTICUT

Title

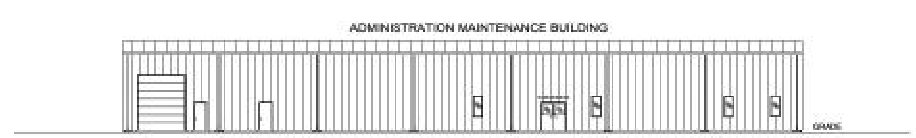
PRELIMINARY NOT FOR CONSTRUCTION
REPLACE WITH ENGINEERS STAMP AT CONSTRUCTION AND/OR FABRICATION

Designed	--	Eng check	JW
Drawn	AP	Approved	-
Dwg check	AP	Project Mngr	JW
Scale at ANSI E 1" = 40'-0"		Date 04/07/16	Rev C

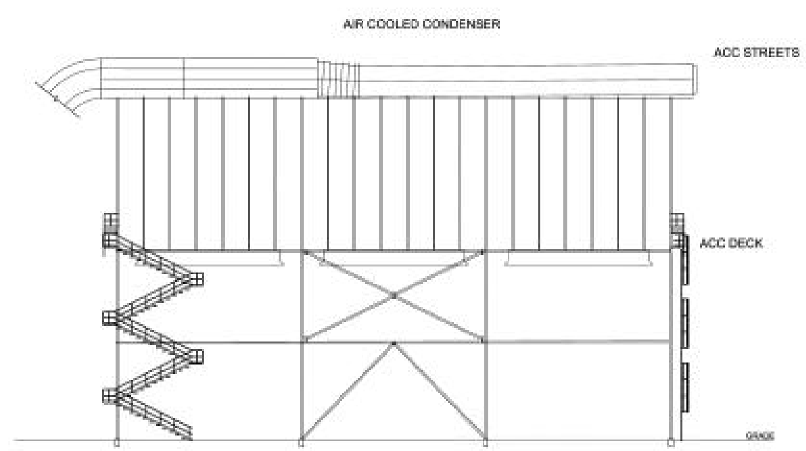
Drawing Number
334954CT-GA-203



LKG NORTH EAST



LKG SOUTH WEST



(NOT TO SCALE)
LKG NORTH WEST

0 16 32 64
SCALE IN FEET

Notes

Legend

Reference Drawings

MITSUBISHI HEAVY INDUSTRIES,LTD
M501GAC 2 ON 1
TYPICAL LAYOUT (3/3) DRAWING
2009/04/30

Rev	Date	Drawn	Description	Ch'k'd	App'd
A	3/18/16	AF	FOR CLIENT REVIEW	JW	JW

Mott MacDonald

NTE ENERGY

KILLINGLY ENERGY CENTER
KILLINGLY CONNECTICUT

Title

ELEVATIONS

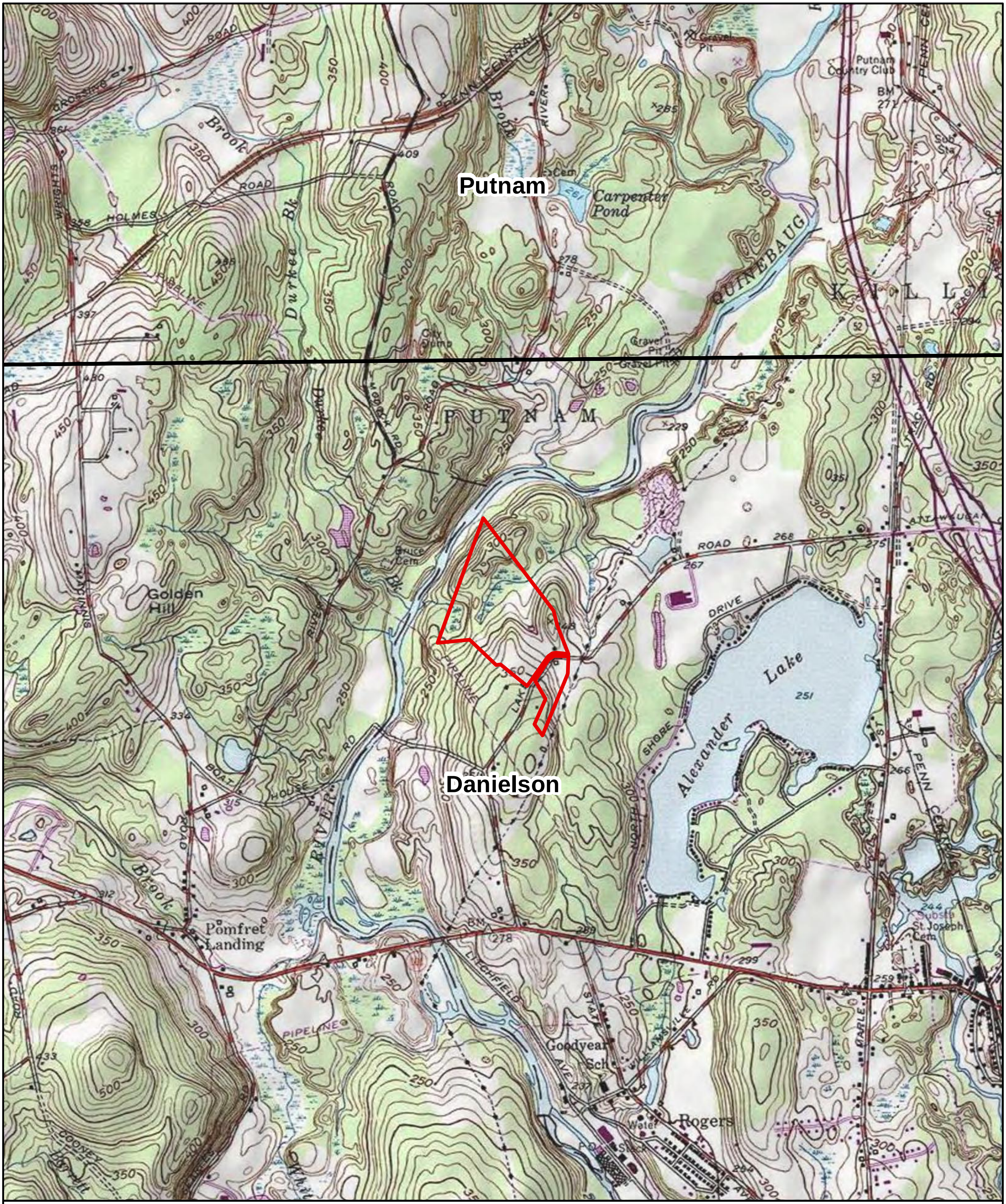
PRELIMINARY
NOT FOR
CONSTRUCTION
REPLACE WITH ENGINEERS STAMP AT CONSTRUCTION AND/OR FABRICATION ISSUE IF REQUIRED BY PROJECT ADMINISTRATION MANUAL

Designed	–	Eng check	JW
Drawn	AF	Approved	JW
Dwg check	–	Project Mngr	JW
Scale at ANSI E: 1/16" = 1'-0"		Date: 3/18/16	Rev: A

Drawing Number
334954CT-GA-201

ATTACHMENT D – USGS TOPOGRAPHIC QUADRANGLE MAP

Provided on the following page is an 8½” x 11” figure of the relevant portion of a United States Geological Survey (USGS) Quadrangle Map, at a scale of 1:24,000, including the names of the quadrangles. The figure shows the exact location of the Project site and the proposed activities, including an outline of the premises boundary.



Legend

Project Site

1:24,000 USGS Topographic Quadrangle Map Sheet (1985)

N

1:24,000

0 0.25 0.5 Miles

ATTACHMENT E – SUPPLEMENTAL APPLICATION FORMS

The following supplemental attachment forms are provided, unless indicated as “Not Applicable”:

- Attachment E202: Fuel Burning Equipment:
  - Auxiliary Boiler (AB)
    - Attachment E202-A: Flow Diagram
    - Attachment E202-B: Manufacturer Information (See Appendix B)
    - Attachment E202-C: Emissions Profile (Not Applicable)
  - Combustion Turbine (CT)
    - Attachment E202-A: Flow Diagram
    - Attachment E202-B: Manufacturer Information (See Appendix B)
    - Attachment E202-C: Emissions Profile (See Appendix A)
  - Duct Burner (DB)
    - Attachment E202-A: Flow Diagram
    - Attachment E202-B: Manufacturer Information (Information is not available)
    - Attachment E202-C: Emissions Profile (Not Applicable)
  - Emergency Generator Engine (EG)
    - Attachment E202-A: Flow Diagram
    - Attachment E202-B: Manufacturer Information (See Appendix B)
    - Attachment E202-C: Emissions Profile (Not Applicable)
  - Emergency Fire Pump Engine (FP)
    - Attachment E202-A: Flow Diagram
    - Attachment E202-B: Manufacturer Information (See Appendix B)
    - Attachment E202-C: Emissions Profile (Not Applicable)
  - Natural Gas Heater (GH)
    - Attachment E202-A: Flow Diagram
    - Attachment E202-B: Manufacturer Information (See Appendix B)
    - Attachment E202-C: Emissions Profile (Not Applicable)
- Attachment E210: Air Pollution Control Equipment (DEEP-NSR-APP-210)
  - Attachment E210(SCR) – Manufacturer Information (Information was not available)
  - Attachment E210(OC) – Manufacturer Information (Information was not available)
- Attachment E211: Stack and Building Parameters (DEEP-NSR-APP-211)
  - Attachment E211-A: Plot Plan (See Attachment C)
- Attachment E212: Unit Emissions (DEEP-NSR-APP-212)

- AB
  - Attachment E212-A: Sample Calculations (See Appendix A)
  - Attachment E212-B: Completed CT Maximum Allowable Stack Concentration (MASC) Spreadsheet (See Appendix A)
  - Attachment E212-C: Completed Carbon Dioxide Equivalent (CO_{2e}) Calculator Spreadsheet (See Appendix A)
- CT / DB
  - Attachment E212-A: Sample Calculations (See Appendix A)
  - Attachment E212-B: Completed CT MASC Spreadsheet (See Appendix A)
  - Attachment E212-C: Completed CO_{2e} Calculator Spreadsheet (See Appendix A)
- EG
  - Attachment E212-A: Sample Calculations (See Appendix A)
  - Attachment E212-B: Completed CTMASC Spreadsheet (See Appendix A)
  - Attachment E212-C: Completed CO_{2e} Calculator Spreadsheet (See Appendix A)
- FP
  - Attachment E212-A: Sample Calculations (See Appendix A)
  - Attachment E212-B: Completed CTMASC Spreadsheet (See Appendix A)
  - Attachment E212-C: Completed CO_{2e} Calculator Spreadsheet (See Appendix A)
- GH
  - Attachment E212-A: Sample Calculations (See Appendix A)
  - Attachment E212-B: Completed CTMASC Spreadsheet (See Appendix A)
  - Attachment E212-C: Completed CO_{2e} Calculator Spreadsheet (See Appendix A)

Prior to the forms is a discussion of the emission sources, the procedures used to calculate potential emissions, and any operating restrictions taken to limit potential annual emissions.

PROJECT EQUIPMENT DESCRIPTION AND POTENTIAL EMISSIONS

Combined Cycle Combustion Turbine

The Project will utilize a Siemens Model SGT6-8000H, Mitsubishi M501GAC, or equivalent CTG model in terms of size and emissions performance. The primary fuel that will be fired in the CTG will be natural gas, with limited firing of ULSD as a back-up fuel. The CTG will exhaust through a dedicated HRSG to generate steam from the waste-heat energy in the exhaust gas. Steam generated in the HRSG will be expanded through a multi-stage, reheat-capable, condensing STG. The discharge steam from the steam turbine will be directed to an ACC. The HRSG will be equipped with supplemental natural gas-fired duct burners to generate more steam to the STG during periods of high electricity demand. The duct burners will be natural gas-fired, and will have a nominal maximum input capacity of 927 million British thermal units per hour (MMBtu/hr, higher heating value [HHV]), although the duct burners will not always operate at maximum capacity. The duct burners will only be used with natural gas-firing in the CTG. Combined cycle CTG operation is the most efficient fossil fuel-fired generating technology available to provide baseload power to the regional transmission grid.

The electrical output of the combined cycle CTG varies with ambient temperature. At lower temperatures, the density of the combustion air is higher, and more mass can be injected into the combustor, which results in higher electrical output from the CTG. In warmer weather when air density is lower, an evaporative cooler is utilized to cool the combustion air in order to achieve greater electrical output. The gross electrical output of the plant will vary from approximately 430 MW at higher ambient temperatures to approximately 550 MW at very low ambient temperatures, including contribution from the duct burners. The net electrical output of the plant will be slightly less due to internal (plant) loads from auxiliary equipment associated with the Project.

The Siemens Model SGT6-8000H CTG, Mitsubishi M501GAC, or equivalent will have a heat input rate at 100 percent (%) load while firing natural gas at International Organization for Standardization (ISO) conditions[1] of approximately 2,827 MMBtu/hr (HHV). At the same conditions, while firing ULSD, the Siemens Model SGT6-8000H CTG, Mitsubishi M501GAC, or equivalent will have a firing rate of approximately 2,783 MMBtu/hr (HHV).

Air Pollution Control Equipment

The emission control technologies for the proposed CTG will include DLN combustors and SCR to control NO_x emissions, and an oxidation catalyst to control CO and VOC emissions. When firing ULSD, water injection will also be used to minimize NO_x emissions upstream of the SCR. DLN combustors will be integrated within the CTG; the SCR and oxidation catalyst systems will be located within the HRSG. The DLN combustors control NO_x formation during natural gas firing by pre-mixing the natural gas and air immediately prior to combustion. Pre-mixing inhibits NO_x formation by minimizing both the flame temperature and the concentration of oxygen (O_2) at the flame front. Water injection during ULSD firing flashes to steam, and acts as a heat sink to reduce peak flame temperatures and reduce NO_x formation. Emissions of SO_2, $PM/PM_{10}/PM_{2.5}$, and H_2SO_4 will be minimized through use of natural gas as the primary fuel and limited firing of ULSD as backup fuel. The SCR and oxidation catalysts are discussed further in the sections below.

Selective Catalytic Reduction

SCR will be installed in the HRSG to treat the exhaust gas downstream of the CTG and the duct burners. The SCR process will use 19% aqueous NH_3 as a reagent. Aqueous NH_3 will be injected into the flue gas upstream of the SCR catalyst, where it will mix with NO_x. The catalyst bed will be located in a temperature zone of the HRSG where the catalyst is most effective. The mixture will pass over the catalyst and the NO_x will be reduced to nitrogen gas (N_2) and water. During natural gas firing, the SCR system will reduce NO_x concentrations to 2.0 parts per million by volume dry basis corrected to 15 percent O_2 (ppmvdc), with or without duct-firing at all steady-state load conditions and ambient temperatures. During ULSD firing, the SCR system will reduce NO_x concentrations to 5.0 ppmvdc at all steady-state load conditions and ambient temperatures. A small amount of NH_3 will remain un-reacted through the catalyst, which is called "ammonia slip." The ammonia slip will be limited to 2.0 ppmvdc during natural gas firing and 5.0 ppmvdc during ULSD firing at all steady-state load conditions and ambient temperatures.

Oxidation Catalyst

An oxidation catalyst system will be located within the HRSG to control emissions of CO and VOC. Exhaust gases from the CTG will flow through the catalyst bed where excess air in the flue gas will oxidize the CO and VOC to form carbon dioxide (CO_2) and water. The oxidation catalyst system will reduce CO concentrations to 2.0 ppmvdc in the exhaust gas under all steady-state load conditions and ambient temperatures, including natural gas firing, with or without duct-firing, and ULSD firing. VOC concentrations will be limited to 2.0 ppmvdc and 1.0 ppmvdc

[1] 59 degrees Fahrenheit (°F), 14.7 pounds per square inch barometric pressure, and 60% relative humidity.

during natural gas firing, with and without duct firing, respectively. VOC concentrations will be limited to 2.0 ppmvdc during ULSD firing.

Ancillary Sources

The proposed Project will utilize ancillary support equipment including an auxiliary boiler, emergency generator engine, emergency fire pump engine, aqueous NH_3 storage tank, and an above-ground ULSD storage tank. Emissions from the aqueous NH_3 storage tank and an above-ground ULSD storage tank will be *de minimis*.

Auxiliary Boiler

The auxiliary boiler will use natural gas as the sole fuel, and operate as needed to keep the HRSG warm during periods of shutdown and provide steam to the STG during start-ups. The auxiliary boiler will have a maximum input capacity of 84 MMBtu/hr (HHV), and will be limited to 4,600 hours of total operation per year.

Natural Gas Heater

A natural gas fired heater will be used to heat the natural gas to the CTG when the natural gas temperature is too low. The heater will fire natural gas as the sole fuel, and operate as needed to keep the natural gas at a suitable temperature for the CTG. The heater will have a maximum input capacity of 12 MMBtu/hr (HHV) with unlimted annual operation of up to 8,760 hours of operation per year.

Emergency Generator Engine

The Project will have an emergency generator engine with a nominally rated electrical output capacity of 1,380 kilowatts mechanical (kW) to provide on-site emergency power capabilities independent of the utility grid. The emergency generator engine will fire ULSD fuel, and will typically only operate for testing and to maintain operational readiness in the event of an emergency. A small ULSD storage tank will be integrated into this equipment. Routine operation of the generator will be limited to a maximum of 300 operating hours per year.

Emergency Fire Pump Engine

The Project will have a 305-brake horsepower (bhp) emergency fire pump engine to provide on-site firefighting capabilities independent of the off-site electrical utilities grid. The emergency fire pump engine will fire ULSD fuel, and will typically only operate for testing and to maintain operational readiness in the event of an emergency. A small ULSD storage tank will be integrated into this equipment. Similar to the emergency generator engine, it will be limited to a maximum of 300 operating hours per year.

Aqueous Ammonia Storage Tanks

The Project will have tanks for storage of 19% aqueous NH_3 for use in the SCR system. The tanks will be equipped with secondary containment sized to accommodate the entire volume of one tank and sufficient freeboard for precipitation. The tanks will be located outdoors within an impermeable containment area. There will be no measurable emissions during normal operation of the aqueous NH_3 storage tank.

Fuel Oil Storage Tank

The Project will have a one million gallon capacity aboveground fixed roof fuel oil storage tanks for storing ULSD as a backup fuel. Each tank will be equipped with secondary containment sized to accommodate the entire volume of the tank and sufficient freeboard to account for precipitation.

POTENTIAL EMISSIONS

This section presents short-term and long-term potential emissions from each emission source for the Project. NTE proposes to use DLN combustion during natural gas firing, water injection during ULSD firing, and SCR to minimize NO_x emissions from the CTG. Combustion controls and an oxidation catalyst will be used to minimize CO and VOC emissions from the CTG. $PM/PM_{10}/PM_{2.5}$, SO_2, and H_2SO_4 will be minimized through the use of natural gas as the primary fuel for the CTG with limited firing of ULSD as backup fuel. The duct burners, auxiliary boiler, and natural gas heater will be fired solely with natural gas. ULSD will be used for the emergency generator and fire pump engines. Attachment G of this application contains a control technology analysis to demonstrate that these controls meet applicable LAER and BACT requirements. Appendix A of this application contains detailed emission calculations and Appendix B contains equipment specifications and vendor performance data for the proposed emission sources.

Emission Sources

The emission sources for the Project that will require a Permit to Construct and Operate will include the following:

- One Siemens Model SGT6-8000H CTG, Mitsubishi M501GAC, or equivalent with an associated HRSG. The HRSG will be equipped with duct burners for supplemental firing. The CTG will be equipped with DLN combustion during natural gas firing, and water injection during ULSD firing to minimize NO_x emissions from the CTG. The HRSG will contain an SCR and an oxidation catalyst to control NO_x, CO and VOC emissions from the CTG and duct burners;
- One natural gas-fired auxiliary boiler rated at 84 MMBtu/hr, equipped with ultra-low NO_x burners (ULNBs);
- One natural gas-fired gas heater rated at 12 MMBtu/hr, equipped with ULNBs;
- One emergency generator engine rated at 1,380 kW (mechanical standby rating), firing ULSD;
- One emergency fire pump engine rated at approximately 305 bhp, firing ULSD; and
- Fugitive emissions of GHGs from onsite electrical circuit breakers and natural gas handling equipment.

Short-Term Emissions

Combustion Turbine and Duct Burners

Table E-1 presents a summary of the proposed limits for pollutants emitted from the Siemens Model SGT6-8000H CTG, Mitsubishi M501GAC, or equivalent and duct burners at steady-state operation above the minimum emissions compliance load (MECL). The emission rates represent the LAER and BACT emission rate as determined in Section G of this application.

Table E-1: Maximum Short-Term Emission Rates for the CTG and Duct Burners

Pollutant	Case	Emission Rate (lb/MMBtu)[b]	Emission Rate (ppmvdc)
NO_x	CTG Only on Gas CTG Gas with DB[c] CTG on ULSD	0.0075 0.0075 0.0194	2.0 2.0 5.0
VOC	CTG Only on Gas CTG Gas with DB[c] CTG on ULSD	0.0013 0.0026 0.0027	1.0 2.0 2.0
CO	CTG Only on Gas CTG Gas with DB[c] CTG on ULSD	0.0045 0.0045 0.0047	2.0 2.0 2.0
$PM/PM_{10}/PM_{2.5}$	CTG Only on Gas CTG Gas with DB[c] CTG on ULSD	0.0055[d] 0.0059[d] 0.0155[d]	n/a n/a n/a
SO_2	CTG Only on Gas CTG Gas with DB[c] CTG on ULSD	0.0015 0.0015 0.0015	n/a n/a n/a
H_2SO4	CTG Only on Gas CTG Gas with DB[c] CTG on ULSD	0.00056 0.00053 0.00054	n/a n/a n/a
GHG	CTG Only on Gas	7,273 Btu/kW-hr[e]	n/a

[a] CTG may exceed these limits during defined periods of start-up and shutdown.
[b] lb/MMBtu = pounds per million British thermal units. Emission rates are based on HHV of fuel.
[c] DB = duct burner; duct burner in operation (during CTG gas firing only).
[d] $PM/PM_{10}/PM_{2.5}$ lb/MMBtu emission rates cover all operating loads at or above the MECL.
[e] BACT for GHGs is expressed as an efficiency based limit (British thermal units per net kilowatt-hour [Btu/net kW-hr], net) at ISO conditions (natural gas firing) without duct firing.

Steady-State Operation

Table E-2 presents short-term emissions estimates from the CTG at 100% load conditions for both fuels, including duct firing during natural gas firing of the CTG, based upon vendor emission performance estimates for the Project. The $PM/PM_{10}/PM_{2.5}$ emissions estimates include both filterable and condensable PM. Emission rates for all steady-state operating conditions above the MECL are provided in Appendix B.

Potential non-criteria pollutant emissions from the operation of the CTG, duct burners and ancillary equipment were estimated using USEPA's Compilation of Air Pollution Emission Factors (AP-42) (USEPA, 2000) with the following exceptions: 1) emissions of formaldehyde from the CTG are based upon the MACT floor emission rate determined by USEPA for the National Emission Standard for Hazardous Air Pollutants (NESHAP) Subpart YYYY, as representative for a new CTG equipped with DLN combustors and an oxidation catalyst; and 2) emissions of trace metals from ULSD were estimated from the reference *Survey of Ultra-Trace Metals in Gas Turbine Fuels* (Rising et al., 2004). Potential emissions of hazardous air pollutants (HAPs) and DEEP-regulated air toxics from operation of the combined cycle CTG unit (i.e., CTG, HRSG, duct burner) are also provided in Appendix B.

Table E-2: Maximum Steady State Emission Rates for the CTG and Duct Burners

Pollutant	100% Load Natural Gas Firing with Duct Burner (maximum lb/hr)	100% Load Natural Gas Firing without Duct Burner (lb/hr)	100% Load ULSD Firing without Duct Burner (lb/hr)
NO_x	29.3	22.4	54.9
VOC	10.3	3.90	7.66
CO	17.9	13.7	13.4
$PM_{10}/PM_{2.5}$	22.9	12.8	30.0
SO_2	5.84	4.46	4.24
H_2SO_4	2.00	1.60	1.50
NH_3	10.9	8.30	20.3
CO_2	462,871	353,170	458,746
CO_{2e} [a]	463,341	353,529	460,328

[a] Carbon dioxide equivalents. CO_{2e} incorporates emissions of methane (CH_4) and nitrous oxide (N_2O) weighted by their respective global warming potentials.

Start-up and Shutdown Operation

Potential emissions associated with start-up and shutdown (SU/SD) of the CTG were developed using vendor-supplied information. In addition to emissions, the vendor information provides the event duration and downtime associated with start-up events (e.g., the minimum number of hours the combined cycle CTG would be off before a start-up). In most cases, emissions from these events are “self-correcting” on an annual basis, meaning that the emissions for each SU/SD sequence, incorporating a minimum downtime required to define that type of start-up, are less than the corresponding full load steady-state emission rate. Table E-3 presents SU/SD emissions on a per event basis for each type of start for natural gas and ULSD. The pounds per event represent the emissions from first fire until the CTG reaches compliance with the emission rates in Tables E-1 and E-2.

Table E-3: Emissions for Start-up and Shutdown

Parameter	Cold Start-up	Warm Start-up	Hot Start-up	Shutdown
Natural Gas Firing				
Duration of event outside of steady-state emission limits (minutes)	35	35	30	18
	Emissions Per Event (pounds)			
NO_x	100	130	110	60
CO	470	430	370	200
VOC	40	40	40	60
ULSD Firing				
Duration of event outside of steady-state emission limits (minutes)	35	35	32	18
	Emissions Per Event (pounds)			
NO_x	150	170	150	130
CO	2,200	2,300	1,970	420
VOC	240	260	260	170
Note: Cold start applies to units that are down more than 64 hours. Warm start applies to units that are down between 16 and 64 hours. Hot start applies to units that are down less than 16 hours. Six hours of downtime is assumed for hot starts based upon daily cycling of the CTG with downtime during nighttime hours.				

Proposed annual emissions for the Project incorporates the number of SU/SD conditions by type, as provided in Appendix B. NO_x and $PM/PM_{10}/PM_{2.5}$ are self-correcting for all types of starts. SO_2 will always be self-correcting because SO_2 emissions are dependent upon the amount of fuel burned, and fuel consumption during SU/SD is much lower than during full load steady-state operation.

NO_x is self-correcting for all start types. VOCs are self-correcting for cold and warm starts. CO is self-correcting for cold starts. The impacts of SU/SDs on the annual potential emissions of CO, NO_x, and VOC have been taken into account. These calculations are provided in Appendix B.

Table E-4 presents the maximum hourly emission rates associated the CTG's SU/SD events. Normal SU/SDs will be completed in less than one hour. To determine the worst-case hourly emission rate that includes a start-up or shutdown, the balance of each hour was based upon a full load steady-state emission rate. Since cold, warm, and hot starts all have a comparable duration (30-35 minutes), the worst-case type of start for each pollutant has been used to determine a single pound per hour (lb/hr) limit for start-up, along with a single lb/hr limit for shutdown to cover all SU/SD events. Any given start-up or shutdown may last longer than one hour if there are issues, which is not uncommon during a start. The one-hour emission values are not intended to imply that all starts will be completed in one hour. However, these lb/hr emissions are intended to apply to each hour of any start-up or shutdown, even if the start-up or shutdown persists longer than one hour due to unusual circumstances.

Table E-4: Maximum Hourly Emissions Associated with Start-up and Shutdown Events for Each Unit

Pollutant	Natural Gas		ULSD	
	Start-up (lb/hr)	Shutdown (lb/hr)	Start-up (lb/hr)	Shutdown (lb/hr)
NO_x	141.8	79.9	192.9	168.5
CO	477.2	212.1	2,306	429.4
VOC	45.0	66.9	263.6	175.4

Ancillary Equipment

Short-term potential emission rates for the auxiliary boiler and the emergency engines are presented in Table E-5. Potential emission rates are presented in lb/MMBtu; grams per kilowatt-hour (g/kW-hr) or grams/brake-horsepower-hour (g/bhp-hr), as appropriate; and in lb/hr.

Table E-5: Short-Term Emission Rates for Ancillary Equipment

Pollutant	Auxiliary Boiler		Natural Gas Heater		Emergency Generator		Fire Pump	
	lb/MMBtu	lb/hr	lb/MMBtu	lb/hr	g/kW-hr	lb/hr	g/ kW-hr	lb/hr
NO_x	0.0085	0.71	0.012	0.15	6.4 (NO_x + VOC)	17.64	4.0 (NO_x + VOC)	2.01
CO	0.037	3.11	0.037	0.44	3.5	9.65	3.5	1.76
VOC	0.0041	0.34	0.0034	0.04	0.32	0.88	0.20	0.10
SO_2	0.0015	0.13	0.0015	0.02	0.0015 lb/MMBtu	0.02	0.0015 lb/MMBtu	0.003
PM_{10}/ $PM_{2.5}$	0.005	0.42	0.005	0.06	0.20	0.55	0.20	0.10
H_2SO_4	0.00011	0.010	0.00011	0.0014	0.00011 lb/MMBtu	0.0014	0.00011 lb/MMBtu	0.0002

lb/MMBtu = pounds emitted per million Btu of fuel throughput
lb/hr = pounds emitted per hour
g/kW-hr = grams emitted per kilowatt-hour

Annual Emissions

The proposed potential annual emissions from the Project are summarized in Table E-6. Potential annual emissions are based on 8,760 operating hours for the CTG along with the following assumptions:

- Combustion turbine operating for up to 8,760 hours per year at 100% load, operating at 59 degrees Fahrenheit (°F), firing gas with duct firing;
- Combustion turbine operating for up to 720 hours per year at 100% load, operating at -10°F, firing ULSD;
- The auxiliary boiler operating 4,600 hours per year at 100% load; and
- The natural gas heater operating 8,760 hours per year at 100% load; and
- The emergency generator and fire pump engines each operating 300 hours per year at 100% load.

Table E-6: Facility-Wide Annual Potential Emissions (tons per year [tpy])

Pollutant	CTG & Duct Burners	Auxiliary Boiler	Natural Gas Heater	Emergency Generator	Fire Pump	Facility Total
NO_x[a]	133.9	1.64	0.64	2.92	0.30	139.4
CO[a]	142.4	7.14	1.94	1.60	0.26	153.3
VOC[a]	48.3	0.78	0.18	0.15	0.02	49.4
SO_2	24.7	0.29	0.08	0.003	0.0005	25.1
$PM_{10}/PM_{2.5}$	100.8	0.97	0.26	0.09	0.02	102.2
GHG (as CO_2e)	1,966,937	22,610	6,151	308	49	1,996,602[b]
H_2SO_4	8.76	0.02	0.006	0.0002	0.00003	8.8
Lead (Pb)	0.0018	$9.5x10^{-5}$	$2.6x10^{-5}$	$1.4x10^{-6}$	$2.3x10^{-7}$	0.002
NH_3	49.5	N/A	N/A	N/A	N/A	49.5
Max Individual HAP (hexane)	7.06	0.35	0.10	N/A	N/A	7.5
Total HAPs	14.1	0.37	0.10	0.01	0.003	14.6

[a] Includes incremental emissions due to start-up and shutdown.
[b] Includes 547 tpy of fugitive GHG emissions from circuit breakers and natural gas handling.

The CTG has higher mass emission rates of NO_x, CO, and VOC during SU/SD than during steady-state operation. The impact of increased emissions during SU/SD was evaluated to determine its effect on potential emissions for the Project. Start-ups for combined cycle systems are generally classified as cold, warm, and hot depending upon the length of time the unit has been off-line prior to start-up. The length of start-ups will vary with the type of start-up and equipment temperatures. However, the CTG can reach the MECL from initial start-up in no more than one hour for all start types.

The maximum number of starts per year for the CTG was determined based upon vendor recommendations and projected operation in the competitive power marketplace. A conservative worst-case operating scenario based upon the CTG operating as a daily cycling unit was used to estimate the number of starts by start type. The maximum number of starts per year was determined to be 270 with the following breakdown by start type: 208 hot starts, 52 warm starts and 10 cold starts per year. The increase in emissions per type of start was quantified using vendor emissions estimates and operating data. The increase in emissions for each type of start was then compared to the reduction in emissions associated with the CTG downtime preceding each type of SU/SD event. Any increase in SU/SD emissions for each type of start was added to the potential steady-state emissions. This potential to emit approach represents the worst-case maximum potential to emit for the Project. Each start type was evaluated with a shutdown, as a start-up cannot occur without a prior shutdown. The incremental increase in potential emissions due to SU/SD is as follows:

- NO_x: 0 tpy
- CO: 66.6 tpy
- VOC: 4.9 tpy

Detailed SU/SD emissions calculations are provided in detail in Appendix A.

Hazardous Air Pollutant Emissions

Potential annual HAP emissions are presented in detail in Appendix A. The operating scenarios described above were applied when calculating potential HAP emissions. Total HAP emissions from the Project are estimated to be 14.5 tpy, with a maximum potential emission for any single HAP (hexane) of 7.4 tpy.

Attachment E202: Fuel Burning Equipment Supplemental Application Form

Applicant Name: **NTE Connecticut, LLC**
Unit No.: **AB**

DEEP USE ONLY
App. No.:

Complete this form in accordance with the instructions (DEEP-NSR-INST-202) to ensure the proper handling of your application. Print or type unless otherwise noted.

Note: Certain external combustion units may be operated pursuant to RCSA section 22a-174-3b or -3c in lieu of a permit to construct and operate pursuant to RCSA section 22a-174-3a.

Complete a separate form for *each* fuel burning source.

Questions? Visit the Air Permitting web page or contact the Air Permitting Engineer of the Day at 860-424-4152.

Part I: General

Type of Unit *(check one)*	☒ Boiler ☐ IC Engine ☐ Duct Burner	☐ Heater/Furnace ☐ Turbine ☐ Other (specify):
Manufacturer and Model Number	Cleaver Brooks (or equivalent)	
Construction Date	Sept. 2017	
Manufacture Date	N/A	
Is this unit subject to Title 40 CFR Part 60, NSPS?	☐ No ☒ Yes, Subpart(s) **Dc**	
Is this unit subject to Title 40 CFR Part 63, MACT?	☒ No ☐ Yes, Subpart(s)	
Maximum Design Heat Input	84 MMBtu/hr	
Typical Heat Input	84 MMBtu/hr	
Maximum Operating Schedule	**24** hours/day	**4,600** hours/year
Percentage of Annual Use in Each Category	Space Heat:	%
	Process Heat:	**100**%
	Power:	%

Part II: Fuel Information

Fuel Type	% Sulfur by weight	Higher Heating Value (BTU)	Maximum Hourly Firing Rate	Maximum Annual Fuel Usage	Units (gal or ft^3)
Natural Gas	0.0016	1,028	81,712	375,875,500	ft3

Note: Parts III and IV are unit specific. Complete only that section which applies to the subject unit.

Part III: External Combustion Unit Information (Boiler or Heater/Furnace)

Burner Manufacturer and Model Number	**CB-NATCOM (or equivalent)**
Number of Burners	**1**
Burner Maximum Rated Capacity (per burner)	84 MMBtu/hr
Firing Type and Method Information *(Choose all that apply)*	
Oil/Gas Fired Unit	☐ Tangentially Fired ☒ Horizontally Opposed (normal) Fired ☐ Other (specify):
Pulverized Coal Fired Unit	☐ Dry Bottom ☐ Wet Bottom ☐ Wall Fired ☐ Tangentially Fired ☐ Horizontally Fired ☐ Vertically Fired ☐ Other (specify):
Coal/Wood Fired Stoker Unit	☐ Overfeed ☐ Underfeed ☐ Spreader ☐ Hand Fed ☐ IGCC (Integrated Gasification Combined Cycle) ☐ Other (specify):
Coal/Wood Fired Fluidized Bed Combustor	☐ Circulating Bed ☐ Bubbling Bed ☐ Cyclone Furnace ☐ Other (specify):
Other Coal/Wood Fired Unit	☐ Suspension Firing ☐ Dutch Oven/Fuel Cell Oven ☐ Over Fire Air ☐ Other (specify):

Part IV: Internal Combustion (IC) Unit Information (IC Engine or Turbine)

IC Engine Information	
IC Engine Operation *(check one)*	☐ Emergency Only ☐ Emergency/Non-Emergency
IC Engine Ignition *(check one)*	☐ Compression ☐ Spark
IC Engine Type *(check one)*	☐ 4-Stroke Rich Burn (4SRB) ☐ 4-Stroke Lean Burn (4SLB) ☐ 2-Stroke Lean Burn (2SLB)
IC Engine Brake Horsepower	HP
IC Engine Power Output	MW
Turbine Information	
Turbine Operation *(check one)*	☐ Emergency Only ☐ Emergency/Non-Emergency
Turbine Type *(check one)*	☐ Simple Cycle ☐ Combined Cycle
Turbine Power Output	MW

Part V: Combustion Controls Information (Check all that apply)

Type of Combustion Control(s) or Modifications(s)	☒ Low NOx Burners ☒ Flue Gas Recirculation ☐ Selective Catalytic Reduction ☐ Coal Reburn ☐ Gas Reburn ☐ Lean Burn ☐ Rich Burn ☐ Low Excess Air ☐ Other (specify):	☐ Fly Ash Reinjection ☐ Reburn ☐ Selective Non-Catalytic Reduction ☐ Oxidation Catalyst ☐ 3-way Catalyst ☐ Over Fire Air ☐ Biased Burner Firing ☐ Burners Out of Service ☐ None

Part VI: Attachments

Please check the attachments being submitted as verification that all applicable attachments have been submitted with this application form. When submitting such documents, please label the documents as indicated in this Part (e.g., Attachment E202-A, etc.) and be sure to include the applicant's name.

☒ Attachment E202-A:	*Process Information and Flow Diagram* – Submit a process flow diagram indicating all related equipment, air pollution control equipment and stacks, as applicable. Identify all materials entering and leaving each such device indicating quantities and parameters relevant to the proper operation of the device. Indicate all monitoring devices and controls. **REQUIRED**
☒ Attachment E202-B:	*Manufacturer Information* - Submit copies of the manufacturer specification sheets for the unit, the air pollution control equipment and the monitoring systems. **REQUIRED**
☐ Attachment E202-C:	*Turbine Emissions Profiles* - Submit copies of manufacturer's emissions profile data for steady state and transient operation of the turbine. **IF APPLICABLE**

Attachment E202: Fuel Burning Equipment Supplemental Application Form

Applicant Name: **NTE Connecticut, LLC**
Unit No.: **CT**

DEEP USE ONLY
App. No.: ____________

Complete this form in accordance with the instructions (DEEP-NSR-INST-202) to ensure the proper handling of your application. Print or type unless otherwise noted.

Note: Certain external combustion units may be operated pursuant to RCSA section 22a-174-3b or -3c in lieu of a permit to construct and operate pursuant to RCSA section 22a-174-3a.

Complete a separate form for *each* fuel burning source.

Questions? Visit the Air Permitting web page or contact the Air Permitting Engineer of the Day at 860-424-4152.

Part I: General

Type of Unit *(check one)*	☐ Boiler ☐ Heater/Furnace ☐ IC Engine ☒ Turbine ☐ Duct Burner ☐ Other (specify):	
Manufacturer and Model Number	SGT6-8000H, Mitsubishi M501GAC, or equivalent	
Construction Date	Sept. 2017	
Manufacture Date	TBD	
Is this unit subject to Title 40 CFR Part 60, NSPS?	☐ No ☒ Yes, Subpart(s) **KKKK**	
Is this unit subject to Title 40 CFR Part 63, MACT?	☒ No ☐ Yes, Subpart(s)	
Maximum Design Heat Input	2,974 @ -10F MMBtu/hr	
Typical Heat Input	2,827 @ ISO MMBtu/hr	
Maximum Operating Schedule	**24** hours/day	**8,760** hours/year
Percentage of Annual Use in Each Category	Space Heat:	%
	Process Heat:	%
	Power:	**100**%

Part II: Fuel Information

Fuel Type	% Sulfur by weight	Higher Heating Value (BTU)	Maximum Hourly Firing Rate	Maximum Annual Fuel Usage	Units (gal or ft^3)
Natural Gas	0.0016	1,028	2.893E06	2.41E10	ft3
ULSD	0.0015	138,000	20,486	1.48E7	gal

Note: Parts III and IV are unit specific. Complete only that section which applies to the subject unit.

Part III: External Combustion Unit Information (Boiler or Heater/Furnace)

Burner Manufacturer and Model Number	
Number of Burners	
Burner Maximum Rated Capacity (per burner)	MMBtu/hr
Firing Type and Method Information *(Choose all that apply)*	
Oil/Gas Fired Unit	☐ Tangentially Fired ☐ Horizontally Opposed (normal) Fired ☐ Other (specify):
Pulverized Coal Fired Unit	☐ Dry Bottom ☐ Wet Bottom ☐ Wall Fired ☐ Tangentially Fired ☐ Horizontally Fired ☐ Vertically Fired ☐ Other (specify):
Coal/Wood Fired Stoker Unit	☐ Overfeed ☐ Underfeed ☐ Spreader ☐ Hand Fed ☐ IGCC (Integrated Gasification Combined Cycle) ☐ Other (specify):
Coal/Wood Fired Fluidized Bed Combustor	☐ Circulating Bed ☐ Bubbling Bed ☐ Cyclone Furnace ☐ Other (specify):
Other Coal/Wood Fired Unit	☐ Suspension Firing ☐ Dutch Oven/Fuel Cell Oven ☐ Over Fire Air ☐ Other (specify):

Part IV: Internal Combustion (IC) Unit Information (IC Engine or Turbine)

IC Engine Information	
IC Engine Operation *(check one)*	☐ Emergency Only ☐ Emergency/Non-Emergency
IC Engine Ignition *(check one)*	☐ Compression ☐ Spark
IC Engine Type *(check one)*	☐ 4-Stroke Rich Burn (4SRB) ☐ 4-Stroke Lean Burn (4SLB) ☐ 2-Stroke Lean Burn (2SLB)
IC Engine Brake Horsepower	HP
IC Engine Power Output	MW
Turbine Information	
Turbine Operation *(check one)*	☐ Emergency Only ☐ Emergency/Non-Emergency
Turbine Type *(check one)*	☐ Simple Cycle ☒ Combined Cycle
Turbine Power Output	296 MW

Part V: Combustion Controls Information (Check all that apply)

Type of Combustion Control(s) or Modifications(s)	☒ Low NOx Burners ☐ Flue Gas Recirculation ☒ Selective Catalytic Reduction ☐ Coal Reburn ☐ Gas Reburn ☐ Lean Burn ☐ Rich Burn ☐ Low Excess Air ☐ Other (specify):	☐ Fly Ash Reinjection ☐ Reburn ☐ Selective Non-Catalytic Reduction ☒ Oxidation Catalyst ☐ 3-way Catalyst ☐ Over Fire Air ☐ Biased Burner Firing ☐ Burners Out of Service ☐ None

Part VI: Attachments

Please check the attachments being submitted as verification that all applicable attachments have been submitted with this application form. When submitting such documents, please label the documents as indicated in this Part (e.g., Attachment E202-A, etc.) and be sure to include the applicant's name.

☒ Attachment E202-A:	*Process Information and Flow Diagram* – Submit a process flow diagram indicating all related equipment, air pollution control equipment and stacks, as applicable. Identify all materials entering and leaving each such device indicating quantities and parameters relevant to the proper operation of the device. Indicate all monitoring devices and controls. **REQUIRED**
☒ Attachment E202-B:	*Manufacturer Information* - Submit copies of the manufacturer specification sheets for the unit, the air pollution control equipment and the monitoring systems. **REQUIRED**
☒ Attachment E202-C:	*Turbine Emissions Profiles* - Submit copies of manufacturer's emissions profile data for steady state and transient operation of the turbine. **IF APPLICABLE**

Attachment E202: Fuel Burning Equipment Supplemental Application Form

Applicant Name: **NTE Connecticut, LLC**
Unit No.: **DB**

DEEP USE ONLY
App. No.:

Complete this form in accordance with the instructions (DEEP-NSR-INST-202) to ensure the proper handling of your application. Print or type unless otherwise noted.

Note: Certain external combustion units may be operated pursuant to RCSA section 22a-174-3b or -3c in lieu of a permit to construct and operate pursuant to RCSA section 22a-174-3a.

Complete a separate form for *each* fuel burning source.

Questions? Visit the Air Permitting web page or contact the Air Permitting Engineer of the Day at 860-424-4152.

Part I: General

Type of Unit *(check one)*	☐ Boiler ☐ IC Engine ☒ Duct Burner	☐ Heater/Furnace ☐ Turbine ☐ Other (specify):
Manufacturer and Model Number	TBD	
Construction Date	Sept. 2017	
Manufacture Date		
Is this unit subject to Title 40 CFR Part 60, NSPS?	☐ No ☒ Yes, Subpart(s) **KKKK**	
Is this unit subject to Title 40 CFR Part 63, MACT?	☒ No ☐ Yes, Subpart(s)	
Maximum Design Heat Input	927 MMBtu/hr	
Typical Heat Input	895 MMBtu/hr	
Maximum Operating Schedule	**24** hours/day	**8,760** hours/year
Percentage of Annual Use in Each Category	Space Heat:	%
	Process Heat:	%
	Power:	**100**%

Part II: Fuel Information

Fuel Type	% Sulfur by weight	Higher Heating Value (BTU)	Maximum Hourly Firing Rate	Maximum Annual Fuel Usage	Units (gal or ft^3)
Natural Gas	0.0016	1028	901,751	7.63E09	ft3

Note: Parts III and IV are unit specific. Complete only that section which applies to the subject unit.

Part III: External Combustion Unit Information (Boiler or Heater/Furnace)

Burner Manufacturer and Model Number	
Number of Burners	
Burner Maximum Rated Capacity (per burner)	MMBtu/hr
Firing Type and Method Information *(Choose all that apply)*	
Oil/Gas Fired Unit	☐ Tangentially Fired ☐ Horizontally Opposed (normal) Fired ☐ Other (specify):
Pulverized Coal Fired Unit	☐ Dry Bottom ☐ Wet Bottom ☐ Wall Fired ☐ Tangentially Fired ☐ Horizontally Fired ☐ Vertically Fired ☐ Other (specify):
Coal/Wood Fired Stoker Unit	☐ Overfeed ☐ Underfeed ☐ Spreader ☐ Hand Fed ☐ IGCC (Integrated Gasification Combined Cycle) ☐ Other (specify):
Coal/Wood Fired Fluidized Bed Combustor	☐ Circulating Bed ☐ Bubbling Bed ☐ Cyclone Furnace ☐ Other (specify):
Other Coal/Wood Fired Unit	☐ Suspension Firing ☐ Dutch Oven/Fuel Cell Oven ☐ Over Fire Air ☐ Other (specify):

Part IV: Internal Combustion (IC) Unit Information (IC Engine or Turbine)

IC Engine Information	
IC Engine Operation *(check one)*	☐ Emergency Only ☐ Emergency/Non-Emergency
IC Engine Ignition *(check one)*	☐ Compression ☐ Spark
IC Engine Type *(check one)*	☐ 4-Stroke Rich Burn (4SRB) ☐ 4-Stroke Lean Burn (4SLB) ☐ 2-Stroke Lean Burn (2SLB)
IC Engine Brake Horsepower	HP
IC Engine Power Output	MW
Turbine Information	
Turbine Operation *(check one)*	☐ Emergency Only ☐ Emergency/Non-Emergency
Turbine Type *(check one)*	☐ Simple Cycle ☐ Combined Cycle
Turbine Power Output	MW

Part V: Combustion Controls Information (Check all that apply)

Type of Combustion Control(s) or Modifications(s)	☒ Low NOx Burners ☐ Flue Gas Recirculation ☒ Selective Catalytic Reduction ☐ Coal Reburn ☐ Gas Reburn ☐ Lean Burn ☐ Rich Burn ☐ Low Excess Air ☐ Other (specify):	☐ Fly Ash Reinjection ☐ Reburn ☐ Selective Non-Catalytic Reduction ☒ Oxidation Catalyst ☐ 3-way Catalyst ☐ Over Fire Air ☐ Biased Burner Firing ☐ Burners Out of Service ☐ None

Part VI: Attachments

Please check the attachments being submitted as verification that all applicable attachments have been submitted with this application form. When submitting such documents, please label the documents as indicated in this Part (e.g., Attachment E202-A, etc.) and be sure to include the applicant's name.

☒ Attachment E202-A:	*Process Information and Flow Diagram* – Submit a process flow diagram indicating all related equipment, air pollution control equipment and stacks, as applicable. Identify all materials entering and leaving each such device indicating quantities and parameters relevant to the proper operation of the device. Indicate all monitoring devices and controls. **REQUIRED**
☒ Attachment E202-B:	*Manufacturer Information* - Submit copies of the manufacturer specification sheets for the unit, the air pollution control equipment and the monitoring systems. **REQUIRED**
☐ Attachment E202-C:	*Turbine Emissions Profiles* - Submit copies of manufacturer's emissions profile data for steady state and transient operation of the turbine. **IF APPLICABLE**

Attachment E202: Fuel Burning Equipment Supplemental Application Form

Applicant Name: **NTE Connecticut, LLC**
Unit No.: **EG**

DEEP USE ONLY
App. No.: ________________

Complete this form in accordance with the instructions (DEEP-NSR-INST-202) to ensure the proper handling of your application. Print or type unless otherwise noted.

Note: Certain external combustion units may be operated pursuant to RCSA section 22a-174-3b or -3c in lieu of a permit to construct and operate pursuant to RCSA section 22a-174-3a.

Complete a separate form for *each* fuel burning source.

Questions? Visit the Air Permitting web page or contact the Air Permitting Engineer of the Day at 860-424-4152.

Part I: General

Type of Unit *(check one)*	☐ Boiler ☒ IC Engine ☐ Duct Burner ☐ Heater/Furnace ☐ Turbine ☐ Other (specify):	
Manufacturer and Model Number	Cummins 1250DQGAE	
Construction Date	Sept. 2017	
Manufacture Date		
Is this unit subject to Title 40 CFR Part 60, NSPS?	☐ No ☒ Yes, Subpart(s) **IIII**	
Is this unit subject to Title 40 CFR Part 63, MACT?	☐ No ☒ Yes, Subpart(s) **ZZZZ**	
Maximum Design Heat Input	12.54 @ 138,000 Btu/gal MMBtu/hr	
Typical Heat Input	12.54 @ 138,000 Btu/gal MMBtu/hr	
Maximum Operating Schedule	**24** hours/day	**300** hours/year
Percentage of Annual Use in Each Category	Space Heat:	%
	Process Heat:	%
	Power:	**100**%

Part II: Fuel Information

Fuel Type	% Sulfur by weight	Higher Heating Value (BTU)	Maximum Hourly Firing Rate	Maximum Annual Fuel Usage	Units (gal or ft^3)
ULSD	0.0015	138,000	90.9	27,270	gal

Note: Parts III and IV are unit specific. Complete only that section which applies to the subject unit.

Part III: External Combustion Unit Information (Boiler or Heater/Furnace)

Burner Manufacturer and Model Number	
Number of Burners	
Burner Maximum Rated Capacity (per burner)	MMBtu/hr
Firing Type and Method Information *(Choose all that apply)*	
Oil/Gas Fired Unit	☐ Tangentially Fired ☐ Horizontally Opposed (normal) Fired ☐ Other (specify):
Pulverized Coal Fired Unit	☐ Dry Bottom ☐ Wet Bottom ☐ Wall Fired ☐ Tangentially Fired ☐ Horizontally Fired ☐ Vertically Fired ☐ Other (specify):
Coal/Wood Fired Stoker Unit	☐ Overfeed ☐ Underfeed ☐ Spreader ☐ Hand Fed ☐ IGCC (Integrated Gasification Combined Cycle) ☐ Other (specify):
Coal/Wood Fired Fluidized Bed Combustor	☐ Circulating Bed ☐ Bubbling Bed ☐ Cyclone Furnace ☐ Other (specify):
Other Coal/Wood Fired Unit	☐ Suspension Firing ☐ Dutch Oven/Fuel Cell Oven ☐ Over Fire Air ☐ Other (specify):

Part IV: Internal Combustion (IC) Unit Information (IC Engine or Turbine)

IC Engine Information	
IC Engine Operation *(check one)*	☒ Emergency Only ☐ Emergency/Non-Emergency
IC Engine Ignition *(check one)*	☒ Compression ☐ Spark
IC Engine Type *(check one)*	☐ 4-Stroke Rich Burn (4SRB) ☒ 4-Stroke Lean Burn (4SLB) ☐ 2-Stroke Lean Burn (2SLB)
IC Engine Brake Horsepower	1,850 HP
IC Engine Power Output	1,380 mechanical MW
Turbine Information	
Turbine Operation *(check one)*	☐ Emergency Only ☐ Emergency/Non-Emergency
Turbine Type *(check one)*	☐ Simple Cycle ☐ Combined Cycle
Turbine Power Output	MW

Part V: Combustion Controls Information (Check all that apply)

Type of Combustion Control(s) or Modifications(s)	☐ Low NOx Burners ☐ Flue Gas Recirculation ☐ Selective Catalytic Reduction ☐ Coal Reburn ☐ Gas Reburn ☐ Lean Burn ☐ Rich Burn ☐ Low Excess Air ☐ Other (specify):	☐ Fly Ash Reinjection ☐ Reburn ☐ Selective Non-Catalytic Reduction ☐ Oxidation Catalyst ☐ 3-way Catalyst ☐ Over Fire Air ☐ Biased Burner Firing ☐ Burners Out of Service ☒ None

Part VI: Attachments

Please check the attachments being submitted as verification that all applicable attachments have been submitted with this application form. When submitting such documents, please label the documents as indicated in this Part (e.g., Attachment E202-A, etc.) and be sure to include the applicant's name.

☒ Attachment E202-A:	*Process Information and Flow Diagram* – Submit a process flow diagram indicating all related equipment, air pollution control equipment and stacks, as applicable. Identify all materials entering and leaving each such device indicating quantities and parameters relevant to the proper operation of the device. Indicate all monitoring devices and controls. **REQUIRED**
☒ Attachment E202-B:	*Manufacturer Information* - Submit copies of the manufacturer specification sheets for the unit, the air pollution control equipment and the monitoring systems. **REQUIRED**
☐ Attachment E202-C:	*Turbine Emissions Profiles* - Submit copies of manufacturer's emissions profile data for steady state and transient operation of the turbine. **IF APPLICABLE**

Attachment E202: Fuel Burning Equipment Supplemental Application Form

Applicant Name: **NTE Connecticut, LLC**
Unit No.: **FP**

DEEP USE ONLY
App. No.: ____________

Complete this form in accordance with the instructions (DEEP-NSR-INST-202) to ensure the proper handling of your application. Print or type unless otherwise noted.

Note: Certain external combustion units may be operated pursuant to RCSA section 22a-174-3b or -3c in lieu of a permit to construct and operate pursuant to RCSA section 22a-174-3a.

Complete a separate form for *each* fuel burning source.

Questions? Visit the Air Permitting web page or contact the Air Permitting Engineer of the Day at 860-424-4152.

Part I: General

Type of Unit *(check one)*	☐ Boiler ☒ IC Engine ☐ Duct Burner ☐ Heater/Furnace ☐ Turbine ☐ Other (specify):	
Manufacturer and Model Number	Clarke JU6H-UFADX8	
Construction Date	Sept. 2017	
Manufacture Date		
Is this unit subject to Title 40 CFR Part 60, NSPS?	☐ No ☒ Yes, Subpart(s) **IIII**	
Is this unit subject to Title 40 CFR Part 63, MACT?	☐ No ☒ Yes, Subpart(s) **ZZZZ**	
Maximum Design Heat Input	2.01 MMBtu/hr	
Typical Heat Input	2.01 MMBtu/hr	
Maximum Operating Schedule	**24** hours/day	**300** hours/year
Percentage of Annual Use in Each Category	Space Heat:	**N/A**%
	Process Heat:	**N/A**%
	Power:	**N/A**%

Part II: Fuel Information

Fuel Type	% Sulfur by weight	Higher Heating Value (BTU)	Maximum Hourly Firing Rate	Maximum Annual Fuel Usage	Units (gal or ft^3)
ULSD	0.0015	138,000	14.6	4,380	gal

Note: Parts III and IV are unit specific. Complete only that section which applies to the subject unit.

Part III: External Combustion Unit Information (Boiler or Heater/Furnace)

Burner Manufacturer and Model Number	
Number of Burners	
Burner Maximum Rated Capacity (per burner)	MMBtu/hr
Firing Type and Method Information *(Choose all that apply)*	
Oil/Gas Fired Unit	☐ Tangentially Fired ☐ Horizontally Opposed (normal) Fired ☐ Other (specify):
Pulverized Coal Fired Unit	☐ Dry Bottom ☐ Wet Bottom ☐ Wall Fired ☐ Tangentially Fired ☐ Horizontally Fired ☐ Vertically Fired ☐ Other (specify):
Coal/Wood Fired Stoker Unit	☐ Overfeed ☐ Underfeed ☐ Spreader ☐ Hand Fed ☐ IGCC (Integrated Gasification Combined Cycle) ☐ Other (specify):
Coal/Wood Fired Fluidized Bed Combustor	☐ Circulating Bed ☐ Bubbling Bed ☐ Cyclone Furnace ☐ Other (specify):
Other Coal/Wood Fired Unit	☐ Suspension Firing ☐ Dutch Oven/Fuel Cell Oven ☐ Over Fire Air ☐ Other (specify):

Part IV: Internal Combustion (IC) Unit Information (IC Engine or Turbine)

IC Engine Information	
IC Engine Operation *(check one)*	☒ Emergency Only ☐ Emergency/Non-Emergency
IC Engine Ignition *(check one)*	☒ Compression ☐ Spark
IC Engine Type *(check one)*	☐ 4-Stroke Rich Burn (4SRB) ☒ 4-Stroke Lean Burn (4SLB) ☐ 2-Stroke Lean Burn (2SLB)
IC Engine Brake Horsepower	305 HP
IC Engine Power Output	227.5 mechanical MW
Turbine Information	
Turbine Operation *(check one)*	☐ Emergency Only ☐ Emergency/Non-Emergency
Turbine Type *(check one)*	☐ Simple Cycle ☐ Combined Cycle
Turbine Power Output	MW

Part V: Combustion Controls Information (Check all that apply)

Type of Combustion Control(s) or Modifications(s)	☐ Low NOx Burners ☐ Flue Gas Recirculation ☐ Selective Catalytic Reduction ☐ Coal Reburn ☐ Gas Reburn ☐ Lean Burn ☐ Rich Burn ☐ Low Excess Air ☐ Other (specify):	☐ Fly Ash Reinjection ☐ Reburn ☐ Selective Non-Catalytic Reduction ☐ Oxidation Catalyst ☐ 3-way Catalyst ☐ Over Fire Air ☐ Biased Burner Firing ☐ Burners Out of Service ☒ None

Part VI: Attachments

Please check the attachments being submitted as verification that all applicable attachments have been submitted with this application form. When submitting such documents, please label the documents as indicated in this Part (e.g., Attachment E202-A, etc.) and be sure to include the applicant's name.

☒ Attachment E202-A:	*Process Information and Flow Diagram* – Submit a process flow diagram indicating all related equipment, air pollution control equipment and stacks, as applicable. Identify all materials entering and leaving each such device indicating quantities and parameters relevant to the proper operation of the device. Indicate all monitoring devices and controls. **REQUIRED**
☒ Attachment E202-B:	*Manufacturer Information* - Submit copies of the manufacturer specification sheets for the unit, the air pollution control equipment and the monitoring systems. **REQUIRED**
☐ Attachment E202-C:	*Turbine Emissions Profiles* - Submit copies of manufacturer's emissions profile data for steady state and transient operation of the turbine. **IF APPLICABLE**

Attachment E202: Fuel Burning Equipment Supplemental Application Form

Applicant Name: **NTE Connecticut, LLC**
Unit No.: **GH**

DEEP USE ONLY
App. No.: ______________

Complete this form in accordance with the instructions (DEEP-NSR-INST-202) to ensure the proper handling of your application. Print or type unless otherwise noted.

Note: Certain external combustion units may be operated pursuant to RCSA section 22a-174-3b or -3c in lieu of a permit to construct and operate pursuant to RCSA section 22a-174-3a.

Complete a separate form for *each* fuel burning source.

Questions? Visit the Air Permitting web page or contact the Air Permitting Engineer of the Day at 860-424-4152.

Part I: General

Type of Unit *(check one)*	☐ Boiler ☐ IC Engine ☐ Duct Burner	☒ Heater/Furnace ☐ Turbine ☐ Other (specify):
Manufacturer and Model Number	TERI (or equivalent)	
Construction Date	Sept. 2017	
Manufacture Date	N/A	
Is this unit subject to Title 40 CFR Part 60, NSPS?	☐ No ☒ Yes, Subpart(s) **Dc**	
Is this unit subject to Title 40 CFR Part 63, MACT?	☒ No ☐ Yes, Subpart(s)	
Maximum Design Heat Input	12 MMBtu/hr	
Typical Heat Input	12 MMBtu/hr	
Maximum Operating Schedule	**24** hours/day	**4,000** hours/year
Percentage of Annual Use in Each Category	Space Heat:	%
	Process Heat:	**100**%
	Power:	%

Part II: Fuel Information

Fuel Type	% Sulfur by weight	Higher Heating Value (BTU)	Maximum Hourly Firing Rate	Maximum Annual Fuel Usage	Units (gal or ft^3)
Natural Gas	0.0016	1,028	11,673	46,692,000	ft3

Note: Parts III and IV are unit specific. Complete only that section which applies to the subject unit.

Part III: External Combustion Unit Information (Boiler or Heater/Furnace)

Burner Manufacturer and Model Number	**TERI (or equivalent)**
Number of Burners	**1**
Burner Maximum Rated Capacity (per burner)	12 MMBtu/hr
Firing Type and Method Information *(Choose all that apply)*	
Oil/Gas Fired Unit	☐ Tangentially Fired ☒ Horizontally Opposed (normal) Fired ☐ Other (specify):
Pulverized Coal Fired Unit	☐ Dry Bottom ☐ Wet Bottom ☐ Wall Fired ☐ Tangentially Fired ☐ Horizontally Fired ☐ Vertically Fired ☐ Other (specify):
Coal/Wood Fired Stoker Unit	☐ Overfeed ☐ Underfeed ☐ Spreader ☐ Hand Fed ☐ IGCC (Integrated Gasification Combined Cycle) ☐ Other (specify):
Coal/Wood Fired Fluidized Bed Combustor	☐ Circulating Bed ☐ Bubbling Bed ☐ Cyclone Furnace ☐ Other (specify):
Other Coal/Wood Fired Unit	☐ Suspension Firing ☐ Dutch Oven/Fuel Cell Oven ☐ Over Fire Air ☐ Other (specify):

Part IV: Internal Combustion (IC) Unit Information (IC Engine or Turbine)

IC Engine Information	
IC Engine Operation *(check one)*	☐ Emergency Only ☐ Emergency/Non-Emergency
IC Engine Ignition *(check one)*	☐ Compression ☐ Spark
IC Engine Type *(check one)*	☐ 4-Stroke Rich Burn (4SRB) ☐ 4-Stroke Lean Burn (4SLB) ☐ 2-Stroke Lean Burn (2SLB)
IC Engine Brake Horsepower	HP
IC Engine Power Output	MW
Turbine Information	
Turbine Operation *(check one)*	☐ Emergency Only ☐ Emergency/Non-Emergency
Turbine Type *(check one)*	☐ Simple Cycle ☐ Combined Cycle
Turbine Power Output	MW

Part V: Combustion Controls Information (Check all that apply)

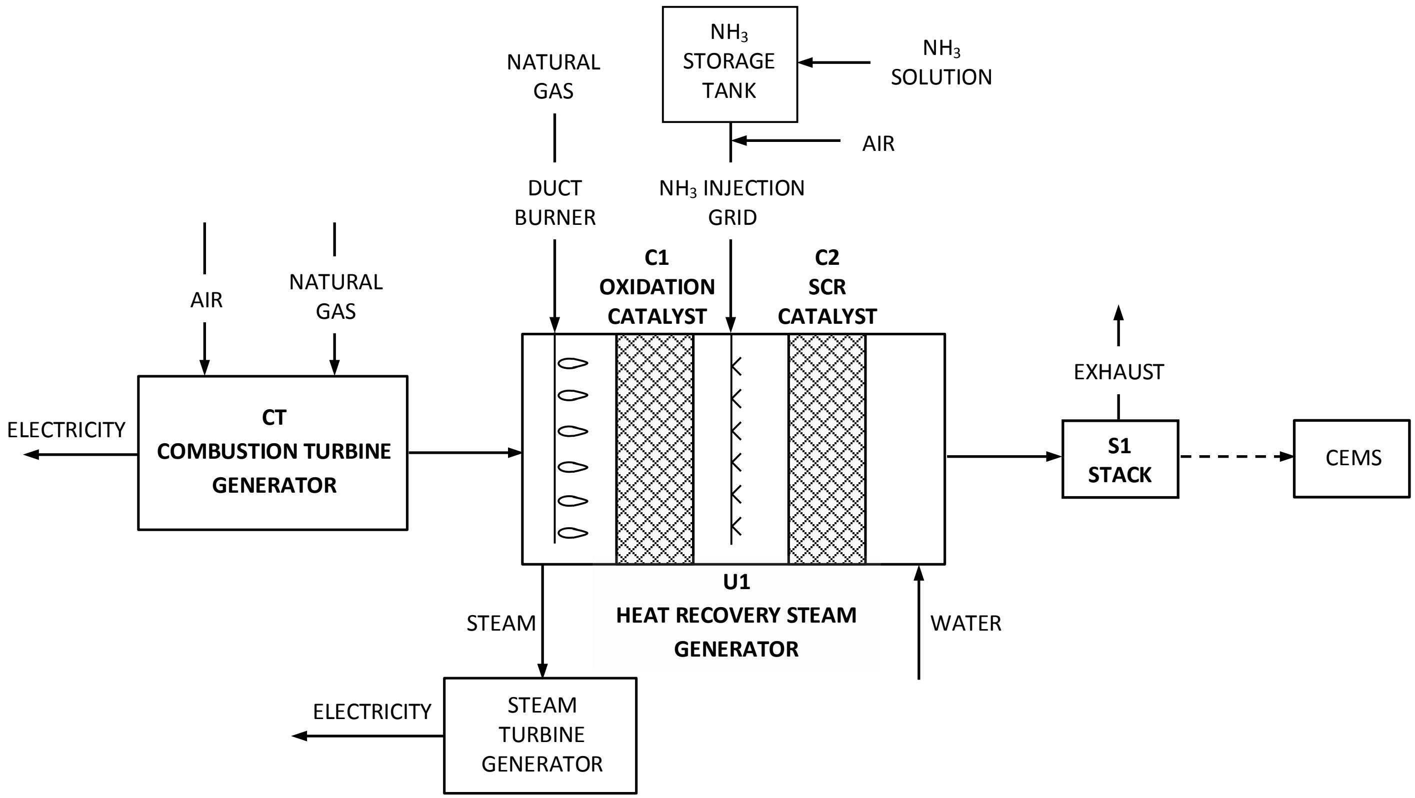
Type of Combustion Control(s) or Modifications(s)	☒ Low NOx Burners ☐ Flue Gas Recirculation ☐ Selective Catalytic Reduction ☐ Coal Reburn ☐ Gas Reburn ☐ Lean Burn ☐ Rich Burn ☐ Low Excess Air ☐ Other (specify):	☐ Fly Ash Reinjection ☐ Reburn ☐ Selective Non-Catalytic Reduction ☐ Oxidation Catalyst ☐ 3-way Catalyst ☐ Over Fire Air ☐ Biased Burner Firing ☐ Burners Out of Service ☐ None

Part VI: Attachments

Please check the attachments being submitted as verification that all applicable attachments have been submitted with this application form. When submitting such documents, please label the documents as indicated in this Part (e.g., Attachment E202-A, etc.) and be sure to include the applicant's name.

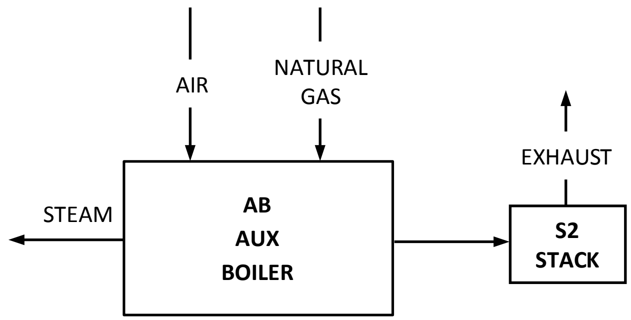
☒ Attachment E202-A:	*Process Information and Flow Diagram* – Submit a process flow diagram indicating all related equipment, air pollution control equipment and stacks, as applicable. Identify all materials entering and leaving each such device indicating quantities and parameters relevant to the proper operation of the device. Indicate all monitoring devices and controls. **REQUIRED**
☒ Attachment E202-B:	*Manufacturer Information* - Submit copies of the manufacturer specification sheets for the unit, the air pollution control equipment and the monitoring systems. **REQUIRED**
☐ Attachment E202-C:	*Turbine Emissions Profiles* - Submit copies of manufacturer's emissions profile data for steady state and transient operation of the turbine. **IF APPLICABLE**

COMBUSTION TURBINE AND DUCT BURNER – PROCESS FLOW DIAGRAM



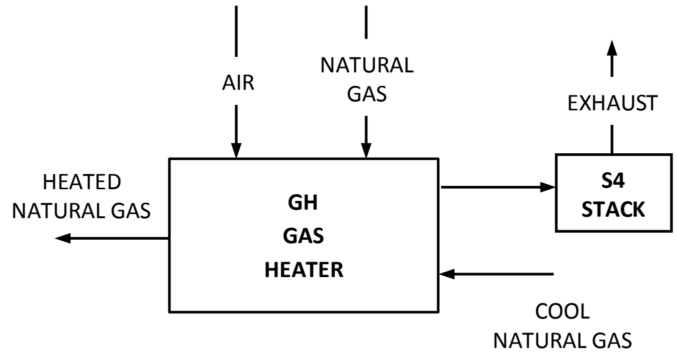
NOTE: Material quantities provided in Attachments E202C and E212A

AUXILIARY BOILER – PROCESS FLOW DIAGRAM



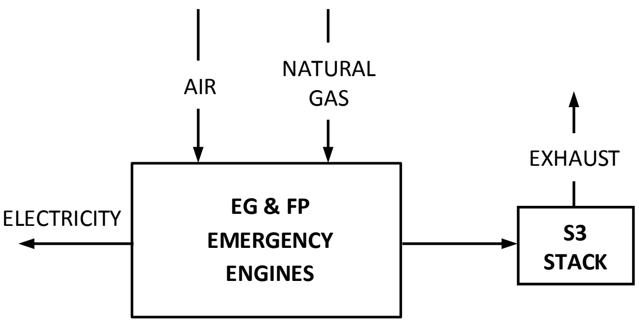
NOTE: Material quantities provided in Attachments E202C and E212A

NATURAL GAS HEATER – PROCESS FLOW DIAGRAM



NOTE: Material quantities provided in Attachments E202C and E212A

EMERGENCY GENERATOR AND FIRE PUMP ENGINES – PROCESS FLOW DIAGRAM



NOTE: Material quantities provided in Attachments E202C and E212A

Attachment E210: Air Pollution Control Equipment Supplemental Application Form

Applicant Name: **NTE Connecticut, LLC**
Unit No(s).: **CT/DB**

DEEP USE ONLY
App. No.: ______

Complete this form in accordance with the instructions (DEEP-NSR-INST-210) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this supplemental application form to provide the air pollution control equipment information for all units that are part of this application package.

Questions? Visit the Air Permitting web page or contact the Air Permitting Engineer of the Day at 860-424-4152.

Part I. Summary Sheet

Unit No.	Unit Description	Control Equipment		Overall Control Efficiency (%)	Pollutant(s) Controlled	*Basis	Stack No.
		No.	Type				
CT/DB	**Combined Cycle Combustion Turbine**	**SCR**	**SCR**	**90 (est)**	**NOx**	**Vendor Guarantee**	**1**
CT/DB	**Combined Cycle Combustion Turbine**	**OC**	**Oxidation Catal**	**90 (est)**	**CO, VOC**	**Vendor Guarantee**	**1**

** Submit supporting documentation with this form, e.g., stack test data, manufacturer's guarantees, etc. as Attachment E210(Control Equipment No.).*

☐ Check here if additional sheets are necessary, and label and attach them to this sheet.

Part II: Specific Control Equipment

Complete the appropriate subsection for each *distinct* piece of control equipment.

1. Adsorption Device

Control Equipment Number of Adsorption Unit: ______________________________

Unit Number of Unit which Uses Adsorption Unit: ____________________________

Manufacturer and Model Number		
Construction Date		
Adsorbent		☐ Activated Charcoal Type: ☐ Granulated ☐ Other (specify): ☐ Powdered
Number of Beds		
Dimensions of Beds ☐ Check here if additional sheets are necessary, and label and attach them to this sheet.	**Bed No. 1**	Thickness in direction of gas flow: inches Cross-section area: square inches
	Bed No. 2	Thickness in direction of gas flow: inches Cross-section area: square inches
	Bed No. 3	Thickness in direction of gas flow: inches Cross-section area: square inches
Inlet Gas Temperature		^{o}F
Design Pressure Drop Range Across Unit		inches H_2O
Gas Flow Rate		scfm
Type of Regeneration		☐ Replacement ☐ Steam ☐ Other (specify):
Method of Regeneration		☐ Alternate use of beds ☐ Source shut down ☐ Other (specify): Describe procedures used to ensure that emissions from regeneration process are treated or minimized:
Maximum Operation Time Before Regeneration		
Is Adsorber Equipped with a Break-Through Detector?		☐ Yes ☐ No
Pollutant(s) Controlled		
Collection Efficiency(s) of Adsorber		%
Control Efficiency(s) of Adsorber		%
Overall Control Efficiency(s)		%

2. Afterburner (Incinerator for Air Pollution Control)

Control Equipment Number of Afterburner: **OC**

Unit Number of Unit which Uses Afterburner: **CT/DB**

Manufacturer and Model Number		TBD
Construction Date		Sept. 2017
Type of Afterburner		☐ Thermal ☒ Catalytic ☐ Other (specify):
Combustion Chamber Dimensions	**Length**	TBD inches
	Cross-section area	TBD square inches
Inlet Gas Temperature		700 ^{o}F
Operating Temperature Range of Chamber		600-800 ^{o}F
Auxiliary Fuel Information		

Fuel Type	% Sulfur by Weight	Higher Heating Value (BTU)	Maximum Hourly Firing Rate	Maximum Annual Fuel Usage	Units (gal or ft^3)
None	N/A	N/A	N/A	N/A	N/A

Number of Burners		N/A
Burner Maximum Heat Input	**Burner No. 1**	BTU per hour
	Burner No. 2	BTU per hour
	Burner No. 3	BTU per hour
Catalyst Used		☒ Yes ☐ No
Catalyst Type		Platinum
Catalyst Sampling Interval		Manufacturer recommendation
Heat Exchanger Used		☐ Yes ☒ No
Type of Heat Exchanger		
Heat Recovery		
Reagent Used		N/A
Gas Flow Rate		1,153,970 gas firing w/o DF @ ISO scfm
Combustion Chamber Design Residence Time		TBD seconds
Moisture Content of Exhaust Gas		5-14 %
Heat Recovery		0 %
Pollutant(s) Controlled		CO & VOC
Collection Efficiency(s) of Afterburner		100 %

2. Afterburner (Incinerator for Air Pollution Control) (continued)

Control Equipment Number of Afterburner: **OC**

Unit Number of Unit which Uses Afterburner: **CT/DB**

Control Efficiency(s) of Afterburner	90% for CO %
Overall Control Efficiency(s)	90% for CO %

3. Condenser

Control Equipment Number of Condenser: ______________________________

Unit Number of Unit which Uses Condenser: ____________________________

Manufacturer and Model Number	
Construction Date	
Heat Exchange Area	square feet
Coolant Flow Rate	☐ Water: gpm ☐ Air: scfm ☐ Other (specify) :
Gas Flow Rate	scfm
Coolant Temperature	In: ºF Out: ºF
Gas Temperature	In: ºF Out: ºF
Pollutant(s) Controlled	
Collection Efficiency(s) of Condenser	%
Control Efficiency(s) of Condenser	%
Overall Control Efficiency(s)	%

4. Electrostatic Precipitator

Control Equipment Number of Electrostatic Precipitator: ______________________

Unit Number of Unit which Uses Electrostatic Precipitator: ______________________

Manufacturer and Model Number	
Construction Date	
Collecting Electrode Area	square feet
Gas Flow Rate	scfm
Voltage Across the Precipitator Plates	kV
Resistivity of Pollutants	ohms
Number of Fields in the Precipitator	
Grain Loading	In: grains/scf Out: grains/scf
Pollutant(s) Controlled	
Collection Efficiency(s) of Electrostatic Precipitator	%
Control Efficiency(s) of Electrostatic Precipitator	%
Overall Control Efficiency(s)	%

5. Filter

Control Equipment Number of Filter: ___________________________________

Unit Number of Unit which Uses Filter: ________________________________

Manufacturer and Model Number	
Construction Date	
Filtering Material	
Air to Cloth Ratio	square feet
Net Cloth Area	square feet
Number of Bags	
Cleaning Method	☐ Shaker ☐ Reverse Air ☐ Pulse Air ☐ Pulse Jet ☐ Other (specify):
Gas Cooling Method	☐ Ductwork Length: ft. Diameter: in. ☐ Heat Exchanger ☐ Bleed-in Air ☐ Water Spray ☐ Other (specify): ☐ Not Applicable
Cooling Medium Flow Rate	☐ Bleed-in Air: scfm ☐ Water Spray: gpm
Exhaust Gas Flow Rate	scfm
Inlet Gas Temperature	^{o}F
Inlet Gas Dew Point	^{o}F
Grain Loading	In: grains/scf Out: grains/scf
Design Pressure Drop Across Unit	inches H_2O
Operating Pressure Drop Range Across Unit	inches H_2O
Pollutant(s) Controlled	
Collection Efficiency(s) of Filter	%
Control Efficiency(s) of Filter	%
Overall Control Efficiency(s)	%

6. Cyclone

Control Equipment Number of Cyclone: ______________________________

Unit Number of Unit which Uses Cyclone: ____________________________

Manufacturer and Model Number	
Construction Date	
Type of Cyclone	☐ Single ☐ Multiple: Number of Cyclones
Gas Flow Rate	scfm
Grain Loading	In: grains/scf Out: grains/scf
Design Pressure Drop Across Unit	inches H_2O
Pollutant(s) Controlled	
Collection Efficiency(s) of Cyclone	%
Control Efficiency(s) of Cyclone	%
Overall Control Efficiency(s)	%

7. Mist Eliminator

Control Equipment Number of Mist Eliminator: ______________________________

Unit Number of Unit which Uses Mist Eliminator: ____________________________

Manufacturer and Model Number	
Construction Date	
Face Velocity	feet per second ☐ Vertical Flow ☐ Horizontal Flow ☐ Diagonal
Design Pressure Drop Range Across Unit	inches H_2O
Flow Rate	scfm
Pollutant(s) Controlled	
Collection Efficiency(s) of Mist Eliminator	%
Control Efficiencies of Mist Eliminator	% @ 1 mmHg % @ 5 mmHg % @ 10 mmHg
Overall Control Efficiency(s)	%

8. Scrubber

Control Equipment Number of Scrubber: ______________________________

Unit Number of Unit which Uses Scrubber: ____________________________

Manufacturer and Model Number		
Construction Date		
Type of Scrubber		☐ Venturi ☐ Wet Fan ☐ Packed: Packing Material Size: Packed Height: inches ☐ Spray: Number of Nozzles: Nozzle No. 1 Pressure: psig Nozzle No. 2 Pressure: psig Nozzle No. 3 Pressure: psig Nozzle No. 4 Pressure: psig ☐ Other (specify):
Design Pressure Drop Range Across Unit		inches H_2O
Type of Flow		☐ Concurrent ☐ Countercurrent ☐ Crossflow
Scrubber Geometry	**Length in direction of gas flow**	feet
	Cross-sectional area	square inches
Chemical Composition of Scrubbing Liquid		
Scrubbing Liquid/Reagent Flow Rate		gpm
Fresh Liquid Make-Up Rate		gpm
Scrubber Liquid/Reagent Circulation		☐ One Pass ☐ Recirculated
Scrubber Liquid/Reagent pH		
Gas Flow Rate		scfm
Inlet Gas Temperature		^oF
Design Outlet Grain Loading		gr/dscf
Pollutant(s) Controlled		
Collection Efficiency(s) of Scrubber		%
Control Efficiency(s) of Scrubber		%
Overall Control Efficiency(s)		%

9. Other Control Equipment for Degreasing Equipment

Name of Control Equipment: ______________________

Control Equipment Number of Control Equipment: ______________

Unit Number of Unit which Uses Control Equipment: ______________

Manufacturer and Model Number	
Construction Date	
Method of Control	☐ Refrigerator Chiller ☐ Water Spray ☐ Other (specify):
Pollutant(s) Controlled	
Collection Efficiency(s) of Control Equipment	%
Control Efficiency(s) of Control Equipment	%
Overall Control Efficiency(s)	%

10. Other Type of Control Equipment

Name of Control Equipment: **SCR**

Control Equipment Number of Control Equipment: **SCR**

Unit Number of Unit which Uses Control Equipment: **CT/DB**

Manufacturer and Model Number	TBD
Construction Date	Sept. 2017
Pollutant(s) Controlled	NOx
Collection Efficiency(s) of Control Equipment	100 %
Control Efficiency(s) of Control Equipment	90 (estimate) %
Overall Control Efficiency(s)	90 (estimate) %

Part III: Attachments

Please check the attachment being submitted as verification that all applicable attachments have been submitted with this application form. When submitting such documents, please label the documents as indicated in this Part (e.g., Attachment E210(Control Equipment No.), etc.) and be sure to include the applicant's name.

☒ Attachment E210: *Manufacturer Information* - Submit supporting documentation for each piece of air pollution control equipment listed in Part I of this form, e.g., stack test data, manufacturer's guarantees, etc. Label each document in this Attachment referencing the applicable air pollution control equipment number as indicated in Part I of this form using this format: Attachment E210(Control Equipment No.). **REQUIRED**

Attachment E211: Stack and Building Parameters Supplemental Application Form

Applicant Name: **NTE Connecticut, LLC**

Complete this form in accordance with the instructions (DEEP-NSR-INST-211) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this supplemental application form to provide the stack and building parameter information for all units that are part of this application package.

Questions? Visit the Air Permitting web page or contact the Air Permitting Engineer of the Day at 860-424-4152.

Part I. Stack Parameters Summary

Stack No.	Unit No.(s)	Control Equipment No.(s)	Stack Height (feet)	Stack Diameter (feet)	Stack Exit Temp (°F)		Stack Exhaust Flow Rate (ACFM)		Stack Exit Direction (H or V)	Rain Hat (Y or N)	Stack Lining Material	Stack Distance to Nearest Property Line (feet)
					Max	Min	Max	Min				
1	CT/DB	SCR/O	TBD	22.0	212	178	1.6E6	8.5E5	V	N	Metal	425
2	AB	N/A	90	4.0	300	N/A	20500	N/A	V	N	Metal	430
3	EG	N/A	25	1.17	840	N/A	6,600	N/A	V	N	Metal	440
4	FP	N/A	20	1.0	961	N/A	1,100	N/A	V	N	Metal	130
5	GH	N/A	20	1.0	250	N/A	2,700	N/A	V	N	Metal	345

☐ Check here if additional sheets are necessary, and label and attach them to this sheet.

Part II. Building Parameters Summary

Complete this Part if a Stack Height Review or Screening Ambient Air Quality Analysis is required. This Part is not required for sources performing a Refined Modeling Analysis.

Building No.	Building Description	Building Height (H) (feet)	Building Length (L) (feet)	Building Width (W) (feet)	Building Distance to				Building Distance to Nearest Property Line (feet)
					Stack No.	Stack No.	Stack No.	Stack No.	

☐ Check here if additional sheets are necessary, and label and attach them to this sheet.

Part III. Attachment

Please check the attachments being submitted as verification that all applicable attachments have been submitted with this application form. When submitting such documents, please label the documents as indicated in this Part (e.g., Attachment E211-A, etc.) and be sure to include the applicant's name.

☒	Attachment E211-A:	*Plot Plan* – Submit a detailed plot plan of the facility with all structures, stack locations, and property lines clearly delineated. In addition you may submit sketches, aerial photos, or other site plans to aid in the identification of buildings listed in Part II and their locations with respect to the stacks listed in Part I. **REQUIRED**

Attachment E212: Unit Emissions Supplemental Application Form

Applicant Name: NTE Connecticut, LLC
Unit No.: AB

DEEP USE ONLY
App. No.:

Complete this form in accordance with the instructions (DEEP-NSR-INST-212) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete a separate form for *each* unit.

Questions? Visit the Air Permitting web page or contact the Air Permitting Engineer of the Day at 860-424-4152.

Part I: Unit Emission Information

Pollutant	Potential Emissions at Maximum Capacity		Proposed Allowable Emissions		
	lb/hr	tpy	lb/hr	Other Units *(specify)*	tpy
Criteria Air Pollutants					
PM	0.42	1.8	0.42	0.005 lb/MMBtu	0.97
PM_{10}	0.42	1.8	0.42	0.005 lb/MMBtu	0.97
$PM_{2.5}$ Total (filterable + condensable)	0.42	1.8	0.42	0.005 lb/MMBtu	0.97
SO_x	0.13	0.55	0.13	0.0015 lb/MMBtu	0.29
NO_x	0.71	3.1	0.71	0.0085 lb/MMBtu	1.6
CO	3.11	13.6	3.11	0.037 lb/MMBtu	6.2
VOC	0.34	1.5	0.34	0.0041 lb/MMBtu	0.78
Pb	4.1E-05	1.8E-04	4.1E-05	4.9E-07 lb/MMBtu	9.5E-05
GHG	9,831	43,058	9,831	119 lb/MMBtu	22,610
Hazardous or Other Air Pollutants					
See Appendix A					

Potential Emissions Calculation Basis: Vendor Data

Proposed Allowable Emissions Calculation Basis: Vendor Data and 4,600 hrs/yr of operation

Part II: Regulatory Standards

Enter the regulatory standard(s) and the proposed allowable emissions for each pollutant emitted by the unit using the same units (e.g., ppmvd, lb/MMBTU, lb/hour, lb/day, etc.). More than one regulatory standard will often apply to a unit for a particular pollutant, list all that apply. Enter the regulatory citation(s) for the standard(s).

NOTE: The applicant should be aware of any existing regulatory standard applicable to the unit and should not propose allowable emissions in excess of the regulatory standard(s).

Pollutant	Regulatory Standard(s) *(specify units)*	Proposed Allowable Emissions *(specify units)*	Regulatory Citation(s)
Criteria Air Pollutants			
PM			
PM_{10}			
$PM_{2.5}$ Total (filterable + condensable)			
SO_x			
NO_x			
CO			
VOC			
Pb			
GHG			
Hazardous or Other Air Pollutants *(Standards other than RCSA §22a-174-29)*			

Part III: Attachments

Please check the attachment being submitted as verification that all applicable attachments have been submitted with this application form. When submitting such documents, please label the documents as indicated in this Part (e.g., Attachment E212-A, etc.) and be sure to include the applicant's name.

☒	Attachment E212-A:	*Sample Calculations*- Submit sample calculations used to determine all emissions rates, excluding GHG. See Attachment E212-C for GHG emissions. **REQUIRED**
☒	Attachment E212-B:	*RCSA section 22a-174-29 Hazardous Air Pollutants Compliance* – Submit a completed CTMASC spreadsheet**,** or equivalent, to demonstrate compliance with RCSA section 22a-174-29. **REQUIRED**
☒	Attachment E212-C:	*Greenhouse Gas Emissions* – Submit a completed CO_2 Equivalents Calculator Spreadsheet, or equivalent, used to quantify Greenhouse Gas emissions, **REQUIRED**

Attachment E212: Unit Emissions Supplemental Application Form

Applicant Name: NTE Connecticut, LLC
Unit No.: CT & DB

DEEP USE ONLY
App. No.:

Complete this form in accordance with the instructions (DEEP-NSR-INST-212) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete a separate form for *each* unit.

Questions? Visit the Air Permitting web page or contact the Air Permitting Engineer of the Day at 860-424-4152.

Part I: Unit Emission Information

Pollutant	Potential Emissions at Maximum Capacity		Proposed Allowable Emissions		
	lb/hr	tpy	lb/hr	Other Units *(specify)*	tpy
Criteria Air Pollutants					
PM	30.0	131.4	30.0	See Attached	100.8
PM_{10}	30.0	131.4	30.0	Text and Tables	100.8
$PM_{2.5}$ Total (filterable + condensable)	30.0	131.4	30.0		100.8
SO_x	5.6	24.7	5.6		24.7
NO_x	54.9	240.6	54.9		133.9
CO	17.3	75.8	17.3		142.4
VOC	9.9	43.4	9.9		48.3
Pb	3.0E-03	1.3E-02	3.0E-03		1.8E-03
GHG	460,328	2.0E06	460,328		1,966,937
Hazardous or Other Air Pollutants					
See Appendix A					

Potential Emissions Calculation Basis: Vendor Data

Proposed Allowable Emissions Calculation Basis: Vendor Data/operating restrictions in attached text

Part II: Regulatory Standards

Enter the regulatory standard(s) and the proposed allowable emissions for each pollutant emitted by the unit using the same units (e.g., ppmvd, lb/MMBTU, lb/hour, lb/day, etc.). More than one regulatory standard will often apply to a unit for a particular pollutant, list all that apply. Enter the regulatory citation(s) for the standard(s).

NOTE: The applicant should be aware of any existing regulatory standard applicable to the unit and should not propose allowable emissions in excess of the regulatory standard(s).

Pollutant	Regulatory Standard(s) *(specify units)*	Proposed Allowable Emissions *(specify units)*	Regulatory Citation(s)
Criteria Air Pollutants			
PM			
PM_{10}			
$PM_{2.5}$ Total (filterable + condensable)			
SO_x	0.06 lb/MMBtu	0.0015 lb/MMBtu	40 CFR 60.4320(a)
NO_x	15 ppmvd @15% O2	2.0 ppmvdc (gas) 5.0 ppmvdc (ULSD	40 CFR 60.4330(a)(2)
CO			
VOC			
Pb			
GHG			
Hazardous or Other Air Pollutants *(Standards other than RCSA §22a-174-29)*			

Part III: Attachments

Please check the attachment being submitted as verification that all applicable attachments have been submitted with this application form. When submitting such documents, please label the documents as indicated in this Part (e.g., Attachment E212-A, etc.) and be sure to include the applicant's name.

☒	Attachment E212-A:	*Sample Calculations*- Submit sample calculations used to determine all emissions rates, excluding GHG. See Attachment E212-C for GHG emissions. **REQUIRED**
☒	Attachment E212-B:	*RCSA section 22a-174-29 Hazardous Air Pollutants Compliance* – Submit a completed CTMASC spreadsheet**,** or equivalent, to demonstrate compliance with RCSA section 22a-174-29. **REQUIRED**
☒	Attachment E212-C:	*Greenhouse Gas Emissions* – Submit a completed CO_2 Equivalents Calculator Spreadsheet, or equivalent, used to quantify Greenhouse Gas emissions, **REQUIRED**

Attachment E212: Unit Emissions Supplemental Application Form

DEEP USE ONLY
App. No.: ______

Applicant Name: NTE Connecticut, LLC
Unit No.: EG

Complete this form in accordance with the instructions (DEEP-NSR-INST-212) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete a separate form for *each* unit.

Questions? Visit the Air Permitting web page or contact the Air Permitting Engineer of the Day at 860-424-4152.

Part I: Unit Emission Information

Pollutant	Potential Emissions at Maximum Capacity		Proposed Allowable Emissions		
	lb/hr	tpy	lb/hr	Other Units *(specify)*	tpy
Criteria Air Pollutants					
PM	0.55	2.4	0.61	0.20 g/kW-hr	0.091
PM_{10}	0.55	2.4	0.61	0.20 g/kW-hr	0.091
$PM_{2.5}$ Total (filterable + condensable)	0.55	2.4	0.61	0.20 g/kW-hr	0.091
SO_x	0.02	0.08	0.02	15 ppmw S fuel	0.003
NO_x	17.64	77.2	19.5	6.4 g/kW-hr	2.92
CO	9.65	42.2	10.6	3.5 g/kW-hr	1.60
VOC	0.88	3.9	0.97	0.32 g/kW-hr	0.13
Pb	1.3E-05	5.8E-05	1.3E-05	1.1E-06 lb/MMBtu	2.0E-06
GHG	2,053	8,991	2,053		308
Hazardous or Other Air Pollutants					
See Appendix A					

Potential Emissions Calculation Basis: Vendor Data

Proposed Allowable Emissions Calculation Basis: **<u>Vendor Data and 300 hr/yr</u>**

Part II: Regulatory Standards

Enter the regulatory standard(s) and the proposed allowable emissions for each pollutant emitted by the unit using the same units (e.g., ppmvd, lb/MMBTU, lb/hour, lb/day, etc.). More than one regulatory standard will often apply to a unit for a particular pollutant, list all that apply. Enter the regulatory citation(s) for the standard(s).

NOTE: The applicant should be aware of any existing regulatory standard applicable to the unit and should not propose allowable emissions in excess of the regulatory standard(s).

Pollutant	**Regulatory Standard(s)** *(specify units)*	**Proposed Allowable Emissions** *(specify units)*	**Regulatory Citation(s)**
Criteria Air Pollutants			
PM	0.20 g/kW-hr	0.20 g/kW-hr	40 CFR 60.4202(a)(2)
PM_{10}	0.20 g/kW-hr	0.20 g/kW-hr	40 CFR 60.4202(a)(2)
$PM_{2.5}$ Total (filterable + condensable)	0.20 g/kW-hr	0.20 g/kW-hr	40 CFR 60.4202(a)(2)
SO_x			
NO_x	6.4 g/kW-hr (NOx + VOC)	6.4 g/kW-hr	40 CFR 60.4202(a)(2)
CO	3.5 g/kW-hr	3.5 g/kW-hr	40 CFR 60.4202(a)(2)
VOC			
Pb			
GHG			
Hazardous or Other Air Pollutants *(Standards other than RCSA §22a-174-29)*			

Part III: Attachments

Please check the attachment being submitted as verification that all applicable attachments have been submitted with this application form. When submitting such documents, please label the documents as indicated in this Part (e.g., Attachment E212-A, etc.) and be sure to include the applicant's name.

☒	Attachment E212-A:	*Sample Calculations*- Submit sample calculations used to determine all emissions rates, excluding GHG. See Attachment E212-C for GHG emissions. **REQUIRED**
☒	Attachment E212-B:	*RCSA section 22a-174-29 Hazardous Air Pollutants Compliance* – Submit a completed CTMASC spreadsheet**,** or equivalent, to demonstrate compliance with RCSA section 22a-174-29. **REQUIRED**
☒	Attachment E212-C:	*Greenhouse Gas Emissions* – Submit a completed CO_2 Equivalents Calculator Spreadsheet, or equivalent, used to quantify Greenhouse Gas emissions, **REQUIRED**

Attachment E212: Unit Emissions Supplemental Application Form

DEEP USE ONLY
App. No.:

Applicant Name: NTE Connecticut, LLC
Unit No.: FP

Complete this form in accordance with the instructions (DEEP-NSR-INST-212) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete a separate form for *each* unit.

Questions? Visit the Air Permitting web page or contact the Air Permitting Engineer of the Day at 860-424-4152.

Part I: Unit Emission Information

Pollutant	Potential Emissions at Maximum Capacity		Proposed Allowable Emissions		
	lb/hr	tpy	lb/hr	Other Units *(specify)*	tpy
Criteria Air Pollutants					
PM	0.10	0.44	0.10	0.20 g/kW-hr	0.015
PM_{10}	0.10	0.44	0.10	0.20 g/kW-hr	0.015
$PM_{2.5}$ Total (filterable + condensable)	0.10	0.44	0.10	0.20 g/kW-hr	0.015
SO_x	0.003	0.013	0.003	15 ppmw S fuel	0.0005
NO_x	2.0	8.8	2.0	4.0 g/kW-hr	0.30
CO	1.8	7.7	1.8	3.5 g/kW-hr	0.26
VOC	0.10	0.44	0.10	0.2 g/kW-hr	0.015
Pb	2.1E-06	9.3E-06	2.1E-06	1.1E-06 lb/MMBtu	3.2E-07
GHG	330	1,444	330		49
Hazardous or Other Air Pollutants					

Potential Emissions Calculation Basis: Vendor Data

Proposed Allowable Emissions Calculation Basis: **Vendor Data and 300 hr/yr**

Part II: Regulatory Standards

Enter the regulatory standard(s) and the proposed allowable emissions for each pollutant emitted by the unit using the same units (e.g., ppmvd, lb/MMBTU, lb/hour, lb/day, etc.). More than one regulatory standard will often apply to a unit for a particular pollutant, list all that apply. Enter the regulatory citation(s) for the standard(s).

NOTE: The applicant should be aware of any existing regulatory standard applicable to the unit and should not propose allowable emissions in excess of the regulatory standard(s).

Pollutant	Regulatory Standard(s) *(specify units)*	Proposed Allowable Emissions *(specify units)*	Regulatory Citation(s)
Criteria Air Pollutants			
PM	0.20 g/kW-hr	0.20 g/kW-hr	40 CFR 60.4205(c)
PM_{10}	0.20 g/kW-hr	0.20 g/kW-hr	40 CFR 60.4205(c)
$PM_{2.5}$ Total (filterable + condensable)	0.20 g/kW-hr	0.20 g/kW-hr	40 CFR 60.4205(c)
SO_x			
NO_x	4.0 g/kW-hr (NOx + VOC)	4.0 g/kW-hr	40 CFR 60.4205(c)
CO	3.5 g/kW-hr	3.5 g/kW-hr	40 CFR 60.4205(c)
VOC			
Pb			
GHG			
Hazardous or Other Air Pollutants *(Standards other than RCSA §22a-174-29)*			

Part III: Attachments

Please check the attachment being submitted as verification that all applicable attachments have been submitted with this application form. When submitting such documents, please label the documents as indicated in this Part (e.g., Attachment E212-A, etc.) and be sure to include the applicant's name.

☒	Attachment E212-A:	*Sample Calculations*- Submit sample calculations used to determine all emissions rates, excluding GHG. See Attachment E212-C for GHG emissions. **REQUIRED**
☒	Attachment E212-B:	*RCSA section 22a-174-29 Hazardous Air Pollutants Compliance* – Submit a completed CTMASC spreadsheet**,** or equivalent, to demonstrate compliance with RCSA section 22a-174-29. **REQUIRED**
☒	Attachment E212-C:	*Greenhouse Gas Emissions* – Submit a completed CO_2 Equivalents Calculator Spreadsheet, or equivalent, used to quantify Greenhouse Gas emissions, **REQUIRED**

Attachment E212: Unit Emissions Supplemental Application Form

Applicant Name: NTE Connecticut, LLC
Unit No.: GH

DEEP USE ONLY
App. No.:

Complete this form in accordance with the instructions (DEEP-NSR-INST-212) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete a separate form for *each* unit.

Questions? Visit the Air Permitting web page or contact the Air Permitting Engineer of the Day at 860-424-4152.

Part I: Unit Emission Information

Pollutant	Potential Emissions at Maximum Capacity		Proposed Allowable Emissions		
	lb/hr	tpy	lb/hr	Other Units *(specify)*	tpy
Criteria Air Pollutants					
PM	0.06	0.26	0.06	0.005 lb/MMBtu	0.26
PM_{10}	0.06	0.26	0.06	0.005 lb/MMBtu	0.26
$PM_{2.5}$ Total (filterable + condensable)	0.06	0.26	0.06	0.005 lb/MMBtu	0.26
SO_x	0.02	0.08	0.02	0.0015 lb/MMBtu	0.08
NO_x	0.13	0.57	0.13	0.012 lb/MMBtu	0.64
CO	0.44	1.9	0.44	0.037 lb/MMBtu	1.94
VOC	0.04	0.18	0.04	0.0034 lb/MMBtu	0.18
Pb	5.9E-06	2.6E-05	5.9E-06	4.9E-07 lb/MMBtu	2.6E-05
GHG	1,404	6,151	1,404	119 lb/MMBtu	6,151
Hazardous or Other Air Pollutants					
See Appendix A					

Potential Emissions Calculation Basis: **Vendor Data**

Proposed Allowable Emissions Calculation Basis: **Vendor Data and 4,000 hrs/yr of operation**

Part II: Regulatory Standards

Enter the regulatory standard(s) and the proposed allowable emissions for each pollutant emitted by the unit using the same units (e.g., ppmvd, lb/MMBTU, lb/hour, lb/day, etc.). More than one regulatory standard will often apply to a unit for a particular pollutant, list all that apply. Enter the regulatory citation(s) for the standard(s).

NOTE: The applicant should be aware of any existing regulatory standard applicable to the unit and should not propose allowable emissions in excess of the regulatory standard(s).

Pollutant	Regulatory Standard(s) *(specify units)*	Proposed Allowable Emissions *(specify units)*	Regulatory Citation(s)
Criteria Air Pollutants			
PM			
PM_{10}			
$PM_{2.5}$ Total (filterable + condensable)			
SO_x			
NO_x			
CO			
VOC			
Pb			
GHG			
Hazardous or Other Air Pollutants *(Standards other than RCSA §22a-174-29)*			

Part III: Attachments

Please check the attachment being submitted as verification that all applicable attachments have been submitted with this application form. When submitting such documents, please label the documents as indicated in this Part (e.g., Attachment E212-A, etc.) and be sure to include the applicant's name.

☒	Attachment E212-A:	*Sample Calculations*- Submit sample calculations used to determine all emissions rates, excluding GHG. See Attachment E212-C for GHG emissions. **REQUIRED**
☒	Attachment E212-B:	*RCSA section 22a-174-29 Hazardous Air Pollutants Compliance* – Submit a completed CTMASC spreadsheet**,** or equivalent, to demonstrate compliance with RCSA section 22a-174-29. **REQUIRED**
☒	Attachment E212-C:	*Greenhouse Gas Emissions* – Submit a completed CO_2 Equivalents Calculator Spreadsheet, or equivalent, used to quantify Greenhouse Gas emissions, **REQUIRED**

ATTACHMENT F – PREMISES INFORMATION FORM

Provided on the following pages is a completed Premises Information form (DEEP-APP-217).

Attachment F: Premises Information Form

Applicant Name: NTE Connecticut, LLC

DEEP USE ONLY
App. No.:

Complete this form in accordance with the instructions (DEEP-NSR-INST-217) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete Parts I through VI of this form, as applicable, for only the equipment which is located at the premises prior to the submittal of this application package. Unit(s) or modifications that are the subject of this application package are addressed in Part VII of this form.

Questions? Visit the Air Permitting web page or contact the Air Permitting Engineer of the Day at 860-424-4152

Note: This form is not required if you indicated in Part IV.8 of the *Permit Application for Stationary Sources of Air Pollution New Source Review Form (DEEP-NSR-APP-200) that* the premises is operating under the General Permit to Limit Potential to Emit.

Part I: Premises Information Summary

Answer each question unless directed to do otherwise. Complete the Part(s) indicated as well as Part VII.

Question	Check One	If Yes….
A. Is this a new premises? (i.e. no air pollution emitting equipment on site)	☒ Yes ☐ No	Skip Questions B through G and continue on to Part VII of this form.
B. Is the premises operating under a Title V permit?	☐ Yes ☐ No	Permit Number: Issue Date: Skip Questions C through G and continue on to Part VII of this form.
C. Is there any equipment operating under a New Source Review Permit (permit) or Air Registration (registration) at the premises?	☐ Yes ☐ No	Complete Part II of this form.
D. Are there any external combustion units, automotive refinishing operations, nonmetallic mineral processing equipment, emergency engines or surface coating operations operating under RCSA section 22a-174-3b at the premises?	☐ Yes ☐ No	Complete Part III of this form.
E. Are there any external combustion units, automotive refinishing operations, nonmetallic mineral processing equipment, emergency engines or surface coating operations operating under RCSA section 22a-174-3c at the premises?	☐ Yes ☐ No	Complete Part IV of this form.
F. Are there any emissions units operating at the premises that have potential emissions of any air pollutant below the permitting thresholds of RCSA section 22a-174-3a which have not been captured in Question E?	☐ Yes ☐ No	Complete Part V of this form.
G. Is the premises operating under a premises-wide annual limitation (other than GPLPE or RCSA section 22a-174-3c) for any air pollutant?	☐ Yes ☐ No	Complete Part VI of this form.

Part II: Permits and Registrations

Complete this part, if "Yes" was answered to Question C in Part I of this form. List each piece of equipment operating under a permit or registration located at this premises. Provide the potential emissions for each pollutant as limited by such permit or registration in tons per year for each unit. Calculate the total potential emissions from equipment operating under permits or registrations for the premises.

Permit / Registration Number	Equipment Description	Permit/Registration Issuance Date	Potential Emissions from Permit or Registration (tpy)								
			PM	PM_{10}	$PM_{2.5}$*	SO_x	NO_x	VOC	CO	Pb	GHG
Totals											

* $PM_{2.5}$ should include filterable $PM_{2.5}$ plus condensable $PM_{2.5}$

Part III: Units Operating Under RCSA section 22a-174-3b

Complete this part, if "Yes" was answered to Question D in Part I of this form. Enter the following information for each unit operating under RCSA section 22a-174-3b. Such units may include external combustion units, automotive refinishing operations, nonmetallic mineral processing equipment, emergency engines or surface coating operations. Calculate the total potential emissions from the equipment as limited by RCSA section 22a-174-3b.

Equipment Type	Const. Date	Maximum Rated Capacity of Equipment	Potential Emissions as Limited by RCSA section 22a-174-3b (tpy)								
			PM	PM_{10}	$PM_{2.5}$*	SO_x	NO_x	VOC	CO	Pb	GHG
Totals											

* $PM_{2.5}$ should include filterable $PM_{2.5}$ plus condensable $PM_{2.5}$

Emissions Calculation Basis: ____

Part IV: Units Operating Under RCSA section 22a-174-3c

Complete this part, if "Yes" was answered to Question E in Part I of this form. Check off the types of equipment that is operating at the premises under RCSA section 22a-174-3c. Check all that apply. Calculate the total potential emissions from the equipment limited by RCSA section 22a-174-3c for each pollutant.

Equipment Operating Under RCSA section 22a-174-3c (Check all that apply)		**Fuels Used (Check all that apply)**	**Number of Fuels Used**	**Potential Emissions for Each Pollutant (tpy)**	**Total Potential Emissions for Each Pollutant (tpy)**
External Combustion Unit	☐	☐ Gaseous Fuel ☐ Distillate Oil or a blend of distillate oil and biodiesel fuel ☐ Residual Oil or a blend of residual oil and biodiesel fuel (boiler only) ☐ Propane		**15**	
Emergency Engine	☐				
Nonmetallic Mineral Processing Equipment	☐	**N/A**	**N/A**	**15**	
Automotive Refinishing Operation	☐	**N/A**	**N/A**	**15**	
Surface Coating Operation	☐	**N/A**	**N/A**	**15**	
				Totals for Each Pollutant (tpy)	

Potential emissions of any individual air pollutant for a stationary source operating under RCSA section 22a-174-3c is less than 15 tons per year unless otherwise determined by a permit or order. Please be aware that if different units are operating with the same fuel, the most stringent limitation for that fuel applies to the premises.

Part V: Other Equipment

Complete this part, if “Yes” was answered to Question F in Part I of this form. Only include units which have not been captured elsewhere on this form and have potential emissions between 5 and 15 tons per year of any individual pollutant. If it is determined that premises-wide annual emissions of a pollutant are within 90% of major source thresholds, include all units with potential emissions greater than one ton per year on this table. Calculate the total potential emissions.

Equipment Description	Const. Date	Maximum Rated Capacity of Equipment	Potential Emissions as Defined in RCSA section 22a-174-1(91) (tpy)								
			PM	PM_{10}	$PM_{2.5}$*	SO_x	NO_x	VOC	CO	Pb	GHG
Totals											

* $PM_{2.5}$ should include filterable $PM_{2.5}$ plus condensable $PM_{2.5}$

Emissions Calculation Basis: ____

Part VI: Premises-Wide Annual Limitations

Complete this part, if “Yes” was answered to Question G in Part I of this form. List all premises-wide annual limitations applicable to this premises that appear in a permit or order. **Do not include limitations under RCSA section 22a-174-3c.**

Permit or Order Number	Pollutant Limited	Enforceable Premises-Wide Limitation (tpy)

Part VII: Premises Summary

Ozone Non-Attainment Status: ☒ **Serious** ☐ **Severe**

$PM_{2.5}$ Attainment Status: ☒ **Attainment** ☐ **Non-Attainment**

A. Current Premises Potential Emissions

List the applicable potential emissions totals from Parts II through VI, if required to complete those sections. Calculate the *Total Current Premises Potential Emissions* applying any applicable premise-wide limitations. A source that answered "Yes" to Question A or B in Part I of this form would only complete the last three rows of the table below.

Form Part	Part Description	Potential Emissions (tpy)								
		PM	PM_{10}	$PM_{2.5}$*	SO_x	NO_x	VOC	CO	Pb	GHG
Part II	**Total Potential Emissions as Limited by Permit or Registration**									
Part III	**Total Potential Emissions as Limited by RCSA section 22a-174-3b**									
Part IV	**Total Potential Emissions as Limited by RCSA section 22a-174-3c**									
Part V	**Total Potential Emissions from Other Sources**									
Part VI	**Applicable Premises-Wide Annual Limitations**									
Total Current Premises Potential Emissions		0	0	0	0	0	0	0	0	0
Major Source Thresholds (severe/serious)		**100**	**100**	**100**	**100**	**25/50**	**25/50**	**100**	**100**	**100,000**
Existing Major Stationary Source?		☐	☐	☐	☐	☐	☐	☐	☐	☐

* $PM_{2.5}$ should include filterable $PM_{2.5}$ plus condensable $PM_{2.5}$

If any pollutant is checked above**,** this premises **is** an existing major stationary source.

If no pollutants are checked above, this premises **is not** an existing major stationary source.

Go on to Part VII.B.

B. Proposed Project Allowable Emissions

List the proposed allowable emissions from the proposed project for the equipment or modifications included in this application package from *Attachment E: Unit Emissions (DEEP-AIR-APP-212)*.

Totals	Pollutant Emissions (tpy)								
	PM	PM_{10}	$PM_{2.5}$*	SO_x	NO_x	VOC	CO	Pb	GHG
Proposed Allowable Emissions	102.2	102.2	102.2	25.1	139.4	49.4	153.3	0.02	1,996,602
Major Source Thresholds (severe/serious)	**100**	**100**	**100**	**100**	**25/50**	**25/50**	**100**	**100**	**100,000**
Project Major Source?	☒	☒	☒	☐	☒	☐	☒	☐	☒

* $PM_{2.5}$ should include filterable $PM_{2.5}$ plus condensable $PM_{2.5}$

If any pollutant is checked above, the proposed project **is** major in and of itself.

If no pollutants are checked above, the project **is not** major in and of itself.

Go on to Part VII.C.

C. New Premises Total Emissions

List the *Current Premises Potential Emissions* and the *Proposed Allowable Emissions* values from Parts VII.A and B. Calculate the *New Premises Total Emissions*.

Totals	Pollutant Emissions (tpy)								
	PM	PM_{10}	$PM_{2.5}$*	SO_x	NO_x	VOC	CO	Pb	GHG
Total Current Premises Potential Emissions (Part VII.A)	0	0	0	0	0	0	0	0	0
Proposed Allowable Emissions (Part VII.B)	102.2	102.2	102.2	25.1	139.4	49.4	153.3	0.02	1,996,602
New Premises Total Emissions	102.2	102.2	102.2	25.1	139.4	49.4	153.3	0.02	1,996,602
Major Source Thresholds (severe/serious)	**100**	**100**	**100**	**100**	**25/50**	**25/50**	**100**	**100**	**100,000**
Premises Major Source After Project?	☒	☒	☒	☐	☒	☐	☒	☐	☒

* $PM_{2.5}$ should include filterable $PM_{2.5}$ plus condensable $PM_{2.5}$

If any pollutant is checked above, the premises **will be** considered a major stationary source after the approval of the proposed project.

If no pollutants are checked above, the premises **will not be** considered a major stationary source after the approval of the proposed project.

Go on to Part VII.D**.**

D. Form Requirements

Based on the results in Parts VII.A through VII.C of this form the following forms are required to be completed for each pollutant:

Premises Major Stationary Source?	Project Itself Major Stationary Source?	Premises After Project is Major Stationary Source?	Forms Required to Be Completed
Part VII.A	**Part VII.B**	**Part VII.C**	
Yes	**Yes**	**--**	• Attachment H: Major Modification Determination Form • Attachment I: Prevention of Significant Deterioration of Air Quality (PSD) Program Form • Attachment J: Non-Attainment Review Form (for NOx, VOC or $PM_{2.5}$ only)
Yes	**No**	**--**	• Attachment H: Major Modification Determination Form (This form will direct you to complete Attachments I or J, if required.)
No	**Yes**	**--**	• Attachment I: Prevention of Significant Deterioration of Air Quality (PSD) Program Form • Attachment J: Non-Attainment Review Form (for NOx, VOC or $PM_{2.5}$ only)
No	**No**	**--**	Attachments H, I and J are not required.
--	**--**	**Yes**	If not already operating under one, the applicant is required to apply for a Title V permit within 12 months of becoming a major stationary source or the applicant must limit premises potential emissions by obtaining an approval of registration to operate under the General Permit to Limit Potential to Emit (GPLPE).

ATTACHMENT G – CONTROL TECHNOLOGY ANALYSIS

The following supplemental BACT forms are provided with this application. Attachment G2, Cost/Economic Impact Analysis form DEEP-NSR-APP-214c, was only completed for those sources and pollutants for which the top-level of control was not selected.

- Attachment G - Analysis of BACT (DEEP-NSR-APP-214a)
    - AB – CO Emissions
    - AB – NO_x Emissions
    - AB – VOC Emissions
    - AB – PM Emissions
    - AB – SO_2 Emissions
    - AB – GHGs Emissions
    - AB – H_2SO_4 Emissions
    - CT / DB – CO Emissions
    - CT / DB – NO_x Emissions
    - CT / DB – VOC Emissions
    - CT / DB – PM Emissions
    - CT / DB – SO_2 Emissions
    - CT / DB – GHGs Emissions
    - CT / DB – H_2SO_4 Emissions
    - CT / DB – NH_3 Emissions
- Attachment G1 - Background Search - Existing BACT Determinations (DEEP-NSR-APP-214b)
- Attachment G2 - Cost/Economic Impact Analysis (DEEP-NSR-APP-214c)
    - AB – CO Emissions
    - AB – NO_x Emissions
    - AB – VOC Emissions
    - CT / DB – GHG Emissions
- Attachment G3 - Summary of BACT Review (DEEP-NSR-APP-214d)

Also provided is a control technology analysis to satisfy both the LAER and BACT requirements of the Project.

LOWEST ACHIEVABLE EMISSION RATE ANALYSIS

The Project is located in an area designated as nonattainment for O_3 and has potential NO_x emissions above the new major source threshold. Therefore, the Project must implement LAER controls to minimize NO_x emissions.

Definition of LAER

LAER is defined under 40 Code of Federal Regulations (CFR) 51.165(a)(1)(xiii) as the more stringent rate of emissions based on the following:

1. The most stringent emissions limitation which is contained in the implementation plan of any State for such class or category of stationary source, unless the owner or operator of the proposed stationary source demonstrates that such limitations are not achievable; or

2. The most stringent emissions limitation which is achieved in practice by such class or category of stationary sources. In no event shall the application of the term permit a proposed new or modified stationary source to emit any pollutant in excess of the amount allowable under an applicable new source standard of performance.

The DEEP has incorporated this definition of LAER into the regulations under RCSA Section 22a-174-1(60). In no event shall a LAER emission limitation allow a new source to emit a subject air contaminant in excess of the amount permitted under any applicable emission standard.

To determine the most stringent emission limitation, as defined above, several sources were utilized, including recently issued preconstruction permits for other combined cycle combustion sources, USEPA's Reasonably Available Control Technology (RACT)/BACT/LAER Clearinghouse (RBLC) database, and individual state agency databases.

LAER Analysis Approach

LAER is expressed as an emission rate and may be achieved from one, or a combination of, the following emission controls:

- A change in raw materials where substitution to a lower emitting raw material may be technically feasible. For the Project, the "raw material" would be the fuel combusted in the CTG. Natural gas is the lowest NO_x emitting fossil fuel and will be the primary fuel for the CTG and the sole fuel for the duct burners and auxiliary boiler. Limited firing of ULSD as backup fuel is proposed to ensure that a fuel is always available to the CTG to maintain power to the transmission grid.
- Process modifications where a change in the process may result in lower emissions. For the project, the "process" is the CTG. The proposed CTG will utilize state of the art efficient combustion technology to minimize the formation of NO_x emissions as combustion byproducts.
- Add-on pollution control equipment to capture and reduce air pollutant emissions. The Project will install and operate SCR to control NO_x emissions from the CTG. This is the most efficient add-on pollution control available to reduce NO_x emissions from combined cycle CTG projects.

As noted above, LAER is the more stringent of any limitation in a state's approved implementation plan, or any emissions limitation which is achieved in practice by such class or category of stationary sources. For combined cycle CTG projects, the most stringent NO_x emission limits can be found in previously permitted projects subject to PSD or NNSR requirements. In order to identify the "most stringent emissions limitation which is achieved in practice" by a combined cycle CTG facility, numerous sources of information were evaluated. These sources included the following:

- USEPA's RBLC;

- The California Air Resources Board (CARB) BACT Clearinghouse;
- USEPA regional air permitting websites; and
- State environmental agency websites.

In addition to these sources of information, additional publicly available information obtained through Tetra Tech's experience, such as permits for individual projects not listed in the RBLC or agency websites, was also included in the analysis. This research was conducted for the Project's emission sources that emit NO_x including:

- Combined cycle CTG and duct burners;
- Auxiliary boiler;
- Natural gas heater; and
- Emergency engines.

Following is the LAER determination for NO_x emissions for each of the above-listed emission sources. The analysis follows the guidelines presented above.

Combined Cycle Combustion Turbines and Duct Burners

The LAER analysis for the CTG and duct burners is combined, as the duct burners cannot operate without the CTG in operation. Since the CTG can operate with and without duct firing, LAER was reviewed for both of these operating scenarios. In a combustion process, NO_x is formed during the combustion of fuel and is generally classified as either thermal NO_x or fuel-related NO_x. Thermal NO_x results when atmospheric N_2 is oxidized at high temperatures to produce nitric oxide (NO), nitrogen dioxide (NO_2), and other NO_x. The major factors influencing the formation of thermal NO_x are peak flame temperatures, availability of O_2 at peak flame temperatures, and residence time within the combustion zone. Fuel-related NO_x is formed from the oxidation of chemically bound nitrogen in the fuel. Fuel-related NO_x is generally minimal for natural gas combustion and, therefore, NO_x formation from combustion of natural gas is mostly due to thermal NO_x formation. ULSD contains a small amount of chemically bound nitrogen and NO_x formation from combustion of ULSD is due to both thermal and fuel NO_x formation.

Reduction in thermal NO_x formation can be achieved using combustion controls, and flue gas treatment can further reduce NO_x emissions to the atmosphere. Available combustion controls include water or steam injection and low-emission combustors. Modern CTGs generally utilize DLN combustors for natural gas firing where the natural gas and air are pre-mixed prior to combustion. DLN combustors are designed to operate below the stoichiometric ratio, thereby reducing thermal NO_x formation within the combustion chamber by reducing peak flame temperatures. For ULSD firing, water injection is typically used to minimize NO_x emissions by also limiting peak flame temperatures.

Evaluation of Emission Limiting Measures

Change in Raw Materials

The raw material is the fuel combusted in the CTG and duct burners. Natural gas has been selected as the primary fuel for the Project, and natural gas is the lowest NO_x emitting fuel available. In order to ensure fuel availability at all times, limited firing of ULSD will occur in the CTG when natural gas is not available; natural gas will be the sole fuel for the duct burners. The reasons why firing natural gas as the sole fuel in the CTG is not feasible for the Project, and the proposed restrictions for firing of ULSD, are discussed in detail in the BACT analysis for GHG emissions.

Process Modifications

The process is the proposed combined cycle CTG. A modification to the process would be a change in the CTG design to limit NO_x emissions from the unit. The Project is proposing to utilize DLN combustors during gas firing and water injection during ULSD firing in the CTG to minimize NO_x formation during the combustion process. The duct burners will be low-NO_x burners to minimize NO_x formation. These are the only known process modifications available for a large utility-scale combined cycle CTG projects.

A process modification available for small-scale combustion turbines is catalytic combustion. Kawasaki markets combustion turbines equipped with catalytic combustors named K-Lean™ (formerly XONON). Kawasaki is the only manufacturer that offers catalytic combustors and its largest combustion turbine is 18 MW. Due to size limitations, K-Lean™ was determined to be technically infeasible for the Project.

Add-on Controls

Available add-on pollution controls to reduce NO_x from combustion sources include the following.

- *SCR*: This is a catalytic reduction technology using NH_3 as a reagent that has been in widespread use on combined cycle CTGs for many years. The SCR is located in the HRSG downstream from the CTG and the duct burners to control NO_x from both of these combustion sources. SCR is widely recognized as the most stringent available control technology for NO_x emissions from combustion sources.
- *DLN Combustion*: CTG vendors offer what is known as lean pre-mix combustors for natural gas firing, which limits NO_x formation by reducing peak flame temperatures. DLN is generally used in combination with SCR.
- *Water or Steam Injection*: Water or steam injection has been historically used for both gas- and oil-fired CTGs, but for new units, water or steam injection is generally used only for liquid-fuel firing. Water or steam injection is less effective than DLN, but DLN combustion cannot be used for liquid fuels. Water injection will be used in the CTG during firing of ULSD.
- *SNCR (selective non-catalytic reduction)*: Selective non-catalytic reduction technology uses NH_3 or urea as a reagent that is injected into the hot exhaust gases. SNCR is widely used as a retrofit technology for steam-generating boilers, but has never been applied to control NO_x emissions from combined cycle CTGs.
- *EMx*™: This is an oxidation/absorption technology using hydrogen (H_2) or CH_4 as a reactant.

SNCR and EMx™ were determined to be not technically feasible and unable to achieve further reductions than the NO_x reduction achieved by SCR. Furthermore, neither of these technologies has been applied to a combined cycle CTG. SNCR requires an exhaust gas temperature between 1,600°F and 2,100°F and typically achieves NO_x reductions of 50% or less. The exhaust gas temperature from the proposed CTG prior to the HRSG is below 1,200°F; therefore, SNCR is not technically feasible for the Project. EMx™ utilizes a catalyst that is coated with potassium carbonate to react with NO_x to form CO_2, potassium nitrite, and potassium nitrate; H_2 is used to regenerate the catalyst when it becomes saturated with the products of reaction. The maximum operating temperature range for EMx™ is 750°F with an optimal range between 500°F - 700°F. Unlike SCR, which is a passive reactor with a single reagent (NH_3), EMx™ is a complicated technology with numerous moving parts and multiple sections that are on- or off-line at any given time due to the need to regenerate with H_2 in an O_2-free environment. This complexity reduces the reliability of EMx™ compared to SCR. Furthermore, EMx™ technology has never been installed on a CTG larger than 43 MW and has not demonstrated NO_x emission levels lower than SCR. For these reasons, EMx™ was eliminated as technically infeasible for the Project.

DLN combustors during natural gas firing, water injection during ULSD firing, and SCR are all technically feasible for the proposed CTG and, in combination, represent the top-level of control; therefore, these control technologies have been selected to achieve LAER.

Most Stringent Emission Limitation in any State Implementation Plan

A review of emission limits in State Implementation Plans (SIPs) did not identify any NO_x emission limits for combined cycle CTGs that are more stringent than limits achieved in practice by recently permitted and operated projects subject to BACT and/or LAER requirements.

Most Stringent Emission Limitations Achieved in Practice

A search of permitted, large combined cycle CTG projects was conducted to identify the most stringent NO_x emission limits achieved in practice. Provided in Table G-1 is a summary of recently permitted BACT and LAER NO_x emission limits for combined cycle CTG projects larger than 100 MW firing natural gas and, to the extent available, ULSD as backup. Projects with LAER permitted emission rates are noted as such in the table. The search for permitted projects was conducted back to calendar year 2000; no limits were identified below those identified in Table G-1.

Table G-1: CTG BACT and LAER NO_x Rate Emission Limits

Facility	Location	Permit Date	CTG Model	NO_x[a,b] (ppmvdc)	Control Requirement
FP&L Okeechobee Clean Energy Center	Okechobee, FL	03/09/2016	GE 7HA.02	2.0 (gas w/o DF) 8.0 (ULSD)	BACT
Decordova Steam Electric Station	Hood, TX	03/08/2016	Siemens 231 MW or GE – 210 MW	2.0 (gas) (w/ and w/o DF)	BACT
Cricket Valley Energy Center	Dover, NY	2/03/2016	GE 7FA.05	2.0 (gas) (w/ and w/o DF)	LAER
CPV Towantic, LLC	Oxford, CT	11/30/2015	GE 7HA.01	2.0 (gas) (w/ and w/o DF) 5.0 (ULSD)	LAER
Mattawoman Energy Center	Prince George's, MD	11/13/2015	Siemens SGT-8000H	2.0 (gas) (w/ and w/o DF)	BACT
FGE Eagle Pines	Cherokee, TX	11/04/2015	Alstom GT36	2.0 (gas) (w/ and w/o DF)	BACT
Lon C. Hill Power Station	Nueces, TX	10/02/2015	Siemens SGT6-5000 or GE 7FA.05	2.0 (gas) (w/ and w/o DF)	BACT
Lordstown Energy Center	Lordstown, OH	8/28/2015	2 - Siemens SGT6-8000H or GE 7HA.01	2.0 (gas) (w/ and w/o DF)	BACT
Eagle Mountain	Eagle Mountain, TX	6/18/2015	Siemens 231 MW or GE – 210 MW	2.0 (gas) (w/ and w/o DF)	BACT
Colorado Bend II	Wharton, TX	4/01/2015	GE 7HA.02	2.0 (gas) (w/ and w/o DF)	BACT
NRG Texas SR Bertron Station	LaPorte, TX	12/19/2014	GE 7FA, Siemens SF5, or Mitsubishi M501G	2.0 (gas) (w/ and w/o DF)	BACT

Facility	Location	Permit Date	CTG Model	NO_x[a,b] (ppmvdc)	Control Requirement
Victoria Power Station	Victoria, TX	12/01/2014	GE 7FA.04	2.0 (gas) (w/ and w/o DF)	BACT
Moundsville Power	Moundsville, WV	11/21/2014	GE 7FA.05	2.0 (gas) (w/ and w/o DF)	BACT
Trinidad Generating Facility	Trinidad, TX	11/20/2014	MHI J CTG	2.0 (gas) (w/ and w/o DF)	BACT
Interstate/ Marshalltown	Marshalltwn, IA	4/14/2014	Siemens SGT6-5000F	2.0 (gas) (w/ and w/o DF)	BACT
FGE Power I and II	Mitchell County, TX	3/24/2014	Alstom GT24	2.0 (gas) (w/ and w/o DF)	BACT
Future Power PA.	Porter Twp, PA	3/4/2014	Siemens SGT6-5000F	2.0 (gas) (w/ and w/o DF)	LAER
Footprint Salem Harbor	Salem, MA	1/30/2014	GE 7FA.05	2.0 (gas) (w/ and w/o DF)	LAER
Berks Hollow	Ontelaunee Twnshp,,PA	12/17/2013	CTG not specified, 855 MW	2.0 (gas) (w/ and w/o DF)	LAER
Pinecrest Energy center	Lufkin, TX	11/12/2013	GE 7FA.05 or Siemens SGT6-5000F	2.0 (gas) (w/ and w/o DF)	BACT
Carroll County Energy	Washington Twp., OH	11/5/2013	GE 7FA	2.0 (gas) (w/ and w/o DF)	BACT
Renaissance Power	Carson City, MI	11/1/2013	Siemens 501 FD2	2.0 (gas) (w/ and w/o DF)	BACT
Langley Gulch Power	Payette, ID	8/14/2013	Siemens SGT6-5000F	2.0 (gas) (w/ and w/o DF)	BACT
Consumers Energy Thetford Station	Thetford Twp, MI	7/25/2013	F-class	3.0 (gas) (w/ and w/o DF)	BACT
Oregon Clean Energy	Oregon, OH	6/18/2013	Siemens SGT6-8000H	2.0 (gas) (w/ and w/o DF)	BACT
TECO Polk Power 2	Mulberry, FL	5/15/2013	GE 7FA	2.0 (gas) (w/ and w/o DF)	BACT
Green Energy Partners / Stonewall	Leesburg, VA	4/30/2013	GE 7FA	2.0 (gas) (w/ and w/o DF)	BACT
Garrison Energy Center	Dover, DE	1/30/2013	GE 7FA	2.0 (gas) (w/ and w/o DF) 6.0 (ULSD)	BACT
Hess Newark Energy	Newark, NJ	11/01/2012	GE 7FA.05	2.0 (gas) (w/ and w/o DF)	LAER

Facility	Location	Permit Date	CTG Model	NO_x[a,b] (ppmvdc)	Control Requirement
Pioneer Valley Generation Company	Westfield, MA	4/12/2012	Mitsubishi 501G	2.0 (gas) (w/ and w/o DF) 5.0 (ULSD)	LAER

[a] ppmvdc is parts per million by volume, dry, at 15 percent O_2

[b] DF refers to duct firing

[c] GE refers to General Electric

The permitted NO_x emission rate during natural gas firing, with and without duct firing, for all of the projects in Table G-1 is 2.0 ppmvdc with the exception of one project permitted at 3.0 ppmvdc. The permitted projects cover a wide range of CTG models and 2.0 ppmvdc has been achieved in practice at numerous facilities. No permitted projects were identified with a limit below 2.0 ppmvdc for natural gas firing. For these reasons, LAER for NO_x emissions from the combined cycle CTG and duct burners was selected as 2.0 ppmvdc during natural gas firing for all modes of operation.

For oil firing emission limits, there are far fewer recently permitted combined cycle CTG projects. The most recent permitted project with ULSD firing is the CPV Towantic project in Oxford, CT that was permitted with a NO_x limit of 5.0 ppmvdc during ULSD firing. This limit is consistent with the Pioneer Valley Generation project that also has a permitted NO_x emission rate of 5.0 ppmvdc for ULSD firing. There were no large combined cycle CTG projects identified with a NO_x limit during oil firing less than 5.0 ppmvdc. For these reasons, LAER for NO_x emissions for ULSD firing was selected as 5.0 ppmvdc.

Auxiliary Boiler

In a combustion process, NO_x is formed during the combustion of fuel and is generally classified as either thermal NO_x or fuel-related NO_x. Thermal NO_x results when atmospheric N_2 is oxidized at high temperatures to produce NO, NO_2, and other NO_x. The major factors influencing the formation of thermal NO_x are peak flame temperatures, availability of O_2 at peak flame temperatures, and residence time within the combustion zone. Fuel-related NO_x is formed from the oxidation of chemically bound nitrogen in the fuel. Fuel-related NO_x is generally minimal for natural gas combustion and, therefore, NO_x formation from combustion of natural gas is mostly due to thermal NO_x formation.

Reduction in thermal NO_x formation can be achieved using combustion controls, and flue gas treatment can further reduce NO_x emissions to the atmosphere. Available combustion controls include low-NO_x burners and flue gas recirculation (FGR). Modern auxiliary boilers generally utilize ULNB and FGR in combination to achieve the lowest NO_x emissions.

Evaluation of Emission Limiting Measures

Change in Raw Materials

The raw material is the fuel combusted in the auxiliary boiler. Natural gas has been selected as the sole fuel for the auxiliary boiler, and natural gas is the lowest NO_x emitting fuel available.

Process Modifications

The process is the proposed auxiliary boiler. A modification to the process would be a change in the boiler design to limit NO_x emissions from the unit. The Project is proposing to utilize ultra-low NO_x burners (ULNB) to minimize NO_x emissions from the boiler.

Add-on Controls

Available add-on pollution controls to reduce NO_x from combustion sources include the following.

- *SCR*: This is a catalytic reduction technology using NH_3 as a reagent SCR is widely recognized as the most stringent available control technology for NO_x emissions from combustion sources, but it has not been applied to auxiliary boilers with limited hours of operation.
- *SNCR*: This is a non-catalytic reduction technology using NH_3 or urea as a reagent that is injected into the hot exhaust gases. SNCR is widely used as a retrofit technology for steam-generating boilers but has never been applied to control NO_x emissions from natural gas-fired auxiliary boilers.

No auxiliary boilers equipped with SCR or SNCR technologies were identified. The emissions level achieved by ULNB is comparable to the natural gas-fired emissions rate for the CTG equipped with SCR; further reductions below the rate achieved by the ULNB would be insignificant. The absence of SCR on any permitted auxiliary boiler would indicate that it is not suitable for the control of NO_x emissions for an auxiliary boiler operating at a combined cycle CTG facility, and therefore, eliminated as a control option.

Most Stringent Emission Limitation in any State Implementation Plan

A review of emission limits in SIPs identified a NO_x limit of 7 parts per million volume dry (ppmvd) at 3% O_2 for natural gas-fired boilers operating in the San Joaquin Valley Air Pollution Control District (SJVAPCD) in California. This is the most stringent NO_x emission limit identified in any SIP. As this limit has been approved in SJVAPCD's SIP, LAER for the auxiliary boiler can be no less stringent than this limit in accordance with 40 CFR 51.165(a)(1)(xiii).

Most Stringent Emission Limitations Achieved in Practice

A search of permitted auxiliary boilers at combined cycle CTG projects was conducted to identify the most stringent NOx emission limits achieved in practice. Provided in Table G-2 is a summary of recently permitted BACT and LAER NO_x emission limits for auxiliary boilers at combined cycle CTG projects rated no greater than 100 MMBtu/hr firing natural gas. The search for permitted projects was conducted back to calendar year 2000, but no limits were identified below those identified in Table G-2.

Table G-2: Auxiliary Boiler BACT and LAER NOx Rate Emission Limits

Facility	Location	Permit Date	Boiler Size (MMBtu/hr)	Controls[a]	NO_x[a,b] (ppmvd)
Cricket Valley Energy Center	Dover, NY	02/03/2016	60	ULNB	7.0 (LAER)
CPV Towantic	Oxford, CT	11/30/2015	92	ULNB	7.0 (LAER)
Hess Newark Energy	Newark, NJ	11/01/2012	66	ULNB	9.0 (LAER)
Green Energy Partners / Stonewall	Leesburg, VA	04/30/2013	75	ULNB	9.0 (LAER)
FP&L Okeechobee Clean Energy Center	Okechobee, FL	03/09/2016	99.8	LNB	40
Mattawoman Energy Center	Prince George's, MD	11/13/2015	42	ULNB	9.0 (LAER)

Facility	Location	Permit Date	Boiler Size (MMBtu/hr)	Controls[a]	NO_x[a,b] (ppmvd)
Lordstown Energy Center	Lordstown, OH	08/28/2015	34	LNB	20
Eagle Mountain	Eagle Mountain, TX	06/18/2015	73	ULNB	9.0
NRG Texas SR Bertron Station	LaPorte, TX	12/19/2014	80	LNB	30
Moundsville Power	Moundsville, WV	11/21/2014	100	LNB	20
Interstate/ Marshalltown	Marshalltown, IA	11/20/2014	60	LNB	9.0
Footprint Salem Harbor	Salem, MA	01/30/2014	80	ULNB	9.0 (LAER)

[a] Concentration is parts per million by volume, dry, at 3 percent O_2.
[b] All limits are BACT except where noted
[c] LNB refers to low NO_x burner

The proposed auxiliary boiler will fire natural gas as the sole fuel and will be equipped with ULNBs; this is the most stringent level of control identified in Table G-2. The NO_x emission rate will be 7.0 ppmvd at 3% O_2, which is equivalent to the SJVAPCD SIP limit for natural gas-fired boilers, and the lowest limit permitted for any auxiliary boiler at a combined cycle CTG project. For these reasons, LAER for NO_x emissions from the auxiliary boiler was selected as 7.0 ppmvd at 3% O_2.

Natural Gas Heater

Similar to the auxiliary boiler, thermal and fuel-related NO_x can be generated from the natural gas heater. Fuel-related NO_x is generally minimal for natural gas combustion and, therefore, NO_x formation from combustion of natural gas is mostly due to thermal NO_x formation.

Reduction in thermal NO_x formation can be achieved using combustion controls, and flue gas treatment can further reduce NO_x emissions to the atmosphere. Available combustion controls for the natural gas heater include low-NO_x burners.

Evaluation of Emission Limiting Measures

Change in Raw Materials

The raw material is the fuel combusted in the natural gas heater. Natural gas has been selected as the sole fuel for the natural gas heater, and natural gas is the lowest NO_x emitting fuel available.

Process Modifications

The process is the proposed natural gas heater. A modification to the process would be a change in the heater design to limit NO_x emissions from the unit. The Project is proposing to utilize ultra-low NO_x burners (ULNB) to minimize NO_x emissions from the boiler.

Add-on Controls

Available add-on pollution controls to reduce NO_x from combustion sources include the following.

- *SCR*: This is a catalytic reduction technology using NH_3 as a reagent that has been in widespread use for many years. SCR is widely recognized as the most stringent available control technology for NO_x emissions from combustion sources, but has not been applied to natural gas heaters.

- *SNCR*: This is a non-catalytic reduction technology using NH_3 or urea as a reagent that is injected into the hot exhaust gases. SNCR is widely used as a retrofit technology for steam-generating boilers but has never been applied to control NO_x emissions from natural gas heaters.

No natural gas heaters equipped with SCR or SNCR technologies were identified. The emissions level achieved by ULNB is comparable to the natural gas-fired emissions rate for the CTG equipped with SCR; further reductions below the rate achieved by the ULNB would be insignificant. The exhaust gas temperature from the natural gas heater is less than 300°F, which is well below the minimum operating temperature of both SCR and SNCR. Therefore, SCR and SNCR were eliminated as technically infeasible for the control of NO_x emissions for a natural gas heater.

Most Stringent Emission Limitation in any State Implementation Plan

A review of emission limits in SIPs identified a NO_x limit of 7 parts per million volume dry (ppmvd) at 3% O_2 for natural gas-fired boilers and process heaters operating in the San Joaquin Valley Air Pollution Control District (SJVAPCD) in California. This is the most stringent NO_x emission limit identified in any SIP. As this limit has been approved in California's SIP, LAER for the natural gas heater can be no less stringent than this limit in accordance with 40 CFR 51.165(a)(1)(xiii).

Most Stringent Emission Limitations Achieved in Practice

A search of permitted combined cycle CTG projects was conducted to identify the most stringent NO_x emission limits achieved in practice. Provided in Table G-3 is a summary of recently permitted BACT and LAER NO_x emission limits for natural gas heaters at combined cycle CTG projects. The search for permitted projects was conducted back to calendar year 2000, but no limits were identified below those identified in Table G-3.

Table G-3: Natural Gas Heater BACT and LAER NO_x Rate Emission Limits

Facility	Location	Permit Date	Heater Size (MMBtu/hr)	Controls[a]	NO_x[a,b] (ppmvd)
Green Energy Partners / Stonewall	Leesburg, VA	04/30/2013	20	ULNB	9.0 (LAER)
FP&L Okeechobee Clean Energy Center	Okeechobee, FL	03/09/2016	<10	N/A	80
Mattawoman Energy Center	Prince George's, MD	11/13/2015	13.8	LNB	30
Interstate/ Marshalltown	Marshalltown, IA	11/20/2014	13.3	ULNB	10
CPV Valley Energy Center	Middletown, NY	08/01/2013	5	N/A	48 (LAER)

[a] Concentration is parts per million by volume, dry, at 3 percent O_2.
[b] All limits are BACT except where noted
[c] LNB refers to low NO_x burner

The proposed natural gas heater will fire natural gas as the sole fuel and will be equipped with ULNBs; this is the most stringent level of control identified in Table G-3. The proposed NO_x emission rate will be 10 ppmvd at 3% O_2, which is the lowest emission rate achievable for any commercially available natural gas heater. NTE conducted a thorough search of commercially available natural gas fired heaters and no units were identified with a performance guarantee below 10 ppm. Since 10 ppm represents the most stringent emissions limitation achieved in practice by a natural gas heater, it meets LAER requirements. For these reasons, LAER for NO_x emissions from the natural gas heater was selected as 10 ppmvd at 3% O_2.

Emergency Generator Engine

In diesel generator engines, NO_x is formed during the combustion of fuel and is generally classified as either thermal NO_x or fuel-related NO_x. Thermal NO_x results when atmospheric N_2 is oxidized at high temperatures to produce NO, NO_2, and other NO_x. The major factors influencing the formation of thermal NO_x are peak flame temperatures, availability of O_2 at peak flame temperatures, and residence time within the combustion zone. Fuel-related NO_x is formed from the oxidation of chemically bound nitrogen in the fuel. ULSD contains a small amount of chemically bound nitrogen and NO_x formation from combustion of ULSD is due to both thermal and fuel NO_x formation.

Manufacturers of stationary diesel engines have developed engine design advances to reduce NO_x formation using combustion control techniques. These developments have allowed new engines used for stationary emergency applications to meet applicable USEPA New Source Performance Standards (NSPS) Subpart IIII.

Evaluation of Emission Limiting Measures

Change in Raw Materials

The raw material for the emergency engines is the fuel. It is critical for emergency engines to have their own stand-alone fuel source in the event that the emergency includes disruption of fuel from an outside source, such as natural gas. The primary purpose of the emergency generator engine is to be able to safely shut the plant down in the event of an electric power outage. In order to maintain this important equipment protection function, ULSD, which can be stored in a small tank adjacent to the emergency generator, is the fuel of choice.

Process Modifications

Low-NO_x engine design is the only known process modification that can be made to reduce NO_x emissions from a diesel engine.

Add-on Controls

SCR is a technically feasible option for non-emergency applications to control NO_x emissions but there are no known emergency engines that are equipped with SCR. SCR can normally achieve 90% removal of NO_x emissions under steady-state operating conditions. However, the emergency generator engine will be used only for short periods of time for readiness testing and facility shutdowns in an actual emergency. For an SCR to operate properly, the catalyst must reach and maintain its minimum operating temperature. For the type of operation expected for the emergency generator engine, SCR has not been demonstrated in practice on a comparably sized unit and it is not expected that an SCR will achieve meaningful reductions and, therefore, it was eliminated as technically infeasible for the Project.

Most Stringent Emission Limitation in Any State Implementation Plan

Stationary internal combustion engines are subject to 40 CFR Part 60, Subpart IIII and 40 CFR 63, Subpart ZZZZ. These regulations require new emergency engines to meet the applicable emission standards under 40 CFR 89. A review of emission limits in SIPs did not identify any NO_x emission limits for new emergency engines that are more stringent than the limits provided in 40 CFR 89.

Most Stringent Emission Limitations Achieved in Practice

A review of recent NO_x emission limits for emergency generator diesel engines installed as part of a CTG project show that these engines were required to meet the applicable emission limitations for non-road engines under 40 CFR Part 89. No limits were found that required installation of add-on pollution controls for emergency generator diesel engines.

Selection of LAER

The Project proposes that NO_x LAER for the emergency generator diesel engine be the applicable emission limitation for this class of emergency engine under the Tier 2 standard for emergency generator engines under 40 CFR 89, which is 6.4 g/kW-hr for the sum of NO_x and non-methane hydrocarbons (NMHC) combined. The great majority of permitted projects have applied this limit to NO_x and, therefore, the Project is proposing a NO_x limit of 6.4 g/kW-hr, which is equivalent to 4.8 grams per brake-horsepower-hour (g/bhp).

Emergency Fire Pump Engine

In diesel fire pump engines, NO_x is formed during the combustion of fuel and is generally classified as either thermal NO_x or fuel-related NO_x. Thermal NO_x results when atmospheric N_2 is oxidized at high temperatures to produce NO, NO_2, and other NO_x. The major factors influencing the formation of thermal NO_x are peak flame temperatures, availability of O_2 at peak flame temperatures, and residence time within the combustion zone. Fuel-related NO_x is formed from the oxidation of chemically bound nitrogen in the fuel. ULSD contains a small amount of chemically bound nitrogen and NO_x formation from combustion of ULSD is due to both thermal and fuel NO_x formation.

Manufacturers of stationary diesel engines have developed engine design advances to reduce NO_x formation using combustion control techniques. These developments have allowed new engines used for stationary emergency applications to meet applicable USEPA NSPS Subpart IIII.

Evaluation of Emission Limiting Measures

Change in Raw Materials

The raw material for the emergency fire pump engine is the fuel. It is critical for emergency engines to have their own stand-alone fuel source in the event that the emergency includes disruption of fuel from an outside source, such as natural gas. The purpose of the emergency fire pump engine is to provide firefighting capabilities during a fire. So in order to maintain this important equipment protection function, ULSD, which can be stored in a small tank adjacent to the emergency fire pump engine, is the fuel of choice.

Process Modifications

Low-NO_x engine design is the only known process modification that can be made to reduce NO_x emissions from a diesel engine.

Add-on Controls

SCR is a technically feasible option for non-emergency applications to control NO_x emissions but there are no known emergency fire pump engines that are equipped with SCR. SCR can normally achieve 90% removal of NO_x emissions under steady-state operating conditions. However, the emergency fire pump engine will be used for short periods of time for readiness testing or in an actual emergency. For an SCR to operate properly, the catalyst must reach and maintain its minimum operating temperature. For the type of operation expected for the emergency fire pump engine, SCR has not been demonstrated in practice on a comparably sized unit and it is not expected that an SCR will achieve meaningful reductions and, therefore, it was eliminated as technically infeasible.

Most Stringent Emission Limitation in Any State Implementation Plan

Stationary internal combustion engines are subject to 40 CFR Part 60, Subpart IIII and 40 CFR 63, Subpart ZZZZ. These regulations require new emergency engines to meet the applicable emission standards under 40 CFR 60 Subpart IIII. A review of emission limits in SIPs did not identify any NO_x emission limits for new emergency engines that are more stringent than the limits provided in 40 CFR 89 or 40 CFR 60 Subpart IIII.

Most Stringent Emission Limitations Achieved in Practice

A review of recent NO_x emission limits for emergency fire pump engines installed as part of a large CTG projects show that these engines were required to meet the applicable emission limitations for non-road engines under 40 CFR 60 Subpart IIII. No limits were found that required installation of add-on pollution controls for emergency generator diesel engines.

Selection of LAER

The Project proposes that NO_x LAER for the emergency fire pump diesel engine be the applicable emission limitation for non-road engines under NSPS Subpart IIII. This meets the most stringent limit achieved in practice for an emergency fire pump diesel engine. The applicable limit under NSPS Subpart IIII for a new emergency fire pump engine rated at 305 bhp is 4.0 g/kW-hr (NO_x plus NMHC).

BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS

The Project must install PSD BACT controls for emissions of NO_x, VOC, CO, PM/PM_{10}/$PM_{2.5}$, H_2SO_4, and GHGs. Additionally, DEEP BACT must be satisfied for SO_2 and NH_3 emissions. For NO_x emissions, LAER controls will be installed, which are, by definition, the top level of control available and, therefore, satisfy BACT requirements. Accordingly, the LAER analysis for NO_x will satisfy the BACT requirement for NO_x. The following control technology analysis satisfies BACT requirements for VOC, CO, PM/PM_{10}/$PM_{2.5}$, H_2SO_4, GHGs, SO_2 and NH_3 emissions for the Project.

The BACT analysis begins with a description of the overall BACT approach, followed by pollutant-specific sections for each emissions source covered by this application for a Permit to Construct and Operate. The BACT analysis also reviews the fuels selected for each emissions source per DEEP's definition of BACT to address clean fuels.

Definition of BACT

The DEEP regulations define BACT under RCSA Section 22a-174-1 as:

> *"an emission limitation, including a limitation on visible emissions, based upon the maximum degree of reduction for each applicable air pollutant emitted from any proposed stationary source or modification which the commissioner, on a case-by-case basis, determines is achievable in accordance with section 22a-174-3a of the Regulations of Connecticut State Agencies. BACT may include, without limitation, the application of production processes, work practice standards or available methods, systems, and techniques, including fuel cleaning or treatment, the use of clean fuels, or innovative techniques for the control of such air pollutant."*

When determining whether or not an emission limitation is achievable, the DEEP must take into account the following factors in accordance with RCSA Section 22a-174-3a(j):

1. A previous BACT approval for a similar or a representative type of source;
2. Technological limitations; and
3. Energy, economic and environmental impacts.

In no event shall the application of BACT result in emissions of any pollutant greater than an emission standard pursuant to 40 CFR Parts 60 and 61 or any SIP.

BACT Process

The BACT process is described in USEPA's "Top Down BACT Policy" (1987) that was further documented in USEPA's draft "New Source Review Workshop Manual, Prevention of Significant Deterioration and Nonattainment

Area Permitting" (NSR Manual) (October 1990). In those documents, the USEPA describes a five-step "top-down" process to identify BACT. This five-step process has been followed to identify BACT for all pollutants subject to PSD and DEEP BACT. The top-down BACT process involves the following five-steps:

(1) identify all control technologies;
(2) eliminate technically infeasible options;
(3) rank remaining control technologies by control effectiveness;
(4) evaluate most effective controls and documents results; and
(5) select BACT.

Following is a description of the steps followed for each BACT-subject pollutant for each emission source.

Step 1: Identification of Control Technology Options

The first step in a BACT analysis is the identification of available control technologies, including an evaluation of transferable and innovative control measures that may not have been previously applied to the source type under analysis. For emission sources with a large number of recent control technology determinations, such as those proposed for the Project, the available control technologies can be identified from the various agency reviews of these projects. A review was conducted of recent technical determinations made by USEPA and various state air agencies to identify available control technology options for each proposed emission source and each subject pollutant.

Step 2: Identification of Technically Infeasible Control Technology Options

Once all control technology options are identified, each is evaluated to determine if it is technically feasible for the proposed emission source. This determination is made on a case-by-case basis in accordance with regulatory guidance. A control option may be shown to be technically infeasible by documenting that technical difficulties would preclude the successful use of the control option on the emissions unit under review. Per regulatory guidance, a permit requiring the application of a technology is sufficient justification to assume the technical feasibility of that technology. Following this guidance, this analysis has focused on technologies that have been demonstrated in practice based upon recent determinations and reviewed alternative technologies to assess their capability to achieve a greater emission reduction than the approved technologies.

Step 3: Ranking of Technically Feasible Control Technology Options

After technically infeasible control technologies have been eliminated, the remaining control options are ranked by control effectiveness. The minimum requirement for a BACT proposal is an option that meets federal NSPS limits or other minimum state or local requirements, such as DEEP emission standards.

Step 4: Evaluation of Most Effective Controls

The USEPA's draft NSR Manual states that:

> *"if the applicant accepts the top alternative in the listing as BACT, the applicant proceeds to consider whether impacts of unregulated air pollutants or impacts in other media would justify selection of an alternative control option. If there are no outstanding issues regarding collateral environmental impacts, the analysis is ended and the results proposed as BACT. In the event that the top candidate is shown to be inappropriate, due to energy, environmental, or economic impacts, the rationale for this finding should be documented for the public record. Then the next most stringent alternative in the listing becomes the new control candidate and is similarly evaluated. This process continues until the technology under consideration cannot be eliminated by any source-specific environmental, energy, or economic impacts which demonstrate that alternative to be inappropriate as BACT."*

In USEPA's guidance document "PSD and Title V Permitting Guidance for Greenhouse Gases" (March 2011), it states that "the top-ranked option should be established as BACT unless the permit applicant demonstrates to the satisfaction of the permitting authority that technical considerations, or energy, environmental, or economic impacts justify a conclusion that the top-ranked technology is not 'achievable' in that case." Accordingly, an evaluation of energy, environmental, or economic impacts is applied only when an applicant wants to demonstrate that the top-ranked option is not achievable.

Based upon this guidance, when the top-case BACT option was determined to be achievable and was selected for the Project, an evaluation of energy, environmental, or economic impacts was generally not considered. The exception to this is that any collateral environmental impacts associated with a proposed top-case option were addressed only to the extent that such collateral impacts would be deemed unacceptable, and thus rule out a proposed top-case option as BACT.

Per USEPA guidance, BACT is expressed as an emission rate and the top level of control is determined from the following:

- The most stringent emissions limitation which is contained in any SIP for such class or category of stationary source; or
- The most stringent emissions limitation which is achieved in practice by such class or category of stationary source.

In order to identify the "most stringent emissions limitation which is achieved in practice" by a combined cycle CTG facility, numerous sources of information were evaluated, including the following:

- USEPA's RBLC;
- The CARB BACT Clearinghouse;
- USEPA regional air permitting websites; and
- State environmental agency websites.

In addition to these sources of information, additional publicly available information obtained through Tetra Tech's experience, such as permits for individual projects not listed in the RBLC or agency websites, were also included in the analysis.

Information was compiled for each emission source, focusing on projects permitted in the last five years. Older precedents were included on a pollutant-specific basis to identify the most stringent permitted emission levels achieved in practice on a pollutant-by-pollutant basis. Attachment G-1 provides the BACT precedents identified for comparable combined cycle CTG projects.

Step 5: Selection of BACT

If there is only a single technically feasible option, or if the top-ranked control option is proposed, then no further analysis was conducted other than a check of potentially unacceptable collateral environmental impacts as discussed above. If two or more technically feasible options were identified, and the most stringent (top) level of control was not proposed, the next three steps (as presented below) were applied to demonstrate that the economic, energy, and environmental impacts of the top-ranked option justified not selecting this option as BACT.

Economic Impacts

The economic analysis consists of evaluating the cost-effectiveness of a control technology, on a dollar per ton of pollution removed basis. Annual emissions with a control option are subtracted from base-case emissions to calculate tons of pollutant controlled. The base case may be uncontrolled emissions or the maximum emission rate allowed by regulation (such as an NSPS limit). Annual costs are calculated by the sum of operation and maintenance costs plus the annualized capital cost of the control option. Operating and maintenance costs may take into account a reduction in the output capacity or reliability of a unit. The cost-effectiveness (dollars per ton of pollutant removed) of a control option is the annual cost (dollars per year) divided by the annual reduction in pollutant emissions (tpy). If the calculated cost effectiveness is deemed too high, then a control option may be eliminated from the remainder of the BACT analysis for economic reasons. If the most effective control option is proposed, or if there are no technically feasible control options, an economic analysis is not required.

Energy Impacts

The consumption of energy by the control option itself is a quantifiable energy impact. These impacts can be quantified by either an increase in fuel consumption due to reduced efficiency or fuel consumption to power the control equipment.

Environmental Impacts

The environmental impact analysis concentrates on other impacts such as solid or hazardous waste generation, discharges of polluted water from a control device, visibility impacts, or emissions of additional pollutants. Collateral increases or decreases in air pollutant emissions of other criteria or non-criteria pollutants may occur with a control option and should be evaluated. These additional impacts are identified and qualitatively and/or quantitatively evaluated as appropriate.

Combined Cycle Combustion Turbines and Duct Burners

The BACT analysis for the CTG and duct burners is combined as the duct burners cannot operate without the CTG in operation. Since the CTG can operate with and without duct firing, BACT emission rates were reviewed for both of these operating scenarios. Provided in Table G-4 is a summary of recently permitted VOC, CO, PM/PM_{10}/$PM_{2.5}$, GHG and NH_3 emission limits for combined cycle CTG projects larger than 100 MW. The emission limits provided in Table G-3 serve as the basis for determining the “most stringent emissions limitation which is achieved in practice” for a large combined cycle CTG project. The search for permitted projects was conducted back to calendar year 2000 but no limits were identified below those identified in Table G-4.

Table G-4: CTG Permitted VOC, CO, PM, GHG and NH_3 Emission Rate Limits

Facility	Location	Permit Date	CTG Model	VOC[a] (ppm)	CO[a] (ppm)	PM[b] (lb/MMBtu)	GHG (lb/MW-hr)	GHG (Btu/kW-hr)	NH_3[a] (ppm)
FP&L Okeechobee Clean Energy Center	Okeechobee, FL	03/09/2016	GE 7HA.02	1.0 (gas w/o DF[c]) 2.0 (ULSD)	4.3 (gas w/o DF) 10.0 (ULSD)	N/A	850 (gas, w/o DF annual) 1,210 (ULSD, annual)	N/A	N/A
Decordova Steam Electric Station	Hood, TX	03/08/2016	Siemens 231 MW or GE – 210 MW	2.0 (w/ & w/o DF)	4.0 (w/ & w/o DF)	N/A	N/A	N/A	N/A
Cricket Valley Energy Center	Dover Plains, NY	02/03/2016	GE 7FA.05	1.0 (w/o DF) 2.0 (w/ DF) LAER	2.0 (w/ & w/o DF)	0.005 (w/o DF) 0.006 (w/ DF)	N/A	7,604[d] (net w/o DF)	5.0 (w/ & w/o DF)
CPV Towantic	Oxford, CT	11/30/2015	GE 7HA.01	1.0 (w/o DF) 2.0 (w/ DF) 2.0 (ULSD) LAER	0.9 (w/o DF) 1.7 (w/ DF) 2.0 (ULSD)	0.0065 (w/o DF) 0.0081 (w/ DF) 0.0319 (ULSD)	809 (gas w/o DF @ ISO) (net, new & clean)	7,220[d] (net gas w/o DF	2.0 (w/ & w/o DF) 5.0 (ULSD)
Mattawoman Energy Center	Prince George's, MD	11/13/2015	Siemens SGT-8000H	1.0 (w/o DF) 1.9 (w/ DF) LAER	2.0 (w/ & w/o DF)	N/A	865 (gas, net, all operating conditions)	N/A	5.0 (w/ & w/o DF)
FGE Eagle Pines	Cherokee, TX	11/04/2015	Alstom GT36	2.0 (w/ & w/o DF)	2.0 (w/ & w/o DF)	N/A	816 (w/o DF) 886 (w/ DF)	N/A	N/A
Lon C. Hill Power Station	Nueces, TX	10/02/2015	Siemens SGT6-5000 or GE 7FA.05	2.0 (w/ & w/o DF)	2.0 (w/ & w/o DF)	N/A	N/A	N/A	N/A
Lordstown Energy Center	Lordstown, OH	08/25/2015	Siemens SGT6-8000H or GE 7HA.01	1.0 (w/o DF) 2.0 (w/ DF)	2.0 (w/ & w/o DF)	0.0068 (w/o DF) 0.0049 (w/ DF)	833 (w/o DF @ ISO) (gross)	N/A	N/A
Eagle Mountain	Eagle Mountain, TX	06/18/2015	Siemens – 231 MW or GE – 210 MW	2.0 (w/ & w/o DF)	2.0 (w/ & w/o DF)	N/A	N/A	N/A	N/A
NRG Texas SR Bertron Station	LaPorte, TX	12/19/2014	GE7FA, Siemens SF5, or Mitsubishi M501G	1.0 (w/ & w/o DF)	4.0 (w/ & w/o DF)	N/A	N/A	N/A	N/A

Facility	Location	Permit Date	CTG Model	VOC[a] (ppm)	CO[a] (ppm)	PM[b] (lb/MMBtu)	GHG (lb/MW-hr)	GHG (Btu/kW-hr)	NH_3[a] (ppm)
Victoria Power Station	Victoria, TX	12/01/2014	GE 7FA.04	4.0 (w/ & w/o DF)	4.0 (w/ & w/o DF)	N/A	N/A	N/A	N/A
Moundsville Power	Moundsville WV	11/21/2014	GE 7FA.05	1.0 (w/o DF) 2.0 (w/ DF)	2.0 (w/ & w/o DF)	N/A	792 (w/o DF @ ISO) (gross, new & clean)	N/A	5.0 (w/ & w/o DF)
Trinidad Generating Facility	Trinidad, TX	11/20/2014	MHI J	4.0 (w/ & w/o DF)	4.0 (w/ & w/o DF)	N/A	N/A	N/A	N/A
Interstate/ Marshalltown	Marshalltown IA	4/14/2014	Siemens SGT6-5000F	1.0 (w/o DF)	2.0 (w/o DF)	0.01 (w/o DF)	951 (w/o DF @ ISO) (gross)	N/A	N/A
FGE Power I and II	Mitchell County TX	3/24/2014	Alstom GT24	2.0 (w/ & w/o DF)	2.0 (w/ & w/o DF)	N/A	N/A	N/A	N/A
Future Power PA.	Porter Twp, PA	3/4/2014	Siemens 5000	2.0 (w/ & w/o DF) LAER	3.0 (w/ & w/o DF)	N/A	N/A	N/A	N/A
Footprint Salem Harbor	Salem, MA	01/30/2014	GE 7FA.05	1.0 (w/o DF[c]) 1.7 (w/ DF) LAER	2.0 (w/ & w/o DF)	0.0071 (w/o DF) 0.0062 (w/ DF)	825 (w/o DF, new and clean) 895 (annual avg)	N/A	2.0 (w/ & w/o DF)s
Pinecrest Energy Center	Lufkin, TX	11/12/2013	GE 7FA.05 or Siemens SGT6-5000F	2.0 (w/ & w/o DF)	2.0 (w/ & w/o DF)	N/A	N/A	N/A	N/A
Carroll County Energy	Washington Twp., OH	11/5/2013	GE 7FA.05	1.0 (w/o DF) 2.0 (w/ DF)	2.0 (w/ & w/o DF)	0.0108 (w/o DF) 0.0078 (w/ DF)	859	7,350[d] (net w/o DF)	N/A

Facility	Location	Permit Date	CTG Model	VOC[a] (ppm)	CO[a] (ppm)	PM[b] (lb/MMBtu)	GHG (lb/MW-hr)	GHG (Btu/kW-hr)	NH_3[a] (ppm)
Renaissance Power	Carson City, MI	11/1/2013	Siemens 501 FD2	2.0 (w/ and w/o DF)	2.0 (w/ & w/o DF)	0.0042 (w/ & w/o DF)	1,000	N/A	N/A
Langley Gulch Power	Payette, ID	08/14/2013	Siemens SGT6-5000F	2.0 (w/ and w/o DF)	2.0 (w/ & w/o DF)	0.0053 (w/ & w/o DF)	N/A	N/A	5.0 (w/ & w/o DF)
Oregon Clean Energy	Oregon, OH	06/18/2013	Siemens SGT6-8000H	1.0 (w/o DF) 1.9 (w/ DF)	2.0 (w/ & w/o DF)	0.0047 (w/o DF) 0.0055 (w/ DF)	833	7,227[d] (net w/o DF)	N/A
TECO Polk Power 2	Mulberry, FL	05/15/2013	GE 7FA	1.4 (no ox. cat)	4.1 (no ox. cat)	N/A	877	N/A	5.0 (w/ & w/o DF)
Green Energy Partners / Stonewall	Leesburg, VA	04/30/2013	GE 7FA.05	1.0 (w/o DF[c]) 2.4 (w/ DF) LAER	2.0 (w/ & w/o DF)	0.00334 (w/ & w/o DF)	903	7,340[d] (gross w/o DF) 7,780[d] (gross w/ DF)	5.0 (w/ & w/o DF)
Hickory Run Energy LLC	New Beaver Twp., PA	04/23/2013	GE7FA, Siemens SGT6- 5000F, Mitsubishi M501G, or Siemens SGT6-8000H	1.5 (w/ and w/o DF) LAER	2.0 (w/ & w/o DF)	N/A	N/A	N/A	N/A
Sunbury Generation	Sunbury, PA	04/01/2013	"F Class"	1.0 (w/o DF) 3.9 (w/ DF) LAER	2.0 (w/ & w/o DF)	0.0088 (w/ & w/o DF)	N/A	N/A	N/A
Brunswick County Power	Freeman, VA	03/12/2013	Mitsubishi M501 GAC	0.7 (w/o DF) 1.6 (w/ DF)	1.5 (w/o DF) 2.4 (w/ DF)	0.0033 (w/o DF) 0.0047 (w/ DF) (full load)	N/A	7,500 (net, w/o DF)	N/A
Moxie Patriot LLC	Clinton Twp, PA	01/31/2013	Not Specified	1.0 (w/o DF) 1.5 (w/ DF) LAER	2.0 (w/ & w/o DF)	0.0057 (w/ & w/o DF)	N/A	N/A	N/A
Hess Newark Energy	Newark, NJ	11/01/2012	GE 7FA.05	1.0 (w/o DF) 2.0 (w/ DF)	2.0 (w/ & w/o DF)	0.0047 (w/o DF) 0.0058 (w/ DF)	887	7,522[d] (net w/o DF)	5.0 (w/ & w/o DF)

Facility	Location	Permit Date	CTG Model	VOC[a] (ppm)	CO[a] (ppm)	PM[b] (lb/MMBtu)	GHG (lb/MW-hr)	GHG (Btu/kW-hr)	NH_3[a] (ppm)
Pioneer Valley Generation Company	Westfield, MA	04/12/2012	Mitsubishi 501G	1.0 (w/o DF) 6.0 (ULSD)	2.0 (w/ & w/o DF) 6.0 (ULSD)	0.0040 (w/ & w/o DF) 0.014 (ULSD)	825 (w/o DF, new and clean) 895 (annual avg)	N/A	2.0 (w/ & w/o DF) 2.0 (ULSD)
Kleen Energy	Middletown, CT	02/25/2008	Siemens SGT6-5000F	5.0 (gas) (w/ and w/o DF) 3.6 (ULSD)	0.9 (w/o DF) 1.7 (w/ DF) 1.8 (ULSD)	0.0051 (w/o DF) 0.0059 (w/ DF) 0.0269 (ULSD)	N/A	N/A	2.0 (gas) (w/ & w/o DF) 5.0 (ULSD)

[a] Concentration in ppm is parts per million by volume, dry, at 15 percent O_2.
[b] Concentration in pounds per million Btu heat input (HHV), except as noted, including front (filterable) and back-half (condensable) PM. All PM is considered to be $PM_{2.5}$.
[c] DF = duct firing.
[d] At full load and corrected to ISO conditions (59°F), absolute pressure of 14.696 kPa and 60% relative humidity)
[e] All limits are for natural gas firing except where noted

Fuels

The first step in evaluating BACT is to evaluate changes in raw materials where substitution to a lower emitting raw material may be technically feasible. For the Project, the "raw material" would be the fuel combusted in the CTG and duct burners. The selection of the lowest emitting fuel for a combustion source affects emissions of multiple pollutants and, therefore, this review of available fuels is applicable for all BACT-subject pollutants for the Project.

Step 1: Identification of Control Technology Options

Available fuel choices for the CTG and cut burners include the following:

- natural gas as the sole fuel, based on securing a dedicated pipeline supply;
- natural gas as the primary fuel with liquefied natural gas (LNG) as backup; and,
- natural gas as the primary fuel with ULSD as the backup fuel.

Step 2: Identification of Technically Infeasible Control Technology Options

Natural gas is the cleanest burning fossil fuel and its selection as the primary fuel for the CTG is the "top case" for emissions reductions that may be achieved through fuel choice; natural gas will be the sole fuel for the duct burners. The Project will connect to the Algonquin Natural Gas interstate natural gas pipeline that is constrained during periods of peak demand, meaning that that there is not always sufficient capacity to reliably support the Project. The Independent System Operator – New England's (ISO-NE's) recent *Winter Reliability Program Update* (September 2015)[2], noted that the region is increasingly reliant on resources with uncertain availability, and that natural gas-fired generating units typically lack firm gas transportation or fuel storage. In ISO-NE's *2015 Regional Electricity Outlook*[3], ISO-NE discusses the issue of natural gas supply constraints in the regional natural gas transmission system. ISO-NE notes that the natural gas pipeline system is reaching maximum capacity more often, and when supplies become constrained, priority goes to residential and commercial customers. Consequently, the Project cannot secure an uninterruptible supply contract for natural gas delivery. Given the location of the Project within New England's natural gas transmission system, it is anticipated that natural gas may not be available at all times based on the current gas pipeline infrastructure, and therefore, natural gas as the sole fuel source was deemed technically infeasible.

A potential option that would create a dedicated supply of natural gas to the Project would be installation of LNG storage. Securing the necessary approvals and constructing this LNG storage at the Project site is also not feasible for the Project. There is not sufficient space on the site to build an LNG storage terminal. There is also a significant concern regarding the required the exclusion zone around LNG storage tanks, which would further increase the space requirements. Given the space constraints on the Project site, using LNG as a backup to pipeline natural gas was eliminated as technically infeasible for the Project.

Therefore, the only technically feasible backup fuel option for the Project is ULSD.

Step 3: Ranking of Technically Feasible Control Technology Options

The sole technically feasible option for fuels is natural gas as the primary fuel with ULSD as backup fuel.

Step 4: Evaluation of Most Effective Controls

For CTGs that utilize ULSD as backup fuel, operating limits achieved in practice include limiting the number of operating hours when the backup fuel can be fired and restrictions on when backup fuel can be fired. The most recent PSD approval issued for an electric generating unit in Connecticut was for the CPV Towantic project in

---

2 http://www.iso-ne.com/static-assets/documents/2015/09/final_gillespie_raab_sept2015.pdf
3 http://www.iso-ne.com/static-assets/documents/2015/02/2015_reo.pdf

Oxford, CT. This approval limited backup firing of ULSD to 720 hours per year and imposed the following restrictions on when ULSD can be fired:

i. ISO-NE declares an Energy Emergency, as defined in ISO-NE's Operating Procedure No. 21, and requests the firing of ULSD.

ii. The natural gas supply is curtailed by an entity through which gas supply and/or transportation is contracted.

iii. There exists a physical blockage or breakage in the natural gas pipeline.

iv. During all periods of commissioning of the plant including performance testing.

v. During routine maintenance and readiness testing.

vi. In order to maintain an appropriate turnover of the on-site fuel inventory, to prevent wastage of oil, the owner/operator can fire ULSD when the last delivery of oil was more than six months ago.

Step 5: Selection of BACT

The proposed fuel BACT for the Project is the use of natural gas as the primary fuel, with ULSD as the backup fuel. The selection of appropriate conditions on ULSD use is key to the fuels BACT determination. Natural gas will be fired in the CTG at all times when it is available, and other times when necessary to comply with environmental requirements and to prevent wastage of oil. In order to ensure reliable annual service to the region, the Project is requesting up to 720 operating hours per year of ULSD firing in the CTG.

Natural gas will be deemed unavailable when its supply and/or delivery cannot be contracted for within the timeframe necessary to start the unit or when emergency conditions or scarcity conditions are declared by ISO-NE. ULSD firing will also occur to ensure that the unit is properly maintained and the ULSD quality is high enough to support unit availability and to meet the BACT and LAER emission rates. It is proposed to limit the Project's use of ULSD to any of the following specific conditions.

i) When ISO-NE declares an Emergency, as defined in ISO-NE's Operating Procedure No. 4, No. 7, or No. 21, or declares a Scarcity Condition.

ii) The natural gas supply is curtailed by an entity through which gas supply and/or transportation is contracted.

iii) Any equipment (whether on- or off-site) required to allow the CTG to operate on natural gas has failed, including a physical blockage of the supply pipeline.

iv) During commissioning when the combustion turbine is required to operate on ULSD pursuant to the CTG manufacturer's written instructions.

v) For emission testing purposes as specified in the Project's air permit or as required by DEEP, USEPA or other regulatory order requiring emissions testing during ULSD firing.

vi) During routine maintenance if any equipment requires ULSD operation.

vii) In order to maintain an appropriate turnover of the on-site fuel oil inventory, ULSD can be used when the age of the fuel in the tank is greater than six months.

There are no unacceptable collateral environmental impacts associated with use of 720 hours per year of ULSD firing that would preclude its selection as BACT, in combination with use of natural gas as the primary fuel.

VOC

Step 1: Identification of Control Technology Options

Process Modifications

The process is the proposed combined cycle CTG; CTGs have inherently low VOC emission rates. Emissions of VOCs from a CTG occur as a result of incomplete combustion of organic compounds within the fuel. In an ideal combustion process, all carbon and hydrogen contained within the fuel are oxidized to form CO_2 and water. VOC emissions from the CTG are limited by utilizing good combustion practices to ensure that the fuel is completely combusted.

Add-on Controls

Available add-on pollution controls to reduce VOCs from combustion sources include the following:

- *Oxidation Catalyst*: An oxidation catalyst can effectively control some VOC constituents in the CTG. The degree of removal depends on the particular VOC compounds that are present, straight chain hydrocarbons such as propane will not be controlled by the oxidation catalyst whereas partially oxidized compounds such as formaldehyde will be highly controlled.

Oxidation catalyst systems consist of a passive reactor comprised of a grid of metal panels with a platinum catalyst. The optimal location for VOC controls, in the 900°F to 1,100°F temperature range, would be upstream of the SCR in the HRSG.

Step 2: Identification of Technically Infeasible Control Technology Options

Good combustion practices and an oxidation catalyst are both technically feasible.

Step 3: Ranking of Technically Feasible Control Technology Options

The combination of good combustion practices and an oxidation catalyst is the top ranked control option.

Step 4: Evaluation of Most Effective Controls

The results of the RBLC search and other available permits for VOC BACT/LAER precedents is presented in Table G-4 and Attachment G-1. Based on this search, use of efficient combustion and an oxidation catalyst is the most stringent level of VOC control for a combined cycle CTG. Therefore, the use of these controls is considered to represent the most stringent level of VOC control achieved in practice.

For natural gas firing, the lowest VOC limits for any combined cycle CTG in Table G-4 is 0.7 ppmvdc without duct firing for the Brunswick County Power project in Virginia, and 1.0 ppmvdc with duct firing for the NRG Texas SR Bertron Station project in Texas. The Brunswick County Power project is the only combined cycle CTG project with a VOC limit below 1.0 ppmvdc without duct firing and has not yet begun operation. In addition to the NRG Texas SR Bertron Station project, there are several projects permitted between 1.5 and 1.9 ppmvdc during duct firing. However, none of the projects with VOC limits less than 2 ppmvdc during duct firing have begun operation. The lowest permitted emission rates that have been achieved in practice for natural gas firing are 1.0 ppmvdc without duct firing and 2.0 ppmvdc with duct firing.

For oil firing emission limits, there are far fewer recently permitted combined cycle CTG projects. The FP&L Okeechobee Clean Energy Center project in Florida and CPV Towantic in Connecticut were recently permitted, each with a VOC limit during ULSD firing of 2.0 ppmvdc. The Kleen Energy project in Connecticut has a VOC limit during ULSD firing of 3.6 ppmvdc and has demonstrated compliance with this limit.

Step 5: Selection of BACT

The Project is proposing to use the most stringent available emissions control practices for VOC, good combustion practices and an oxidation catalyst. The CTG performance emissions guarantees for VOC are 1.0 ppmvdc for natural gas firing without duct firing, 2.0 ppmvdc for natural gas firing with duct firing, and 2.0 ppmvdc for ULSD firing. These emissions levels are equal to or better than the emissions that have been demonstrated in practice for any combined cycle electric generating facility and are proposed as BACT.

The proposed controls represent the top level of emission controls available, and have been demonstrated to be achievable in practice. Pursuant to USEPA guidance, an evaluation of economic and energy impacts has not been conducted. There are no unacceptable collateral environmental impacts associated with use of an oxidation catalyst.

CO

Step 1: Identification of Control Technology Options

Process Modifications

The process is the proposed combined cycle CTG; CTGs have inherently low CO emission rates. Emissions of CO from a CTG occur as a result of incomplete combustion of organic compounds within the fuel. In an ideal combustion process, all carbon and hydrogen contained within the fuel would be oxidized to form CO_2 and water. CO emissions from the unit are limited by utilizing good combustion practices to ensure that the fuel is completely combusted.

Add-on Controls

Available add-on pollution controls to reduce CO from combustion sources include the following:

- *Oxidation Catalyst*: An oxidation catalyst can effectively control CO in the CTG exhaust.

Oxidation catalyst systems consist of a passive reactor comprised of a grid of metal panels with a platinum catalyst. The optimal location for CO control, in the 900°F to 1,100°F temperature range, would be upstream of the SCR within the HRSG.

Step 2: Identification of Technically Infeasible Control Technology Options

Good combustion practices and an oxidation catalyst are both technically feasible.

Step 3: Ranking of Technically Feasible Control Technology Options

The combination of good combustion practices and an oxidation catalyst is the top-ranked control option.

Step 4: Evaluation of Most Effective Controls

The results of the search of the RBLC and other available permits for CO BACT/LAER precedents are presented in Table G-4 and Attachment G-1. Based on this search, use of efficient combustion and an oxidation catalyst is the most stringent level of CO control for natural gas-fired and dual-fuel CTGs. Therefore, the use of efficient combustion and an oxidation catalyst is considered to represent the most stringent level of CO control achieved in practice.

For natural gas firing, the lowest CO limits for any project presented in Table G-4 are 0.9 ppmvdc without duct firing, and 1.7 ppmvdc with duct firing for the CPV Towantic and Kleen Energy projects in Connecticut. The only other project with a natural gas firing limit below 2.0 ppmvdc is the Brunswick County Power project with a limit of 1.5 ppmvdc without duct firing. All other permitted natural gas firing CO limits are 2.0 ppmvdc or higher. For ULSD firing, the lowest permitted rate is 1.8 ppmvdc for the Kleen Energy project, this is the only project with a limit below 2.0 ppmvdc for ULSD firing. The CPV Towantic project, recently approved in Connecticut, had a USLD firing limit of 2.0 ppmvdc.

A review of emission limits in SIPs did not identify any CO emission limits for combustion turbines that are more stringent than limits achieved in practice by recently permitted and operated combined cycle CTGs subject to BACT and/or LAER requirements.

Step 5: Selection of BACT

The Project is proposing to use the most stringent available emissions control practices for CO, good combustion practices and an oxidation catalyst. The proposed CO BACT emission rate is based upon the Siemens CTG although other turbine models are under consideration for the Project. NTE submitted a request to Siemens to provide CO emissions guarantees equivalent to the CPV Towantic permit limits. Siemens stated that they could not guarantee a CO emission rate below 2.0 ppmvdc for natural gas firing. Although emission limits have been demonstrated below 2.0 ppmvdc for natural gas firing, it is not possible for NTE to accept a permit limit below a manufacturer's guarantee due to financing issues. It will be difficult, if not impossible, for the Project to secure financing if a permit limit is below a manufacturer's guarantee. Since Siemens will not provide a guarantee below 2.0 ppmvdc for natural gas firing and a permit limit below this level will jeopardize the Project, the proposed CO BACT emission limit is 2.0 ppmvdc for natural gas firing, with and without duct firing, and 2.0 ppmvdc for ULSD firing. These proposed BACT emission rates will be achieved using the most stringent emissions control available.

The proposed emission controls represent the top level of control and have been demonstrated to be achievable in practice. Pursuant to USEPA and DEEP guidance, an evaluation of economic and energy impacts has not been conducted. There are no unacceptable collateral environmental impacts associated with use of an oxidation catalyst.

PM/PM_{10}/$PM_{2.5}$

Step 1: Identification of Control Technology Options

Process Modifications

The process is the proposed combined cycle CTG; CTGs have inherently low PM emission rates. Emissions of PM from combustion can occur as a result of trace inert solids contained in the fuel and products of incomplete combustion, which may agglomerate or condense to form particles. PM emissions from CTGs equipped with SCR and an oxidation catalyst can also result from the formation of ammonium salts due to the conversion of SO_2 to sulfur trioxide (SO_3), which is then available to react with NH_3 to form ammonium sulfates. All of the PM emitted from the combined cycle CTG is considered to be $PM_{2.5}$. Therefore, the PM, PM_{10} and $PM_{2.5}$ emission rates are assumed to be equivalent.

Add-on Controls

This evaluation did not identify any PM/PM_{10}/$PM_{2.5}$ post-combustion control technologies available for combined cycle CTGs. Post-combustion PM control technologies such as fabric filters (baghouses), electrostatic precipitators, and/or wet scrubbers, which are commonly used on solid-fuel boilers, are not available for CTGs since the large amount of excess air inherent to combustion turbine technology would create an unacceptable amount of backpressure for combustion turbine operation. There are no known combined cycle CTG facilities that are equipped with a post-combustion PM control technology.

Step 2: Identification of Technically Infeasible Control Technology Options

The only known control option for PM from CTGs is to fire clean-burning fuels and ensure good combustion practices.

Step 3: Ranking of Technically Feasible Control Technology Options

The firing of natural gas as the primary fuel, limited firing of ULSD, and good combustion practices are the only technically feasible controls.

Step 4: Evaluation of Most Effective Controls

The results of the search of the RBLC and other available permits for $PM/PM_{10}/PM_{2.5}$ BACT/LAER precedents are presented in Table G-4 and Attachment G-1. Based on this search, use of clean-burning fuels and good combustion practices are the most stringent available technologies for control of combined cycle CTG PM emissions.

A review recently permitted combined cycle CTG projects shows that the majority of the PM emission limits are presented in the units of lb/hr. The lb/hr emission rates will vary depending upon the size of the CTG as well as maximum duct firing capacity. Therefore, lb/hr emission rates do not provide a suitable metric to compare the emission rates between two separate projects. In order to compare PM emission limits across a range of CTG sizes, only projects with PM limits in units of pounds per million British thermal units (lbs/MMBtu) were considered.

A review of the permitted lb/MMBtu emission limits shows a wide-range of values, from 0.0034 to 0.011 for natural gas firing and 0.014 to 0.0319 for ULSD firing. It is important to recognize that the differences in $PM/PM_{10}/PM_{2.5}$ emission limits among various projects are mostly due to different emission guarantee philosophies of the various CTG vendors, and are not believed to be actual differences in the quantity of $PM/PM_{10}/PM_{2.5}$ emissions inherently produced by the various CTG models. The different emission guarantee philosophies are influenced by the overall uncertainties of the $PM/PM_{10}/PM_{2.5}$ test procedures, especially given reported difficulties in achieving test repeatability, and concerns with artifact emissions introduced by the inclusion of condensable particulate emissions in permit limits in the last decade. All of the $PM/PM_{10}/PM_{2.5}$ listed in Table G-4 are based upon good combustion practices and the CTG vendor performance emissions guarantee.

A review of emission limits in SIPs did not identify any $PM/PM_{10}/PM_{2.5}$ emission limits for combustion turbines more stringent than limits achieved in practice by recently permitted and operated combined cycle CTGs subject to BACT and/or LAER requirements.

Step 5: Selection of BACT

Consistent with other permitted projects, the Project proposes PM limits of 0.0055 lb/MMBtu during natural gas firing without duct firing, 0.0059 lb/MMBtu during natural gas firing with duct firing and 0.0155 lb/MMBtu for ULSD firing. Appendix A to this application provides the vendor specified performance guarantee for each operating condition. These limits will be achieved through firing natural gas as the primary fuel, limited firing of ULSD, and good combustion practices. These emission controls represent the top level of control for a combined cycle CTG.

The proposed controls represent the top level of control and have been demonstrated to be achievable in practice. Pursuant to USEPA guidance, an evaluation of economic and energy impacts has not been conducted. There are no unacceptable collateral environmental impacts associated with the proposed $PM/PM_{10}/PM_{2.5}$ BACT.

SO_2/H_2SO_4

Step 1: Identification of Control Technology Options

Process Modifications

Emissions of SO_2/H_2SO_4 are formed from the oxidation of sulfur in the fuel. Normally, all sulfur compounds contained in the fuel will oxidize, with the vast majority initially oxidizing in the CTG to SO_2 and a smaller percentage to SO_3. Additionally, a portion of the fuel sulfur that initially oxidizes to SO_2 will be subsequently oxidized to SO_3 by the SCR and oxidation catalyst. After being formed, SO_3 reacts with water to form H_2SO_4 and sulfate particulate. There are no process modifications available to reduce SO_2 and H_2SO_4 emissions from the CTG.

Add-on Controls

This evaluation did not identify any post-combustion control technologies available for SO_2/H_2SO_4 emissions from CTGs. Post-combustion SO_2/H_2SO_4 control technologies, such as dry or wet scrubbers that are commonly used on solid-fuel boilers, are not available for CTGs since the large amount of excess air inherent to combustion turbine technology would create an unacceptable amount of backpressure for CTG operation. Furthermore, the low concentrations of SO_2/H_2SO_4 in the exhaust gas would make further reductions very difficult, if not impossible, to achieve. NTE is not aware of any combined cycle CTG facilities that are equipped with any post-combustion SO_2/H_2SO_4 control technologies.

Step 2: Identification of Technically Infeasible Control Technology Options

The only known control option for SO_2/H_2SO_4 from a CTG is to fire clean-burning fuels and ensure good combustion practices.

Step 3: Ranking of Technically Feasible Control Technology Options

The firing of pipeline-quality natural gas and ULSD as the sole fuels is the only technically feasible control.

Step 4: Evaluation of Most Effective Controls

The results of the search of the RBLC and other available permits for SO_2/H_2SO_4 BACT combined cycle CTG precedents are presented in Attachment G-1. This search confirms that the only technology identified for control of SO_2/H_2SO_4 from a CTG is use of low-sulfur fuels. The sulfur in the natural gas will be limited to the sulfur content in the natural gas pipeline. The USEPA defines pipeline quality natural gas in the Acid Rain regulations under 40 CFR 72.2 as natural gas that contains no more than 0.5 gr S/100 scf. The sulfur content of ULSD will be limited in Connecticut to no greater than 15 parts per million by weight (ppmw), effective July 1, 2017, in accordance with RCSA Section 22a-174-19b, Table 19b-1. Since the Project will begin operation after July 1, 2017, this fuel sulfur content limit will apply to the Project. Natural gas meeting the specifications under 40 CFR 72.2 and ULSD having a sulfur content of 15 ppmw result in nearly equivalent SO_2 and H_2SO_4 emission rates.

Step 5: Selection of BACT

BACT for SO_2 emissions from the CTG and duct burners is proposed to be pipeline quality natural gas as the primary fuel with limited firing of ULSD having a maximum sulfur content of 15 ppmw.

The proposed BACT emission rates for H_2SO_4 are based upon vendor estimates and are 0.00056 lb/MMBtu for natural gas firing and 0.00054 lb/MMBtu for ULSD firing.

Firing of natural gas and ULSD provides the greatest level of SO_2/H_2SO_4 reduction technically feasible and represents the top level of control. Pursuant to USEPA guidance, an evaluation of economic and energy impacts has not been conducted. There are no unacceptable collateral environmental impacts associated with the proposed SO_2/H2SO_4 BACT.

Greenhouse Gases

USEPA issued a 2011 guidance document for completing GHG BACT analyses titled "*PSD and Title V Permitting Guidance for Greenhouse Gases.*"[4] This guidance is in addition to the 1990 USEPA BACT guidance document. Although the 2011 guidance document refers to the same top-down methodology described in the 1990 document, the 2011 guidance provides additional clarification and detail with regard to some aspects of the analysis. The following analysis has been conducted in accordance with both the 1990 and 2011 guidance documents.

The principal GHGs associated with the Project are CO_2, CH_4, and N_2O. Because these gases differ in their ability to trap heat, 1 ton of CO_2 in the atmosphere has a different effect on global warming than 1 ton of CH_4 or 1 ton of N_2O. For example, CH_4 and N_2O have 25 times and 298 times the global warming potential of CO_2, respectively, pursuant to 40 CFR 98, Subpart A, Table A-1. GHG emissions from the proposed Project are primarily attributable to combustion of fuels in the CTG and duct burners. Combustion of fuels in the auxiliary boiler and emergency engines will also produce CO_2 but in insignificant amounts as compared to the CTG and duct burners. There will

[4] http://www.epa.gov/nsr/ghgdocs/ghgpermittingguidance.pdf

also be minor fugitive releases of natural gas (primarily CH_4) from valves and flanges associated with the natural gas piping, and of sulfur hexafluoride (SF_6) from the circuit breakers. By far the greatest proportion of potential GHG emissions associated with the Project are CO_2 emissions from the CGT and duct burners. Trace amounts of CH_4 and N_2O will be emitted during combustion in varying quantities depending on operating conditions, and even more insignificant amounts of SF_6 will be released from the circuit breakers. Even after adjusting for global warming potential, emissions of CH_4, N_2O, and SF_6 are negligible when compared to the CO_2 emissions from the CTG and duct burners. Accordingly, BACT for the Project focuses on the options for reducing and controlling emissions of CO_2 from the CTG and duct burners.

Step 1: Identify Potentially Feasible GHG Control Options

CO_2 is a product of combustion for any carbon-containing fuel, including natural gas and ULSD. During complete combustion, carbon (C) in the fuel is oxidized to CO_2 via the following reaction:

$$C + O_2 \rightarrow CO_2$$

Full oxidation of carbon in fuel is desirable because CO, a product of partial combustion, has long been a regulated criteria pollutant and complete combustion results in more useful energy. In fact, emission control technologies required for CO emissions (oxidation catalysts) increase CO_2 emissions by oxidizing CO to CO_2. Since emissions of CO_2 are directly related to the amount of fuel combusted, an effective means of reducing GHG emissions is through efficient power generation combustion technologies. By utilizing more efficient technology, less fuel is required to produce the same amount of electricity. For this reason, past BACT determinations for combined cycle CTG projects have focused on reducing CO_2 emissions through the use of high efficiency power generation technology. The Project is proposing to use an Advanced G/H class CTG, which will be among the most efficient CTGs in the G/H size range that are commercially available. The Project will also operate in combined cycle configuration where the waste heat in the CTG exhaust is recovered to product steam and additional electricity in the STG. A combined cycle CTG project utilizing an Advanced G/H class CTG represents the highest level of efficiency achievable for a fossil fuel fired generating plant.

The Project will have a “Design Base Heat Rate” (new and clean) of 6,529 Btu/kW-hr (net, HHV) while firing natural gas at full load at ISO conditions, without duct firing, evaporative cooler off. The emphasis on GHG reductions via efficient combustion is reflected in the recently issued BACT determinations for combined cycle CTG projects as summarized in Table G-3 and Attachment G-1.

Another effective method used to reduce GHG emissions is the use of inherently low-emitting fuels. The Project will combust natural gas, which is the lowest GHG emitting fossil fuel, as the primary fuel in the CTG and as the sole fuel in the duct burners. Firing of ULSD as backup fuel will be limited to no more than 720 hours per rolling 12-month period, pursuant to the restrictions defined in the Fuels BACT analysis.

Add-on Controls

There are limited post-combustion options for controlling CO_2. The USEPA indicated in *PSD and Title V Permitting Guidance for Greenhouse Gases* (USEPA, 2011) that carbon capture and sequestration (CCS) should be considered in BACT analyses as a technically feasible add-on control option for CO_2. Currently, there are no CTG projects utilizing CCS, and although deemed theoretically feasible by the USEPA, this technology is not commercially available. However, this control option is discussed in greater detail below per USEPA guidance.

CCS is a relatively new technology that requires three distinct processes:

- removal of CO_2 from the exhaust gas;
- transportation of the captured CO_2 to a suitable storage location; and,
- 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 CTG exhaust 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 CTGs have relatively low CO_2 concentrations. Only physical and chemical absorption would be considered technically feasible for a high-volume, low-concentration gas stream.

The next step in the CCS process is transportation of the captured CO_2 to a suitable storage location. Currently, development of commercially available CO_2 storage sites is in its infancy. The nearest geological formation that is capable of storing CO_2 is located in New York, more than 150 miles from the Project. However, a carbon storage facility does not exist at this location. New York is an area where the suitability of geological formations for CO_2 storage is being studied by the Midwest Regional Carbon Sequestration Partnership (MRCSP), which is funded by the United States Department of Energy. While several CO_2 sequestration demonstrations have been initiated under this program, much further development is needed before a commercially available CO_2 sequestration site becomes available near the Project site. Currently, the closest MRCSP CO_2 sequestration site in the development phase is in northern Michigan, over 500 miles from the Project site; although this location is not currently operable.

Step 2: Technical Feasibility of Potential GHG Control Options

Low Carbon-Emitting Fuels

Natural gas combustion generates lower GHG emissions on a per unit of heat throughput than ULSD (approximately 27% less) and coal (approximately 50% less). Use of biofuels, such as biodiesel, would reduce fossil-based CO_2 emissions, since biofuels are produced from recently harvested plant material rather than ancient plant material that has transformed into fossil fuel. However, biofuels are not readily available on a commercial scale. In addition, CTGs have technical issues with biofuels that have yet to be resolved and, as a result, there are no known permitted or proposed CTG projects firing biofuels. For this reason, biofuels were eliminated from consideration as BACT. Therefore, natural gas as the primary fuel represents the lowest carbon-emitting fuel commercially available for the Project. Firing of ULSD as backup fuel will be limited to no more than 720 hours per year.

Energy Efficiency and Heat Rate

USEPA's 2011 GHG permitting guidance states:

> "*Evaluation of [energy efficiency options] need not include an assessment of each and every conceivable improvement that could marginally improve the energy efficiency of [a] new facility as a whole (e.g., installing more efficient light bulbs in the facility's cafeteria), since the burden of this level of review would likely outweigh any gain in emissions reductions achieved. USEPA instead recommends that the BACT analyses for units at a new facility concentrate on the energy efficiency of equipment that uses the largest amounts of energy, since energy efficient options for such units and equipment (e.g., induced draft fans, electric water pumps) will have a larger impact on reducing the facility's emissions..."*

USEPA also recommends that permit applicants:

> *"propose options that are defined as an overall category or suite of techniques to yield levels of energy utilization that could then be evaluated and judged by the permitting authority and the public against established benchmarks...which represent a high level of performance within an industry."*

With regard to electric generation from combustion sources, the combined cycle CTG is considered to be the most efficient technology available. GHG emissions from electricity production are primarily a function of the amount of fuel burned.

Therefore, the Project's proposal to use advanced combined cycle CTG technology is the most efficient process technically available to minimize GHG emissions.

Carbon Capture and Storage

USEPA has specifically stated that CCS is technically achievable and must be considered in a GHG PSD BACT analysis. CCS is composed of three main components: CO_2 capture and compression, transport, and storage. While CCS is a promising technology and may be technically achievable for a specific project, USEPA has also stated that at this time, CCS will be a technically feasible BACT option only in certain limited cases. There are currently no CTGs equipped with CCS and this technology is not considered commercially available. As such, this technology has not been demonstrated in practice for combined cycle CTGs or any utility-scale power generating facility in the United States. However, for the purposes of this analysis, CCS is considered technically feasible in accordance with USEPA guidance.

Step 3: Ranking of Technically Feasible GHG Control Options by Effectiveness

The technically feasible options, ranked in order or effectiveness and achievability, are as follows:

- CCS;
- low emitting fuels; and,
- generating efficiency.

Step 4: Evaluation of Most Effective Controls

The results of the search of the RBLC and other available permits for GHG BACT precedents are presented in Table G-4 and Attachment G-1. The GHG BACT determinations are expressed predominantly in units of lbs CO_{2e} per MW-hr with two limits on a tpy basis. The energy-based limits are expressed as either “gross” or “net.” Energy units (MW-hr or kW-hr) are more meaningful than mass emission limits since they relate directly to the efficiency of the equipment, which enables comparison of energy efficiency between different projects. Mass emissions are specific to the fuel firing rate of a given project, the number of operating hours, and the carbon content of the fuel, but do not incorporate Project efficiency.

The GHG BACT emission rate must take into account both performance margin and degradation, as follows:

- design margin to account for the possibility that the equipment as constructed and installed may not fully achieve the optimal vendor specified design performance;
- degradation to account for the normal wear and tear of the CTG over its useful life and particularly between maintenance overhauls; and
- degradation to account for the normal wear and tear of the ancillary generating equipment including the HRSG, STG, and other power island components.

The proposed Project performance margin and degradation factors for the GHG BACT are as follows:

- a design margin of 5.0%;
- CTG degradation margin of 3.0%; and
- ancillary equipment degradation margin of 3.0%.

The adjustment factors have a compounding affect so the overall degradation applied from new and clean condition is 11.4% [$1.05 \times 1.03 \times 1.03 = 1.114$]. In addition, proposing a G/H-class CTG provides among the highest efficiencies of any available comparably sized CTG. The Project will also be designed to maximize generation efficiency by minimizing sources of internal power consumption. Certain equipment, such as the SCR and oxidation catalyst, do result in pressure drop (and reduced power output). However, the SCR and oxidation catalysts are necessary in order to meet LAER and BACT requirements for criteria pollutants. Within the competing design and operational requirements, the Project will be designed to maximize net generation to the grid.

The lowest GHG BACT emission limits for natural gas firing in Table G-4 are for new and clean condition, which only take into account the design margin. The lowest new and clean GHG limit is 793 lb/MW-hr for the Moundsville Power project in West Virginia. The Moundsville Power project is based upon a GE 7FA.05 CTG, which cannot meet a limit of 793 lb/MW-hr if design margin is taken into account and therefore, this limit is considered to be not technically feasible. There are other new and clean permit limits listed in Table G-4 between 809 and 825 lb/MW-hr for various CTG technologies. There are also several projects permitted with annual average GHG limits in units of lb/MW-hr. These limits would be redundant with an efficiency limit, which is discussed below and, therefore, not addressed in this BACT analysis. Most of the projects listed in Table G-4 have GHG limits only for natural gas firing, which is the primary fuel for all of these projects. Consistent with the recently permitted CPV Towantic project in Connecticut, a separate GHG limit for ULSD is not proposed as firing of this fuel will be limited to 720 hours per year and will typically be much less based upon the restrictions for firing ULSD proposed in the Fuels BACT analysis.

The majority of recently permitted combined cycle CTG projects with annual efficiency limits are for natural gas firing, without duct firing and on a net basis. The efficiency of the CTG is best at full load; during start-up, shutdown, malfunction, and reduced operating loads, the efficiency is lower than the full load design. Therefore, several recently permitted projects have GHG limits that are specified as full load operation only, including the recently permitted CPV Towantic project. The CPV Towantic project has the lowest permitted efficiency limit of 7,220 Btu/kW-hr for natural gas firing, without duct firing, and at full operating load. The Oregon Clean Energy facility has a comparable efficiency limit of 7,227 Btu/kW-hr that is also based upon natural gas firing at full operating load.

A review of SIPs did not identify any GHG emission limits for combustion turbines that are more stringent than limits achieved in practice by recently permitted and operated combined cycle CTGs subject to BACT requirements.

Step 5: Selection of BACT

Each of the three technically feasible options in Step 3 can be used in tandem and, therefore, the top-level of control would be the application of all three technologies. Low emitting fuels and high efficiency operation have been demonstrated in practice and, therefore, deemed to meet BACT requirements. An evaluation of the economic, energy, and environmental impacts for CCS was conducted to determine if it meets BACT requirements.

CCS Economics Impacts

The capital expenditure required to capture CO_2 from the exhaust and compress it to the pressure required for transport and sequestration is prohibitive. The Report of the *Interagency Task Force on Carbon Capture and Storage* (ITF, 2010) states that the estimated capital cost for carbon capture equipment for a 550 MW natural gas-fired combined cycle CTG facility is $340 million, which would constitute an 80% increase in the capital cost of the plant. The ITF report states that the cost to control is $105 per ton of CO_2 captured, which would yield an annual cost of $165,222,708 per year to control 80% of the potential 1,966,937 tons of CO_2 emitted per year. These costs are excessive and would make the Project economically unviable.

As the costs for installing a carbon capture system are clearly excessive and the infrastructure to transport and sequester the captured CO_2 does not currently exist, evaluating costs for this infrastructure was determined to be unnecessary.

CCS Energy Impacts

CCS systems impose a very large parasitic load, which reduces the overall efficiency of the Project. The *Interagency Task Force on Carbon Capture and Storage* (ITF, 2010) estimates that CCS technology would result in an energy penalty of 15% or greater, meaning that 15 % additional fuel would be required to meet the design criteria of 550 MW, resulting in a 15% increase in emissions of all other regulated pollutants for the Project.

CCS Environmental Impacts

The reduction in overall plant output would not result in a ton per year reduction in any other pollutants that are subject to BACT. As a result, the emissions of every non-GHG BACT-subject pollutant would significantly increase on a lb/MW-hr basis. This increase in criteria pollutant emissions is clearly counterproductive for LAER and BACT for criteria pollutants.

Based upon this review, CCS is not commercially available for a CTG and even if it were, the economic, energy and environmental impacts would be prohibitive. Therefore, CCS was eliminated as a BACT option for the Project.

The Project is proposing to implement the remaining two control technologies for GHG emission reduction, high-efficiency generating technology and low-carbon fuels. The Project will utilize an Advanced G/H class CTG in combined cycle configuration that provides the highest efficiency of any available fossil fuel generating technology. Based upon the Project design, and adding a margin of 11.4% as discussed in Step 4, the CTG will meet a heat rate of 7,273 Btu/kW-hr at full-load ISO-NE conditions for natural gas firing, without duct firing, on a net basis. The new and clean GHG emission rate, taking into account the 5% design margin, will be 816 lb/MW-hr at full-load ISO conditions for natural gas firing, without duct firing, on a net basis.

NH_3

Step 1: Identification of Control Technology Options

NH_3 emissions are a byproduct of its use as the reagent in the SCR system used to control NO_x emissions from the CTG. NH_3 is injected into the exhaust at a level slightly above stoichiometric requirements to ensure that the NO_x LAER emission rate can be met. NH_3 emissions are limited by controlling the injection rate to ensure compliance with the NO_x LAER emission rate but limiting the amount of unreacted NH_3 (i.e., “slip”) that is exhausted to the atmosphere. The sole technology available is SCR design and process control to limit NH_3 slip.

Step 2: Identification of Technically Infeasible Control Technology Options

The technology identified in Step 1 is technically feasible.

Step 3: Ranking of Technically Feasible Control Technology Options

SCR design and NH_3 injection control to limit slip is technically feasible and the only control option.

Step 4: Evaluation of Most Effective Controls

The results of the review of combined cycle CTG NH_3 emission limits is provided in Table G-4 and Attachment G-1. There are numerous projects listed in Table G-4 with an NH_3 slip limit of 2.0 ppmvdc for natural gas firing and this limit has been demonstrated in practice. The lowest NH_3 slip limit for oil firing is 5.0 ppmvdc, which has also been demonstrated in practice.

Step 5: Selection of BACT

The Project is proposing an NH_3 BACT limit of 2.0 ppmvdc for natural gas firing and 5.0 ppmvdc for ULSD firing, which is the top level of control. Since the top level of control has been selected, an evaluation of economic, energy and environmental impacts is not warranted.

Summary of Proposed CTG Steady-State LAER and BACT Emission Rate Limits

Table G-5 summarizes the proposed LAER and BACT emission limits and associated control technology for the proposed CTG and duct burners.

Table G-5: Proposed LAER and BACT Emission Limits for the Combined Cycle CTG

Pollutant	Fuel	Emission Rate (lb/MMBtu)	Emission Rate (ppmvdc)	Control Technology
NO_x	Natural Gas	0.0075	2.0	DLN and SCR
	ULSD	0.0194	5.0	Water Injection and SCR
VOC	Natural Gas	0.0013 (w/o DF) 0.0026 (w/ DF)	1.0 (w/o DF) 2.0 (w/ DF)	Good combustion controls and an oxidation catalyst
	ULSD	0.0027	2.0	
CO	Natural Gas	0.0045	2.0	Good combustion controls and an oxidation catalyst
	ULSD	0.0047	2.0	
$PM/PM_{10}/PM_{2.5}$	Natural Gas	0.0055 (w/o DF) 0.0059 (w/ DF)	12.8 lb/hr (w/o DF) 22.9 lb/hr (w/ DF)	Good combustion controls and low sulfur fuels
	ULSD	0.0155	30.0 lb/hr	
SO_2	Natural Gas	0.0015	N/A	Low sulfur fuels
	ULSD	0.0015	N/A	
H_2SO_4	Natural Gas	0.00056 (w/o DF) 0.00053 (w/ DF)	N/A	Low sulfur fuels
	ULSD	0.00054	N/A	
NH_3	Natural Gas	0.0027	2.0	SCR design and NH_3 injection control
	ULSD	0.0072	5.0	
GHG	Natural Gas	816 lb/MW-hr (w/o DF)[1]	7,273 Btu/kW-hr (w/o DF)[2]	High efficiency generation and low emitting fuels

[1] New and clean, full load @ ISO conditions, net energy basis.

[2] Full-load ISO conditions, net energy basis, annual.

CTG Start-up and Shutdown Operation

During SU/SD, combustion conditions are less than optimal, resulting in higher emissions of NO_x, CO and VOC. In addition, the control technologies employed to meet the LAER and BACT emission limits, in particular the oxidation catalyst and SCR, require minimum operating temperatures that may not be met during start-up or when the CTG is below its minimum rated operating load.

There are no control technologies to limit SU/SD emissions beyond those already established as the BACT control technologies for steady-state operation. The oxidation catalyst is a passive reactor and will control emissions of CO whenever it is operating above its minimum operating temperature. When the SCR catalyst is below its minimum operating temperature, NH_3 will not react with NO_x and would be emitted as slip. To minimize NO_x emissions during start-up, the Project will initiate NH_3 injection as soon as the SCR catalyst reaches its minimum operating temperature and other SCR design criteria are met.

To establish BACT emission rate limits for SU/SD operation, emissions data from the vendor are relied upon as the vendor has performance data from test cell operation for the selected make and model CTG. The vendor provided SU/SD emissions are not guaranteed and therefore, a conservative compliance margin of 25% was added to the vendor rates to establish emission limits. Emissions of $PM/PM_{10}/PM_{2.5}$ during SU/SD will be equal to or less than the steady-state emission rates on a lb/hr basis.

Table G-6 presents the maximum hourly emission rates associated with each CTG SU/SD events covering all start types. Normal start-ups and shutdowns will be completed in less than one hour. To determine the worst-case hourly emission rate that includes a start-up or shutdown, the balance of each hour was based upon full-load steady-state emission rate. Since cold, warm, and hot starts all have a comparable duration (30-35 minutes), the worst-case type of start for each pollutant has been used to determine a single lb/hr limit for start-up along with a single limit for shutdown to cover all start-up and shutdown events. Any given start-up or shutdown may last longer than one hour if there are issues, which is not uncommon during a start. The one-hour emission values are not intended to imply that all starts will be completed in one hour. However, these lb/hr emissions are intended to apply to each hour of any start-up or shutdown even if the start-up or shutdown persists longer than one hour due to unusual circumstances. Any increase in emissions during SU/SD operation is included in the potential annual emissions provided in Table E-6; supporting calculations are provided in Appendix A.

Table G-6: Start-up/Shutdown Maximum Emission Rates (lbs/hr)

Pollutant	Natural Gas		ULSD	
	Start-up (lb/hr)	Shutdown (lb/hr)	Start-up (lb/hr)	Shutdown (lb/hr)
NO_x	141.8	79.9	192.9	168.5
CO	477.2	212.1	2,306	429.4
VOC	45.0	66.9	263.6	175.4

Auxiliary Boiler

Provided in Table G-7 and Attachment G-1 is a summary of recently permitted CO, VOC and PM BACT emission rates for auxiliary boilers at combined cycle CTG projects. NO_x emissions will meet LAER as described previously; SO_2, H_2SO_4; and GHGs will be controlled by using natural gas as the sole fuel; and there will be no NH_3 emissions. The permit search was conducted back to calendar year 2000 but no emission rate limits below those presented in Table G-7 were identified.

Table G-7: Summary of Recent LAER and BACT Determinations for Natural Gas-Fired Auxiliary Boilers

Facility	Location	Permit Date	Controls	CO[a] (ppm)	VOC[a] (lb/MMBtu)	$PM_{10}/PM_{2.5}$[b] (lb/MMBtu)
Cricket Valley Energy Center	Dover, NY	02/03/2016	ULNB	50	0.0015 (LAER)	0.005
CPV Towantic	Oxford, CT	11/30/2015	ULNB	50	0.0041 (LAER)	0.007
Mattawoman Energy Center	Prince George's, MD	11/13/2015	ULNB	50	0.003 (LAER)	0.0075
Lordstown Energy Center	Lordstown, OH	08/28/2015	LNB	75	0.006	0.008
Eagle Mountain	Eagle Mountain, TX	06/18/2015	ULNB	50	0.0017	N/A
NRG Texas SR Bertron Station	LaPorte, TX	12/19/2014	LNB	N/A	0.037	N/A
Moundsville Power	Moundsville, VA	11/21/2014	LNB	50	0.006	0.005
Interstate/ Marshalltown	Marshalltown, IA	04/14/2014	ULNB	23	0.005	0.008
Footprint Salem Harbor	Salem, MA	01/30/2014	ULNB	5	0.005	0.005
Pinecrest Energy center	Lufkin, TX	11/12/2013	ULNB	75	0.006	0.0076
Carroll County Energy	Washington Twp., OH	11/05/2013	ULNB	75	0.006	0.008
Renaissance Power	Carson City, MI	11/01/2013	LNB	50	0.005	0.005
Consumers Energy Thetford Station	Thetford Twp, MI	07/25/2013	LNB	100	0.008	0.007
Oregon Clean Energy	Oregon, OH	06/18/2013	ULNB	75	0.006	0.008

Facility	Location	Permit Date	Controls	CO[a] (ppm)	VOC[a] (lb/MMBtu)	$PM_{10}/PM_{2.5}$[b] (lb/MMBtu)
Green Energy Partners / Stonewall	Leesburg, VA	04/30/2013	ULNB	50	0.002 (LAER)	0.002
Hickory Run Energy	New Beaver Twp., PA	04/23/2013	ULNB	50	0.0015	0.005
Sunbury Generation	Sunbury, PA	04/01/2013	LNB	100	0.005	0.008
Brunswick County Power	Freeman, VA	03/12/2013	ULNB	50	N/A	N/A

[a] Concentration in ppm is parts per million by volume, dry, at 3 percent O_2.

[b] Concentration in pounds per million Btu heat input (HHV), except as noted, including front (filterable) and back-half (condensable) PM.

Fuels

Step 1: Identification of Control Technology Options

The raw material for the auxiliary boiler is the fuel; natural gas is the lowest emitting fossil fuel.

Step 2: Identification of Technically Infeasible Control Technology Options

The use of natural gas as the sole fuel is technically feasible.

Step 3: Ranking of Technically Feasible Control Technology Options

The use of natural gas as the sole fuel is technically feasible and the top ranked control option.

Step 4: Evaluation of Most Effective Controls

The use of natural gas as the sole fuel is technically feasible and the top ranked control option.

Step 5: Selection of BACT

The auxiliary boiler will be fired with natural gas as the sole fuel, which is the top level of control.

CO and VOC

Step 1: Identification of Control Technology Options

Process Modifications

Combustion controls and ULNB that provide good combustion are the process modifications available to minimize CO and VOC emissions.

Add-on Controls

An oxidation catalyst is a technically feasible option to control CO and VOC emissions from the auxiliary boiler.

Step 2: Identification of Technically Infeasible Control Technology Options

Combustion controls, efficient ULNB and an oxidation catalyst are all technically feasible.

Step 3: Ranking of Technically Feasible Control Technology Options

Combustion controls, efficient ULNB and an oxidation catalyst can all be applied and the use of all three technologies represents the top level of control.

Step 4: Evaluation of Most Effective Controls

A review of recent CO and VOC emission limits for auxiliary boilers installed as part of combined cycle CTG project, as summarized in Table G-7 and Attachment G-1, show that most natural gas fired auxiliary boilers equipped with

ULNB have been permitted with a CO emission rate of 50 ppmvd corrected to 3% O_2. The Footprint Salem Harbor project has an auxiliary boiler equipped with an oxidation catalyst providing a 90% reduction in CO emissions.

The permitted VOC emission rates range from 0.0015 to 0.008 lb/MMBtu. It is important to recognize that the differences in VOC emission limits among various projects are mostly due to different emission guarantee philosophies of the various auxiliary boiler vendors, and are not believed to be actual differences in the quantity of VOC emissions. New auxiliary boilers provide a very high level of combustion efficiency and the amount of VOC emitted between various boilers is expected to be comparable.

Step 5: Selection of BACT

The top level of control would be the application of all control technologies identified in Step 3. Combustion controls and efficient ULNB have been demonstrated in practice. An oxidation catalyst has been permitted for one project but this project has not yet begun operation and, therefore, its permitted emission rate has not yet been demonstrated in practice. However, an evaluation of the economic impacts of an oxidation catalyst was conducted to determine if it met BACT requirements. An evaluation of energy and environmental impacts was not conducted as these impacts would be insignificant for an oxidation catalyst.

Economic Impacts

Since an oxidation catalyst is technically feasible, an economic analysis of the cost effectiveness for emission control was conducted. This economic analysis is presented in Appendix A and is based upon a capital cost estimate provided by an oxidation catalyst vendor. This analysis indicates that the cost effectiveness of an oxidation catalyst is over $6,600 per ton of CO. This cost is excessive for the control of CO emissions. For BACT evaluation purposes, this analysis for CO is adequate to demonstrate an oxidation catalyst is also not cost effective for VOC. The sole auxiliary boiler permitted with an oxidation catalyst has a permitted VOC emission rate at the higher end of the projects listed in Table G-6, which would indicate that the catalyst provides very little, if any, VOC reduction for an auxiliary boiler.

The Project is proposing combustion controls and efficient ULNB to meet a CO emission rate of 0.037 lb/MMBtu (equivalent to 50 ppmvd at 3% O_2) and a VOC emission rate of 0.004 lb/MMBtu.

PM/PM_{10}/$PM_{2.5}$

Step 1: Identification of Control Technology Options

Process Modifications

Combustion controls and ULNB that provide good combustion are the process modifications available to minimize PM, PM_{10}, and $PM_{2.5}$ emissions.

Add-on Controls

There are no technically feasible add-on pollution controls for a natural gas fired auxiliary boiler.

Step 2: Identification of Technically Infeasible Control Technology Options

Combustion controls and good combustion practices are technically feasible control options and have been demonstrated in practice.

Step 3: Ranking of Technically Feasible Control Technology Options

Combustion controls and good combustion practices are the top level of control for PM, PM_{10}, and $PM_{2.5}$ emissions for a natural gas-fired auxiliary boiler.

Step 4: Evaluation of Most Effective Controls

The permitted PM, PM_{10}, and $PM_{2.5}$ emission rates range from 0.002 to 0.008 lb/MMBtu. It is important to recognize that the differences in PM emission limits among various projects are mostly due to different emission guarantee philosophies of the various auxiliary boiler vendors, and are not believed to be actual differences in the quantity of emissions. New auxiliary boilers provide a very high level of combustion efficiency and the amount of particulate matter emitted between various boilers is expected to be comparable.

Step 5: Selection of BACT

The Project is proposing the top level of control, which is combustion controls and efficient ULNB. The proposed BACT $PM/PM_{10}/PM_{2.5}$ emission rate is 0.005 lb/MMBtu based upon the boiler vendor emission rate guarantee

The proposed controls represent the top level of control that have been demonstrated to be achievable in practice.

SO_2 and H_2SO_4

The only control technology available for reducing SO_2 and H_2SO_4 emissions from the auxiliary boiler is the use of low-sulfur fuels. Since no other controls are available, the five-step BACT process was truncated for SO_2 and H_2SO_4 from the auxiliary boiler. Pipeline natural gas has the lowest sulfur content of any fossil fuel and represents the top control technology. The Project will use natural gas as the sole fuel in the auxiliary boiler with a maximum sulfur content of 0.5 gr S/100 scf, equivalent to an SO_2 emission rate of 0.0015 lb/MMBtu. The proposed H_2SO_4 BACT limit is 0.00011 lb/MMBtu based on a 5% conversion of fuel sulfur to SO_3 and subsequently to H_2SO_4.

GHGs

The CTG GHG BACT analysis describes the difficulties in controlling GHG emissions from the primary source of emissions from the Project. The GHG emissions from the auxiliary boiler will be 22,610 tpy, which represents approximately 1% of the Project's GHG emissions. The auxiliary boiler will fire natural gas as the sole fuel, which is the lowest CO_2 emitting fossil fuel and the top level of GHG control. The only technically feasible means of reducing GHG emissions from the auxiliary boiler is to restrict operating hours. The auxiliary boiler is used to keep the combined cycle CTG generating system warm during downtimes, thereby reducing start-up times and start-up emissions. The Project is proposing to limit operation of the auxiliary boiler to no more than 4,600 hours per year; furthermore, the auxiliary boiler will operate simultaneously with the CTG for no more than 500 hours in any calendar year.

Natural Gas Heater

Provided in Table G-8 and Attachment G-1 is a summary of recently permitted CO, VOC and PM BACT emission rates for natural gas heaters at combined cycle CTG projects. NO_x emissions will meet LAER as described previously, SO_2, H_2SO_4 and GHGs will be controlled by using natural gas as the sole fuel and there will be no NH_3 emissions. The permit search was conducted back to calendar year 2000 but no emission rate limits below those presented in Table G-8 were identified.

Table G-8: Summary of Recent LAER and BACT Determinations for Natural Gas Heaters

Facility	Location	Permit Date	Controls	CO[a] (ppm)	VOC[a] (lb/MMBtu)	$PM_{10}/PM_{2.5}$[b] (lb/MMBtu)
Green Energy Partners / Stonewall	Leesburg, VA	04/30/2013	ULNB	50	N/A	N/A
Mattawoman Energy Center	Prince George's, MD	11/13/2015	LNB	28	0.0054 (LAER)	0.0075
Interstate/ Marshalltown	Marshalltown, IA	11/20/2014	ULNB	55	N/A	0.008

[a] Concentration in ppm is parts per million by volume, dry, at 3 percent O_2.

[b] Concentration in pounds per million Btu heat input (HHV), except as noted, including front (filterable) and back-half (condensable) PM.

Fuels

Step 1: Identification of Control Technology Options

The raw material for the auxiliary boiler is the fuel; natural gas is the lowest emitting fossil fuel.

Step 2: Identification of Technically Infeasible Control Technology Options

The use of natural gas as the sole fuel is technically feasible.

Step 3: Ranking of Technically Feasible Control Technology Options

The use of natural gas as the sole fuel is technically feasible and the top ranked control option.

Step 4: Evaluation of Most Effective Controls

The use of natural gas as the sole fuel is technically feasible and the top ranked control option.

Step 5: Selection of BACT

The auxiliary boiler will be fired with natural gas as the sole fuel, which is the top level of control.

CO and VOC

Step 1: Identification of Control Technology Options

Process Modifications

Combustion controls and ULNB that provide good combustion are the process modifications available to minimize CO and VOC emissions.

Add-on Controls

An oxidation catalyst is not considered a technically feasible option to control CO and VOC emissions from the natural gas heater. The exhaust gas temperature from the natural gas heater will be less than 300°F, which is well below the minimum operating temperature of an oxidation catalyst and there does not exist a location within the heater to place an oxidation catalyst in the hot gas path.

Step 2: Identification of Technically Infeasible Control Technology Options

Combustion controls and efficient ULNB are technically feasible.

Step 3: Ranking of Technically Feasible Control Technology Options

Combustion controls and efficient ULNB can be applied and represents the top level of control.

Step 4: Evaluation of Most Effective Controls

There are limited natural gas heaters with permitted limits for CO and VOC emissions as summarized in Table G-8 and Attachment G-1. The permitted CO emission rates range from 28 to 55 ppmvd corrected to 3% O_2 and the sole permitted VOC emission rate identified is 0.0054 lb/MMBtu.

Step 5: Selection of BACT

The top level of control would be the application of all control technologies identified in Step 3. Combustion controls and efficient ULNB have been demonstrated in practice. The Project is proposing combustion controls and efficient ULNB to meet a CO emission rate of 0.037 lb/MMBtu (equivalent to 50 ppmvd at 3% O_2) and a VOC emission rate of 0.0034 lb/MMBtu. These proposed emission rates are consistent with recently permitted BACT rates and are based upon the vendor specified performance guarantee for a natural gas heater equipped with the necessary ULNB required to satisfy NOx LAER.

PM/PM_{10}/$PM_{2.5}$

Step 1: Identification of Control Technology Options

Process Modifications

Combustion controls and ULNB that provide good combustion are the process modifications available to minimize PM, PM_{10}, and $PM_{2.5}$ emissions.

Add-on Controls

There are no technically feasible add-on pollution controls for a natural gas heater.

Step 2: Identification of Technically Infeasible Control Technology Options

Combustion controls and good combustion practices are technically feasible control options and have been demonstrated in practice.

Step 3: Ranking of Technically Feasible Control Technology Options

Combustion controls and good combustion practices are the top level of control for PM, PM_{10}, and $PM_{2.5}$ emissions for a natural gas heater.

Step 4: Evaluation of Most Effective Controls

The recently permitted PM, PM_{10}, and $PM_{2.5}$ emission rates are 0.008 lb/MMBtu.

Step 5: Selection of BACT

The Project is proposing the top level of control, which is combustion controls and efficient ULNB. The proposed BACT PM/PM_{10}/$PM_{2.5}$ emission rate is 0.005 lb/MMBtu based upon the vendor emission rate guarantee

The proposed controls represent the top level of control that have been demonstrated to be achievable in practice.

SO_2 and H_2SO_4

The only control technology available for reducing SO_2 and H_2SO_4 emissions from the natural gas heater is the use of low-sulfur fuels. Since no other controls are available, the five-step BACT process was truncated for SO_2 and H_2SO_4 from the natural gas heater. Pipeline natural gas has the lowest sulfur content of any fossil fuel and represents the top control technology. The Project will use natural gas as the sole fuel for the natural gas heater with a maximum sulfur content of 0.5 gr S/100 scf, equivalent to an SO_2 emission rate of 0.0015 lb/MMBtu. The proposed H_2SO_4 BACT limit is 0.00011 lb/MMBtu based on a 5% conversion of fuel sulfur to SO_3 and subsequently to H_2SO_4.

GHGs

The CTG GHG BACT analysis describes the difficulties in controlling GHG emissions from the primary source of emissions from the Project. The GHG emissions from the natural gas heater will be 6,151 tpy, which represents approximately 0.3% of the Project's GHG emissions. The natural gas heater will fire natural gas as the sole fuel, which is the lowest CO_2 emitting fossil fuel and the top level of GHG control. The gas heater will operate unrestricted up to 8,760 hours per year.

Emergency Generator Engine

Fuels

Step 1: Identification of Control Technology Options

The raw material for the emergency generator engine is the fuel. It is critical for the emergency generator engine to have its own stand-alone fuel source in the event that the emergency includes disruption of fuel from an outside source, such as natural gas. The primary purpose of the emergency generator is to be able to shut the plant down safely in the event of an electric power outage. Generator engines are available that can fire natural gas or diesel; to incorporate a stand-alone fuel source, the available fuel options are LNG and ULSD.

Step 2: Identification of Technically Infeasible Control Technology Options

Use of interruptible natural gas is not feasible for an emergency engine that must be able to operate during an emergency. LNG storage was eliminated as technically infeasible per the CTG Fuels BACT analysis.

Step 3: Ranking of Technically Feasible Control Technology Options

The sole stand-alone fuel source available for the emergency generator engine is ULSD.

Step 4: Evaluation of Most Effective Controls

Under RCSA Section 22a-174-19b, all distillate oil sold in Connecticut beginning July 1, 2018 must be ULSD, having a maximum sulfur content of 0.0015% sulfur by weight (15 ppmw).

Step 5: Select BACT

The emergency generator engine will be fired with ULSD having a sulfur content no greater than 15 ppmw.

CO and VOC

Step 1: Identification of Control Technology Options

Process Modifications

Low-emission engine design is the only known process modification that can be made to reduce CO and VOC emissions from a diesel engine.

Add-on Controls

An oxidation catalyst is a suitable control technology for combustion sources. However, there are no known emergency engines that are equipped with an oxidation catalyst. Given the very limited number of operating hours for an emergency engine, it is uncertain how efficiently an oxidation catalyst would perform. As there are no known emergency engines with an oxidation catalyst, this technology was determined to be not demonstrated in practice and, therefore, not technically feasible.

Step 2: Identification of Technically Infeasible Control Technology Options

Low-emission engine design is the only technically feasible control option for an emergency engine.

Step 3: Ranking of Technically Feasible Control Technology Options

Low-emission engine design is the only technically feasible control option for an emergency engine.

Step 4: Evaluation of Most Effective Controls

Stationary internal combustion engines are subject to 40 CFR Part 60, Subpart IIII and 40 CFR 63, Subpart ZZZZ. A review of recent CO and VOC emission limits for emergency generator diesel engines installed as part of a major source projects, as summarized in Attachment G-1, shows that most of these engines were required to meet the applicable emission limitations for non-road engines under 40 CFR Part 89 as required by 40 CFR 60, Subpart IIII. No limits were found that required installation of add-on controls for emergency generator diesel engines.

Step 5: Selection of BACT

The Project is proposing that BACT be an engine that meets the applicable CO and VOC emission standard under 40 CFR 89. For an engine with a capacity greater than 560 kW, the applicable CO emission standard is 3.5 g/kW-hr. The VOC standard is equivalent to the NMHC standard, which is combined with the NO_x standard under 40 CFR 89 of 6.4 g/kW-hr (NO_x + NMHC). It is conservatively estimated that VOC will constitute 5% of the NO_x plus NMHC standard, which is equivalent to 0.32 g/kW-hr.

PM/PM_{10}/$PM_{2.5}$

Step 1: Identification of Control Technology Options

Process Modifications

Low-PM engine design is the only known process modification that can be made to reduce PM emissions from a diesel engine.

Add-on Controls

A diesel particulate filter (DPF) is a control option for PM emissions from a diesel engine. However, there are no known emergency engines that are equipped with a DPF. Given the very limited number of operating hours for an emergency engine, it is uncertain how efficiently a DPF would perform. As there are no known emergency engines with a DPF, this technology was determined to be not demonstrated in practice and, therefore, not technically feasible.

Step 2: Identification of Technically Infeasible Control Technology Options

Low-PM engine design is the only technically feasible control option for an emergency engine.

Step 3: Ranking of Technically Feasible Control Technology Options

Low-PM engine design is the only technically feasible control option for an emergency engine.

Step 4: Evaluation of Most Effective Controls

Stationary internal combustion engines are subject to 40 CFR Part 60, Subpart IIII and 40 CFR 63, Subpart ZZZZ. A review of recent PM emission limits for emergency generator diesel engines installed as part of a major source generating project, as summarized in Attachment G-1, shows that the great majority of these engines were required to meet the applicable emission limitations for non-road engines under 40 CFR 89 as required by 40 CFR 60, Subpart IIII. No limits were found that required installation of add-on pollution controls for emergency generator diesel engines.

Step 5: Selection of BACT

The Project is proposing that BACT be an engine that meets the applicable PM emission standard under 40 CFR 89. For an engine with a capacity greater than 560 kW, the applicable PM emission standard is 0.2 g/kW-hr.

SO_2 and H_2SO_4

The only control technology for reducing SO_2 and H_2SO_4 emissions from the emergency generator engine is to utilize low sulfur fuels. No other control technologies are available for the control of H_2SO_4 from an emergency engine and, therefore, the five-step BACT process was truncated. The Project will utilize ULSD with a maximum sulfur content of 15 ppmw, which is the lowest sulfur fuel available and represents the top level of control for SO_2 and H_2SO_4 from an emergency engine. The proposed SO_2 BACT limit is 0.0015 lb/MMBtu based on 100% conversion of fuel sulfur to SO_2. The proposed H_2SO_4 BACT limit is based on 5% conversion of fuel sulfur to SO_3 and subsequently to H_2SO_4, resulting in H_2SO_4 emissions of 0.00011 lb/MMBtu.

Greenhouse Gases (GHGs)

The CTG GHG BACT analysis describes the difficulties in controlling GHG emissions from the primary source of emissions from the Project, which is the CTG. The emergency generator engine is an insignificant source of GHG emissions at 308 tpy, which represents approximately 0.02% of the Project's GHG emissions. There are no technically feasible means of reducing GHG emissions from the emergency generator engine other than restricting operating hours. The emergency generator engine will operate no more than 300 hours per year.

Emergency Fire Pump Engine

Fuels

Step 1: Identification of Control Technology Options

The raw material for the emergency fire pump engine is the fuel. It is critical for the emergency fire pump engine to have its own stand-alone fuel source in the event that the emergency includes disruption of fuel from an outside source, such as natural gas. The purpose of the emergency fire pump is to provide firefighting capability during a fire onsite. Engines are available that can fire natural gas or diesel; to incorporate a stand-alone fuel source, the available fuel options are LNG and ULSD.

Step 2: Identification of Technically Infeasible Control Technology Options

Use of interruptible natural gas is not feasible for an emergency engine that must be able to operate during an emergency. LNG storage was eliminated as technically infeasible per the CTG Fuels BACT analysis.

Step 3: Ranking of Technically Feasible Control Technology Options

The sole stand-alone fuel source available for the emergency generator engine is ULSD.

Step 4: Evaluation of Most Effective Controls

Under RCSA Section 22a-174-19b, all distillate oil sold in Connecticut beginning July 1, 2018 must be ULSD, having a maximum sulfur content of 0.0015% sulfur by weight (15 ppmw).

Step 5: Select BACT

The emergency generator engine will be fired with ULSD having a sulfur content no greater than 15 ppmw.

CO and VOC

Step 1: Identification of Control Technology Options

Process Modifications

Low-emission engine design is the only known process modification that can be made to reduce CO and VOC emissions from a diesel engine.

Add-on Controls

An oxidation catalyst is a suitable control technology for combustion sources. However, there are no known emergency engines that are equipped with an oxidation catalyst. Given the very limited number of operating hours for an emergency engine, it is uncertain how efficiently an oxidation catalyst would perform. As there are no known emergency engines with an oxidation catalyst, this technology was determined to be not demonstrated in practice and, therefore, not technically feasible.

Step 2: Identification of Technically Infeasible Control Technology Options

Low-emission engine design is the only technically feasible control option for an emergency engine.

Step 3: Ranking of Technically Feasible Control Technology Options

Low-emission engine design is the only technically feasible control option for an emergency engine.

Step 4: Evaluation of Most Effective Controls

Stationary internal combustion engines are subject to 40 CFR 60, Subpart IIII and 40 CFR 63, Subpart ZZZZ. These regulations require new emergency fire pump engines to meet the applicable emission standards under NSPS Subpart IIII, Table 4. The applicable limits under NSPS Subpart IIII, Table 4 are equal to or more stringent than 40 CFR 89. A review of emission limits in SIPs did not identify any CO or VOC emission limits for new emergency fire pump engines that are more stringent than the limits provided in NSPS Subpart IIII, Table 4.

Step 5: Selection of BACT

The top level of control actually demonstrated in practice for an emergency fire pump engine fired with ULSD is determined to be compliance with the applicable limits under 40 CFR 60, Subpart IIII, Table 4 and firing of ULSD that meets the requirements of 40 CFR 80, Subpart I. The applicable CO limit for a 305-bhp new emergency fire pump engine is 3.5 g/kW-hr of CO. VOC is limited pursuant to 40 CFR 60 Subpart IIII as a combined limit of 4.0 g/kW-hr of NO_x and NMHC combined. It is conservatively estimated that VOC will constitute 5% of the NO_x plus NMHC standard, which is equivalent to 0.20 g/kW-hr.

$PM/PM_{10}/PM_{2.5}$

Step 1: Identification of Control Technology Options

Process Modifications

Low-PM engine design is the only known process modification that can be made to reduce PM emissions from a diesel engine.

Add-on Controls

A DPF is a control option for PM emissions from a diesel engine. However, there are no known emergency engines that are equipped with a DPF. Given the very limited number of operating hours for an emergency engine, it is uncertain how efficiently a DPF would perform. As there are no known emergency engines with a DPF, this technology was determined to be not demonstrated in practice and, therefore, not technically feasible.

Step 2: Identification of Technically Infeasible Control Technology Options

Low-PM engine design is the only technically feasible control option for an emergency engine.

Step 3: Ranking of Technically Feasible Control Technology Options

Low-PM engine design is the only technically feasible control option for an emergency engine.

Step 4: Evaluation of Most Effective Controls

Stationary internal combustion engines are subject to 40 CFR 60, Subpart IIII and 40 CFR 63, Subpart ZZZZ. These regulations require a new emergency fire pump engine to meet the applicable emission standards under NSPS Subpart IIII, Table 4. The applicable limits under NSPS Subpart IIII, Table 4 are equal to or more stringent than 40 CFR 89. A review of emission limits in SIPs did not identify any PM emission limits for new emergency engines that are more stringent than the limits provided in NSPS Subpart IIII, Table 4.

Step 5: Selection of BACT

The Project is proposing that BACT be an engine that meets the applicable PM emission standard under 40 CFR 89. For an emergency fire pump engine with a capacity rating between 300 and 600 bhp, the applicable PM emission standard is 0.20 g/kW-hr.

SO_2 and H_2SO_4

The only control technology for reducing SO_2 and H_2SO_4 emissions from the emergency generator engine is to utilize low-sulfur fuels. No other control technologies are available for the control of H_2SO_4 from an emergency engine and, therefore, the five-step BACT process was truncated. The Project will utilize ULSD with a maximum sulfur content of 15 ppmw, which is the lowest sulfur fuel available and represents the top level of control for SO_2 and H_2SO_4 from an emergency engine. The proposed SO_2 BACT limit is 0.0015 lb/MMBtu based on 100% conversion of fuel sulfur to SO_2. The proposed H_2SO_4 BACT limit is based on 5% conversion of fuel sulfur to SO_3 and subsequently to H_2SO_4, resulting in H_2SO_4 emissions of 0.00011 lb/MMBtu.

Greenhouse Gases (GHGs)

The CTG GHG BACT analysis describes the difficulties in controlling GHG emissions from the primary source of emissions from the Project, which is the CTG. The emergency fire pump engine is an insignificant source of GHG emissions at 49 tpy, which represents approximately 0.003% of the Project's GHG emissions. There are no technically feasible means of reducing GHG emissions from the emergency fire pump engine other than restricting operating hours. The emergency fire pump engine will operate no more than 300 hours per year.

Ancillary Source BACT Summary

Table G-9 summarizes the proposed PSD BACT emission limits and associated control technology for the Project's ancillary emission sources.

Table G-9: Ancillary Emission Sources - Proposed BACT Emission Limits

Pollutant	Auxiliary Boiler	Natural Gas Heater	Emergency Generator Engine	Emergency Fire Pump Engine
NO_x	7 ppmvd at 3% O_2	10 ppmvd at 3% O_2	6.4 g/kW-hr NO_x[1]	4.0 grams/kW-hr[1]
VOC	9.6 ppmvd at 3% O_2	8.0 ppmvd at 3% O_2	0.32 g/kW-hr VOC[1]	0.20 g/kW-hr VOC[1]
CO	50 ppmvd at 3% O_2	50 ppmvd at 3% O_2	3.5 grams/kW-hr[1]	3.5 grams/kW-hr[1]
PM	0.005 lb/MMBtu	0.005 lb/MMBtu	0.20 grams/kW-hr[1]	0.20 grams/kW-hr[1]
SO_2	0.0015 lb/MMBtu	0.0015 lb/MMBtu	0.0015 lb/MMBtu	0.0015 lb/MMBtu
H_2SO_4	0.00011 lb/MMBtu	0.00011 lb/MMBtu	0.00011 lb/MMBtu	0.00011 lb/MMBtu
GHG	22,610 tpy	6,151 tpy	308 tpy	49 tpy

[1] Proposed emission limits in accordance with applicable limits under 40 CFR 60. NSPS Subpart IIII emission test cycle as demonstrated by manufacturer's certification.

Fugitive GHG Emission Sources

The Project will include natural gas handling systems and circuit breakers that contain SF_6. Fugitive losses of natural gas and SF_6 will contribute to GHG emissions from the Project. Provided in Appendix A is an estimate of fugitive GHG emissions totaling 547 tpy, which represents less than 0.03% of the total GHG emissions for the Project. In order to minimize fugitive GHG emissions, the Project will implement current BACT operating standards for these emission sources, including the following:

- Implement an auditory/visual/olfactory leak detection program for the natural gas piping components and make daily observations.
- Equip each circuit breaker with a low pressure alarm and low pressure lockout. SF_6 emissions from each circuit breaker will be calculated annually (calendar year) in accordance with the mass balance approach in Equation DD-1 of 40 CFR 98, Subpart DD. The maximum annual leakage rate for SF_6 will not exceed 0.5% of the total SF_6 storage capacity of the plant's circuit breakers.
- Maintain records of all measurements and reports related to the fugitive emission sources including those related to maintenance as well as compliance with the Monitoring and QA/QC procedures defined under 40 CFR 98.304 Subpart DD.

Attachment G: Analysis of Best Available Control Technology (BACT)

(Complete this form for each pollutant for which BACT must be incorporated. Duplicate this form as necessary.)

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Applicant Name: NTE Connecticut, LLC

Unit No.: AB

Unit Description: Auxliary Boiler

Pollutant: GHG

Part I. Identify All Control Technologies/ Options

List all available control systems that have practical potential for application to this type of unit.

To ensure a sufficiently broad and comprehensive search of control alternatives, references other than the RBLC data should be investigated and documented. These references include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Source	**Facility**	**Control Technology**	**Reference**
Auxiliary Boiler	Several. See Attachme nt G1	Pipeline quality natural gas as the sole fuel	RBLC, CT DEEP BACT Database, permits

Part II. Rank All Control Options by Technical Feasibility and Control Effectiveness

List all Control Options considered in Part I and identify which options are technically feasible. First list the technically feasible control options in descending order of Overall Pollution Reduction Efficiency and then list the technically infeasible options. If a control option is determined to be technically infeasible, specify the reason in the Comments/Rationale column. DO NOT list the Post-BACT Emissions Rate, Emissions Reduction, and the Overall Pollution Reduction Efficiency (%) for technically infeasible control options. Technically infeasibility should be based on physical, chemical, and engineering principles that would preclude the successful use of the control option on the emissions unit under review. In addition, complete *Attachment G1: Background Search – Existing BACT determinations (DEEP-NSR-APP-214b)* to provide more detailed information regarding each of the technically feasible options listed below. (Duplicate this page as necessary)

Baseline Emissions Rate (tpy): 22,610

BACT Option	Technically Feasible? (Yes/No)	Allowable Emissions Rate	Emissions Reduction (tpy)	Overall Pollution Reduction Efficiency (%)	Comments/Rationale
Pipeline quality natural gas as the sole fuel	Yes	22,610	0	0	Top level of control.

Part III. Economic Impacts/Cost Effectiveness

Is the proposed BACT the top control option ☒ **Yes** ☐ **No** **If Yes, go to Part IV**

Complete *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c for each technically feasible BACT options listed in Part **II** for which economic impacts are to be considered before filling this Part.

Provide the following economic information for each of the BACT options with completed *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c.

BACT Option	Total Annualized Cost (TAC, $/year)	Cost Effectiveness ($/ton)		Comments/Rationale
		Average	Incremental (optional)	

Part IV. Environmental Impact Analysis

Provide the following information regarding environmental impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the environmental impact analysis should be done for that option only.

BACT Option	Toxics Impact		Adverse Impact		Comments/Rationale
	Yes/No	amount/ton	Yes/No	amount/ton	
Pipeline quality natural gas as the sole fuel	No	N/A	No	N/A	

Part V. Energy Impact Analysis

Provide the following information regarding energy impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the energy impact analysis should be done for that option only.

Baseline (specify units): N/A

BACT Option	Incremental Increase Over Baseline (specify units)	Comments/Rationale
Pipeline quality natural gas as the sole fuel	0	No energy impact

Part VI. BACT Recommendation

BACT Option Recommended: Pipeline quality natural gas as the sole fuel.

Justification: Natural gas is the lowest GHG emitting fossil fuel. The selected controls are the top level of control.

Part VII. Additional Forms/Attachments

Indicate the number of each type of form included as part of this BACT analysis.

Number of Forms	Form Number	Form Name	Mandatory?
See Att. G text	DEEP-NSR-APP-214b	Attachment G1: Background Search – Existing BACT Determinations	Yes
0	DEEP-NSR-APP-214c	Attachment G2: Cost/Economic Impact Analysis	Yes, for each economic consideration
1	DEEP-NSR-APP-214d	Attachment G3: Summary of Best Available Control Technology	Yes

Additional Attachments:

Attachment G: Analysis of Best Available Control Technology (BACT)

(Complete this form for each pollutant for which BACT must be incorporated. Duplicate this form as necessary.)

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Applicant Name: NTE Connecticut, LLC

Unit No.: AB

Unit Description: Auxliary Boiler

Pollutant: H_2SO_4

Part I. Identify All Control Technologies/ Options

List all available control systems that have practical potential for application to this type of unit.

To ensure a sufficiently broad and comprehensive search of control alternatives, references other than the RBLC data should be investigated and documented. These references include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Source	Facility	Control Technology	Reference
Auxiliary Boiler	Several. See Attachme nt G1	Pipeline quality natural gas as the sole fuel	RBLC, CT DEEP BACT Database, permits

Part II. Rank All Control Options by Technical Feasibility and Control Effectiveness

List all Control Options considered in Part I and identify which options are technically feasible. First list the technically feasible control options in descending order of Overall Pollution Reduction Efficiency and then list the technically infeasible options. If a control option is determined to be technically infeasible, specify the reason in the Comments/Rationale column. DO NOT list the Post-BACT Emissions Rate, Emissions Reduction, and the Overall Pollution Reduction Efficiency (%) for technically infeasible control options. Technically infeasibility should be based on physical, chemical, and engineering principles that would preclude the successful use of the control option on the emissions unit under review. In addition, complete *Attachment G1: Background Search – Existing BACT determinations (DEEP-NSR-APP-214b)* to provide more detailed information regarding each of the technically feasible options listed below. (Duplicate this page as necessary)

Baseline Emissions Rate (tpy): 0.02

BACT Option	Technically Feasible? (Yes/No)	Allowable Emissions Rate	Emissions Reduction (tpy)	Overall Pollution Reduction Efficiency (%)	Comments/Rationale
Pipeline quality natural gas as the sole fuel	Yes	0.02	0	0	Top level of control.

Part III. Economic Impacts/Cost Effectiveness

Is the proposed BACT the top control option ☒ **Yes** ☐ **No** **If Yes, go to Part IV**

Complete *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c for each technically feasible BACT options listed in Part **II** for which economic impacts are to be considered before filling this Part.

Provide the following economic information for each of the BACT options with completed *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c.

BACT Option	Total Annualized Cost (TAC, $/year)	Cost Effectiveness ($/ton)		Comments/Rationale
		Average	Incremental (optional)	

Part IV. Environmental Impact Analysis

Provide the following information regarding environmental impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the environmental impact analysis should be done for that option only.

BACT Option	Toxics Impact		Adverse Impact		Comments/Rationale
	Yes/No	amount/ton	Yes/No	amount/ton	
Pipeline quality natural gas as the sole fuel	No	N/A	No	N/A	

Part V. Energy Impact Analysis

Provide the following information regarding energy impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the energy impact analysis should be done for that option only.

Baseline (specify units): N/A

BACT Option	Incremental Increase Over Baseline (specify units)	Comments/Rationale
Pipeline quality natural gas as the sole fuel	0	No energy impact

Part VI. BACT Recommendation

BACT Option Recommended: Pipeline quality natural gas as the sole fuel. The natural gas will have a maximum sulfur content of 0.5 grains per 100 cubic feet of gas.

Justification: The selected controls are the top level of control.

Part VII. Additional Forms/Attachments

Indicate the number of each type of form included as part of this BACT analysis.

Number of Forms	Form Number	Form Name	Mandatory?
See Att. G text	DEEP-NSR-APP-214b	Attachment G1: Background Search – Existing BACT Determinations	Yes
0	DEEP-NSR-APP-214c	Attachment G2: Cost/Economic Impact Analysis	Yes, for each economic consideration
1	DEEP-NSR-APP-214d	Attachment G3: Summary of Best Available Control Technology	Yes

Additional Attachments:

Attachment G: Analysis of Best Available Control Technology (BACT)

(Complete this form for each pollutant for which BACT must be incorporated. Duplicate this form as necessary.)

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Applicant Name: NTE Connecticut, LLC

Unit No.: AB

Unit Description: Auxliary Boiler

Pollutant: NOx

Part I. Identify All Control Technologies/ Options

List all available control systems that have practical potential for application to this type of unit.

To ensure a sufficiently broad and comprehensive search of control alternatives, references other than the RBLC data should be investigated and documented. These references include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Source	**Facility**	**Control Technology**	**Reference**
N/A	None	Selective Catalytic Reduction (SCR)	RBLC, CT DEEP BACT Database, permits
Auxiliary Boiler	Several. See Attachme nt G1	Ultra Low-NOx Burners (ULNB)	RBLC, CT DEEP BACT Database, permits

Part II. Rank All Control Options by Technical Feasibility and Control Effectiveness

List all Control Options considered in Part I and identify which options are technically feasible. First list the technically feasible control options in descending order of Overall Pollution Reduction Efficiency and then list the technically infeasible options. If a control option is determined to be technically infeasible, specify the reason in the Comments/Rationale column. DO NOT list the Post-BACT Emissions Rate, Emissions Reduction, and the Overall Pollution Reduction Efficiency (%) for technically infeasible control options. Technically infeasibility should be based on physical, chemical, and engineering principles that would preclude the successful use of the control option on the emissions unit under review. In addition, complete *Attachment G1: Background Search – Existing BACT determinations (DEEP-NSR-APP-214b)* to provide more detailed information regarding each of the technically feasible options listed below. (Duplicate this page as necessary)

Baseline Emissions Rate (tpy): 16.8

BACT Option	Technically Feasible? (Yes/No)	Allowable Emissions Rate	Emissions Reduction (tpy)	Overall Pollution Reduction Efficiency (%)	Comments/Rationale
Selective Catalytic Reduction (SCR)	Yes	1.7	15.1	90	Top level of control. Not installed on any known gas fired auxilary boilers
Ultra Low-NOx Burners (ULNB)	Yes	1.6	15.2	90	ULNB and operating hour restrictions. Highest level of control installed in practice

Part III. Economic Impacts/Cost Effectiveness

Is the proposed BACT the top control option ☐ **Yes** ☒ **No** **If Yes, go to Part IV**

Complete *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c for each technically feasible BACT options listed in Part **II** for which economic impacts are to be considered before filling this Part.

Provide the following economic information for each of the BACT options with completed *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c.

BACT Option	Total Annualized Cost (TAC, $/year)	Cost Effectiveness ($/ton)		Comments/Rationale
		Average	Incremental (optional)	
Selective Catalytic Reduction (SCR)	N/A	N/A	N/A	No emission reductions below ULNB and operating restrictions
Ultra Low-NOx Burners (ULNB)	0	N/A	N/A	No increase in costs above baseline

Part IV. Environmental Impact Analysis

Provide the following information regarding environmental impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the environmental impact analysis should be done for that option only.

BACT Option	Toxics Impact		Adverse Impact		Comments/Rationale
	Yes/No	amount/ton	Yes/No	amount/ton	
Selective Catalytic Reduction (SCR)	No	N/A	Yes	0.38 tpy NH3	Ammonia emissions. NH3 tons based upon 5 ppm NH3 slip
Ultra Low-NOx Burners (ULNB)	No	N/A	No	N/A	

Part V. Energy Impact Analysis

Provide the following information regarding energy impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the energy impact analysis should be done for that option only.

Baseline (specify units): N/A

BACT Option	Incremental Increase Over Baseline (specify units)	Comments/Rationale
Selective Catalytic Reduction (SCR)	<0.5%	Marginal reduction in boiler efficiency
Ultra Low-NOx Burners (ULNB)	0	No change in energy impacts

Part VI. BACT Recommendation

BACT Option Recommended: Ultra Low-NOx Burners meeting an emission rate of no greater than 7 ppmvd at 3% O_2.

Justification: The selected controls are the top level of control used in practice for a gas fired auxiliary boiler rated at less than 100 MMBtu/hr.

Part VII. Additional Forms/Attachments

Indicate the number of each type of form included as part of this BACT analysis.

Number of Forms	Form Number	Form Name	Mandatory?
See Table G-2 in text	DEEP-NSR-APP-214b	Attachment G1: Background Search – Existing BACT Determinations	Yes
0	DEEP-NSR-APP-214c	Attachment G2: Cost/Economic Impact Analysis	Yes, for each economic consideration
1	DEEP-NSR-APP-214d	Attachment G3: Summary of Best Available Control Technology	Yes

Additional Attachments: 0

Attachment G: Analysis of Best Available Control Technology (BACT)

(Complete this form for each pollutant for which BACT must be incorporated. Duplicate this form as necessary.)

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Applicant Name: NTE Connecticut, LLC

Unit No.: AB

Unit Description: Auxliary Boiler

Pollutant: PM, PM10 and PM2.5 (all PM is expected to be PM2.5)

Part I. Identify All Control Technologies/ Options

List all available control systems that have practical potential for application to this type of unit.

To ensure a sufficiently broad and comprehensive search of control alternatives, references other than the RBLC data should be investigated and documented. These references include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Source	Facility	Control Technology	Reference
Auxiliary Boiler	Several. See Attachme nt G1	Pipeline quality natural gas as the sole fuel	RBLC, CT DEEP BACT Database, permits

Part II. Rank All Control Options by Technical Feasibility and Control Effectiveness

List all Control Options considered in Part I and identify which options are technically feasible. First list the technically feasible control options in descending order of Overall Pollution Reduction Efficiency and then list the technically infeasible options. If a control option is determined to be technically infeasible, specify the reason in the Comments/Rationale column. DO NOT list the Post-BACT Emissions Rate, Emissions Reduction, and the Overall Pollution Reduction Efficiency (%) for technically infeasible control options. Technically infeasibility should be based on physical, chemical, and engineering principles that would preclude the successful use of the control option on the emissions unit under review. In addition, complete *Attachment G1: Background Search – Existing BACT determinations (DEEP-NSR-APP-214b)* to provide more detailed information regarding each of the technically feasible options listed below. (Duplicate this page as necessary)

Baseline Emissions Rate (tpy): 0.97

BACT Option	Technically Feasible? (Yes/No)	Allowable Emissions Rate	Emissions Reduction (tpy)	Overall Pollution Reduction Efficiency (%)	Comments/Rationale
Pipeline quality natural gas as the sole fuel	Yes	0.97	0	0	Top level of control. No reduction expected from uncontrolled natural gas fired unit

Part III. Economic Impacts/Cost Effectiveness

Is the proposed BACT the top control option ☒ **Yes** ☐ **No** **If Yes, go to Part IV**

Complete *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c for each technically feasible BACT options listed in Part **II** for which economic impacts are to be considered before filling this Part.

Provide the following economic information for each of the BACT options with completed *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c.

BACT Option	Total Annualized Cost (TAC, $/year)	Cost Effectiveness ($/ton)		Comments/Rationale
		Average	Incremental (optional)	

Part IV. Environmental Impact Analysis

Provide the following information regarding environmental impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the environmental impact analysis should be done for that option only.

BACT Option	Toxics Impact		Adverse Impact		Comments/Rationale
	Yes/No	amount/ton	Yes/No	amount/ton	
Pipeline quality natural gas as the sole fuel	No	N/A	No	N/A	

Part V. Energy Impact Analysis

Provide the following information regarding energy impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the energy impact analysis should be done for that option only.

Baseline (specify units): N/A

BACT Option	Incremental Increase Over Baseline (specify units)	Comments/Rationale
Pipeline quality natural gas as the sole fuel	0	No energy impact

Part VI. BACT Recommendation

BACT Option Recommended: Pipeline quality natural gas as the sole fuel meeting an emission limit of 0.005 lb/MMBtu.

Justification: The selected controls are the top level of control.

Part VII. Additional Forms/Attachments

Indicate the number of each type of form included as part of this BACT analysis.

Number of Forms	Form Number	Form Name	Mandatory?
See Table G-7 in text.	DEEP-NSR-APP-214b	Attachment G1: Background Search – Existing BACT Determinations	Yes
0	DEEP-NSR-APP-214c	Attachment G2: Cost/Economic Impact Analysis	Yes, for each economic consideration
1	DEEP-NSR-APP-214d	Attachment G3: Summary of Best Available Control Technology	Yes

Additional Attachments: 0

Attachment G: Analysis of Best Available Control Technology (BACT)

(Complete this form for each pollutant for which BACT must be incorporated. Duplicate this form as necessary.)

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Applicant Name: NTE Connecticut, LLC

Unit No.: AB

Unit Description: Auxliary Boiler

Pollutant: SO2

Part I. Identify All Control Technologies/ Options

List all available control systems that have practical potential for application to this type of unit.

To ensure a sufficiently broad and comprehensive search of control alternatives, references other than the RBLC data should be investigated and documented. These references include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Source	Facility	Control Technology	Reference
Auxiliary Boiler	Several. See Attachme nt G1	Pipeline quality natural gas as the sole fuel	RBLC, CT DEEP BACT Database, permits

Part II. Rank All Control Options by Technical Feasibility and Control Effectiveness

List all Control Options considered in Part I and identify which options are technically feasible. First list the technically feasible control options in descending order of Overall Pollution Reduction Efficiency and then list the technically infeasible options. If a control option is determined to be technically infeasible, specify the reason in the Comments/Rationale column. DO NOT list the Post-BACT Emissions Rate, Emissions Reduction, and the Overall Pollution Reduction Efficiency (%) for technically infeasible control options. Technically infeasibility should be based on physical, chemical, and engineering principles that would preclude the successful use of the control option on the emissions unit under review. In addition, complete *Attachment G1: Background Search – Existing BACT determinations (DEEP-NSR-APP-214b)* to provide more detailed information regarding each of the technically feasible options listed below. (Duplicate this page as necessary)

Baseline Emissions Rate (tpy): 0.29

BACT Option	Technically Feasible? (Yes/No)	Allowable Emissions Rate	Emissions Reduction (tpy)	Overall Pollution Reduction Efficiency (%)	Comments/Rationale
Pipeline quality natural gas as the sole fuel	Yes	0.29	0	0	Top level of control. No reduction expected from uncontrolled natural gas fired unit

Part III. Economic Impacts/Cost Effectiveness

Is the proposed BACT the top control option ☒ **Yes** ☐ **No** **If Yes, go to Part IV**

Complete *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c for each technically feasible BACT options listed in Part **II** for which economic impacts are to be considered before filling this Part.

Provide the following economic information for each of the BACT options with completed *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c.

BACT Option	Total Annualized Cost (TAC, $/year)	Cost Effectiveness ($/ton)		Comments/Rationale
		Average	Incremental (optional)	

Part IV. Environmental Impact Analysis

Provide the following information regarding environmental impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the environmental impact analysis should be done for that option only.

BACT Option	**Toxics Impact**		**Adverse Impact**		**Comments/Rationale**
	Yes/No	**amount/ton**	**Yes/No**	**amount/ton**	
Pipeline quality natural gas as the sole fuel	No	N/A	No	N/A	

Part V. Energy Impact Analysis

Provide the following information regarding energy impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the energy impact analysis should be done for that option only.

Baseline (specify units): N/A

BACT Option	Incremental Increase Over Baseline (specify units)	Comments/Rationale
Pipeline quality natural gas as the sole fuel	0	No energy impact

Part VI. BACT Recommendation

BACT Option Recommended: Pipeline quality natural gas as the sole fuel. The natural gas will have a maximum sulfur content of 0.5 grains per 100 cubic feet of gas.

Justification: The selected controls are the top level of control.

Part VII. Additional Forms/Attachments

Indicate the number of each type of form included as part of this BACT analysis.

Number of Forms	Form Number	Form Name	Mandatory?
See Att. G text	DEEP-NSR-APP-214b	Attachment G1: Background Search – Existing BACT Determinations	Yes
0	DEEP-NSR-APP-214c	Attachment G2: Cost/Economic Impact Analysis	Yes, for each economic consideration
1	DEEP-NSR-APP-214d	Attachment G3: Summary of Best Available Control Technology	Yes

Additional Attachments: 0

Attachment G: Analysis of Best Available Control Technology (BACT)

(Complete this form for each pollutant for which BACT must be incorporated. Duplicate this form as necessary.)

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Applicant Name: NTE Connecticut, LLC

Unit No.: AB

Unit Description: Auxliary Boiler

Pollutant: VOC

Part I. Identify All Control Technologies/ Options

List all available control systems that have practical potential for application to this type of unit.

To ensure a sufficiently broad and comprehensive search of control alternatives, references other than the RBLC data should be investigated and documented. These references include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Source	Facility	Control Technology	Reference
N/A	None	Oxidation Catalyst	RBLC, CT DEEP BACT Database, permits
Auxiliary Boiler	Several. See Attachme nt G1	Good combustion practices	RBLC, CT DEEP BACT Database, permits

Part II. Rank All Control Options by Technical Feasibility and Control Effectiveness

List all Control Options considered in Part I and identify which options are technically feasible. First list the technically feasible control options in descending order of Overall Pollution Reduction Efficiency and then list the technically infeasible options. If a control option is determined to be technically infeasible, specify the reason in the Comments/Rationale column. DO NOT list the Post-BACT Emissions Rate, Emissions Reduction, and the Overall Pollution Reduction Efficiency (%) for technically infeasible control options. Technically infeasibility should be based on physical, chemical, and engineering principles that would preclude the successful use of the control option on the emissions unit under review. In addition, complete *Attachment G1: Background Search – Existing BACT determinations (DEEP-NSR-APP-214b)* to provide more detailed information regarding each of the technically feasible options listed below. (Duplicate this page as necessary)

Baseline Emissions Rate (tpy): 0.92

BACT Option	Technically Feasible? (Yes/No)	Allowable Emissions Rate	Emissions Reduction (tpy)	Overall Pollution Reduction Efficiency (%)	Comments/Rationale
Oxidation Catalyst	Yes	0.69	0.23	25	Top level of control. Control efficinecy dependent upon VOC consitutents, expected to be low for gas fired boiler
Good combustion practices	Yes	0.78	0.14	15	Highest level of control achieved in practice

Part III. Economic Impacts/Cost Effectiveness

Is the proposed BACT the top control option ☐ **Yes** ☒ **No** **If Yes, go to Part IV**

Complete *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c for each technically feasible BACT options listed in Part **II** for which economic impacts are to be considered before filling this Part.

Provide the following economic information for each of the BACT options with completed *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c.

BACT Option	Total Annualized Cost (TAC, $/year)	Cost Effectiveness ($/ton)		Comments/Rationale
		Average	Incremental (optional)	
Oxidation Catalyst				Cost to control not economically feasible. Emissions reductions below proposed levels will be insignificant
Good combustion practices	0	N/A	N/A	No increase in costs above baseline

Part IV. Environmental Impact Analysis

Provide the following information regarding environmental impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the environmental impact analysis should be done for that option only.

BACT Option	Toxics Impact		Adverse Impact		Comments/Rationale
	Yes/No	amount/ton	Yes/No	amount/ton	
Oxidation Catalyst	No	N/A	Yes	0.19	Increased conversion of SO2 to SO3 from 5% to 30% resulting in increased H2SO4 emissions.
Good combustion practices	No	N/A	No	N/A	

Part V. Energy Impact Analysis

Provide the following information regarding energy impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the energy impact analysis should be done for that option only.

Baseline (specify units): N/A

BACT Option	Incremental Increase Over Baseline (specify units)	Comments/Rationale
Oxidation Catalyst	<0.5%	Marginal reduction in boiler efficiency
Good combustion practices	0	No change in energy impacts

Part VI. BACT Recommendation

BACT Option Recommended: Good combustion practices meeting an emission rate of no greater than 9.6 ppmvd at 3% O2.

Justification: The selected controls are the top level of control used in practice for a gas fired auxiliary boiler rated at less than 100 MMBtu/hr.

Part VII. Additional Forms/Attachments

Indicate the number of each type of form included as part of this BACT analysis.

Number of Forms	Form Number	Form Name	Mandatory?
See Table G-7 in text	DEEP-NSR-APP-214b	Attachment G1: Background Search – Existing BACT Determinations	Yes
0	DEEP-NSR-APP-214c	Attachment G2: Cost/Economic Impact Analysis	Yes, for each economic consideration
1	DEEP-NSR-APP-214d	Attachment G3: Summary of Best Available Control Technology	Yes

Additional Attachments: 0

Attachment G: Analysis of Best Available Control Technology (BACT)

(Complete this form for each pollutant for which BACT must be incorporated. Duplicate this form as necessary.)

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: CO

Part I. Identify All Control Technologies/ Options

List all available control systems that have practical potential for application to this type of unit.

To ensure a sufficiently broad and comprehensive search of control alternatives, references other than the RBLC data should be investigated and documented. These references include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Source	Facility	Control Technology	Reference
Combined cycle CT	Several. See Attachme nt G1	Oxidation Catalyst	RBLC, CT DEEP BACT Database, permits

Part II. Rank All Control Options by Technical Feasibility and Control Effectiveness

List all Control Options considered in Part I and identify which options are technically feasible. First list the technically feasible control options in descending order of Overall Pollution Reduction Efficiency and then list the technically infeasible options. If a control option is determined to be technically infeasible, specify the reason in the Comments/Rationale column. DO NOT list the Post-BACT Emissions Rate, Emissions Reduction, and the Overall Pollution Reduction Efficiency (%) for technically infeasible control options. Technically infeasibility should be based on physical, chemical, and engineering principles that would preclude the successful use of the control option on the emissions unit under review. In addition, complete *Attachment G1: Background Search – Existing BACT determinations (DEEP-NSR-APP-214b)* to provide more detailed information regarding each of the technically feasible options listed below. (Duplicate this page as necessary)

Baseline Emissions Rate (tpy): 1,353

BACT Option	Technically Feasible? (Yes/No)	Allowable Emissions Rate	Emissions Reduction (tpy)	Overall Pollution Reduction Efficiency (%)	Comments/Rationale
Oxidation Catalyst	Yes	142.4	1,211	90	Top level of control. Reduction is for steady state operation excluding startup/shutdown emissions.

Part III. Economic Impacts/Cost Effectiveness

Is the proposed BACT the top control option ☒ **Yes** ☐ **No** **If Yes, go to Part IV**

Complete *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c for each technically feasible BACT options listed in Part **II** for which economic impacts are to be considered before filling this Part.

Provide the following economic information for each of the BACT options with completed *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c.

BACT Option	**Total Annualized Cost (TAC, $/year)**	**Cost Effectiveness ($/ton)**		**Comments/Rationale**
		Average	**Incremental (optional)**	

Part IV. Environmental Impact Analysis

Provide the following information regarding environmental impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the environmental impact analysis should be done for that option only.

BACT Option	Toxics Impact		Adverse Impact		Comments/Rationale
	Yes/No	amount/ton	Yes/No	amount/ton	
Oxidation Catalyst	No	N/A	Yes	0.012	Increased conversion of SO_2 to SO_3 from 5% to 30% resulting in increased H_2SO_4 emissions. H_2SO_4/ton reflects ratio of 83.3% of the H_2SO_4 emissions to CO reduction from baseline in Part II.

Part V. Energy Impact Analysis

Provide the following information regarding energy impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the energy impact analysis should be done for that option only.

Baseline (specify units): N/A

BACT Option	Incremental Increase Over Baseline (specify units)	Comments/Rationale
Oxidation Catalyst	0	Marginal increase in net heat rate estimated to be ___ Btu/kWh

Part VI. BACT Recommendation

BACT Option Recommended: Oxidation catalyst. CO emissions will be no greater than 2 ppmvd at 15%O2 during all operating conditions, including natural gas firing, with and without duct firing, and ULSD firing.

Justification: The selected controls are the top level of control.

Part VII. Additional Forms/Attachments

Indicate the number of each type of form included as part of this BACT analysis.

Number of Forms	Form Number	Form Name	Mandatory?
9	DEEP-NSR-APP-214b	Attachment G1: Background Search – Existing BACT Determinations	Yes
0	DEEP-NSR-APP-214c	Attachment G2: Cost/Economic Impact Analysis	Yes, for each economic consideration
1	DEEP-NSR-APP-214d	Attachment G3: Summary of Best Available Control Technology	Yes

Additional Attachments: 0

Attachment G: Analysis of Best Available Control Technology (BACT)

(Complete this form for each pollutant for which BACT must be incorporated. Duplicate this form as necessary.)

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: GHGs

Part I. Identify All Control Technologies/ Options

List all available control systems that have practical potential for application to this type of unit.

To ensure a sufficiently broad and comprehensive search of control alternatives, references other than the RBLC data should be investigated and documented. These references include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Source	Facility	Control Technology	Reference
None	None	Carbon Capture & Sequestration	RBLC, CT DEEP BACT Database, EPA GHG BACT guidance

Part II. Rank All Control Options by Technical Feasibility and Control Effectiveness

List all Control Options considered in Part I and identify which options are technically feasible. First list the technically feasible control options in descending order of Overall Pollution Reduction Efficiency and then list the technically infeasible options. If a control option is determined to be technically infeasible, specify the reason in the Comments/Rationale column. DO NOT list the Post-BACT Emissions Rate, Emissions Reduction, and the Overall Pollution Reduction Efficiency (%) for technically infeasible control options. Technically infeasibility should be based on physical, chemical, and engineering principles that would preclude the successful use of the control option on the emissions unit under review. In addition, complete *Attachment G1: Background Search – Existing BACT determinations (DEEP-NSR-APP-214b)* to provide more detailed information regarding each of the technically feasible options listed below. (Duplicate this page as necessary)

Baseline Emissions Rate (tpy): 2,866,710

BACT Option	Technically Feasible? (Yes/No)	Allowable Emissions Rate	Emissions Reduction (tpy)	Overall Pollution Reduction Efficiency (%)	Comments/Rationale
Carbon Capture & Sequestration	Yes	1,966,937	1,573,350	80	Top level of control. Has never been implemented on a combined cycle generation project. Reduction is from proposed allowable emissions.
Advanced Combined Cycle Combustion Turbine Technlogy	Yes	1,966,937	899,773	46	Top level of control demonstrated in practice.

Part III. Economic Impacts/Cost Effectiveness

Is the proposed BACT the top control option ☐ **Yes** ☒ **No** **If Yes, go to Part IV**

Complete *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c for each technically feasible BACT options listed in Part II for which economic impacts are to be considered before filling this Part.

Provide the following economic information for each of the BACT options with completed *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c.

BACT Option	Total Annualized Cost (TAC, $/year)	Cost Effectiveness ($/ton)		Comments/Rationale
		Average	Incremental (optional)	
Carbon Capture & Sequestration	211,683,648	135	N/A	TAC based upon annualized cost of $44/MWh from the Interagency Task Force for a 549.2 MW plant and 8,760 hours per year. Costs are not economically feasible.

Part IV. Environmental Impact Analysis

Provide the following information regarding environmental impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the environmental impact analysis should be done for that option only.

BACT Option	Toxics Impact		Adverse Impact		Comments/Rationale
	Yes/No	amount/ton	Yes/No	amount/ton	
Carbon Capture & Sequestration	No	N/A	Yes	See Comment	CCS results in an estimated increase in net heat rate resulting in a direct increase of 15% for all pollutants on a lb/MWh basis.
Advanced Combined Cycle Combustion Turbine Technlogy	No	N/A	No	N/A	

Part V. Energy Impact Analysis

Provide the following information regarding energy impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the energy impact analysis should be done for that option only.

Baseline (specify units): N/A

BACT Option	Incremental Increase Over Baseline (specify units)	Comments/Rationale
Carbon Capture & Sequestration	15% increase in net heat rate over baseline	Based upon Interagency Task Force
Advanced Combined Cycle Combustion Turbine Technlogy	0	This is the baseline technology

Part VI. BACT Recommendation

BACT Option Recommended: Advanced Combined Cycle Combustion Turbine Technlogy. The project will meet an annual gross heat rate of 7,235 Btu/kWh. This heat rate takes into account a 12.8% performance degradation over the life of the unit to account for design margin, wear and tear, and degradation of plant auxiliaries.

Justification: The selected controls are the top level of control.

Part VII. Additional Forms/Attachments

Indicate the number of each type of form included as part of this BACT analysis.

Number of Forms	Form Number	Form Name	Mandatory?
7	DEEP-NSR-APP-214b	Attachment G1: Background Search – Existing BACT Determinations	Yes
0	DEEP-NSR-APP-214c	Attachment G2: Cost/Economic Impact Analysis	Yes, for each economic consideration
1	DEEP-NSR-APP-214d	Attachment G3: Summary of Best Available Control Technology	Yes

Additional Attachments: 0

Attachment G: Analysis of Best Available Control Technology (BACT)

(Complete this form for each pollutant for which BACT must be incorporated. Duplicate this form as necessary.)

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: Sulfuric Acid Mist (H2SO4)

Part I. Identify All Control Technologies/ Options

List all available control systems that have practical potential for application to this type of unit.

To ensure a sufficiently broad and comprehensive search of control alternatives, references other than the RBLC data should be investigated and documented. These references include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Source	**Facility**	**Control Technology**	**Reference**
Combined cycle CT	Several. See Attachme nt G1	Pipeline quality natural gas as primary fuel with limited firing of ultra low sulfur diesel as backup	RBLC, CT DEEP BACT Database, permits

Part II. Rank All Control Options by Technical Feasibility and Control Effectiveness

List all Control Options considered in Part I and identify which options are technically feasible. First list the technically feasible control options in descending order of Overall Pollution Reduction Efficiency and then list the technically infeasible options. If a control option is determined to be technically infeasible, specify the reason in the Comments/Rationale column. DO NOT list the Post-BACT Emissions Rate, Emissions Reduction, and the Overall Pollution Reduction Efficiency (%) for technically infeasible control options. Technically infeasibility should be based on physical, chemical, and engineering principles that would preclude the successful use of the control option on the emissions unit under review. In addition, complete *Attachment G1: Background Search – Existing BACT determinations (DEEP-NSR-APP-214b)* to provide more detailed information regarding each of the technically feasible options listed below. (Duplicate this page as necessary)

Baseline Emissions Rate (tpy): 8.8

BACT Option	Technically Feasible? (Yes/No)	Allowable Emissions Rate	Emissions Reduction (tpy)	Overall Pollution Reduction Efficiency (%)	Comments/Rationale
Pipeline quality natural gas as primary fuel with limited firing of ultra low sulfur diesel as backup	Yes	8.8	0	0	Top level of control

Part III. Economic Impacts/Cost Effectiveness

Is the proposed BACT the top control option ☒ **Yes** ☐ **No** **If Yes, go to Part IV**

Complete *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c for each technically feasible BACT options listed in Part **II** for which economic impacts are to be considered before filling this Part.

Provide the following economic information for each of the BACT options with completed *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c.

BACT Option	Total Annualized Cost (TAC, $/year)	Cost Effectiveness ($/ton)		Comments/Rationale
		Average	Incremental (optional)	

Part IV. Environmental Impact Analysis

Provide the following information regarding environmental impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the environmental impact analysis should be done for that option only.

BACT Option	Toxics Impact		Adverse Impact		Comments/Rationale
	Yes/No	amount/ton	Yes/No	amount/ton	
Pipeline quality natural gas as primary fuel with limited firing of ultra low sulfur diesel as backup	No	N/A	No	N/A	

Part V. Energy Impact Analysis

Provide the following information regarding energy impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the energy impact analysis should be done for that option only.

Baseline (specify units): N/A

BACT Option	**Incremental Increase Over Baseline (specify units)**	**Comments/Rationale**
Pipeline quality natural gas as primary fuel with limited firing of ultra low sulfur diesel as backup	0	No energy impact.

Part VI. BACT Recommendation

BACT Option Recommended: Pipeline quality natural gas as primary fuel with limited firing of ultra low sulfur diesel as backup. The natural gas will have a maximum sulfur content of 0.5 grains per 100 cubic feet of gas. Ultra low sulfur diesel (ULSD) fuel with a maximum sulfur content of 15 ppm by weight will be used as backup. ULSD firing will be limited to no more than 720 hours per rolling 12-month period.

Justification: The selected controls are the top level of control.

Part VII. Additional Forms/Attachments

Indicate the number of each type of form included as part of this BACT analysis.

Number of Forms	Form Number	Form Name	Mandatory?
See Att. G text	DEEP-NSR-APP-214b	Attachment G1: Background Search – Existing BACT Determinations	Yes
0	DEEP-NSR-APP-214c	Attachment G2: Cost/Economic Impact Analysis	Yes, for each economic consideration
1	DEEP-NSR-APP-214d	Attachment G3: Summary of Best Available Control Technology	Yes

Additional Attachments: 0

Attachment G: Analysis of Best Available Control Technology (BACT)

(Complete this form for each pollutant for which BACT must be incorporated. Duplicate this form as necessary.)

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: NH3

Part I. Identify All Control Technologies/ Options

List all available control systems that have practical potential for application to this type of unit.

To ensure a sufficiently broad and comprehensive search of control alternatives, references other than the RBLC data should be investigated and documented. These references include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Source	Facility	Control Technology	Reference
Combined cycle CT	Several. See Attachme nt G1	NH3 injection control system	RBLC, CT DEEP BACT Database, permits

Part II. Rank All Control Options by Technical Feasibility and Control Effectiveness

List all Control Options considered in Part I and identify which options are technically feasible. First list the technically feasible control options in descending order of Overall Pollution Reduction Efficiency and then list the technically infeasible options. If a control option is determined to be technically infeasible, specify the reason in the Comments/Rationale column. DO NOT list the Post-BACT Emissions Rate, Emissions Reduction, and the Overall Pollution Reduction Efficiency (%) for technically infeasible control options. Technically infeasibility should be based on physical, chemical, and engineering principles that would preclude the successful use of the control option on the emissions unit under review. In addition, complete *Attachment G1: Background Search – Existing BACT determinations (DEEP-NSR-APP-214b)* to provide more detailed information regarding each of the technically feasible options listed below. (Duplicate this page as necessary)

Baseline Emissions Rate (tpy): 49.5

BACT Option	Technically Feasible? (Yes/No)	Allowable Emissions Rate	Emissions Reduction (tpy)	Overall Pollution Reduction Efficiency (%)	Comments/Rationale
NH3 injection control system	Yes	49.5	0	N/A	Top level of control

Part III. Economic Impacts/Cost Effectiveness

Is the proposed BACT the top control option ☒ **Yes** ☐ **No** **If Yes, go to Part IV**

Complete *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c for each technically feasible BACT options listed in Part **II** for which economic impacts are to be considered before filling this Part.

Provide the following economic information for each of the BACT options with completed *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c.

BACT Option	Total Annualized Cost (TAC, $/year)	Cost Effectiveness ($/ton)		Comments/Rationale
		Average	Incremental (optional)	

Part IV. Environmental Impact Analysis

Provide the following information regarding environmental impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the environmental impact analysis should be done for that option only.

BACT Option	Toxics Impact		Adverse Impact		Comments/Rationale
	Yes/No	amount/ton	Yes/No	amount/ton	
NH_3 injection control system	No	N/A	No	N/A	Impacts associated with SCR provided on Attachment G for NO_x.

Part V. Energy Impact Analysis

Provide the following information regarding energy impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the energy impact analysis should be done for that option only.

Baseline (specify units): N/A

BACT Option	Incremental Increase Over Baseline (specify units)	Comments/Rationale
NH3 injection control system	0	Increase in parasitic load estaimted to be ___ kWh

Part VI. BACT Recommendation

BACT Option Recommended: NH_3 slip emissions will be limited to no greater than 2.0 ppmvdc during natural gas firing and 5 ppmvdc during ULSD firing.

Justification: The selected controls are the top level of control.

Part VII. Additional Forms/Attachments

Indicate the number of each type of form included as part of this BACT analysis.

Number of Forms	Form Number	Form Name	Mandatory?
5	DEEP-NSR-APP-214b	Attachment G1: Background Search – Existing BACT Determinations	Yes
0	DEEP-NSR-APP-214c	Attachment G2: Cost/Economic Impact Analysis	Yes, for each economic consideration
1	DEEP-NSR-APP-214d	Attachment G3: Summary of Best Available Control Technology	Yes

Additional Attachments: 0

Attachment G: Analysis of Best Available Control Technology (BACT)

(Complete this form for each pollutant for which BACT must be incorporated. Duplicate this form as necessary.)

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: NOx

Part I. Identify All Control Technologies/ Options

List all available control systems that have practical potential for application to this type of unit.

To ensure a sufficiently broad and comprehensive search of control alternatives, references other than the RBLC data should be investigated and documented. These references include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Source	Facility	Control Technology	Reference
Combined cycle CT	Several. See Attachme nt G1	Dry Low-NOx combustors (gas firing)	RBLC, CT DEEP BACT Database, permits
Combined cycle CT	Several. See Attachme nt G1	Selective Catalytic Reduction	RBLC, CT DEEP BACT Database, permits
Combustion Turbine	Several. See Attachme nt G1	Water Injection (ULSD firing)	RBLC, CT DEEP BACT Database, permits
Combustion Turbine	Several. See Attachme nt G1	Lean pre-mix combustion (gas firing)	RBLC, CT DEEP BACT Database, permits

Part II. Rank All Control Options by Technical Feasibility and Control Effectiveness

List all Control Options considered in Part I and identify which options are technically feasible. First list the technically feasible control options in descending order of Overall Pollution Reduction Efficiency and then list the technically infeasible options. If a control option is determined to be technically infeasible, specify the reason in the Comments/Rationale column. DO NOT list the Post-BACT Emissions Rate, Emissions Reduction, and the Overall Pollution Reduction Efficiency (%) for technically infeasible control options. Technically infeasibility should be based on physical, chemical, and engineering principles that would preclude the successful use of the control option on the emissions unit under review. In addition, complete *Attachment G1: Background Search – Existing BACT determinations (DEEP-NSR-APP-214b)* to provide more detailed information regarding each of the technically feasible options listed below. (Duplicate this page as necessary)

Baseline Emissions Rate (tpy): 5,278

BACT Option	Technically Feasible? (Yes/No)	Allowable Emissions Rate	Emissions Reduction (tpy)	Overall Pollution Reduction Efficiency (%)	Comments/Rationale
Selective Catalytic Reduction (SCR)	Yes	133.9	5,144	97	Top level of control, LNB, SCR, LPC and WI will be employed, reduction is for all three technologies combined excluding startup/shutdown emissions.
Lean-Premix Combustion (LPC)	Yes	133.9	5,144	97	Top level of control, LNB, SCR, LPC and WI will be employed, reduction is for all three technologies combined excluding startup/shutdown emissions.
Low-NOx combustors (LNB)	Yes	133.9	5,144	97	Top level of control, LNB, SCR, LPC and WI will be employed, reduction is for all three technologies combined excluding startup/shutdown emissions.
Water Injection (SI) [oil firing only]	Yes	133.9	5,144	97	Top level of control, LNB, SCR, LPC and WI will be employed, reduction is for all three technologies combined excluding startup/shutdown emissions.

Part III. Economic Impacts/Cost Effectiveness

Is the proposed BACT the top control option ☒ **Yes** ☐ **No** **If Yes, go to Part IV**

Complete *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c for each technically feasible BACT options listed in Part **II** for which economic impacts are to be considered before filling this Part.

Provide the following economic information for each of the BACT options with completed *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c.

BACT Option	Total Annualized Cost (TAC, $/year)	Cost Effectiveness ($/ton)		Comments/Rationale
		Average	Incremental (optional)	

Part IV. Environmental Impact Analysis

Provide the following information regarding environmental impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the environmental impact analysis should be done for that option only.

BACT Option	Toxics Impact		Adverse Impact		Comments/Rationale
	Yes/No	amount/ton	Yes/No	amount/ton	
Low-NOx combustors (LNB)	No	N/A	No	N/A	
Selective Catalytic Reduction (SCR)	No	N/A	Yes	0.023	Ammonia emissions. NH3/ton reflects ratio of NH3 emissions to NOX reduction from baseline in Part II.
Water Injection (SI)	No	N/A	Yes	N/A	Increased water usage. No impact on air pollutant emissoons
Lean-Premix Combustion (LPC)	No	N/A	No	N/A	

Part V. Energy Impact Analysis

Provide the following information regarding energy impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the energy impact analysis should be done for that option only.

Baseline (specify units): N/A

BACT Option	Incremental Increase Over Baseline (specify units)	Comments/Rationale
Low-NOx combustors (LNB)	0	No incremental change in energy usage
Selective Catalytic Reduction (SCR)		Marginal increase in parasitic load and net heat rate
Water Injection (SI)		Marginal increase in parasitic load and net heat rate
Lean-Premix Combustion (LPC)	0	No incremental change in energy usage

Part VI. BACT Recommendation

BACT Option Recommended: Lean pre-mix combustion, low-NOx combustors during natural gas firing and water injection during ULSD firing. SCR will further control NOx emissions during all operating conditions. NOx emissions will be 2 ppmvdc during natural gas firing and 5.0 ppmvdc during distillate oil firing.

Justification: The selected controls are the top level of control.

Part VII. Additional Forms/Attachments

Indicate the number of each type of form included as part of this BACT analysis.

Number of Forms	Form Number	Form Name	Mandatory?
10	DEEP-NSR-APP-214b	Attachment G1: Background Search – Existing BACT Determinations	Yes
0	DEEP-NSR-APP-214c	Attachment G2: Cost/Economic Impact Analysis	Yes, for each economic consideration
1	DEEP-NSR-APP-214d	Attachment G3: Summary of Best Available Control Technology	Yes

Additional Attachments: 0

Attachment G: Analysis of Best Available Control Technology (BACT)

(Complete this form for each pollutant for which BACT must be incorporated. Duplicate this form as necessary.)

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: PM, PM10 and PM2.5 (all PM is expected to be PM2.5)

Part I. Identify All Control Technologies/ Options

List all available control systems that have practical potential for application to this type of unit.

To ensure a sufficiently broad and comprehensive search of control alternatives, references other than the RBLC data should be investigated and documented. These references include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Source	Facility	Control Technology	Reference
Combined cycle CT	Several. See Attachme nt G1	Pipeline quality natural gas as primary fuel with limited firing of ultra low sulfur diesel as backup	RBLC, CT DEEP BACT Database, permits

Part II. Rank All Control Options by Technical Feasibility and Control Effectiveness

List all Control Options considered in Part I and identify which options are technically feasible. First list the technically feasible control options in descending order of Overall Pollution Reduction Efficiency and then list the technically infeasible options. If a control option is determined to be technically infeasible, specify the reason in the Comments/Rationale column. DO NOT list the Post-BACT Emissions Rate, Emissions Reduction, and the Overall Pollution Reduction Efficiency (%) for technically infeasible control options. Technically infeasibility should be based on physical, chemical, and engineering principles that would preclude the successful use of the control option on the emissions unit under review. In addition, complete *Attachment G1: Background Search – Existing BACT determinations (DEEP-NSR-APP-214b)* to provide more detailed information regarding each of the technically feasible options listed below. (Duplicate this page as necessary)

Baseline Emissions Rate (tpy): 100.8

BACT Option	Technically Feasible? (Yes/No)	Allowable Emissions Rate	Emissions Reduction (tpy)	Overall Pollution Reduction Efficiency (%)	Comments/Rationale
Pipeline quality natural gas as primary fuel with limited firing of ultra low sulfur diesel as backup	Yes	100.8	0	0	Top level of control. No reduction expected from uncontrolled natural gas fired unit

Part III. Economic Impacts/Cost Effectiveness

Is the proposed BACT the top control option ☒ **Yes** ☐ **No** **If Yes, go to Part IV**

Complete *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c for each technically feasible BACT options listed in Part **II** for which economic impacts are to be considered before filling this Part.

Provide the following economic information for each of the BACT options with completed *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c.

BACT Option	Total Annualized Cost (TAC, $/year)	Cost Effectiveness ($/ton)		Comments/Rationale
		Average	Incremental (optional)	

Part IV. Environmental Impact Analysis

Provide the following information regarding environmental impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the environmental impact analysis should be done for that option only.

BACT Option	Toxics Impact		Adverse Impact		Comments/Rationale
	Yes/No	amount/ton	Yes/No	amount/ton	
Pipeline quality natural gas as primary fuel with limited firing of ultra low sulfur diesel as backup	No	N/A	No	N/A	

Part V. Energy Impact Analysis

Provide the following information regarding energy impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the energy impact analysis should be done for that option only.

Baseline (specify units): N/A

BACT Option	Incremental Increase Over Baseline (specify units)	Comments/Rationale
Pipeline quality natural gas as primary fuel with limited firing of ultra low sulfur diesel as backup	0	No energy impact

Part VI. BACT Recommendation

BACT Option Recommended: Pipeline quality natural gas as primary fuel with limited firing of ultra low sulfur diesel (ULSD) as backup. Emissions will not exceed 0.0041 lb/MMBtu for natural gas firing without duct firing at full operating load, 0.0081 lb/MMBtu for natural gas firing with duct firing at full opearting load and 0.020 lb/MMBtu for ULSD firing at full operating load.

Justification: The selected controls are the top level of control.

Part VII. Additional Forms/Attachments

Indicate the number of each type of form included as part of this BACT analysis.

Number of Forms	Form Number	Form Name	Mandatory?
5	DEEP-NSR-APP-214b	Attachment G1: Background Search – Existing BACT Determinations	Yes
0	DEEP-NSR-APP-214c	Attachment G2: Cost/Economic Impact Analysis	Yes, for each economic consideration
1	DEEP-NSR-APP-214d	Attachment G3: Summary of Best Available Control Technology	Yes

Additional Attachments: 0

Attachment G: Analysis of Best Available Control Technology (BACT)

(Complete this form for each pollutant for which BACT must be incorporated. Duplicate this form as necessary.)

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: SO2

Part I. Identify All Control Technologies/ Options

List all available control systems that have practical potential for application to this type of unit.

To ensure a sufficiently broad and comprehensive search of control alternatives, references other than the RBLC data should be investigated and documented. These references include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Source	Facility	Control Technology	Reference
Combined cycle CT	Several. See Attachme nt G1	Pipeline quality natural gas as primary fuel with limited firing of ultra low sulfur diesel as backup	RBLC, CT DEEP BACT Database, permits

Part II. Rank All Control Options by Technical Feasibility and Control Effectiveness

List all Control Options considered in Part I and identify which options are technically feasible. First list the technically feasible control options in descending order of Overall Pollution Reduction Efficiency and then list the technically infeasible options. If a control option is determined to be technically infeasible, specify the reason in the Comments/Rationale column. DO NOT list the Post-BACT Emissions Rate, Emissions Reduction, and the Overall Pollution Reduction Efficiency (%) for technically infeasible control options. Technically infeasibility should be based on physical, chemical, and engineering principles that would preclude the successful use of the control option on the emissions unit under review. In addition, complete *Attachment G1: Background Search – Existing BACT determinations (DEEP-NSR-APP-214b)* to provide more detailed information regarding each of the technically feasible options listed below. (Duplicate this page as necessary)

Baseline Emissions Rate (tpy): 24.7

BACT Option	Technically Feasible? (Yes/No)	Allowable Emissions Rate	Emissions Reduction (tpy)	Overall Pollution Reduction Efficiency (%)	Comments/Rationale
Pipeline quality natural gas as primary fuel with limited firing of ultra low sulfur diesel as backup	Yes	24.7	0	0	Top level of control

Part III. Economic Impacts/Cost Effectiveness

Is the proposed BACT the top control option ☒ **Yes** ☐ **No** **If Yes, go to Part IV**

Complete *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c for each technically feasible BACT options listed in Part **II** for which economic impacts are to be considered before filling this Part.

Provide the following economic information for each of the BACT options with completed *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c.

BACT Option	Total Annualized Cost (TAC, $/year)	Cost Effectiveness ($/ton)		Comments/Rationale
		Average	Incremental (optional)	

Part IV. Environmental Impact Analysis

Provide the following information regarding environmental impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the environmental impact analysis should be done for that option only.

BACT Option	Toxics Impact		Adverse Impact		Comments/Rationale
	Yes/No	amount/ton	Yes/No	amount/ton	
Pipeline quality natural gas as primary fuel with limited firing of ultra low sulfur diesel as backup	No	N/A	No	N/A	

Part V. Energy Impact Analysis

Provide the following information regarding energy impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the energy impact analysis should be done for that option only.

Baseline (specify units): N/A

BACT Option	Incremental Increase Over Baseline (specify units)	Comments/Rationale
Pipeline quality natural gas as primary fuel with limited firing of ultra low sulfur diesel as backup	0	No energy impact

Part VI. BACT Recommendation

BACT Option Recommended: Pipeline quality natural gas as primary fuel with limited firing of ultra low sulfur diesel as backup. The natural gas will have a maximum sulfur content of 0.5 grains per 100 cubic feet of gas. Ultra low sulfur diesel (ULSD) fuel with a maximum sulfur content of 15 ppm by weight will be used as backup. ULSD firing will be limited to no more than 720 hours per rolling 12-month period.

Justification: The selected controls are the top level of control.

Part VII. Additional Forms/Attachments

Indicate the number of each type of form included as part of this BACT analysis.

Number of Forms	Form Number	Form Name	Mandatory?
See Att. G text	DEEP-NSR-APP-214b	Attachment G1: Background Search – Existing BACT Determinations	Yes
0	DEEP-NSR-APP-214c	Attachment G2: Cost/Economic Impact Analysis	Yes, for each economic consideration
1	DEEP-NSR-APP-214d	Attachment G3: Summary of Best Available Control Technology	Yes

Additional Attachments: 0

Attachment G: Analysis of Best Available Control Technology (BACT)

(Complete this form for each pollutant for which BACT must be incorporated. Duplicate this form as necessary.)

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: VOC

Part I. Identify All Control Technologies/ Options

List all available control systems that have practical potential for application to this type of unit.

To ensure a sufficiently broad and comprehensive search of control alternatives, references other than the RBLC data should be investigated and documented. These references include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Source	Facility	Control Technology	Reference
Combined cycle CT	Several. See Attachme nt G1	Oxidation Catalyst	RBLC, CT DEEP BACT Database, permits

Part II. Rank All Control Options by Technical Feasibility and Control Effectiveness

List all Control Options considered in Part I and identify which options are technically feasible. First list the technically feasible control options in descending order of Overall Pollution Reduction Efficiency and then list the technically infeasible options. If a control option is determined to be technically infeasible, specify the reason in the Comments/Rationale column. DO NOT list the Post-BACT Emissions Rate, Emissions Reduction, and the Overall Pollution Reduction Efficiency (%) for technically infeasible control options. Technically infeasibility should be based on physical, chemical, and engineering principles that would preclude the successful use of the control option on the emissions unit under review. In addition, complete *Attachment G1: Background Search – Existing BACT determinations (DEEP-NSR-APP-214b)* to provide more detailed information regarding each of the technically feasible options listed below. (Duplicate this page as necessary)

Baseline Emissions Rate (tpy): 34.6

BACT Option	Technically Feasible? (Yes/No)	Allowable Emissions Rate	Emissions Reduction (tpy)	Overall Pollution Reduction Efficiency (%)	Comments/Rationale
Oxidation Catalyst	Yes	48.3	N/A	N/A	Top level of control. Allowable emissions reflect vendor perofrmance guarantee with the top levek of control installed

Part III. Economic Impacts/Cost Effectiveness

Is the proposed BACT the top control option ☒ **Yes** ☐ **No** **If Yes, go to Part IV**

Complete *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c for each technically feasible BACT options listed in Part **II** for which economic impacts are to be considered before filling this Part.

Provide the following economic information for each of the BACT options with completed *Attachment G2: Cost/Economic Impact Analysis*, DEEP-NSR-APP-214c.

BACT Option	Total Annualized Cost (TAC, $/year)	Cost Effectiveness ($/ton)		Comments/Rationale
		Average	Incremental (optional)	

Part IV. Environmental Impact Analysis

Provide the following information regarding environmental impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the environmental impact analysis should be done for that option only.

BACT Option	**Toxics Impact**		**Adverse Impact**		**Comments/Rationale**
	Yes/No	**amount/ton**	**Yes/No**	**amount/ton**	
Oxidation Catalyst	No	N/A	Yes	6.1	Increased conversion of SO2 to SO3 from 5% to 30% resulting in increased H2SO4 emissions. H2SO4/ton reflects ratio of 83.3% of the H2SO4 emissions to VOC reduction from baseline in Part II.

Part V. Energy Impact Analysis

Provide the following information regarding energy impacts for each of the technically feasible BACT options listed in Part II. If the BACT option chosen is the top control option, the energy impact analysis should be done for that option only.

Baseline (specify units): N/A

BACT Option	Incremental Increase Over Baseline (specify units)	Comments/Rationale
Oxidation Catalyst		Marginal increase in net heat rate estimated to be ___ Btu/kWh

Part VI. BACT Recommendation

BACT Option Recommended: Oxidation catalyst. VOC emissions will be no greater than 1 ppmvd at 15%O2 during natural gas firing without duct firing, 2 ppmvd at 15%O2 during natural gas firing with duct firing and 2 ppmvd at 15% O2 during distillate oil firng.

Justification: The selected controls are the top level of control.

Part VII. Additional Forms/Attachments

Indicate the number of each type of form included as part of this BACT analysis.

Number of Forms	Form Number	Form Name	Mandatory?
9	DEEP-NSR-APP-214b	Attachment G1: Background Search – Existing BACT Determinations	Yes
0	DEEP-NSR-APP-214c	Attachment G2: Cost/Economic Impact Analysis	Yes, for each economic consideration
1	DEEP-NSR-APP-214d	Attachment G3: Summary of Best Available Control Technology	Yes

Additional Attachments: 0

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: NOx

BACT Option: Dry low NOx combustors, Selective Catalytic Reduction, and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Colorado Bend II Power; Wharton, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	119365 & PSDTX1410 (April 1, 2015)
Capacity (specify units)	1,100 MW facility total
BACT/LAER Determination	Dry low NOx combustors, Selective Catalytic Reduction, and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	2.0 ppmvd gas firing w and w/o DB;
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: CO

BACT Option: Oxidation catalyst and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	3 Combined cycle combustion turbines units with HRSG
Facility/Location	Cricket Valley Energy Center LLC / Dover Plains, NY
Permitting Authority	New York State Department of Environmental Conservation
Permit No.	3-1326-00275/00009 (Feb. 3, 2016)
Capacity (specify units)	2,061 MMBtu/hr heat input
BACT/LAER Determination	Oxidation catalyst and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	2.0 ppmvd w and w/o DB burning
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: GHG

BACT Option: High efficiency combined cycle CTG and use of low carbon fuels (natural gas)

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	3 Combined cycle combustion turbines units with HRSG
Facility/Location	Cricket Valley Energy Center LLC / Dover Plains, NY
Permitting Authority	New York State Department of Environmental Conservation
Permit No.	3-1326-00275/00009 (Feb. 3, 2016)
Capacity (specify units)	2,061 MMBtu/hr heat input
BACT/LAER Determination	High efficiency process and use of low carbon fuels (natural gas)
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	7,604 Btu/kW-hr firing gas, w/o duct firing (net, annual)
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: NH3

BACT Option: Proper SCR design to minimize slip

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	3 Combined cycle combustion turbines units with HRSG
Facility/Location	Cricket Valley Energy Center LLC / Dover Plains, NY
Permitting Authority	New York State Department of Environmental Conservation
Permit No.	3-1326-00275/00009 (Feb. 3, 2016)
Capacity (specify units)	2,061 MMBtu/hr heat input
BACT/LAER Determination	Proper SCR design to minimize slip
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	5.0 ppmvdc w/ and w/o DB
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: NOx

BACT Option: Dry low NOx combustors, Selective Catalytic Reduction, and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ **BACT** ☒ **LAER**
Source	3 Combined cycle combustion turbines units with HRSG
Facility/Location	Cricket Valley Energy Center LLC / Dover Plains, NY
Permitting Authority	New York State Department of Environmental Conservation
Permit No.	3-1326-00275/00009 (Feb. 3, 2016)
Capacity (specify units)	2,061 MMBtu/hr heat input
BACT/LAER Determination	Dry low NOx combustors, Selective Catalytic Reduction, and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	2.0 ppmvdc gas firing w and w/o DB
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: PM10/PM2.5

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	3 Combined cycle combustion turbines units with HRSG
Facility/Location	Cricket Valley Energy Center LLC / Dover Plains, NY
Permitting Authority	New York State Department of Environmental Conservation
Permit No.	3-1326-00275/00009 (Feb. 3, 2016)
Capacity (specify units)	2,061 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.005 lb/MMBtu w/o duct firing; 0.006 lb/MMBtu (gas firing)
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: VOC

BACT Option: Oxidation catalyst and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination: ☒ **BACT** ☐ **LAER**

Source	3 Combined cycle combustion turbines units with HRSG
Facility/Location	Cricket Valley Energy Center LLC / Dover Plains, NY
Permitting Authority	New York State Department of Environmental Conservation
Permit No.	3-1326-00275/00009 (Feb. 3, 2016)
Capacity (specify units)	2,061 MMBtu/hr heat input
BACT/LAER Determination	Oxidation catalyst and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	1.0 ppmvdc w/o DB and 2.0 ppmvdc w DB
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: CO

BACT Option: Oxidation catalyst and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	DeCordova Steam Electric Station - Units 5 and 6; Hood, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	107569 & PSDTX1432 (Mar. 8, 2016)
Capacity (specify units)	231 MW per CTG
BACT/LAER Determination	Oxidation catalyst and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	4.0 ppmvdc gas firing w/ and w/o DB;
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: NOx

BACT Option: Dry low NOx combustors, Selective Catalytic Reduction, and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	DeCordova Steam Electric Station - Units 5 and 6; Hood, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	107569 & PSDTX1432 (Mar. 8, 2016)
Capacity (specify units)	231 MW per CTG
BACT/LAER Determination	Dry low NOx combustors, Selective Catalytic Reduction, and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	2.0 ppmvdc gas firing w and w/o DB;
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: VOC

BACT Option: Oxidation catalyst and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	DeCordova Steam Electric Station - Units 5 and 6; Hood, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	107569 & PSDTX1432 (Mar. 8, 2016)
Capacity (specify units)	231 MW per CTG
BACT/LAER Determination	Oxidation catalyst and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	2.0 ppmvdc gas firing w and w/o DB;
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: CO

BACT Option: Oxidation catalyst and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Eagle Mountain Power; Tarrant, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	117026 & PSDTX1390 (June 18, 2015)
Capacity (specify units)	231 MW per turbine
BACT/LAER Determination	Oxidation catalyst and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	2.0 ppmvdc gas firing w/ and w/o DB;
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: NOx

BACT Option: Dry low NOx combustors, Selective Catalytic Reduction, and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Eagle Mountain Power; Tarrant, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	117026 & PSDTX1390 (June 18, 2015)
Capacity (specify units)	231 MW per turbine
BACT/LAER Determination	Dry low NOx combustors, Selective Catalytic Reduction, and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	2.0 ppmvdc gas firing w and w/o DB;
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: VOC

BACT Option: Oxidation catalyst and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Eagle Mountain Power; Tarrant, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	117026 & PSDTX1390 (June 18, 2015)
Capacity (specify units)	231 MW per turbine
BACT/LAER Determination	Oxidation catalyst and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	2.0 ppmvdc gas firing w and w/o DB;
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: CO

BACT Option: Oxidation catalyst and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	FGE Eagle Pines; Cherokee, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	131316 & PSDTX1454 (Nov. 4, 2015)
Capacity (specify units)	326 MW per turbine
BACT/LAER Determination	Oxidation catalyst and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	2.0 ppmvdc gas firing w/ and w/o DB;
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: GHG

BACT Option: High efficiency combined cycle CTG and use of low carbon fuels (natural gas)

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	FGE Eagle Pines; Cherokee, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	131316 & PSDTX1454 (Nov. 4, 2015)
Capacity (specify units)	326 MW per turbine
BACT/LAER Determination	High efficiency combined cycle CTG and use of low carbon fuels (natural gas)
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	886 lb/MW-hr gas, w/o DB; 816 lb/MW-hr gas, w/ DB
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: NOx

BACT Option: Dry low NOx combustors, Selective Catalytic Reduction, and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination: ☒ **BACT** ☐ **LAER**

Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	FGE Eagle Pines; Cherokee, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	131316 & PSDTX1454 (Nov. 4, 2015)
Capacity (specify units)	326 MW per turbine
BACT/LAER Determination	Dry low NOx combustors, Selective Catalytic Reduction, and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	2.0 ppmvdc gas firing w and w/o DB;
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: VOC

BACT Option: Oxidation catalyst and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination: ☒ **BACT** ☐ **LAER**

Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	FGE Eagle Pines; Cherokee, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	131316 & PSDTX1454 (Nov. 4, 2015)
Capacity (specify units)	326 MW per turbine
BACT/LAER Determination	Oxidation catalyst and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	2.0 ppmvdc gas firing w/ and w/o DB;
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: GHG

BACT Option: High efficiency combined cycle CTG and use of low carbon fuels (natural gas)

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Footprint Power; Salem, MA
Permitting Authority	Massachusetts Department of Environmental Protection
Permit No.	13-A-499-P (January 30, 2014)
Capacity (specify units)	2,258 MMBtu/hr
BACT/LAER Determination	High efficiency combined cycle CTG and use of low carbon fuels (natural gas)
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	825 lb/MW-hr (new and clean, gas, w/o DB); 7,220 Btu/Kw-hr (gas, annual, w/o DB)
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: NH3

BACT Option: Proper SCR design to minimize slip

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Footprint Power; Salem, MA
Permitting Authority	Massachusetts Department of Environmental Protection
Permit No.	13-A-499-P (January 30, 2014)
Capacity (specify units)	2,258 MMBtu/hr
BACT/LAER Determination	Proper SCR design to minimize slip
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	2.0 ppmvdc w/ and w/o DB
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: PM10/PM2.5

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Footprint Power; Salem, MA
Permitting Authority	Massachusetts Department of Environmental Protection
Permit No.	13-A-499-P (January 30, 2014)
Capacity (specify units)	2,258 MMBtu/hr
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.0071 lb/MMBtu w/o duct firing; 0.0062 lb/MMBtu (gas firing)
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: CO

BACT Option: Oxidation catalyst and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Lon C. Hill Power Station; Nueces, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	114911 & PSDTX1380 (Oct. 2, 2015)
Capacity (specify units)	240 MW per turbine
BACT/LAER Determination	Oxidation catalyst and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	2.0 ppmvdc gas firing w/ and w/o DB;
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: NOx

BACT Option: Dry low NOx combustors, Selective Catalytic Reduction, and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Lon C. Hill Power Station; Nueces, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	114911 & PSDTX1380 (Oct. 2, 2015)
Capacity (specify units)	240 MW per turbine
BACT/LAER Determination	Dry low NOx combustors, Selective Catalytic Reduction, and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	2.0 ppmvdc gas firing w and w/o DB;
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: VOC

BACT Option: Oxidation catalyst and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Lon C. Hill Power Station; Nueces, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	114911 & PSDTX1380 (Oct. 2, 2015)
Capacity (specify units)	240 MW per turbine
BACT/LAER Determination	Oxidation catalyst and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	2.0 ppmvdc gas firing w/ and w/o DB;
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: CO

BACT Option: Oxidation catalyst and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Lordstown Energy Center; Lordstown, OH
Permitting Authority	Ohio Environmental Protection Agency
Permit No.	P0117655 (Aug. 28, 2015)
Capacity (specify units)	2,725 MMBtu/hr
BACT/LAER Determination	Oxidation catalyst and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	2.0 ppmvdc gas firing w/ and w/o DB
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: GHG

BACT Option: High efficiency combined cycle CTG and use of low carbon fuels (natural gas)

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Lordstown Energy Center; Lordstown, OH
Permitting Authority	Ohio Environmental Protection Agency
Permit No.	P0117655 (Aug. 28, 2015)
Capacity (specify units)	2,725 MMBtu/hr
BACT/LAER Determination	High efficiency combined cycle CTG and use of low carbon fuels (natural gas)
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	833 lb/MW-hr gas, w/o DB, annual
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: NOx

BACT Option: Dry low NOx combustors, Selective Catalytic Reduction, and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Lordstown Energy Center; Lordstown, OH
Permitting Authority	Ohio Environmental Protection Agency
Permit No.	P0117655 (Aug. 28, 2015)
Capacity (specify units)	2,725 MMBtu/hr
BACT/LAER Determination	Dry low NOx combustors, Selective Catalytic Reduction, and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	2.0 ppmvdc gas firing w and w/o DB;
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: PM10/PM2.5

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Lordstown Energy Center; Lordstown, OH
Permitting Authority	Ohio Environmental Protection Agency
Permit No.	P0117655 (Aug. 28, 2015)
Capacity (specify units)	2,725 MMBtu/hr
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.0068 lb/MMBtu gas firing w/o DB; 0.0049 lb/MMBtu gas firing w/ DB
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: VOC

BACT Option: Oxidation catalyst and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Lordstown Energy Center; Lordstown, OH
Permitting Authority	Ohio Environmental Protection Agency
Permit No.	P0117655 (Aug. 28, 2015)
Capacity (specify units)	2,725 MMBtu/hr
BACT/LAER Determination	Oxidation catalyst and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	1.0 ppmvdc gas firing w/o DB; 2.0 ppmvd gas firing w/ DB;
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: PM10/PM2.5

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Marshalltown Generating Station; Marshall, IA
Permitting Authority	Iowa Department of Natural Resources
Permit No.	13-A-499-P (April 14, 2014)
Capacity (specify units)	2,258 MMBtu/hr
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.01 lb/MMBtu gas firing w/o DB
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: CO

BACT Option: Oxidation catalyst and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ BACT ☒ LAER
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Mattawoman Energy Center; Prince George's, MD
Permitting Authority	Maryland Department of the Environment
Permit No.	PSC Case No. 9330 (Nov. 13, 2015)
Capacity (specify units)	990 MW project total
BACT/LAER Determination	Oxidation catalyst and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	2.0 ppmvdc gas firing w/ and w/o DB
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: GHG

BACT Option: High efficiency combined cycle CTG and use of low carbon fuels (natural gas)

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ **BACT** ☒ **LAER**
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Mattawoman Energy Center; Prince George's, MD
Permitting Authority	Maryland Department of the Environment
Permit No.	PSC Case No. 9330 (Nov. 13, 2015)
Capacity (specify units)	990 MW project total
BACT/LAER Determination	High efficiency combined cycle CTG and use of low carbon fuels (natural gas)
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	865 lb/MW-hr (gas, net, annual)
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: NH3

BACT Option: Proper SCR design to minimize slip

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ **BACT** ☒ **LAER**
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Mattawoman Energy Center; Prince George's, MD
Permitting Authority	Maryland Department of the Environment
Permit No.	PSC Case No. 9330 (Nov. 13, 2015)
Capacity (specify units)	990 MW project total
BACT/LAER Determination	Proper SCR design to minimize slip
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	5.0 ppmvd gas firing w and w/o DB;
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: NOx

BACT Option: Dry low NOx combustors, Selective Catalytic Reduction, and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ **BACT** ☒ **LAER**
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Mattawoman Energy Center; Prince George's, MD
Permitting Authority	Maryland Department of the Environment
Permit No.	PSC Case No. 9330 (Nov. 13, 2015)
Capacity (specify units)	990 MW project total
BACT/LAER Determination	Dry low NOx combustors, Selective Catalytic Reduction, and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	2.0 ppmvd gas firing w and w/o DB;
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: VOC

BACT Option: Oxidation catalyst and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ BACT ☒ LAER
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Mattawoman Energy Center; Prince George's, MD
Permitting Authority	Maryland Department of the Environment
Permit No.	PSC Case No. 9330 (Nov. 13, 2015)
Capacity (specify units)	990 MW project total
BACT/LAER Determination	Oxidation catalyst and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	1.0 ppmvdc gas firing w/o DB; 1.9 ppmvdc gas firing w/ DB;
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: GHG

BACT Option: High efficiency combined cycle CTG and use of low carbon fuels (natural gas)

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ **BACT** ☒ **LAER**
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Moundsville Power; Marshall, WV
Permitting Authority	West Virginia Department of the Environmental Protection
Permit No.	R14-0030 (Nov. 21, 2014)
Capacity (specify units)	2,420 MMbtu/hr
BACT/LAER Determination	High efficiency combined cycle CTG and use of low carbon fuels (natural gas)
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	792 lb/MW-hr (gas, w/o DB, new and clean)
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: NH3

BACT Option: Proper SCR design to minimize slip

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ BACT ☒ LAER
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	Moundsville Power; Marshall, WV
Permitting Authority	West Virginia Department of the Environmental Protection
Permit No.	R14-0030 (Nov. 21, 2014)
Capacity (specify units)	2,420 MMbtu/hr
BACT/LAER Determination	Proper SCR design to minimize slip
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	5.0 ppmvdc w/ and w/o DB
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	RBLC

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: CO

BACT Option: Oxidation catalyst and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	3 Combined cycle combustion turbines units with HRSG
Facility/Location	FPL Okeechobee Clean Energy Center; Okeechobee, FL
Permitting Authority	Florida Department of Environmental Protection
Permit No.	0930117-001-AC (PSD-FL-434) (Mar. 9, 2016)
Capacity (specify units)	350 MW per CTG
BACT/LAER Determination	Good combustion practices (no oxidation catalyst)
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	4.3 ppmvdc gas firing w/o duct firing; 10.0 ppmvdc ULSD firing
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: GHG

BACT Option: High efficiency combined cycle CTG and use of low carbon fuels (natural gas)

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	3 Combined cycle combustion turbines units with HRSG
Facility/Location	FPL Okeechobee Clean Energy Center; Okeechobee, FL
Permitting Authority	Florida Department of Environmental Protection
Permit No.	0930117-001-AC (PSD-FL-434) (Mar. 9, 2016)
Capacity (specify units)	350 MW per CTG
BACT/LAER Determination	High efficiency combined cycle CTG and use of low carbon fuels (natural gas)
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	850 lb/MW-hr (gas firing); 1,210 lb/MW-hr (ULSD firing)
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: NOx

BACT Option: Dry low NOx combustors, Selective Catalytic Reduction, and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	3 Combined cycle combustion turbines units with HRSG
Facility/Location	FPL Okeechobee Clean Energy Center; Okeechobee, FL
Permitting Authority	Florida Department of Environmental Protection
Permit No.	0930117-001-AC (PSD-FL-434) (Mar. 9, 2016)
Capacity (specify units)	350 MW per CTG
BACT/LAER Determination	Dry low NOx combustors, Selective Catalytic Reduction, and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	2.0 ppmvd gas firing w and w/o DB;
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: VOC

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	3 Combined cycle combustion turbines units with HRSG
Facility/Location	FPL Okeechobee Clean Energy Center; Okeechobee, FL
Permitting Authority	Florida Department of Environmental Protection
Permit No.	0930117-001-AC (PSD-FL-434) (Mar. 9, 2016)
Capacity (specify units)	350 MW per CTG
BACT/LAER Determination	Good combustion practices (no oxidation catalyst)
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	1.0 ppmvdc gas firing w/o duct firing; 2.0 ppmvdc ULSD firing
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: CO

BACT Option: Oxidation catalyst and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ **BACT** ☒ **LAER**
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	CPV Towantic; Oxford, CT
Permitting Authority	Connecticut Department of Energy and Environmental Protection
Permit No.	144-0023 & 144-0024 (Nov. 30, 2015)
Capacity (specify units)	2,544 MMBtu/hr heat input (gas); 2,511 MMBtu/hr heat input (ULSD)
BACT/LAER Determination	Oxidation catalyst and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.9 ppmvdc gas firing w/o DB;1.7 ppmvdc gas firing w/ DB; 2.0 ppmvdc ULSD firing w/o DB
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: GHG

BACT Option: High efficiency combined cycle CTG and use of low carbon fuels (natural gas)

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ **BACT** ☒ **LAER**
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	CPV Towantic; Oxford, CT
Permitting Authority	Connecticut Department of Energy and Environmental Protection
Permit No.	144-0023 & 144-0024 (Nov. 30, 2015)
Capacity (specify units)	2,544 MMBtu/hr heat input (gas); 2,511 MMBtu/hr heat input (ULSD)
BACT/LAER Determination	High efficiency combined cycle CTG and use of low carbon fuels (natural gas)
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	809 lb/MW-hr (new and clean, gas, w/o DB); 895 lb/MW-hr (gas, annual average)
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: NH3

BACT Option: Proper SCR design to minimize slip

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ BACT ☒ LAER
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	CPV Towantic; Oxford, CT
Permitting Authority	Connecticut Department of Energy and Environmental Protection
Permit No.	144-0023 & 144-0024 (Nov. 30, 2015)
Capacity (specify units)	2,544 MMBtu/hr heat input (gas); 2,511 MMBtu/hr heat input (ULSD)
BACT/LAER Determination	Proper SCR design to minimize slip
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	2.0 ppmvdc gas firing w/ and w/o DB; 5.0 ppmvd ULSD firing w/o DB
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: NOx

BACT Option: Dry low NOx combustors, Selective Catalytic Reduction, and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ BACT ☒ LAER
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	CPV Towantic; Oxford, CT
Permitting Authority	Connecticut Department of Energy and Environmental Protection
Permit No.	144-0023 & 144-0024 (Nov. 30, 2015)
Capacity (specify units)	2,544 MMBtu/hr heat input (gas); 2,511 MMBtu/hr heat input (ULSD)
BACT/LAER Determination	Dry low NOx combustors, Water Injection, Selective Catalytic Reduction, and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	2.0 ppmvd gas firing w and w/o DB; 5.0 ppmvd ULSD firing w/o DB
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: PM10/PM2.5

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ **BACT** ☒ **LAER**
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	CPV Towantic; Oxford, CT
Permitting Authority	Connecticut Department of Energy and Environmental Protection
Permit No.	144-0023 & 144-0024 (Nov. 30, 2015)
Capacity (specify units)	2,544 MMBtu/hr heat input (gas); 2,511 MMBtu/hr heat input (ULSD)
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.0065 lb/MMBtu gas firing w/o DB;0.0081 lb/MMBtu gas firing w/ DB; 0.0319 lb/MMBtu ULSD firing w/o DB
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: CT/DB

Unit Description: Combined Cycle Combustion Turbine

Pollutant: VOC

BACT Option: Oxidation catalyst and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ **BACT** ☒ **LAER**
Source	2 Combined cycle combustion turbines units with HRSG
Facility/Location	CPV Towantic; Oxford, CT
Permitting Authority	Connecticut Department of Energy and Environmental Protection
Permit No.	144-0023 & 144-0024 (Nov. 30, 2015)
Capacity (specify units)	2,544 MMBtu/hr heat input (gas); 2,511 MMBtu/hr heat input (ULSD)
BACT/LAER Determination	Oxidation catalyst and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	CEMS and performance testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	1.0 ppmvdc gas firing w/o DB;2.0 ppmvdc gas firing w/ DB; 2.0 ppmvdc ULSD firing w/o DB
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary boiler

Pollutant: CO

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Auxiliary boiler
Facility/Location	CPV Towantic, LLC / Oxford, CT
Permitting Authority	Connecticut Department of Energy and Environmental Protection
Permit No.	144-0025 (Nov. 30, 2015)
Capacity (specify units)	92 MMBtu/hr heat input per unit
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	50 ppm
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary boiler

Pollutant: NOx

BACT Option: Ultra Low-NOx burners and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ BACT ☒ LAER
Source	Auxiliary boiler
Facility/Location	CPV Towantic, LLC / Oxford, CT
Permitting Authority	Connecticut Department of Energy and Environmental Protection
Permit No.	144-0025 (Nov. 30, 2015)
Capacity (specify units)	92 MMBtu/hr heat input per unit
BACT/LAER Determination	Ultra Low-NOx burners and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	7 ppmv
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary boiler

Pollutant: PM10/PM2.5

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Auxiliary boiler
Facility/Location	CPV Towantic, LLC / Oxford, CT
Permitting Authority	Connecticut Department of Energy and Environmental Protection
Permit No.	144-0025 (Nov. 30, 2015)
Capacity (specify units)	92 MMBtu/hr heat input per unit
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.007 lb/MMBtu
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary boiler

Pollutant: VOC

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ **BACT** ☒ **LAER**
Source	Auxiliary boiler
Facility/Location	CPV Towantic, LLC / Oxford, CT
Permitting Authority	Connecticut Department of Energy and Environmental Protection
Permit No.	144-0025 (Nov. 30, 2015)
Capacity (specify units)	92 MMBtu/hr heat input per unit
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.0041 lb/MMBtu
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boiler

Pollutant: CO

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Auxiliary Boiler
Facility/Location	Cricket Valley Energy Center LLC / Dover Plains, NY
Permitting Authority	New York State Department of Environmental Conservation
Permit No.	3-1326-00275/00009 (Feb. 3, 2016)
Capacity (specify units)	60 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	50 ppm
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boiler

Pollutant: NOx

BACT Option: Ultra Low-NOx burners and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ **BACT** ☒ **LAER**
Source	Auxiliary Boiler
Facility/Location	Cricket Valley Energy Center LLC / Dover Plains, NY
Permitting Authority	New York State Department of Environmental Conservation
Permit No.	3-1326-00275/00009 (Feb. 3, 2016)
Capacity (specify units)	60 MMBtu/hr heat input
BACT/LAER Determination	Ultra Low-NOx burners and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	7 ppmvd
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boiler

Pollutant: PM10/PM2.5

BACT Option: Good combustion practices and pipeline-quality natural gas

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Auxiliary Boiler
Facility/Location	Cricket Valley Energy Center LLC / Dover Plains, NY
Permitting Authority	New York State Department of Environmental Conservation
Permit No.	3-1326-00275/00009 (Feb. 3, 2016)
Capacity (specify units)	60 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices and pipeline-quality natural gas
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.005 lbs/MMBtu
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boiler

Pollutant: VOC

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ BACT ☒ LAER
Source	Auxiliary Boiler
Facility/Location	Cricket Valley Energy Center LLC / Dover Plains, NY
Permitting Authority	New York State Department of Environmental Conservation
Permit No.	3-1326-00275/00009 (Feb. 3, 2016)
Capacity (specify units)	60 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.0015 lb/MMBtu
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: CO

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Auxiliary Boiler
Facility/Location	Eagle Mountain / Eagle Mountain, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	117026 & PSDTX1390 (June 18, 2015)
Capacity (specify units)	73 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	50 ppm
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: NOx

BACT Option: Ultra Low-NOx burners and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Auxiliary Boiler
Facility/Location	Eagle Mountain / Eagle Mountain, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	117026 & PSDTX1390 (June 18, 2015)
Capacity (specify units)	73 MMBtu/hr heat input
BACT/LAER Determination	Ultra Low-NOx burners and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	9.0 ppmvd
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: VOC

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination: ☒ **BACT** ☐ **LAER**

Source	Auxiliary Boiler
Facility/Location	Eagle Mountain / Eagle Mountain, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	117026 & PSDTX1390 (June 18, 2015)
Capacity (specify units)	73 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.0017 lb/MMBtu
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: CO

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Auxiliary Boiler
Facility/Location	Footprint Salem Harbor / Salem, MA
Permitting Authority	Massachusetts Department of Environmental Protection
Permit No.	13-A-499-P (January 30, 2014)
Capacity (specify units)	80 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	5 ppmvd
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: NOx

BACT Option: Ultra Low-NOx burners and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ **BACT** ☒ **LAER**
Source	Auxiliary Boiler
Facility/Location	Footprint Salem Harbor / Salem, MA
Permitting Authority	Massachusetts Department of Environmental Protection
Permit No.	13-A-499-P (January 30, 2014)
Capacity (specify units)	80 MMBtu/hr heat input
BACT/LAER Determination	Ultra Low-NOx burners and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	9.0 ppmvd
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: PM10/PM2.5

BACT Option: Good combustion practices and pipeline-quality natural gas

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Auxiliary Boiler
Facility/Location	Footprint Salem Harbor / Salem, MA
Permitting Authority	Massachusetts Department of Environmental Protection
Permit No.	13-A-499-P (January 30, 2014)
Capacity (specify units)	80 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices and pipeline-quality natural gas
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.005 lb/MMBtu
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: VOC

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Auxiliary Boiler
Facility/Location	Footprint Salem Harbor / Salem, MA
Permitting Authority	Massachusetts Department of Environmental Protection
Permit No.	13-A-499-P (January 30, 2014)
Capacity (specify units)	80 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.005 lb/MMBtu
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: NOx

BACT Option: Low-NOx burners and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Auxiliary Boiler
Facility/Location	FP&L Okeechobee Clean Energy Center / Okeechobee, FL
Permitting Authority	State of Florida Department of Environmental Protection
Permit No.	0930117-001-AC (PSD-FL-434) (Mar. 9, 2016)
Capacity (specify units)	99.8 MMBtu/hr heat input
BACT/LAER Determination	Low-NOx burners and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	40 ppmvd
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary boiler

Pollutant: CO

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Auxiliary boiler
Facility/Location	Green Energy Partners/Stonewall LLC / Leesburg, VA
Permitting Authority	Virginia Department of Environmental Quality
Permit No.	73826 (April 30, 2013)
Capacity (specify units)	75 MMBtu/hr heat input per unit
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	50 ppmv; 2.78 lb/hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary boiler

Pollutant: NOx

BACT Option: Ultra Low-NOx burners and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ BACT ☒ LAER
Source	Auxiliary boiler
Facility/Location	Green Energy Partners/Stonewall LLC / Leesburg, VA
Permitting Authority	Virginia Department of Environmental Quality
Permit No.	73826 (April 30, 2013)
Capacity (specify units)	75 MMBtu/hr heat input per unit
BACT/LAER Determination	Ultra Low-NOx burners and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	9 ppmv; 0.83 lb/hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary boiler

Pollutant: PM10/PM2.5

BACT Option: Good combustion practices and pipeline-quality natural gas

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Auxiliary boiler
Facility/Location	Green Energy Partners/Stonewall LLC / Leesburg, VA
Permitting Authority	Virginia Department of Environmental Quality
Permit No.	73826 (April 30, 2013)
Capacity (specify units)	75 MMBtu/hr heat input per unit
BACT/LAER Determination	Good combustion practices and pielin-quality natural gas
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.002 lb/MMBtu; 0.15 lb/hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary boiler

Pollutant: VOC

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ **BACT** ☒ **LAER**
Source	Auxiliary boiler
Facility/Location	Green Energy Partners/Stonewall LLC / Leesburg, VA
Permitting Authority	Virginia Department of Environmental Quality
Permit No.	73826 (April 30, 2013)
Capacity (specify units)	75 MMBtu/hr heat input per unit
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.002 lb/MMBtu; 0.15 lb/hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: NOx

BACT Option: Ultra Low-NOx burners and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Auxiliary Boiler
Facility/Location	Hess Newark Energy Center / Newark, NJ
Permitting Authority	New Jersey Department of Environmental Protection
Permit No.	BOP110001 (November 1,2012)
Capacity (specify units)	66.2 MMBtu/hr heat input
BACT/LAER Determination	Ultra Low-NOx burners and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	9 ppmvd; 0.66 lb/hr
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: CO

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Auxiliary Boiler
Facility/Location	Interstate/Marshalltown / Marshalltown, IA
Permitting Authority	Iowa Department of Natural Resources
Permit No.	13-A-499-P (April 14, 2014)
Capacity (specify units)	60 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	23 ppmvd
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: NOx

BACT Option: Ultra Low-NOx burners and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Auxiliary Boiler
Facility/Location	Interstate/Marshalltown / Marshalltown, IA
Permitting Authority	Iowa Department of Natural Resources
Permit No.	13-A-499-P (April 14, 2014)
Capacity (specify units)	60 MMBtu/hr heat input
BACT/LAER Determination	Ultra Low-NOx burners and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	9.0 ppmvd
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: PM10/PM2.5

BACT Option: Good combustion practices and pipeline-quality natural gas

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Auxiliary Boiler
Facility/Location	Interstate/Marshalltown / Marshalltown, IA
Permitting Authority	Iowa Department of Natural Resources
Permit No.	13-A-499-P (April 14, 2014)
Capacity (specify units)	60 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices and pipeline-quality natural gas
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.008 lb/MMBtu
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: VOC

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Auxiliary Boiler
Facility/Location	Interstate/Marshalltown / Marshalltown, IA
Permitting Authority	Iowa Department of Natural Resources
Permit No.	13-A-499-P (April 14, 2014)
Capacity (specify units)	60 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.005 lb/MMBtu
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: CO

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Auxiliary Boiler
Facility/Location	Lordstown Energy Center / Lordstown, OH
Permitting Authority	Ohio Environmental Protection Agency
Permit No.	P0117655 (Aug. 28, 2015)
Capacity (specify units)	34 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	75 ppm
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: NOx

BACT Option: Low-NOx burners and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination: ☒ **BACT** ☐ **LAER**

Source	Auxiliary Boiler
Facility/Location	Lordstown Energy Center / Lordstown, OH
Permitting Authority	Ohio Environmental Protection Agency
Permit No.	P0117655 (Aug. 28, 2015)
Capacity (specify units)	34 MMBtu/hr heat input
BACT/LAER Determination	Low-NOx burners and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	20 ppmvd
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: PM10/PM2.5

BACT Option: Good combustion practices and pipeline-quality natural gas

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination: ☒ **BACT** ☐ **LAER**

Source	Auxiliary Boiler
Facility/Location	Lordstown Energy Center / Lordstown, OH
Permitting Authority	Ohio Environmental Protection Agency
Permit No.	P0117655 (Aug. 28, 2015)
Capacity (specify units)	34 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices and pipeline-quality natural gas
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.008 lb/MMBtu
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: VOC

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Auxiliary Boiler
Facility/Location	Lordstown Energy Center / Lordstown, OH
Permitting Authority	Ohio Environmental Protection Agency
Permit No.	P0117655 (Aug. 28, 2015)
Capacity (specify units)	34 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.006 lb/MMBtu
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: CO

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Auxiliary Boiler
Facility/Location	Mattawoman Energy Center / Prince George's, MD
Permitting Authority	Maryland Department of the Environment
Permit No.	PSC Case No. 9330 (Nov. 13, 2015)
Capacity (specify units)	42 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	50 ppm
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: NOx

BACT Option: Ultra Low-NOx burners and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ **BACT** ☒ **LAER**
Source	Auxiliary Boiler
Facility/Location	Mattawoman Energy Center / Prince George's, MD
Permitting Authority	Maryland Department of the Environment
Permit No.	PSC Case No. 9330 (Nov. 13, 2015)
Capacity (specify units)	42 MMBtu/hr heat input
BACT/LAER Determination	Ultra Low-NOx burners and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	9 ppmvd
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: PM

BACT Option: Good combustion practices and pipeline-quality natural gas

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Auxiliary Boiler
Facility/Location	Mattawoman Energy Center / Prince George's, MD
Permitting Authority	Maryland Department of the Environment
Permit No.	PSC Case No. 9330 (Nov. 13, 2015)
Capacity (specify units)	42 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices and pipeline-quality natural gas
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.0075 lb/MMBtu
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: VOC

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ BACT ☒ LAER
Source	Auxiliary Boiler
Facility/Location	Mattawoman Energy Center / Prince George's, MD
Permitting Authority	Maryland Department of the Environment
Permit No.	PSC Case No. 9330 (Nov. 13, 2015)
Capacity (specify units)	42 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.003 lb/MMBtu
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: CO

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Auxiliary Boiler
Facility/Location	Moundsville Power / Moundsville, WV
Permitting Authority	West Virginia Department of Environmental Protection
Permit No.	R14-0030 (Nov. 21, 2014) ☐
Capacity (specify units)	100 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	50 ppm
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: NOx

BACT Option: Low-NOx burners and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Auxiliary Boiler
Facility/Location	Moundsville Power / Moundsville, WV
Permitting Authority	West Virginia Department of Environmental Protection
Permit No.	R14-0030 (Nov. 21, 2014)
Capacity (specify units)	100 MMBtu/hr heat input
BACT/LAER Determination	Low-NOx burners and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	20 ppmvd
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: PM10/PM2.5

BACT Option: Good combustion practices and pipeline-quality natural gas

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Auxiliary Boiler
Facility/Location	Moundsville Power / Moundsville, WV
Permitting Authority	West Virginia Department of Environmental Protection
Permit No.	R14-0030 (Nov. 21, 2014)
Capacity (specify units)	100 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices and pipeline-quality natural gas
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.005 lb/MMBtu
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: VOC

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Auxiliary Boiler
Facility/Location	Moundsville Power / Moundsville, WV
Permitting Authority	West Virginia Department of Environmental Protection
Permit No.	R14-0030 (Nov. 21, 2014)
Capacity (specify units)	100 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.006 lb/MMBtu
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: NOx

BACT Option: Low-NOx burners and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Auxiliary Boiler
Facility/Location	NRG Texas SR Bertron Station / LaPorte, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	102731 PSDTX1294 (December 19, 2014)
Capacity (specify units)	80 MMBtu/hr heat input
BACT/LAER Determination	Low-NOx burners and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	30 ppmvd
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: AB1

Unit Description: Auxiliary Boilers

Pollutant: VOC

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Auxiliary Boiler
Facility/Location	NRG Texas SR Bertron Station / LaPorte, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	102731 PSDTX1294 (December 19, 2014)
Capacity (specify units)	80 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Emissions testing
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.037 lb/MMBtu
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: CO

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Generator
Facility/Location	Carlsbad Energy Center / Carlsbad, CA
Permitting Authority	California Environmental Protection Agency; SDAPCD
Permit No.	APCD2014-APP-(003480-003487) (April 17, 2015)
Capacity (specify units)	779 HP (500 kW)
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	3.5 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: NOx

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Generator
Facility/Location	Carlsbad Energy Center / Carlsbad, CA
Permitting Authority	California Environmental Protection Agency; SDAPCD
Permit No.	APCD2014-APP-(003480-003487) (April 17, 2015)
Capacity (specify units)	779 HP (500 kW)
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	6.4 g/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: PM10/PM2.5

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Generator
Facility/Location	Carlsbad Energy Center / Carlsbad, CA
Permitting Authority	California Environmental Protection Agency; SDAPCD
Permit No.	APCD2014-APP-(003480-003487) (April 17, 2015)
Capacity (specify units)	779 HP (500 kW)
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.20 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: VOC

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Generator
Facility/Location	Carlsbad Energy Center / Carlsbad, CA
Permitting Authority	California Environmental Protection Agency; SDAPCD
Permit No.	APCD2014-APP-(003480-003487) (April 17, 2015)
Capacity (specify units)	779 HP (500 kW)
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	6.4 g/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: CO

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Generator
Facility/Location	CPV Towantic, LLC / Oxford, CT
Permitting Authority	Connecticut Department of Energy and Environmental Protection
Permit No.	144-0023 & 144-0024 (Nov. 30, 2015)
Capacity (specify units)	1500 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	2.14 lb/hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: NOx

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Generator
Facility/Location	CPV Towantic, LLC / Oxford, CT
Permitting Authority	Connecticut Department of Energy and Environmental Protection
Permit No.	144-0023 & 144-0024 (Nov. 30, 2015)
Capacity (specify units)	1500 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	19.84 lb/hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: PM10/PM2.5

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Generator
Facility/Location	CPV Towantic, LLC / Oxford, CT
Permitting Authority	Connecticut Department of Energy and Environmental Protection
Permit No.	144-0023 & 144-0024 (Nov. 30, 2015)
Capacity (specify units)	1500 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.15 lb/hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: VOC

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Generator
Facility/Location	CPV Towantic, LLC / Oxford, CT
Permitting Authority	Connecticut Department of Energy and Environmental Protection
Permit No.	144-0023 & 144-0024 (Nov. 30, 2015)
Capacity (specify units)	1500 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.53 lb/hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: CO

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Generator
Facility/Location	Footprint Power Salem Harbor / Salem, MA
Permitting Authority	Massachusetts Department of Environmental Protection
Permit No.	13-A-499-P (January 30, 2014)
Capacity (specify units)	750 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	3.5 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: NOx

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Generator
Facility/Location	Footprint Power Salem Harbor / Salem, MA
Permitting Authority	Massachusetts Department of Environmental Protection
Permit No.	13-A-499-P (January 30, 2014)
Capacity (specify units)	750 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	6.4 g/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: PM10/PM2.5

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Generator
Facility/Location	Footprint Power Salem Harbor / Salem, MA
Permitting Authority	Massachusetts Department of Environmental Protection
Permit No.	13-A-499-P (January 30, 2014)
Capacity (specify units)	750 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.20 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: VOC

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Generator
Facility/Location	Footprint Power Salem Harbor / Salem, MA
Permitting Authority	Massachusetts Department of Environmental Protection
Permit No.	13-A-499-P (January 30, 2014)
Capacity (specify units)	750 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	6.4 g/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: CO

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Generator
Facility/Location	FP&L Lauderdale / Broward, FL
Permitting Authority	Florida Department of Environmental Protection
Permit No.	0110037-011-AC (April 22, 2014)
Capacity (specify units)	(4) 3,100 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	3.5 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: NOx

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Generator
Facility/Location	FP&L Lauderdale / Broward, FL
Permitting Authority	Florida Department of Environmental Protection
Permit No.	0110037-011-AC (April 22, 2014)
Capacity (specify units)	(4) 3,100 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	6.4 g/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: PM10/PM2.5

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Generator
Facility/Location	FP&L Lauderdale / Broward, FL
Permitting Authority	Florida Department of Environmental Protection
Permit No.	0110037-011-AC (April 22, 2014)
Capacity (specify units)	(4) 3,100 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.20 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: VOC

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination: ☒ **BACT** ☐ **LAER**

Source	Emergency Generator
Facility/Location	FP&L Lauderdale / Broward, FL
Permitting Authority	Florida Department of Environmental Protection
Permit No.	0110037-011-AC (April 22, 2014)
Capacity (specify units)	(4) 3,100 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	6.4 g/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: CO

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Generator
Facility/Location	Goldenspread Antelope Elk Energy / Hale, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	109148, PSDTX1358 (April 22, 2014)
Capacity (specify units)	1,656 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	3.5 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: NOx

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Generator
Facility/Location	Goldenspread Antelope Elk Energy / Hale, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	109148, PSDTX1358 (April 22, 2014)
Capacity (specify units)	1,656 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	6.4 g/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: PM10/PM2.5

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Generator
Facility/Location	Goldenspread Antelope Elk Energy / Hale, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	109148, PSDTX1358 (April 22, 2014)
Capacity (specify units)	1,656 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.20 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: VOC

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Generator
Facility/Location	Goldenspread Antelope Elk Energy / Hale, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	109148, PSDTX1358 (April 22, 2014)
Capacity (specify units)	1,656 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	6.4 g/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: CO

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Generator
Facility/Location	Hickory Run Energy, LLC / New Beaver Twp., PA
Permitting Authority	Pennsylvania Department of Environmental Protection
Permit No.	37-337A (April 23, 2013)
Capacity (specify units)	750 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.4 g/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: NOx

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Generator
Facility/Location	Hickory Run Energy, LLC / New Beaver Twp., PA
Permitting Authority	Pennsylvania Department of Environmental Protection
Permit No.	37-337A (April 23, 2013)
Capacity (specify units)	750 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	6.0 g/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: PM10/PM2.5

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Generator
Facility/Location	Hickory Run Energy, LLC / New Beaver Twp., PA
Permitting Authority	Pennsylvania Department of Environmental Protection
Permit No.	37-337A (April 23, 2013)
Capacity (specify units)	750 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.02 tpy
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: VOC

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Generator
Facility/Location	Hickory Run Energy, LLC / New Beaver Twp., PA
Permitting Authority	Pennsylvania Department of Environmental Protection
Permit No.	37-337A (April 23, 2013)
Capacity (specify units)	750 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	6.4 g/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: CO

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Generator
Facility/Location	Moundsville Power / Moundsville, WV
Permitting Authority	West Virginia Department of Environmental Protection
Permit No.	R14-0030 (Nov. 21, 2014)
Capacity (specify units)	1500 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	3.5 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: NOx

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Generator
Facility/Location	Moundsville Power / Moundsville, WV
Permitting Authority	West Virginia Department of Environmental Protection
Permit No.	R14-0030 (Nov. 21, 2014)
Capacity (specify units)	1500 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	6.4 g/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: PM10/PM2.5

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Generator
Facility/Location	Moundsville Power / Moundsville, WV
Permitting Authority	West Virginia Department of Environmental Protection
Permit No.	R14-0030 (Nov. 21, 2014)
Capacity (specify units)	1500 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.20 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: VOC

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Generator
Facility/Location	Moundsville Power / Moundsville, WV
Permitting Authority	West Virginia Department of Environmental Protection
Permit No.	R14-0030 (Nov. 21, 2014)
Capacity (specify units)	1500 kW
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	6.4 g/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: CO

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Generator
Facility/Location	Moxie Patriot LLC / Clinton Twp, PA
Permitting Authority	Pennsylvania Department of Environmental Protection
Permit No.	41-00084A (January 31, 2013)
Capacity (specify units)	1472 hp
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.01 g/hp-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: NOx

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Generator
Facility/Location	Moxie Patriot LLC / Clinton Twp, PA
Permitting Authority	Pennsylvania Department of Environmental Protection
Permit No.	41-00084A (January 31, 2013)
Capacity (specify units)	1472 hp
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	4.93 g/hp-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: PM10/PM2.5

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Generator
Facility/Location	Moxie Patriot LLC / Clinton Twp, PA
Permitting Authority	Pennsylvania Department of Environmental Protection
Permit No.	41-00084A (January 31, 2013)
Capacity (specify units)	1472 hp
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.02 g/hp-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: VOC

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Generator
Facility/Location	Moxie Patriot LLC / Clinton Twp, PA
Permitting Authority	Pennsylvania Department of Environmental Protection
Permit No.	41-00084A (January 31, 2013)
Capacity (specify units)	1472 hp
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.13 g/hp-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: CO

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Generator
Facility/Location	Tenaska Roan's Prairie Partners / Grimes, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	114698 PSDTX1378 (September 22, 2014)
Capacity (specify units)	2937 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	3.5 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: NOx

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Generator
Facility/Location	Tenaska Roan's Prairie Partners / Grimes, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	114698 PSDTX1378 (September 22, 2014)
Capacity (specify units)	2937 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	6.4 g/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: PM10/PM2.5

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Generator
Facility/Location	Tenaska Roan's Prairie Partners / Grimes, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	114698 PSDTX1378 (September 22, 2014)
Capacity (specify units)	2937 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.20 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: EG1

Unit Description: Emergency Generator

Pollutant: VOC

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Generator
Facility/Location	Tenaska Roan's Prairie Partners / Grimes, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	114698 PSDTX1378 (September 22, 2014)
Capacity (specify units)	2937 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	6.4 g/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: CO

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Fire Pump
Facility/Location	Carlsbad Energy Center / Carlsbad, CA
Permitting Authority	California Environmental Protection Agency; SDAPCD
Permit No.	APCD2014-APP-(003480-003487) (April 17, 2015)
Capacity (specify units)	327 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	3.5 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: NOx

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Fire Pump
Facility/Location	Carlsbad Energy Center / Carlsbad, CA
Permitting Authority	California Environmental Protection Agency; SDAPCD
Permit No.	APCD2014-APP-(003480-003487) (April 17, 2015)
Capacity (specify units)	327 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	4.0 grams/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: PM10/PM2.5

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Fire Pump
Facility/Location	Carlsbad Energy Center / Carlsbad, CA
Permitting Authority	California Environmental Protection Agency; SDAPCD
Permit No.	APCD2014-APP-(003480-003487) (April 17, 2015)
Capacity (specify units)	327 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.20 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: VOC

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Fire Pump
Facility/Location	Carlsbad Energy Center / Carlsbad, CA
Permitting Authority	California Environmental Protection Agency; SDAPCD
Permit No.	APCD2014-APP-(003480-003487) (April 17, 2015)
Capacity (specify units)	327 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	4.0 grams/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: CO

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Fire Pump
Facility/Location	CPV Towantic, LLC / Oxford, CT
Permitting Authority	Connecticut Department of Energy and Environmental Protection
Permit No.	144-0023 & 144-0024 (Nov. 30, 2015)
Capacity (specify units)	350 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.64 lb/hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: NOx

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Fire Pump
Facility/Location	CPV Towantic, LLC / Oxford, CT
Permitting Authority	Connecticut Department of Energy and Environmental Protection
Permit No.	144-0023 & 144-0024 (Nov. 30, 2015)
Capacity (specify units)	350 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	2.65 lb/hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: PM10/PM2.5

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Fire Pump
Facility/Location	CPV Towantic, LLC / Oxford, CT
Permitting Authority	Connecticut Department of Energy and Environmental Protection
Permit No.	144-0023 & 144-0024 (Nov. 30, 2015)
Capacity (specify units)	350 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.1 lb/hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: VOC

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination: ☒ **BACT** ☐ **LAER**

Source	Emergency Fire Pump
Facility/Location	CPV Towantic, LLC / Oxford, CT
Permitting Authority	Connecticut Department of Energy and Environmental Protection
Permit No.	144-0023 & 144-0024 (Nov. 30, 2015)
Capacity (specify units)	350 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.07 lb/hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: CO

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Fire Pump
Facility/Location	Duke Suwannee River Power / Live Oak, FL
Permitting Authority	Florida Department of Environmental Protection
Permit No.	1210003-008-AC PSD-FL-428 (April 28, 2015)
Capacity (specify units)	160 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	3.5 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: NOx

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Fire Pump
Facility/Location	Duke Suwannee River Power / Live Oak, FL
Permitting Authority	Florida Department of Environmental Protection
Permit No.	1210003-008-AC PSD-FL-428 (April 28, 2015)
Capacity (specify units)	160 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	4.0 grams/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: PM10/PM2.5

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Fire Pump
Facility/Location	Duke Suwannee River Power / Live Oak, FL
Permitting Authority	Florida Department of Environmental Protection
Permit No.	1210003-008-AC PSD-FL-428 (April 28, 2015)
Capacity (specify units)	160 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.20 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: VOC

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Fire Pump
Facility/Location	Duke Suwannee River Power / Live Oak, FL
Permitting Authority	Florida Department of Environmental Protection
Permit No.	1210003-008-AC PSD-FL-428 (April 28, 2015)
Capacity (specify units)	160 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	4.0 grams/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: CO

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Fire Pump
Facility/Location	Footprint Power Salem Harbor / Salem, MA
Permitting Authority	Massachusetts Department of Environmental Protection
Permit No.	13-A-499-P (January 30, 2014)
Capacity (specify units)	371 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	3.5 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: NOx

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Fire Pump
Facility/Location	Footprint Power Salem Harbor / Salem, MA
Permitting Authority	Massachusetts Department of Environmental Protection
Permit No.	13-A-499-P (January 30, 2014)
Capacity (specify units)	371 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	4.0 grams/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: PM10/PM2.5

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Fire Pump
Facility/Location	Footprint Power Salem Harbor / Salem, MA
Permitting Authority	Massachusetts Department of Environmental Protection
Permit No.	13-A-499-P (January 30, 2014)
Capacity (specify units)	371 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.20 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: VOC

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Fire Pump
Facility/Location	Footprint Power Salem Harbor / Salem, MA
Permitting Authority	Massachusetts Department of Environmental Protection
Permit No.	13-A-499-P (January 30, 2014)
Capacity (specify units)	371 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	4.0 grams/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: CO

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Fire Pump
Facility/Location	FP&L Lauderdale / Broward, FL
Permitting Authority	Florida Department of Environmental Protection
Permit No.	0110037-011-AC (April 22, 2014)
Capacity (specify units)	300 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	3.5 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: NOx

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination: ☒ **BACT** ☐ **LAER**

Source	Emergency Fire Pump
Facility/Location	FP&L Lauderdale / Broward, FL
Permitting Authority	Florida Department of Environmental Protection
Permit No.	0110037-011-AC (April 22, 2014)
Capacity (specify units)	300 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	4.0 grams/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: PM10/PM2.5

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Fire Pump
Facility/Location	FP&L Lauderdale / Broward, FL
Permitting Authority	Florida Department of Environmental Protection
Permit No.	0110037-011-AC (April 22, 2014)
Capacity (specify units)	300 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.20 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: VOC

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Fire Pump
Facility/Location	FP&L Lauderdale / Broward, FL
Permitting Authority	Florida Department of Environmental Protection
Permit No.	0110037-011-AC (April 22, 2014)
Capacity (specify units)	300 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	4.0 grams/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: CO

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Fire Pump
Facility/Location	Hickory Run Energy, LLC / New Beaver Twp., PA
Permitting Authority	Pennsylvania Department of Environmental Protection
Permit No.	37-337A (April 23, 2013)
Capacity (specify units)	450 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	1.1 g/hp-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: NOx

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Fire Pump
Facility/Location	Hickory Run Energy, LLC / New Beaver Twp., PA
Permitting Authority	Pennsylvania Department of Environmental Protection
Permit No.	37-337A (April 23, 2013)
Capacity (specify units)	450 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	1.9 g/bhp-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: PM10/PM2.5

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Fire Pump
Facility/Location	Hickory Run Energy, LLC / New Beaver Twp., PA
Permitting Authority	Pennsylvania Department of Environmental Protection
Permit No.	37-337A (April 23, 2013)
Capacity (specify units)	450 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.20 g/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: VOC

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Fire Pump
Facility/Location	Hickory Run Energy, LLC / New Beaver Twp., PA
Permitting Authority	Pennsylvania Department of Environmental Protection
Permit No.	37-337A (April 23, 2013)
Capacity (specify units)	450 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	4.0 g/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: CO

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Fire Pump
Facility/Location	Invenergy Ector County Energy Center / Ector, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	110423 PSDTX1366 (August 1, 2014)
Capacity (specify units)	250 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	3.5 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: NOx

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Fire Pump
Facility/Location	Invenergy Ector County Energy Center / Ector, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	110423 PSDTX1366 (August 1, 2014)
Capacity (specify units)	250 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	4.0 grams/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: PM10/PM2.5

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Fire Pump
Facility/Location	Invenergy Ector County Energy Center / Ector, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	110423 PSDTX1366 (August 1, 2014)
Capacity (specify units)	250 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.20 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: VOC

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Fire Pump
Facility/Location	Invenergy Ector County Energy Center / Ector, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	110423 PSDTX1366 (August 1, 2014)
Capacity (specify units)	250 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	4.0 grams/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: CO

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Fire Pump
Facility/Location	Moundsville Power / Moundsville, WV
Permitting Authority	West Virginia Department of Environmental Protection
Permit No.	R14-0030 (Nov. 21, 2014)
Capacity (specify units)	251 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	3.5 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: NOx

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Fire Pump
Facility/Location	Moundsville Power / Moundsville, WV
Permitting Authority	West Virginia Department of Environmental Protection
Permit No.	R14-0030 (Nov. 21, 2014)
Capacity (specify units)	251 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	4.0 grams/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: PM10/PM2.5

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Fire Pump
Facility/Location	Moundsville Power / Moundsville, WV
Permitting Authority	West Virginia Department of Environmental Protection
Permit No.	R14-0030 (Nov. 21, 2014)
Capacity (specify units)	251 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.20 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: VOC

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination: ☒ BACT ☐ LAER

Source	Emergency Fire Pump
Facility/Location	Moundsville Power / Moundsville, WV
Permitting Authority	West Virginia Department of Environmental Protection
Permit No.	R14-0030 (Nov. 21, 2014)
Capacity (specify units)	251 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	4.0 grams/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: CO

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Fire Pump
Facility/Location	Moxie Patriot LLC / Clinton Twp, PA
Permitting Authority	Pennsylvania Department of Environmental Protection
Permit No.	41-00084A (January 31, 2013)
Capacity (specify units)	460 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.1 g/hp-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: NOx

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Fire Pump
Facility/Location	Moxie Patriot LLC / Clinton Twp, PA
Permitting Authority	Pennsylvania Department of Environmental Protection
Permit No.	41-00084A (January 31, 2013)
Capacity (specify units)	460 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	2.6 g/hp-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: PM10/PM2.5

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Fire Pump
Facility/Location	Moxie Patriot LLC / Clinton Twp, PA
Permitting Authority	Pennsylvania Department of Environmental Protection
Permit No.	41-00084A (January 31, 2013)
Capacity (specify units)	460 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.09 g/hp-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: VOC

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Fire Pump
Facility/Location	Moxie Patriot LLC / Clinton Twp, PA
Permitting Authority	Pennsylvania Department of Environmental Protection
Permit No.	41-00084A (January 31, 2013)
Capacity (specify units)	460 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.5 g/hp-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: CO

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Emergency Fire Pump
Facility/Location	Tenaska Roan's Prairie Partners / Grimes, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	114698 PSDTX1378 (September 22, 2014)
Capacity (specify units)	575 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	3.5 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: NOx

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Fire Pump
Facility/Location	Tenaska Roan's Prairie Partners / Grimes, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	114698 PSDTX1378 (September 22, 2014)
Capacity (specify units)	575 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	4.0 grams/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: PM10/PM2.5

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Fire Pump
Facility/Location	Tenaska Roan's Prairie Partners / Grimes, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	114698 PSDTX1378 (September 22, 2014)
Capacity (specify units)	575 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	0.20 grams/kW-hr
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: FP1

Unit Description: Emergency Fire Pump

Pollutant: VOC

BACT Option: Low emissions engine design

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Emergency Fire Pump
Facility/Location	Tenaska Roan's Prairie Partners / Grimes, TX
Permitting Authority	Texas Commission on Environmental Quality
Permit No.	114698 PSDTX1378 (September 22, 2014)
Capacity (specify units)	575 HP
BACT/LAER Determination	Low emissions engine design
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor certification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	4.0 grams/kW-hr NOx
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: GH1

Unit Description: Natural Gas Heater

Pollutant: NOx

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ BACT ☒ LAER
Source	Natural Gas Heater
Facility/Location	CPV Valley Energy Center / Middletown, NY
Permitting Authority	New York State Department of Environmental Conservation
Permit No.	3-3356-00136/00001 (August 1, 2013)
Capacity (specify units)	5 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor specification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	48 ppmvd
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: GH1

Unit Description: Natural Gas Heater

Pollutant: NOx

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Natural Gas Heater
Facility/Location	FP&L Okeechobee Clean Energy Center / Okeechobee, FL
Permitting Authority	State of Florida Department of Environmental Protection
Permit No.	0930117-001-AC (PSD-FL-434) (Mar. 9, 2016)
Capacity (specify units)	<10 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor specification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	80 ppmvd
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: GH1

Unit Description: Natural Gas Heater

Pollutant: CO

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Natural Gas Heater
Facility/Location	Green Energy Partners/Stonewall LLC / Leesburg, VA
Permitting Authority	Virginia Department of Environmental Quality
Permit No.	73826 (April 30, 2013)
Capacity (specify units)	20 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor specification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	50 ppmv
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: GH1

Unit Description: Natural Gas Heater

Pollutant: NOx

BACT Option: Ultra-low NOx burners and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ BACT ☒ LAER
Source	Natural Gas Heater
Facility/Location	Green Energy Partners/Stonewall LLC / Leesburg, VA
Permitting Authority	Virginia Department of Environmental Quality
Permit No.	73826 (April 30, 2013)
Capacity (specify units)	20 MMBtu/hr heat input
BACT/LAER Determination	Ultra-low NOx burners and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor specification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not available
Allowable Emissions Rate (specify units)	9.0 ppmv
Emissions Reduction Potential (%)	Not available
Cost Effectiveness ($/ton removed)	Not available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: GH1

Unit Description: Gas Heater

Pollutant: CO

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Gas Heater
Facility/Location	Interstate/Marshalltown / Marshalltown, IA
Permitting Authority	Iowa Department of Natural Resources
Permit No.	13-A-499-P (April 14, 2014)
Capacity (specify units)	13.3 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor specification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	55 ppm
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: GH1

Unit Description: Gas Heater

Pollutant: NOx

BACT Option: Ultra Low-NOx burners and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ BACT ☐ LAER
Source	Gas Heater
Facility/Location	Interstate/Marshalltown / Marshalltown, IA
Permitting Authority	Iowa Department of Natural Resources
Permit No.	13-A-499-P (April 14, 2014)
Capacity (specify units)	13.3 MMBtu/hr heat input
BACT/LAER Determination	Ultra Low-NOx burners and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor specification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	10 ppmvd
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: GH1

Unit Description: Gas Heater

Pollutant: PM10/PM2.5

BACT Option: Good combustion practices and pipeline-quality natural gas

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination: ☒ **BACT** ☐ **LAER**

Source	Gas Heater
Facility/Location	Interstate/Marshalltown / Marshalltown, IA
Permitting Authority	Iowa Department of Natural Resources
Permit No.	13-A-499-P (April 14, 2014)
Capacity (specify units)	13.3 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices and pipeline-quality natural gas
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor specification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.008 lb/MMBtu
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: GH1

Unit Description: Natural Gas Heater

Pollutant: CO

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Natural Gas Heater
Facility/Location	Mattawoman Energy Center / Prince George's, MD
Permitting Authority	Maryland Department of the Environment
Permit No.	PSC Case No. 9330 (Nov. 13, 2015)
Capacity (specify units)	13.8 MMBtu/hr heat input
BACT/LAER Determination	Low NOx burners and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor specification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	28 ppm
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: GH1

Unit Description: Natural Gas Heater

Pollutant: NOx

BACT Option: Low NOx burners and good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Natural Gas Heater
Facility/Location	Mattawoman Energy Center / Prince George's, MD
Permitting Authority	Maryland Department of the Environment
Permit No.	PSC Case No. 9330 (Nov. 13, 2015)
Capacity (specify units)	13.8 MMBtu/hr heat input
BACT/LAER Determination	Low NOx burners and good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor specification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	30 ppmvd
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: GH1

Unit Description: Natural Gas Heater

Pollutant: PM10/PM2.5

BACT Option: Good combustion practices and pipeline-quality natural gas

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☒ **BACT** ☐ **LAER**
Source	Natural Gas Heater
Facility/Location	Mattawoman Energy Center / Prince George's, MD
Permitting Authority	Maryland Department of the Environment
Permit No.	PSC Case No. 9330 (Nov. 13, 2015)
Capacity (specify units)	13.8 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices and pipeline-quality natural gas
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor specification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.0075 lb/MMBtu
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G1: Background Search – Existing BACT Determinations

Applicant Name: NTE Connecticut, LLC

Unit No.: GH1

Unit Description: Natural Gas Heater

Pollutant: VOC

BACT Option: Good combustion practices

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each existing BACT or LAER determination found for a unit which is the same or similar to the subject unit. LAER determinations may be considered BACT in some instances.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC data should be investigated and documented. These sources include: DEEP BACT Database, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals.

Indicate if BACT or LAER Determination:	☐ **BACT** ☒ **LAER**
Source	Natural Gas Heater
Facility/Location	Mattawoman Energy Center / Prince George's, MD
Permitting Authority	Maryland Department of the Environment
Permit No.	PSC Case No. 9330 (Nov. 13, 2015)
Capacity (specify units)	13.8 MMBtu/hr heat input
BACT/LAER Determination	Good combustion practices
Compliance Achieved? (Yes/No)	No
Method of Compliance Determination	Vendor specification
Actions Taken for Noncompliance	NA
Baseline Emissions Rate (specify units)	Not Available
Allowable Emissions Rate (specify units)	0.0054 lb/MMBtu
Emissions Reduction Potential (%)	Not Available
Cost Effectiveness ($/ton removed)	Not Available
Reference	

Attachment G2: Cost/Economic Impact Analysis

Applicant Name: NTE Connecticut, LLC

Unit No.: AB

Pollutant: CO

BACT Option: Oxidation Catalyst

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete this form for each BACT option in which cost and economic impacts are to be considered. On this form, do not include costs that would be incurred regardless of whether the BACT option is chosen. If the particular item is not applicable to the BACT option being evaluated, indicate "Not Applicable" (N/A) in the appropriate blanks. Add additional lines and/or use additional forms as necessary. Complete this form for each technically feasible BACT Option in Part II of Attachment G *Best Available Control Technology* (DEEP-NSR-APP-214a).

Part I. Total Capital Investment

Total Capital Investment (TCI) is the total direct and indirect capital costs associated with implementation of a BACT option. Use Tables A and B to indicate the direct and indirect capital costs that would be incurred above the baseline project costs. Attach vendor quotes and additional sheets as necessary.

Table A. Direct Capital Costs

	Item		Cost Estimate	Reference/Comments
Purchased Equipment Costs	1. Equipment Costs (Itemize Below)			
	Oxidation Catalyst		$ 90,000	Estimate
			$	
			$	
			$	
	2. Instrumentation		$ 9,000	10%
	3. Sales Tax		$ 7,200	8%
	4. Freight		$ 0	Included with sales tax
	5. Other:		$ 0	
	6. **Purchased Equipment Subtotal** (Sum of Items 1, 2, 3, 4, and 5)		$ 106,200	PEC

Table A. Direct Capital Costs (continued)

Direct Installation Costs	7. Foundations and Supports		$ 8,496	8% of PEC
	8. Auxiliaries (duct work, fittings – include only the equipment which would not be necessary if the facility was not controlled)		$	
	9. Handling and Erection		$ 14,868	14% of PEC
	10. Piping		$ 2,124	2% of PEC
	11. Insulation and Painting		$ 2,124	2% of PEC
	12. Electrical		$ 4,248	4% of PEC
	13. Site Preparation		$	
	14. Other:	Inlet/Outlet Transitions	$ 10,000	Estimate
	15. **Direct Installation Costs Subtotal** (Sum of Items 7, 8, 9, 10, 11, 12, 13 and 14)		$ 41,860	
	16. **DIRECT CAPITAL COSTS SUBTOTAL** (Sum of Items 6 and 15)		$ 148,060	

Table B. Indirect Installation Costs

Item		**Cost Estimate**	**Reference/Comments**
1. Engineering and Supervision		$ 10,620	10% of PEC
2. Lost Production (for retrofit situations only)		$ N/A	
3. Construction and Field Expenses		$ 5,310	5% of PEC
4. Contractor Fees		$ 10,620	10% of PEC
5. Start-up and Performance Tests		$ 3,186	3% of PEC
6. Over-all Contingencies		$ 3,186	3% of PEC
7. Working Capital (if applicable)		$ N/A	
8. Other:		$	
9. **Indirect Installation Costs Subtotal** (Sum of Items 1, 2, 3, 4, 5, 6, 7, and 8)		$ 32,922	

Table C. Capital Cost Summary

Item	**Cost Estimate**	**Reference/Comments**
1. Total Capital Investment Subtotal (Sum of Table A, item 16 and Table B Item 9)	$ 180,982	
2. Capital Recovery Factor	0.1098	Non-Catalyst Components
a. Interest Rate	7.0	Non-Catalyst Components
b. Economic Lifetime	15 years	Non-Catalyst Components
3. Capital Recovery Cost	$ 11,125	Non-Catalyst Components

Part II. Total Annual Cost

Total Annual Cost includes the direct and indirect costs and recovery credits associated with implementation of a BACT option. Use Tables D and E to indicate the annual costs that would be incurred above the baseline project costs. Use Table F to indicate the recovery credits that would be realized after implementation of the BACT option. Summarize the total annual costs in Table G. Attach vendor quotes and additional sheets as necessary.

Table D. Direct Capital Costs

Item	Cost Estimate	Reference/Comments
1. Operating Labor (Itemize Below)		
	$ 0	
	$	
2. Maintenance Labor (Itemize Below)		
	$ 0	
	$	
3. Materials (Itemize Below)		
	$	
	$	
4. Utilities (Itemize Below)		
	$ 0	
	$	
5. Waste Treatment and Disposal (Itemize Below)		
Catalyst disposal	$ 66	
	$	
6. Replacement Parts (Itemize Below)		
Catalyst Replacement	$ 19,427	Catalyst replacement annualized over 5 years
	$	
7. Other (Please Specify)		
	$	
	$	
8. **DIRECT ANNUAL COSTS SUBTOTAL** (Sum of Items 1, 2, 3, 4, 5, 6, and 7)	$ 19,493	

Table E. Indirect Annual Costs

Item		Cost Estimate	Reference/Comments
1. Overhead		$ 0	
2. Property Taxes, Insurance, and Administrative Charges		$ 7,239	4% of Total Capital Investment
3. Other:		$	
4. **Indirect Annual Costs Subtotal** (Sum of Items 1, 2, and 3)		$ 7,239	

Table F. Recovery Credits

Item	Cost Estimate	Reference/Comments
1. Materials Recovered		
	$	
2. Energy Recovered		
	$	
3. Other (Please Specify)		
	$	
4. **RECOVERY CREDITS SUBTOTAL** (Sum of Items 1, 2, and 3)	$	

Table G. Total Annual Cost Summary

Item	Cost Estimate	Reference/Comments
1. Direct Annual Costs Subtotal (Table D, Item 8)	$ 19,493	
2. Indirect Annual Costs Subtotal (Table E, Item 4)	$ 7,239	
3. Recovery Credits Subtotal (Table F, Item 4)	$ 0	
4. **TOTAL ANNUAL COST SUBTOTAL** (Items 1 plus Item 2 minus Item 3)	$ 26,732	

Part III. Cost/Economic Impact Summary

Table H. Total Annualized Cost Summary

Item	Cost Estimate
1. Capital Recovery Cost (Table C, Item 3)	$ 11,125
2. Total Annual Cost Subtotal (Table G, Item 4)	$ 26,732
3. **TOTAL ANNUALIZED COST (TAC)** (Sum of Items 1 and 2)	$ 37,857

Table I. Cost Effectiveness

Item	Cost Estimate
1. Baseline Emissions Rate (tpy)	7.14
2. Allowable Emissions Rate (tpy)	1.43
3. Total Pollutant Removed (tpy) (Difference of Item 1 and Item 2)	5.71
4. **AVERAGE COST EFFECTIVENESS OF BACT OPTION** ($/ton of pollutant removed) (Divide Table H, Item 3 by Table I, Item 3)	$ 6,630

Part IV. Attachments

List any attachments used to support your calculations in the table below.

Attachment	Description
Appendix A	**Supporting calculations**

Attachment G3: Summary of Best Available Control Technology Reviews

Complete this form in accordance with the instructions (DEEP-NSR-INST-214) to ensure the proper handling of your application. Print or type unless otherwise noted.

List each emissions unit subject to the BACT requirements. For each emissions unit listed, indicate the Emissions Unit number and all pollutants that are subject to the BACT requirements. *Attachment G: Analysis of Best Available Control Technology* (DEEP-NSR-APP-214a) should be completed for each emissions unit-pollutant combination listed in this table.

		Pollutants Subject to BACT									
Unit Description	**Unit Number**	**PM**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**NO_X**	**CO**	**VOC**	**GHG**	**Other** (please specify)	
Combustion Turbine	CT	☒	☒	☒	☒	☒	☒	☒	☒	☒	H2SO4 & NH3
Duct Burner	DB	☒	☒	☒	☒	☒	☒	☒	☒	☒	H2SO4 & NH3
Auxliary Boiler	DB1	☒	☒	☒	☒	☒	☒	☒	☒	☒	H2SO4
Emergency Generator Engine	DB2	☒	☒	☒	☒	☒	☒	☒	☒	☒	H2SO4
Emergency Fire Pump Engine	AB	☒	☒	☒	☒	☒	☒	☒	☒	☒	H2SO4
Natural Gas Heater	GH	☒	☒	☒	☒	☒	☒	☒	☒	☒	H2SO4
Fugitive Emissions	FG	☐	☐	☐	☐	☐	☐	☐	☒	☐	H2SO4
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
		☐	☐	☐	☐	☐	☐	☐	☐	☐	
Baseline Project Emissions Total in tons per year (tpy):		102.2	102.2	102.2	25.1	139.2	153.2	49.4	1,996,602	58.3	**Comments:**
Allowable Project Emissions Total in tons per year (tpy):		102.2	102.2	102.2	25.1	139.2	153.2	49.4	1,996,602	58.3	

ATTACHMENT H – MAJOR MODIFICATION DETERMINATION FORM

Not required.

ATTACHMENT I – PREVENTION OF SIGNIFICANT DETERIORATION

The following pages provide a complete PSD of Air Quality form (DEEP-NSR-APP-216) and additional information to support the form in accordance with DEEP's instructions. Attachments associated with this form are listed below, indicating applicability and location, if not provided following this form.

- Attachment 216-A: Existing Actual Emissions: Alternative Two-Year Period Justification (Not Applicable)
- Attachment 216-B: New Actual Emissions: Alternative Two-Year Period Justification (Not Applicable)
- Attachment 216-C: BACT Determination (see Attachments G, G1, G2, and G3)
- Attachment 216-D: Ambient Monitoring Analysis (see Attachment L)
- Attachment 216-E: Source Impact Analysis (see Attachment L)
- Attachment 216-F: Ambient Air Quality Analysis (see Attachment L)
- Attachment 216-G: Visibility, Soils, Vegetation, and Growth Analysis (see Attachment L)
- Attachment 216-H: Growth and Ambient Air Impact Analysis (see Attachment L)
- Attachment 216-I: Project Description and Operating Schedule (see Forms 200, E202, and E212)
- Attachment 216-J: Construction Schedule

Attachment I: Prevention of Significant Deterioration of Air Quality (PSD) Program Form

DEEP USE ONLY
App. No.: ____________________

Applicant Name: NTE Connecticut, LLC

Complete this form in accordance with the instructions (DEEP-NSR-INST-216) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete a separate form for each unit that is part of this application package.

Questions? Visit the Air Permitting web page or contact the Air Permitting Engineer of the Day at 860-424-4152.

Note: This form is not required if Current Premises Potential Emissions and Proposed Allowable Emissions (from Part VII.B of *Attachment F: Premises Information Form - DEEP-NSR-APP-217)* from this project are each less than major source thresholds for each pollutant. (i.e. an existing minor premises adds a minor source which results in the premises becoming a new major source.)

Part I: Applicability

A. Project with Proposed Allowable Emissions Greater than Major Stationary Source Thresholds Located at an Existing Minor Stationary Source (Premises)

Indicate the pollutants for which the project will be classified as a major stationary source as indicated in Part VII.B of Attachment F. (Check all that apply.)	☒ **PM** ☒ **PM_{10}** ☒ **$PM_{2.5}$** ☐ **SO_2** ☒ **NO_x**	☐ **VOC** ☒ **CO** ☐ **Pb** ☒ **CO_2e and GHG**

The project is subject to PSD review for each pollutant that is checked above. Complete Part II of this form for all other pollutants.

B. Any Project Located at an Existing Major Stationary Source (Premises)

If the project is located at an existing major stationary source (prior to the subject equipment being permitted), complete *Attachment H: Major Modification Determination Form* (DEEP-NSR-APP-213) before completing this form.

Indicate the pollutants for which the project will be considered a major modification as indicated in Part V of Attachment H. (Check all that apply.)	☐ **PM** ☐ **PM_{10}** ☐ **$PM_{2.5}$** ☐ **SO_2** ☐ **NO_x**	☐ **VOC** ☐ **CO** ☐ **Pb** ☐ **CO_2e and GHG**

The project is subject to PSD review for each pollutant that is checked above. Complete Part II of this form for all other pollutants.

Part II: Additional Pollutant PSD Applicability

In addition to the pollutants previously indicated, PSD review must be completed for every other pollutant that has a total project emissions increase and a net emissions increase that are greater than the significant emission rate thresholds in Table 3a(k)-1 of RCSA section 22a-174-3a(k) even if the premises is not major for that pollutant.

Indicate in the following table the pollutants that the source emits (that were not checked in Part I of this form) and enter the total proposed project emissions increase.

A. Total Project Emissions Increase

Pollutant	Project Emits Pollutant?	Total Project Proposed Potential Emissions (tpy)	Total Project 2-yr Actual Emissions, if modification (tpy)	Total Project Emissions Increase (tpy)	Significant Emission Rate Threshold (tpy)	Is TOTAL PROJECT EMISSIONS INCREASE greater than the SIGNIFICANT EMISSION RATE THRESHOLD?
PM	☐				**25**	☐ Yes ☐ No
PM_{10}	☐				**15**	☐ Yes ☐ No
$PM_{2.5}$	☐				**10**	☐ Yes ☐ No
SO_2 (as a $PM_{2.5}$ precursor)	☒	**25.0**	**0**	**25.0**	**40**	☐ Yes ☒ No
SO_2 (NAAQS)	☒	**25.0**	**0**	**25.0**	**40**	☐ Yes ☒ No
NO_x (as an ozone precursor)	☐				**25**	☐ Yes ☐ No
NO_x (as a $PM_{2.5}$ precursor)	☐				**40**	☐ Yes ☐ No
NO_x (NAAQS)	☐				**40**	☐ Yes ☐ No
CO	☐				**100**	☐ Yes ☐ No
VOC	☒	**49.4**	**0**	**49.4**	**25**	☒ Yes ☐ No
Pb	☒	**0.02**	**0**	**0.02**	**0.6**	☐ Yes ☒ No
H_2S	☐				**10**	☐ Yes ☐ No
Reduced Sulfur & Compounds	☐				**10**	☐ Yes ☐ No

A. Total Project Emissions Increase, continued

Pollutant	Project Emits Pollutant?	Total Project Proposed Potential Emissions (tpy)	Total Project 2-yr Actual Emissions, if modification (tpy)	Total Project Emissions Increase (tpy)	Significant Emission Rate Threshold (tpy)	Is TOTAL PROJECT EMISSIONS INCREASE greater than the SIGNIFICANT EMISSION RATE THRESHOLD?
Sulfuric Acid Mist	☒	**8.8**	**0**	**8.8**	**7**	☒ Yes ☐ No
Fluorides	☐				**3**	☐ Yes ☐ No
Mercury	☒	**0.001**	**0**	**0.001**	**0.1**	☐ Yes ☒ No
MWC Organics	☐				**3.5E-6**	☐ Yes ☐ No
MWC Metals	☐				**15**	☐ Yes ☐ No
MWC Acid Gases	☐				**40**	☐ Yes ☐ No
CO_2e	☐				**75,000**	☐ Yes ☐ No

The Total Project 2- yr Actual Emissions must be based on actual emissions for the two years immediately preceding the proposed modification. New units would enter a “0” since they did not previously exist. If the most recent two year period was not selected as the representative two year period for actual emissions above, check here and submit written justification for using a period other than the most recent two years of actual emission as Attachment 216-A.	☐ Attachment 216-A

If “No”:

This pollutant ***is not*** subject to PSD Review and the PSD Review determination is complete.

If “Yes” and the project is located at an existing minor stationary source (i.e. completed Part I.A of this form):

This pollutant ***is*** subject to PSD Review. Continue to Part III.

If “Yes” and the project is located at an existing major stationary source (i.e. completed Part I.B of this form):

Continue on to Parts II.B and C for the subject pollutant.

B. Contemporaneous Creditable Emissions Increases and Decreases

Provide the following information for all contemporaneous creditable emissions increases and decreases during the 5-year contemporaneous period determined in Part II of *Attachment H: Major Modification Determination Form*. Calculate the *Total Contemporaneous Increases/Decreases* for the subject pollutant and enter the results in Part I.C. Duplicate this page if necessary.

Change Type (NEW, MOD, REM, PBR, DB)	Equipment Description	License or Regulation No. (P)	Date of Change	Pollutants (tpy)									
				New ACT	2-yr ACT	New ACT	2-yr ACT	New ACT	2-yr ACT	New ACT	2-yr ACT	New ACT	2-yr ACT
			/ /										
			/ /										
			/ /										
			/ /										
			/ /										
			/ /										
			/ /										
			/ /										
Totals (tpy)													
TOTAL CONTEMPORANEOUS INCREASES/DECREASES (tpy) (New ACT – 2-yr ACT)													

The 2-yr ACT emissions for each unit listed in Part II.B must be based on the average actual emissions for the two years immediately preceding the change. New units would enter a "0" since they did not previously exist. If the most recent two year period was not selected as the representative two year period for actual emissions for any changed unit, check here and submit written justification for using a period other than two years of actual emissions immediately preceding the change as Attachment 216-B.	☐ Attachment 216-B

C. Emissions Summation

Add the *Total Project Emission Increase* values from Part II.A of this form to the *Total Contemporaneous Increases/Decreases* value from Part II.B of this form to calculate the *Net Emissions Increase* for the subject pollutant.

Pollutant	Total Project Emissions Increase (tpy)	Total Contemporaneous Increases/Decreases	Net Emissions Increase	Significant Emission Rate Threshold (RCSA §22a-174-3a(k), Table 3a(k)-1)	Is NET EMISSIONS INCREASE equal to or greater than SIGNIFICANT EMISSION RATE THRESHOLD?
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No

If "No":

This pollutant ***is not*** subject to PSD Review and the PSD Review determination is complete.

If "Yes":

This pollutant ***is*** subject to PSD Review. Continue to Part III.

Part III: Attachments

Complete this part for each pollutant subject to PSD review as indicated in Parts I and II of this form.

Please check the attachments being submitted as verification that all applicable attachments have been submitted with this application form. When submitting such documents, please label the documents as indicated in this Part (e.g., Attachment 216-A, etc.) and be sure to include the applicant's name. All Attachments are **REQUIRED**.

Best Available Control Technology (BACT) Determination Submit a BACT analysis for each pollutant subject to PSD review. The owner or operator of any source subject to PSD shall install BACT as approved by the commissioner. Please complete *Attachment G: BACT Determination Form* (DEEP-NSR-APP-214) and attach it as Attachment 216-A. Include a detailed description as to what system of continuous emission reduction is planned for the subject source or modification, emission estimates, or any other information necessary to demonstrate that BACT will be applied. [RCSA sections 22a-174-3a(k)(4); -3a(k)(8)(A)(v)]	☒ **Attachment 216-C**
Air Quality Analysis	
Ambient Monitoring Analysis Submit an analysis of the effect on ambient air quality in the area of the subject source or modification for pollutants that have allowable emissions in excess of the amount listed in Table 3a(k)-1 of RCSA section 22a-174-3a(k)-1 *or* those listed in RCSA section 22a-174-24. The analysis shall meet the requirements of RCSA section 22a-174-3a(k)(5). [RCSA section 22a-174-3a(k)(5)]	☒ **Attachment 216-D**
Source Impact Analysis Submit a source impact analysis of the effects on ambient air quality in the area of the subject source or modification for pollutants that will have an impact on air quality equal or greater than any amount listed in Table 3a(i)-1 of RCSA section 22a-174-3a(i) or any applicable maximum allowable increase above baseline concentration established in Table 3a(k)-2 of RCSA section 22a-174-3a(k). The analysis shall meet the requirements of RCSA section 22a-174-3a(k)(6). [RCSA section 22a-174-3a(k)(6)]	☒ **Attachment 216-E**
Ambient Air Quality Analysis Submit an ambient air quality analysis in accordance with RCSA section 22a-174-3a(i), of the effect of the pollutants listed in Table 3a(k)-1 of RCSA section 22a-174-3a(k). [RCSA section 22a-174-3a(k)(7)]	☒ **Attachment 216-F**
Additional Source Information	
Visibility, Soils, Vegetation and Growth Analysis Submit an analysis of the impairment to visibility, soils, and vegetation that would result from construction and operation of the subject source or modification, and an analysis of the general commercial, residential, industrial and other associated growth. The applicant does not need to provide an analysis of the impact on vegetation having no significant commercial or residential value. [RCSA section 22a-174-3a(k)(8)(A)(i)]	☒ **Attachment 216-G**

Part III: Attachments (continued)

Growth and Ambient Air Impact Analysis Submit an analysis of the ambient air quality impact projected for the area as a result of the general commercial, residential, industrial, and other growth associated with the subject source or modification. [RCSA section 22a-174-3a(k)(8)(A)(ii)]	☒ **Attachment 216-H**
Project Description and Operating Schedule Submit a description of the nature, location, design capacity and typical operating schedule of the subject source or modification, including specifications and drawings showing its design and plant layout. [RCSA section 22a-174-3a(k)(8)(A)(iii)]	☒ **Attachment 216-I**
Construction Schedule Submit a schedule for construction of the subject source or modification. [RCSA section 22a-174-3a(k)(8)(A)(iv)]	☒ **Attachment 216-J**

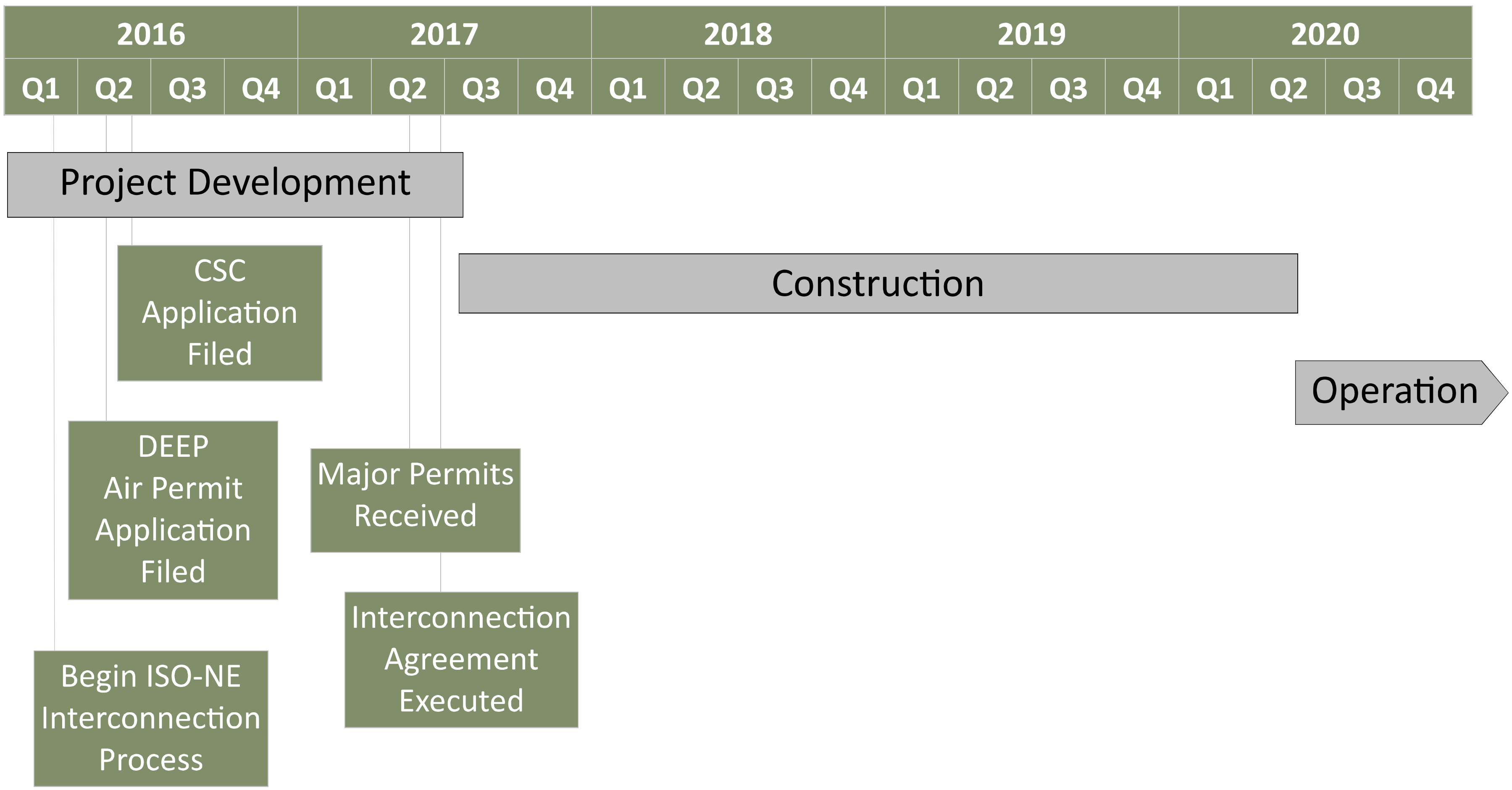
ATTACHMENT 216-J - CONSTRUCTION SCHEDULE

The Project's Construction Schedule is provided on the following page.

Killingly
Energy Center

an NTE Energy Project

Project Schedule



NTE ENERGY

ATTACHMENT J – NON-ATTAINMENT NEW SOURCE REVIEW

The following pages provide a complete Non-Attainment Review of Air Quality form (DEEP-NSR-APP-215) and additional information to support the form in accordance with DEEP's instructions. Attachments associated with this form are listed below, indicating applicability and location, if not provided following this form.

- Attachment 215-A: Alternative Two-Year Period Justification (Not Applicable)
- Attachment 215-B: Analysis of Alternatives
- Attachment 215-C: Secondary or Cumulative Impact Analysis (see Attachment L)
- Attachment 215-D: Off-setting Emission Reductions or Emission Reduction Credits Determination
- Attachment 215-E: Required Number of CERCs Determination (See Attachment J: Part II)

Attachment J: Non-Attainment Review Form

Applicant Name: NTE Connecticut, LLC

DEEP USE ONLY
App. No.:

Complete this form in accordance with the instructions (DEEP-NSR-INST-215) to ensure the proper handling this application. Print or type unless otherwise noted.

Questions? Visit the Air Permitting web page or contact the Air Permitting Engineer of the Day at 860-424-4152.

Note: This form is not required if Current Premises Potential Emissions and Proposed Allowable Emissions (from Part VII.B of *Attachment F: Premises Information Form - DEEP-NSR-APP-217)* from this project are each less than major source thresholds for each pollutant. (i.e. an existing minor premises adds a minor source which results in the premises becoming a new major source.)

If the proposed project will be a major modification for NOx or VOC, after completing *Attachment H: Major Modification Determination Form* (DEEP-NSR-APP-215), skip Part **I** of this form and complete Parts **II** and **III** of this form.

Part I: Applicability

A. If the proposed project is a new major stationary source:

Indicate the air quality status of the area in which the premises is or will be located and list the allowable emissions from the proposed project for each pollutant. Indicate if such emissions are greater than the major source thresholds listed. (Check all that apply. See instructions for the air quality attainment status of Connecticut municipalities).

Ozone (check one):

☐	***Severe Non-Attainment***	
	NOx Allowable Emissions from Proposed Project:	tpy
	Are NOx Allowable Emissions from the Proposed Project Greater Than 25 tpy?	☐ Yes ☐ No
	VOC Allowable Emissions from Proposed Project:	tpy
	Are VOC Allowable Emissions from the Proposed Project Greater Than 25 tpy?	☐ Yes ☐ No
☒	***Serious Non-Attainment***	
	NOx Allowable Emissions from Proposed Project:	139.4 tpy
	Are NOx Allowable Emissions from the Proposed Project Greater Than 50 tpy?	☒ Yes ☐ No
	VOC Allowable Emissions from Proposed Project	49.4 tpy
	Are VOC Allowable Emissions from the Proposed Project Greater Than 50 tpy?	☐ Yes ☒ No

If "No":

This pollutant ***is not*** subject to Non-Attainment Review and the Non-Attainment Review determination is complete.

If "Yes":

This pollutant ***is*** subject to Non-Attainment Review. Continue to Parts **II** and **III** of this form for the subject pollutant.

B. If the proposed project is being located at an existing major stationary source and the project did not trigger a major modification for NOx or VOC:

Calculate the net emissions increase of NOx and VOC during the 5-year contemporaneous period determined in Part II of *Attachment H: Major Modification Determination Form,* including the current project. ("Deminimis Rule")

If the net emissions increase during the 5-year contemporaneous period was calculated on *Attachment H – Major Modification Determination Form*, please enter the values in Part I.B.2 of this form. You do not need to complete Part I.B.1 of this form. Otherwise, complete Part I.B.1 of this form to determine the contemporaneous increases and decreases during the 5-year contemporaneous period and enter the results in Part I.B.2.

1. Contemporaneous Creditable Emissions Increases and Decreases

Provide the following information for all contemporaneous creditable NOx and VOC emissions increases and decreases during the 5-year contemporaneous period. Calculate the *Total Contemporaneous Increases/Decreases* for the subject pollutant and enter the results in Part I.B.2. Duplicate this page if necessary.

Change Type (NEW, MOD, REM, PBR, DB)	Equipment Description	License or Regulation No. (P)	Date of Change	Pollutants (tpy)			
				NOx		VOC	
				New ACT	2-yr ACT	New ACT	2-yr ACT
			/ /				
			/ /				
			/ /				
			/ /				
			/ /				
			/ /				
			/ /				
			/ /				
Totals (tpy)							
TOTAL CONTEMPORANEOUS INCREASES/DECREASES (tpy) (New ACT – 2-yr ACT)							

The 2-yr ACT emissions for each changed unit must be based on the average actual emissions for the two years immediately preceding the chnage. New units would enter a "0" since they did not previously exist. If the most recent two year period was not selected as the representative two year period for actual emissions for any changed unit above, check here and submit written justification for using a period other than two years of actual emissions immediately preceding the change as Attachment 215-A.	☐ Attachment 215-A

2. Emission Summation

Add the *Total Project Emission Increase* from Part III of *Attachment H: Major Modification Determination Form* to the *Total Contemporaneous Increases/Decreases* from Part I.B.1 of this form to calculate the *Net Emissions Increase* for the subject pollutant.

Pollutant	Total Project Emissions Increase (tpy)	Total Contemporaneous Increases/Decreases	Net Emissions Increase	Is NET EMISSIONS INCREASE equal to or greater than 25 tpy?
NOx				☐ Yes ☐ No
VOC				☐ Yes ☐ No

If "No":

This pollutant ***is not*** subject to Non-Attainment Review and the Non-Attainment Review determination is complete.

If "Yes":

This pollutant ***is*** subject to Non-Attainment Review. Continue to Parts II and III of this form for the subject pollutant.

Part II: Application Requirements for Non-Attainment Areas

Check the applicable box below for each attachment being submitted with this application form. When submitting any supporting documents, please label the documents as indicated in this Part (e.g., Attachment 215A, etc.) and be sure to include the applicant's name as indicated on this application form. All Attachments are **REQUIRED**.

<table>
<tr><td>Analysis of Alternatives
Submit an Analysis of Alternatives for each non-attainment pollutant that includes:
• Alternative sites for the proposed activity;
• Alternative sizes for the subject source or modification;
• Alternative production processes;
• A demonstration of whether the benefits of the subject source or modification would significantly outweigh its adverse environmental impacts, including secondary impacts and cumulative impacts, and social costs imposed as a result of the location, construction or modification.</td><td>☒ Attachment 215-B</td></tr>
<tr><td>Secondary or Cumulative Impact Analysis
Submit an evaluation of secondary impacts or cumulative impacts for each non-attainment pollutant with potential emissions in excess of the amount listed in Table 3a(k)-1 of RCSA section 22a-174-3a(k).</td><td>☒ Attachment 215-C</td></tr>
<tr><td>Offsetting Emission Reductions or Emission Reduction Credits Determination
Submit documentation for each non-attainment pollutant demonstrating that the planned use of any internal offsets comply with the requirements of RCSA section 22a-174-3a(l)(4)(B) and that certified emission reduction credits comply with the requirements of RCSA section 22a-174-3a(l)(5).</td><td>☒ Attachment 215-D</td></tr>
<tr><td>Required Number of CERCs Determination
Submit the calculation method for the number of required CERCs for approval for each non-attainment pollutant.</td><td>☒ Attachment 215-E

Number of CERCs Required:

NOx: 167.3

VOC:

$PM_{2.5}$:</td></tr>
</table>

Part III: Lowest Achievable Emission Rate (LAER) Review

Note: Complete this part for each non-attainment pollutant.

Pollutant: ☒ NOx ☐ VOC ☐ $PM_{2.5}$

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the RBLC database should be investigated and documented. These sources include: Any limitation found in a State Implementation Plan, EPA/State air quality permits, control equipment vendors, trade associations, international agencies or companies, technical papers or journals. Attach documentation of investigation to this form. The source of information, (e.g., RBLC, South Coast AQMD, state permit, vendor, etc.) and sufficient information for verification of the achievable limit,(e.g. contact information to include: name, affiliation, address, phone, email of contact; any relevant permit; RBLC ID; etc.) should be included for each system.

A. Achievability

List all LAER found for a unit which is the same or similar to the subject unit and determine if the emissions limitation has been demonstrated in practice.

LAER	Achievable?	If No, Explain (be specific)
NOx - 2.0 ppmvd at 15% O2 during natural gas firing of combustion turbines & duct burners	☒ Yes ☐ No	
NOx - 5.0 ppmvd at 15% O2 during ULSD firing of combustion turbines	☒ Yes ☐ No	
NOx - 7.0 ppmvd at 3% O2 using ultra-low NOx burners for the auxiliary boiler	☒ Yes ☐ No	
NOx - 10.0 ppmvd at 3% O2 using ultra-low NOx burners for the gas heater	☒ Yes ☐ No	
NOx - meet NSPS Subpart IIII for emergency generator and fire pump engines	☒ Yes ☐ No	
	☐ Yes ☐ No	
	☐ Yes ☐ No	
	☐ Yes ☐ No	
	☐ Yes ☐ No	
	☐ Yes ☐ No	

B. LAER Information

Complete this table for each LAER listed in Part III.A of this form.

LAER Option: NOx - 7.0 ppmvd at 3% O2 using ultra-low NOx burners for the auxliary boiler

Unit Description	Auxiliary boiler
Facility/Location	CPV Towantic, LLC
Permitting Authority with Contact Information	CT DEEP
Permit No.	144-0025
Capacity (specify units)	92.4
LAER Determination	Ultra Low-NOx burners and good combustion practices
Compliance Achieved?	☐ Yes ☒ No
Method of Compliance Determination	Facility not yet operational
Post-LAER Emissions Rate (specify units)	N/A
Reference	http://www.ct.gov/deep/lib/deep/press_releases/2015/2015Nov30_CPV_Towantic_Final_Permits.pdf

C. Proposed LAER Determination

LAER Option Proposed:	**NOx - 7.0 ppmvd at 3% O2 during natural gas firing of auxiliary boiler**
Justification:	**Lowest permitted NOx emission rate for a natural gas fired auxiliary boiler.** **See Att. G discussion for further detail**

B. LAER Information

Complete this table for each LAER listed in Part III.A of this form.

LAER Option: NOx - 2.0 ppmvd at 15% O2 during natural gas firing of combustion turbines & duct burners

Unit Description	Combined Cycle Combustion Turbine
Facility/Location	Cricket Valley Energy Center LLC / Dover Plains, NY
Permitting Authority with Contact Information	New York State Department of Environmental Conservation
Permit No.	3-1326-00275/00004
Capacity (specify units)	2,061 MMBtu/hr heat input
LAER Determination	Dry low-NOx combustors, Selective Catalytic Reduction, and good combustion practices
Compliance Achieved?	☐ Yes ☒ No
Method of Compliance Determination	CEMS and performance testing
Post-LAER Emissions Rate (specify units)	N/A
Reference	New York State Department of Environmental Conservation; Preconstruction Permit for a Major Stationary Source; Cricket Valley Energy Center, Dover Plains, NY; Air State Facility Permit ID 3-1326-00275/00004; September 27, 2012.

C. Proposed LAER Determination

LAER Option Proposed:	**NOx - 2.0 ppmvd at 15% O2 during natural gas firing of combustion turbines & duct burners**

Justification:	**Lowest permitted NOx emission rate for a combined cycle combustion turbine firing natural gas. See Attachment G discussion for further detail.**

B. LAER Information

Complete this table for each LAER listed in Part III.A of this form.

LAER Option: NOx - 5.0 ppmvd at 15% O2 during ULSD firing of combustion turbines

Unit Description	Combined Cycle Combustion Turbine
Facility/Location	Westfield Land Development Company, LLC - Pioneer Valley Energy Center / Westfield, MA
Permitting Authority with Contact Information	Massachusetts Department of Environmental Protection
Permit No.	Plan #: 1-B-08-037; Trans. #: X223780
Capacity (specify units)	2,542 MMBtu/hr heat input
LAER Determination	Dry low NOx combustors, Selective Catalytic Reduction, Water injection during ULSD firing and good combustion practices
Compliance Achieved?	☐ Yes ☒ No
Method of Compliance Determination	CEMS and performance testing
Post-LAER Emissions Rate (specify units)	N/A
Reference	Commonwealth of Massachusetts, Executive Office of Energy & Environmental Affairs, Department of Environmental Protection Western Regional Office; Conditional Approval to Construct, Westfield Land Development Company, LLC - Pioneer Valley Energy Center, Plan #: 1-B-08-037; Trans. #: X223780; December 31, 2010

C. Proposed LAER Determination

LAER Option Proposed:	**NOx - 5.0 ppmvd at 15% O2 during ULSD firing of combustion turbines**

Justification:	**Lowest permitted NOx emission rate for a combined cycle combustion turbine firing ULSD. See Attachment G discussion for further detail.**

B. LAER Information

Complete this table for each LAER listed in Part III.A of this form.

LAER Option: NOx - meet NSPS Subpart IIII limit for emergency engines

Unit Description	Emergency Generator Engine and Emergency Fire Pump Engine
Facility/Location	Green Energy Partners/Stonewall LLC / Leesburg, VA
Permitting Authority with Contact Information	Virginia Department of Environmental Quality
Permit No.	73826
Capacity (specify units)	15.4 MMBtu/hr (generator), 2.54 MMBtu/hr (fire pump)
LAER Determination	Good combustion practices
Compliance Achieved?	☐ Yes ☒ No
Method of Compliance Determination	None
Post-LAER Emissions Rate (specify units)	N/A
Reference	Green Energy Partners/Stonewall LLC, Commonwealth of Virginia Department of Environmental Quality, Prevention of Significant Deterioration Permit, Non-Attainment New Source Review Permit, Stationary Source Permit to Construction and Operate, Registration Number 73826, April 30, 2013.

C. Proposed LAER Determination

LAER Option Proposed:	**NOx - meet NSPS Subpart IIII limit for emergency engines**

Justification:	**Consistent with permitted NOx emission rate for ULSD fired emergency engines. See Attachment G discussion for further detail.**

B. LAER Information

Complete this table for each LAER listed in Part III.A of this form.

LAER Option: NOx - 9.0 ppmvd @ 3% O2

Unit Description	Natural Gas Heater
Facility/Location	Green Energy Partners/Stonewall LLC / Leesburg, VA
Permitting Authority with Contact Information	Virginia Department of Environmental Quality
Permit No.	73826
Capacity (specify units)	20 MMBtu/hr
LAER Determination	UNLB
Compliance Achieved?	☐ Yes ☒ No
Method of Compliance Determination	None
Post-LAER Emissions Rate (specify units)	N/A
Reference	Green Energy Partners/Stonewall LLC, Commonwealth of Virginia Department of Environmental Quality, Prevention of Significant Deterioration Permit, Non-Attainment New Source Review Permit, Stationary Source Permit to Construction and Operate, Registration Number 73826, April 30, 2013.

C. Proposed LAER Determination

LAER Option Proposed:	**NOx - 10.0 ppmvd @ 3% O2**

Justification:	**Lowest guaranteed NOx emission rate for a natural gas heater commercially available; no add-on pollution controls technically feasible to further reduce emissions. See Attachment G discussion for further detail.**

ATTACHMENT 215-B ANALYSIS OF ALTERNATIVES

This attachment provides an analysis of alternatives for the Killingly Energy Center (the Project) proposed by NTE Connecticut, LLC (NTE). The Project is currently proposed as an approximately 550-megawatt (MW) electric generating facility primarily fueled by natural gas. The Project will utilize a single combustion turbine generator (CTG) in a 1x1x1 configuration, with a heat recovery steam generator (HRSG), steam turbine generator (STG), and an air-cooled condenser (ACC). Alternatives for the Project will also be reviewed by the Connecticut Siting Council (CSC) to confirm that the Project provided an appropriate balance of environmental and community impacts with the need for a reliable and efficient source of energy.

The following sections consider alternatives to the Project as currently proposed, addressing the extent to which the benefits outweigh adverse environmental impacts, including secondary impacts and cumulative impacts, as well as social costs. As required by the Connecticut Department of Energy and Environmental Protection (DEEP), consideration of alternative Project sites, sizes, and production processes are discussed. Lastly, environmental control techniques and technology are summarized, with cross-referencing to Attachment G, which includes a detailed demonstration of Lowest Achievable Emission Rate (LAER) and Best Available Control Technology (BACT) for the Project.

ALTERNATIVE SITES

Over the course of several months, NTE researched numerous prospective sites for the Project throughout Connecticut. NTE's initial site search prioritized areas with nearby natural gas and electric transmission infrastructure, adequately sized parcels within existing or planned industrial areas, and communities that would benefit significantly from a substantial increase in tax revenue, job growth and other economic impacts.

In addition to a thorough desktop analysis utilizing geographic information system (GIS) mapping software, NTE conducted numerous site diligence trips and met with several towns in Connecticut to discuss general interest level in this Project, prospective site locations within the town, and infrastructure capabilities.

NTE weighed initial siting prospects on a set of criteria which narrowed down viable site locations. These criteria included community long-term plans/interest and proximity to required infrastructure. Due to the Town of Killingly's strong surrounding infrastructure and interest in the strong economic benefits the Project would bring, the Town of Killingly became the top contender for the Project. Other locations of interest would have required extensive infrastructure additions, like the development of lengthy transmission lines, or lacked adequate acreage.

Once Killingly was defined as the target area for the Project, several sites in close proximity to the required infrastructure were further assessed. Research identified the Town of Killingly's *Plan of Conservation and Development: 2010 - 2020* which detailed intentions to expand the industrial zoned area towards the west of the current industrial zoned area (see Figure 1). The industrial areas of the Future Land Use Map are primarily where NTE identified prospective sites within the Town of Killingly.

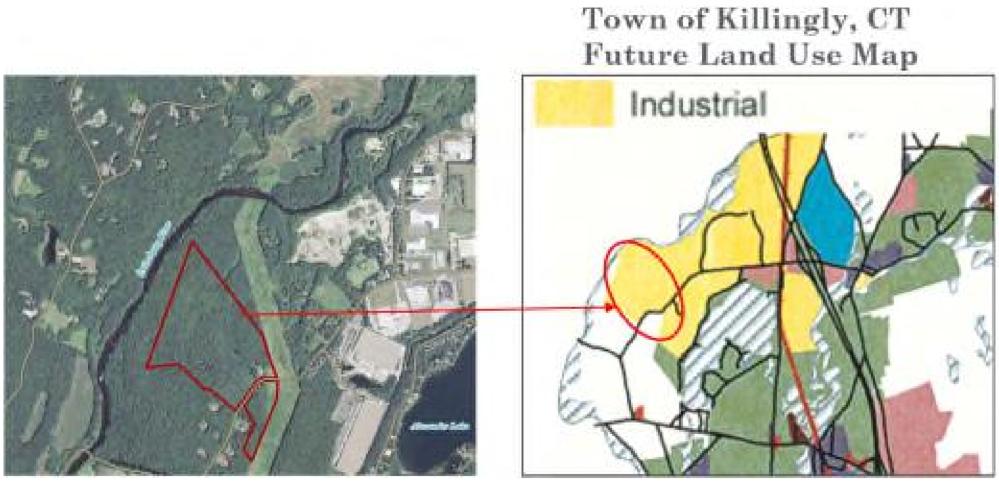


Figure 1: Town of Killingly Future Land Use Map

The sites in Killingly were closely assessed and weighted. Criteria for assessment included size of parcel, ability to minimize wetland disturbance, surrounding buffer to minimize visual impact, favorable elevation to minimize visual impact, and proximity to required infrastructure.

An assessment of critical issues was compiled for each prospective Killingly site, including a preliminary evaluation of air quality, noise, water supply, visibility, protected species, and land use and zoning. Once these assessments were compiled and sites were further narrowed down, NTE reached out to property owners and executed a site option for the 180/189 Lake Road parcels.

The combination of adequate parcel size, surrounding infrastructure, site buffering capabilities, ability to avoid wetland disturbance, and the town's future land use intentions made this site the top candidate for the Killingly Energy Center.

ALTERNATIVE SIZES OR ALTERNATIVE PROCESSES

Alternative Size/Project Output

As noted above, the proposed Project reflects a 550-MW generating capability utilizing efficient, state-of-the-art technology. The generating capacity was selected as consistent with market needs for a flexible base load plant in this location. Other factors that influenced the optimal generating capacity were energy efficiency and system reliability from both a natural gas and electrical perspective. The proposed 550-MW plant utilizes an advanced class gas turbine resulting in a very high combined cycle efficiency. Providing less generating capacity would considerably reduce the plant's overall efficiency. Adding additional capacity beyond the proposed 550 MW would result in addition of a considerable amount of power to the ISO-NE grid in a particular location, and would most likely require substantial system upgrades to protect system reliability. Additionally, drawing the needed amount of natural gas to operate a larger facility would likely trigger the need for similar upgrades to the natural gas pipeline that provides fuel for the infrastructure.

Alternative Generation Technologies

NTE considered the range of potential generation technologies, and affirmed that a combined cycle combustion turbine utilizing natural gas as its primary fuel not only presented economic and efficiency advantages demonstrated in practice, but was a favorable option from a reliability, environmental, and acceptability perspective.

The Project's purpose is to provide a reliable, baseload energy facility to serve the ISO-NE market. Renewable resources, such as wind and solar, are an important component of the electrical grid. However, they cannot meet any of the Project's three primary objectives (flexible, reliable, baseload power). Solar and wind facilities generate energy only intermittently, depending upon the availability of the resource. Energy storage solutions do not yet allow for reliable power generation across the potential demand spectrum. Given this, efficient baseload generating sources are needed to augment the growing focus on renewables to the energy mix.

In addition, land requirements for solar and wind projects are highly dependent on the "resource" available at a given site, as well as topographic and other factors. The National Renewable Energy Laboratory (NREL) identifies solar energy production in its June 2013 report *Land-Use Requirements for Solar Power Plants in the United States* of approximately 5.9 acres per MW. A 70-acre site would, therefore, result in solar generation of approximately 12 MW. In reality, significant portions of the site would not be used due to wetlands or other constraints, and energy generation from a solar installation at this site would be even less. Similarly, wind energy facilities vary in the amount of land area required. Using NREL's August 2009 *Land-Use Requirements of Modern Wind Power Plants in the United States*, which indicates a dramatic range from approximately 22 acres per MW to 250 acres per MW; even assuming the more productive end of the range, just over 3 MW of generation would result. In general, New England is not among the areas with a strong on-shore wind regime, due to variable wind direction and lower speeds except on certain ridgelines. Therefore, a solar or wind installation would be expected to result in considerably lower energy production than the technology proposed.

Advanced combined cycle combustion turbine technology with natural gas firing is much more efficient than other types of technology utilized in current non-renewable electric power generation projects. The Energy Information Administration (EIA) publication entitled Updated Capital Cost Estimates for Utility Scale Electricity Generating Plants (April 2013) provides a comparison of heat rates for various electric utility scale generating technologies. The listed heat rate for other fossil fuel generating technologies, as listed in that source, are:

- Coal-fired boilers/IGCC – 8,700 to 12,000 Btu/kWh
- Simple-cycle combustion turbines – 9,750 to 10,850 Btu/kWh
- Biomass boilers – 12,350 to 13,500 Btu/kWh
- Fuel cells – 9,500 Btu/kWh

The proposed Project has a new and clean net heat rate at full load under ISO conditions of 6,529 Btu/kWh (HHV, net).

Natural gas-fired combined cycle technology, as proposed, also facilitates flexible operation. This will allow ISO-NE to select the most appropriate generating source during periods of energy demand.

Combined cycle technology utilizing natural gas as its primary fuel remains the most favorable option today from a market point of view. This was recently demonstrated by ISO-NE's choice of a gas-fired combined cycle facility as the forward capacity market's proxy unit. This technology also maximizes energy efficiency and minimizes air emissions.

ALTERNATIVE FUELS

NTE considered fuel alternatives for the Project before selecting natural gas as the primary fuel source, with limited capabilities to fire ultra-low sulfur distillate (ULSD) oil as backup.

Natural gas, the preferred fuel source for the Project, is the cleanest burning fossil fuel. Burning alternative fossil fuels, such as coal and oil, result in greater pollutant emissions, and potentially introduce additional, complicating social and environmental impacts associated with fuel delivery and storage. NTE identified the following three fuel options to assure the lowest emitting scenario was selected that would best meet the Project purpose and need: 1) natural gas as the sole fuel; 2) natural gas as primary fuel with liquefied natural gas (LNG) as backup; and 3) natural gas as the primary fuel with ULSD as backup.

The Algonquin Gas Transmission natural gas pipeline (Algonquin pipeline) will supply natural gas to the Project. Natural gas, delivered via the Algonquin pipeline, located approximately 2 miles north of the site, eliminates the need for road or rail delivery, and provides efficient combustion in combined cycle mode resulting in the lowest emissions for all fossil fuels. Natural gas will be fired in the CTG at all times when it is available. However, the Algonquin pipeline may become constrained during periods of peak demand, preventing the Project from securing an uninterruptible supply contract for natural gas delivery. Given the infrastructure and anticipated resource limitations, natural gas as the sole fuel source was deemed technically infeasible for Project reliability and ability to meet contractual commitments.

Natural gas as the primary fuel with the installation of LNG storage to supply backup fuel could create a dedicated fuel supply; however, securing the necessary approvals and constructing LNG storage at the proposed Project site was considered infeasible. There is not sufficient space on the site to build an LNG storage terminal as well as the Project, even without consideration for the additional space requirements associated with the need for an exclusion zone around LNG storage tanks. This fuel alternative was, therefore, considered infeasible.

The use of ULSD presents the lowest emitting option of liquid fuels available, and is able to be utilized by the same combustion process and equipment. Because the emissions are higher for certain parameters than natural gas, the Project's use of ULSD has been restricted to no more than 720 hours per year. This will be sufficient support for Project reliability, and allow for appropriate fuel flexibility without the need for substantial additional infrastructure or equipment. There are no unacceptable collateral environmental impacts associated with use of 720 hours per year of ULSD firing.

The selection of natural gas as the primary fuel, with ULSD for limited use as backup was determined to be the appropriate fuel scenario for the Project.

ALTERNATIVE COOLING TECHNOLOGIES

A natural gas-fired combined cycle electric generating facility requires cooling, particularly for the condensing of turbine exhaust steam in the steam turbine condensers. A range of cooling technologies was evaluated, including once-through cooling, conventional "wet" cooling towers, and air cooling. The technology that is most appropriate for a given project is dependent on a site-specific balancing of a number of technical, economic, and environmental factors. For this Project, air cooling has been selected as the most appropriate cooling technology. Information regarding each alternative is provided below.

Once-Through Cooling

Many larger electric generating facilities located near surface water bodies have historically utilized once-through cooling technology. Once-through cooling systems circulate water from a nearby surface waterbody through the steam surface condensers. Heat from the steam condensers is transferred to the cooler circulating water. The same quantity of water is then returned directly to the surface water body after exiting the condensers, although at an increased temperature. The higher temperature is the result of the water having absorbed the latent heat of vaporization associated with the condensing turbine exhaust steam back to a liquid state. The name of this system is derived from the fact that cooling water is passed through the condenser just one time before being returned to the water source. With the issuance of USEPA's 2014 §316(b) Final Rule covering cooling water intake structures, presumptive Best Technology Available (BTA) has been defined as a withdrawal rate equivalent to mechanical draft wet cooling towers. For this reason, once-through cooling was rejected.

Mechanical Draft (Wet) Cooling

In a mechanical draft or wet cooling tower system, water is circulated in a loop through the steam surface condensers and the cooling tower. The circulating water serves as the intermediary heat transfer medium between the steam surface condenser and ambient air. Cooling is achieved through evaporation of the water circulating through the system and through direct contact with the air as the water cascades down through the cooling tower fill. Air is moved through the cooling tower through the use of fans. A supply of water is required to make up for evaporation losses. In addition, a smaller quantity of water, known as blowdown, is discharged from the system to limit the build-up of dissolved solids that are concentrated in the remaining circulating water during the evaporation process. The blowdown water must also be replaced with makeup water.

Although water cooling is more efficient than the use of air, local concerns regarding water and water use were a key factor for this site. Although the Quinebaug River reflects a potential surface water source, and potential groundwater resources are also available, it was determined that the Project should select the technology that required the least possible water demand.

Air-Cooled Condenser Cooling

An air-cooled condenser relies only on ambient air as a direct steam-cycle heat sink, without the use of any water or other intermediary heat transfer medium. Steam is routed from the turbine exhaust through ducts to a series of finned tube heat exchangers. The steam flows through, and condenses inside the tubes while air flows over the outer, finned tube surface. Condensate is discharged from the air-cooled condenser and supplied back to the HRSGs after the latent heat of vaporization is transferred from the turbine steam directly to the air stream. Air is moved through the air-cooled condensers by a series of fans, with the warmer air discharged from the tops of the condenser. Air has a lower heat adsorption/exchange rate than water that affects the size of the cooling system.

Selection of air cooling reduces the Project's water requirements by over 95% as compared to wet cooling, and was thus determined to be most appropriate for the Project in this location.

ENVIRONMENTAL CONTROL TECHNIQUE AND TECHNOLOGY REVIEW

A detailed LAER/BACT demonstration analysis is provided in Section G of this application. As outlined in that section, the Project has selected advanced pollution control technologies and add-on controls to achieve low levels of emissions when operating both with its primary fuel (natural gas) and its backup source (ULSD).

The proposed Project considered various alternative NO_x emission control technologies, and proposes to install DLN combustors and SCR technology to control NO_x emissions during natural gas firing. Water injection will be used with SCR to minimize NO_x emissions during ULSD firing. As discussed in Attachment G, this represents LAER, which is equivalent to the lowest emission rates achieved in practice. NTE evaluated alternative technologies, including SNCR and EM_x^{TM}. SNCR requires exhaust temperatures much higher than produced by a combustion turbine to be effective and typically achieves NO_x reductions of 50% or less. For these reasons, SNCR was eliminated as technically infeasible. EM_x^{TM} has never been installed on a CTG larger than 43 MW and has not demonstrated NO_x control levels greater than SCR. For these reasons, EM_x^{TM} was eliminated as technically infeasible.

Good combustion controls and an oxidation catalyst will be used to control CO and VOC emissions; as discussed in Attachment G, this represents BACT for these two pollutants. No other emission control technologies are available to achieve further reductions for these two pollutants.

Emissions of SO_2, H_2SO_4 and $PM/PM_{2.5}/PM_{10}$ will be controlled by good combustion practices and use of low sulfur fuels. The Project will fire natural gas as the primary fuel, with a maximum sulfur content of 0.5 gr/100 scf. ULSD, with a maximum sulfur content of 15 ppmw, will be the backup fuel, limited to times when natural gas is not reasonably available and in no case for more than 720 hours per year. Post-combustion emissions controls such as fabric filters, electrostatic precipitators, and scrubbers, which are commonly used on solid-fuel boilers, are not technically feasible for CTGs, given the low emission rates and the large amount of excess air inherent in combustion turbine technology. There are no known combined cycle CTGs with post combustion controls for SO_2, H_2SO_4 and $PM/PM_{2.5}/PM_{10}$.

Emissions of GHGs, primarily CO_2, are related to carbon content of the fuel and heat rate of the technology. Due to relatively low carbon content of natural gas on a heat content basis, and the low heat rate of the combined cycle technology, the Project will have less than half of the CO_2 emissions of existing coal-fired boiler plants with steam turbines. Post-combustion controls (CCS), while theoretically feasible, are not commercially available and cost prohibitive. BACT for GHGs was determined to be use of natural gas as the primary fuel with limited use of ULSD as the backup fuel.

SUMMARY AND CONCLUSION

The Project conducted a robust and thorough consideration of a range of alternatives. The Project as proposed reflects the use of an appropriate site, the most efficient generating technology, clean fuels, and state-of-the-art emission controls. The Project is the optimal size for successful participation in the current New England forward capacity and energy markets. Air quality impacts associated with the Project will comply with National Ambient Air Quality Standards and PSD Increments, which have been established for the protection of the most sensitive members of the population. Beneficial cumulative air quality effects will result from displacement of older, less efficient, higher emitting generating units. The Project will be a source of efficient, reliable energy production, as well as employment opportunities associated with its construction and operation; both of which will result in significant secondary economic impacts throughout the local community. The Project will also contribute substantial financial support to the local community as one of the largest taxpayers. The Project has incorporated the best available alternatives in order to balance its impacts and create a beneficial source of electrical generation.

.

ATTACHMENT 215-D - OFFSETTING EMISSION REDUCTIONS OR EMISSION REDUCTION CREDITS DETERMINATION

Documentation is required to be provided for each non-attainment pollutant demonstrating that the planned use of any internal offsets comply with the requirements of RCSA Section 22a-174-3a(*l*)(4)(B) and that certified emission reduction credits comply with the requirements of RCSA Section 22a-174-3a(*l*)(5).

In accordance with the requirements of RCSA Section 22a-174-3a(l)(5), the emission reduction credits (ERCs) must satisfy the following requirements:

A. Created and used in accordance with 40 CFR 51;

B. Real, that is, resulting in a reduction of actual emissions, net of any consequential increase in actual emissions resulting from shifting demand. The emission reductions shall be measured, recorded and reported to the commissioner;

C. Quantifiable, based on either stack testing approved by the commissioner in writing, conducted pursuant to an appropriate, reliable, and replicable protocol approved by the commissioner, or continuous emissions monitoring certified by the commissioner. Such quantification shall be in terms of the rate and total mass amount of non-attainment pollutant emission reduction;

D. Surplus, not required by any Connecticut General Statute or regulation adopted thereunder, or mandated by the State Implementation Plan, and not currently relied upon for any attainment plan, any Reasonable Further Progress plan or milestone demonstration;

E. Permanent, in that at the source of the emission reduction, the emission reduction system shall be in place and operating, and an appropriate record keeping system is maintained to collect and record the data required to verify and quantify such emissions reductions; and

F. Enforceable and approved by the commissioner in writing after the submission to the commissioner of documents satisfactory to the commissioner or incorporated into a permit as a restriction on emissions.

The Project is required to hold 167.3 ERCs to offset the 139.4 tons per year of NO_X emissions from the Project in accordance with the requirements of RCSA Section 22a-174-3a(l)(5). The NO_X ERCs will be created prior to the date the Project becomes operational, and will come from an area in Connecticut or New York that is designated as an equal or higher nonattainment classification than the Project area. Prior to operation of the Project, NTE will provide documentation to DEEP that it has acquired the additional ERCs, along with the documentation necessary to verify that the ERCs meet all of the requirements of RCSA Section 22a-174-3a(l)(5).

ATTACHMENT K – OPERATION AND MAINTENANCE PLAN

Since DEEP has not requested an Operation and Maintenance Plan, and no other permit or order requires it, Attachment K is not required.

ATTACHMENT L – AMBIENT AIR QUALITY ANALYSIS

The Ambient Air Quality Analysis, consistent with RCSA Sections 22a-174-3a(d)(3)(B) & (C), will be provided under separate cover at a later date. The required Attachments in the Ambient Air Quality Analysis will include:

- Attachment 216-D: Ambient Monitoring Analysis
- Attachment 216-E: Source Impact Analysis
- Attachment 216-F: Ambient Air Quality Analysis
- Attachment 216-G: Visibility, Soils, Vegetation, and Growth Analysis
- Attachment 216-H: Growth and Ambient Air Impact Analysis
- Attachment 215-C: Secondary or Cumulative Impact Analysis

ATTACHMENT M – APPLICANT COMPLIANCE INFORMATION

Provided on the following pages is a completed Applicant Compliance Information form (DEEP-APP-002).

Connecticut Department of
Energy & Environmental Protection

Applicant Compliance Information

DEEP ONLY
App. No. ____________________
Co./Ind. No. ____________________

Applicant Name: NTE Connecticut, LLC

Mailing Address: **24 Cathedral Place, Suite 300**

City/Town: **Saint Augustine** State: **FL** Zip Code: **32084**

Business Phone: **904-687-1857** ext.:

Contact Person: **Mark Mirabito** Phone: **904-687-1857** ext.

*E-mail: **mmirabito@nteenergy.com**

If you answer *yes* to any of the questions below, you must complete the Table of Enforcement Actions on the reverse side of this sheet as directed in the instructions for your permit application.

A. During the five years immediately preceding submission of this application, has the applicant been convicted in any jurisdiction of a criminal violation of any environmental law?

☐ Yes ☒ No

B. During the five years immediately preceding submission of this application, has a civil penalty been imposed upon the applicant in any state, including Connecticut, or federal judicial proceeding for any violation of an environmental law?

☐ Yes ☒ No

C. During the five years immediately preceding submission of this application, has a civil penalty exceeding five thousand dollars been imposed on the applicant in any state, including Connecticut, or federal administrative proceeding for any violation of an environmental law?

☐ Yes ☒ No

D. During the five years immediately preceding submission of this application, has any state, including Connecticut, or federal court issued any order or entered any judgement to the applicant concerning a violation of any environmental law?

☐ Yes ☒ No

E. During the five years immediately preceding submission of this application, has any state, including Connecticut, or federal administrative agency issued any order to the applicant concerning a violation of any environmental law?

☐ Yes ☒ No

Table of Enforcement Actions

(1) Type of Action	(2a) Date Commenced	(2b) Date Terminated	(3) Jurisdiction	(4) Case/Docket/ Order No.	(5) Description of Violation

☐ Check the box if additional sheets are attached. Copies of this form may be duplicated for additional space.

ATTACHMENT N – MARKED UP PERMIT

Not required; the Project is a new source and not a modification to an existing source.

ATTACHMENT O – COASTAL CONSISTENCY REVIEW FORM

Not required, as the Project is not located within the coastal zone or in a coastal community.

ATTACHMENT P – COPY OF RESPONSE TO REQUEST FOR NATURAL DIVERSITY DATABASE (NDDB) STATE LISTED SPECIES REVIEW FORM

A copy of the letter received on March 8, 2016 in response to the Natural Diversity Database (NDDB) State Listed Species Review request made for the Project on February 9, 2016 is attached. A threatened butterfly, the frosted elfin (*Callophrys irus*), and two special concern moths, the fragile dagger moth (*Acronicta fragilis*) and the pink star moth (*Derrima stellata*), have been identified with the potential to occur in the Project area. Surveys will be completed to determine the potential for presence based on host plants.

Additional special concern species identified with potential for presence in the site vicinity are the red bat (*Lasiurus borealis*), the wood turtle (*Glyptemys insculpta*), and the eastern box turtle (*Terrapene carolina*). Surveys will be conducted to determine their potential presence, and appropriate management strategies will be incorporated into project design and construction to avoid species impact. The potential presence of floodplain forest was also noted. Wetland delineations have been completed in order to avoid forested wetlands and floodplain impact on the site.

March 8, 2016

Mr. George Logan
REMA Ecological Services, LLC
164 East Center Street, Suite 8
Manchester, CT 06040
Rema8@aol.com

Project: Preliminary Site Assessment for Property Located at 189 Lake Road in Killingly, Connecticut

NDDB Preliminary Assessment No.: 201601996

Dear Amy,

I have reviewed Natural Diversity Data Base maps and files regarding the area delineated on the map provided for the Preliminary Site Assessment for Property Located at 189 Lake Road in Killingly, Connecticut.

According to our records there are known extant populations of State Listed Species known that occur within or close to the boundaries of this property. I have attached a list of these species to this letter. Please be advised that this is a preliminary review and not a final determination. A more detailed review will be necessary to move forward with any subsequent environmental permit applications submitted to DEEP for the proposed project. This preliminary assessment letter cannot be used or submitted with your permit applications at DEEP. This letter is valid for one year.

To prevent impacts to State-listed species, field surveys of the site should be performed by a qualified biologist when these target species are identifiable. A report summarizing the results of such surveys should include:

1. Survey date(s) and duration
2. Site descriptions and photographs
3. List of component vascular plant and animal species within the survey area (including scientific binomials)
4. Data regarding population numbers and/or area occupied by State-listed species

5. Detailed maps of the area surveyed including the survey route and locations of State-listed species
6. Statement/résumé indicating the biologist's qualifications

The site surveys report should be sent to our CT DEEP-NDDB Program (deep.nddbrequest@ct.gov) for further review by our program biologists along with an updated request for another NDDB review.

If you do not intend to do site surveys to determine the presence or absence of state-listed species, please let us know how you will protect the state-listed species from being impacted by this project.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Natural History Survey and cooperating units of DEEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available. The result of this review does not preclude the possibility that listed species may be encountered on site and that additional action may be necessary to remain in compliance with certain state permits.

Please contact me if you have further questions at (860) 424-3592, or dawn.mckay@ct.gov . Thank you for consulting the Natural Diversity Data Base.

Sincerely,

Dawn M. McKay

Dawn M. McKay
Environmental Analyst 3

Species List for NDDB Request

Scientific Name	Common Name	State Status
Invertebrate Animal		
Acronicta fragilis	Fragile dagger moth	SC
Callophrys irus	Frosted elfin	T
Derrima stellata	Pink star moth	SC
Terrestrial Community - Other Classification		
Floodplain forest	<null>	<null>
Vertebrate Animal		
Glyptemys insculpta	Wood turtle	SC
Lasiurus borealis	Red bat	SC
Terrapene carolina carolina	Eastern box turtle	SC

E = Endangered, T = Threatened, SC = Special Concern, * Extirpated

CPPU USE ONLY
App #:______________________________
Doc #:______________________________
Check #: No fee required
Program: Natural Diversity Database Endangered Species
Hardcopy _____ Electronic _____

Connecticut Department of Energy & Environmental Protection
Bureau of Natural Resources
Wildlife Division

Request for Natural Diversity Data Base (NDDB) State Listed Species Review

Please complete this form in accordance with the instructions (DEEP-INST-007) to ensure proper handling of your request.

There are no fees associated with NDDB Reviews.

Part I: Preliminary Screening & Request Type

Before submitting this request, you must review the most current Natural Diversity Data Base "State and Federal Listed Species and Significant Natural Communities Maps" found on the DEEP website. These maps are updated twice a year, usually in June and December.

Does your site, including all affected areas, fall in an NDDB Area according to the map instructions:

☒ Yes ☐ No **Enter the date** of the map reviewed for pre-screening: **September 2015**

This form is being submitted for a :	
☒ *New* NDDB request ☐ *Renewal/Extension* of an existing NDDB Request ☐ With modifications ☐ Without modifications***** *****no attachments required [*CPPU Use Only - NDDB-Listed Species Determination #* 1736]	☐ *New* **Safe Harbor Determination** associated with an application for GP for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities ☐ *Renewal/Extension* of an existing Safe Harbor Determination ☐ With modifications ☐ Without modifications***** *****no attachments required [*CPPU Use Only - NDDB-Safe Harbor Determination #* 1736]
Enter NDDB Determination Number for Renewal/Extension:	Enter Safe Harbor Determination Number for Renewal/Extension:

Part II: Requester Information

***If the requester is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, it must be registered with the Secretary of State. If applicable, the name shall be stated *exactly* as it is registered with the Secretary of State. Please note, for those entities registered with the Secretary of State, the registered name will be the name used by DEEP. This information can be accessed at the Secretary of the State's database CONCORD.** (www.concord-sots.ct.gov/CONCORD/index.jsp)

If the requester is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).

If there are any changes or corrections to your company/facility or individual mailing or billing address or contact information, please complete and submit the Request to Change company/Individual Information to the address indicated on the form.

1. Requester Name*: **REMA Ecological Services, LLC**

Address: **164 E. Center Street, Suite 8**

City/Town: **Manchester** State: **CT** Zip Code: **06040**

Business Phone: **860 649 7362** ext.

Contact Name: **George T. Logan, MS, PWS, CSE**

E-mail: **rema8@aol.com**

By providing this email address you are agreeing to receive official correspondence from the department, at this electronic address, concerning this request. Please remember to check your security settings to be sure you can receive emails from "ct.gov" addresses. Also, please notify the department if your e-mail address changes

a) Requester can best be described as:

☐ Individual ☐ Federal Agency ☐ State agency ☐ Municipality ☐ Tribal

☒ *business entity (* if a business entity complete i through iii):

i) Check type ☐ corporation ☒ limited liability company ☐ limited partnership
☐ limited liability partnership ☐ statutory trust ☐ Other:

ii) Provide Secretary of the State Business ID #: 0539455 This information can be accessed at the Secretary of the State's database (CONCORD). (www.concord-sots.ct.gov/CONCORD/index.jsp)

iii) ☐ Check here if your business is **NOT** registered with the Secretary of State's office.

b) Acting as (Affiliation), pick one:

☐ Property owner ☒ Consultant ☐ Engineer ☐ Facility owner ☐ Applicant
☐ Biologist ☐ Pesticide Applicator ☐ Other representative:

2. List Primary Contact to receive Natural Diversity Data Base correspondence and inquiries, if different from requester.

Company:

Contact Person: Title:

Mailing Address:

City/Town: State: Zip Code:

Business Phone: ext.

*E-mail:

*By providing this email address you are agreeing to receive official correspondence from the department, at this electronic address, concerning this request. Please remember to check your security settings to be sure you can receive emails from "ct.gov" addresses. Also, please notify the department if your e-mail address changes.

Part III: Site Information

This request can only be completed for one site. A separate request must be filed for each additional site.

1. SITE NAME AND LOCATION

Site Name or Project Name: **189 Lake Road**

Town(s): **Killingly**

Street Address or Location Description:
189 Lake Road

Size in acres, or site dimensions: **~45.0**

Latitude and longitude of the center of the site in decimal degrees (e.g., 41.23456 -71.68574):

Latitude: **41.8636** Longitude: **-71.9154**

Method of coordinate determination (check one):

☐ GPS ☐ Photo interpolation using [CTECO map viewer] ☒ Other (specify): **NWI Mapper**

2a. Describe the current land use and land cover of the site.

Mostly forested, including white pine dominated, pole-sized evergreen/deciduous, shrub/sapling thickets, open hayfield, forested wetlands, man-made pond, residential lawn.

b. Check all that apply and enter the size in acres or % of area in the space after each checked category.

☐ Industrial/Commercial _____	☐ Residential 0.5	☒ Forest 80
☒ Wetland 17	☐ Field/grassland 2.5	☐ Agricultural ____
☐ Water _____	☐ Utility Right-of-way _____	
☐ Transportation Right-of-way _____	☐ Other (specify): _____	

Part IV: Project Information

1. PROJECT TYPE:

Choose Project Type: Site assessment , If other describe: ______________________________

2. Is the subject activity limited to the maintenance, repair, or improvement of an existing structure within the existing footprint? ☐ Yes ☒ No If yes, explain.

Part IV: Project Information (continued)

3. Give a detailed description of the activity which is the subject of this request and describe the methods and equipment that will be used.

   This request is for planning purposes only.

4. If this is a renewal or extension of an existing NDDB or Safe Harbor request *with* modifications, explain what about the project has changed.

5. Provide a contact for questions about the project details if different from Part II primary contact.

   Name:

   Phone:

   E-mail:

Part V: Request Requirements and Associated Application Types

Check *one* box from either Group 1, Group 2 *or* Group 3, indicating the appropriate category for this request.

Group 1. If you check one of these boxes, fill out Parts I – VII of this form and submit the required attachments A and B.

- ☐ Preliminary screening was negative but an NDDB review is still requested
- ☐ Request regards a municipally regulated or unregulated activity (no state permit/certificate needed)
- ☒ Request regards a preliminary site assessment or project feasibility study
- ☐ Request relates to land acquisition or protection
- ☐ Request is associated with a *renewal* of an existing permit, with no modifications

Group 2. If you check one of these boxes, fill out Parts I – VII of this form and submit required attachments A, B, *and* C.

- ☐ Request is associated with a *new* state or federal permit application
- ☐ Request is associated with modification of an existing permit
- ☐ Request is associated with a permit enforcement action
- ☐ Request regards site management or planning, requiring detailed species recommendations
- ☐ Request regards a state funded project, state agency activity, or CEPA request

☐ **Group 3.** If you are requesting a **Safe Harbor Determination**, complete Parts I-VII and submit required attachments A, B, and D. Safe Harbor determinations can only be requested if you are applying for a GP for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities

If you are filing this request as part of a state or federal permit application(s) enter the application information below.

Permitting Agency and Application Name(s): ______________________________

State DEEP Application Number(s), if known: ______________________________

State DEEP Enforcement Action Number, if known: ______________________________

State DEEP Permit Analyst(s)/Engineer(s), if known: ______________________________

Part VI: Supporting Documents

Check each attachment submitted as verification that *all* applicable attachments have been supplied with this request form. Label each attachment as indicated in this part (e.g., Attachment A, etc.) and be sure to include the requester's name, site name and the date. **Please note that Attachments A and B are required for all new requests and renewals/extensions with modifications.** Renewals/Extensions with no modifications do not need to submit any attachments. Attachments C and D are supplied at the end of this form.

☒ Attachment A:	**Overview Map:** an 8 1/2" X 11" print/copy of the relevant portion of a USGS Topographic Quadrangle Map clearly indicating the exact location of the site.
☒ Attachment B:	**Detailed Site Map:** fine scaled map showing site boundary details on aerial imagery with relevant landmarks labeled. (Site boundaries in GIS [ESRI ArcView shapefile, in NAD83, State Plane, feet] format can be substituted for detailed maps, see instruction document)
☐ Attachment C:	**Supplemental Information, Group 2 requirement (attached, DEEP-APP-007C)** ☐ Section i: Supplemental Site Information and supporting documents ☐ Section ii: Supplemental Project Information and supporting documents
☐ Attachment D:	**Safe Harbor Report Requirements, Group 3 (attached, DEEP-APP-007D)**

Part VII: Requester Certification

The requester *and* the individual(s) responsible for actually preparing the request must sign this part. A request will be considered incomplete unless all required signatures are provided.

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of the individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief."

George T. Logan	**2/9/16**
Signature of Requester (a typed name will substitute for a handwritten signature)	Date
George T. Logan, MS, PWS, CSE	**Principal Environ. Scientist**
Name of Requester (print or type)	Title (if applicable)
Signature of Preparer (if different than above)	Date
Name of Preparer (print or type)	Title (if applicable)

Note: Please submit the completed Request Form and all Supporting Documents to:

CENTRAL PERMIT PROCESSING UNIT
DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD, CT 06106-5127

Or email request to: deep.nddbrequest@ct.gov

Figure 1: Site Locus; 189 Lake Road, Killingly, CT

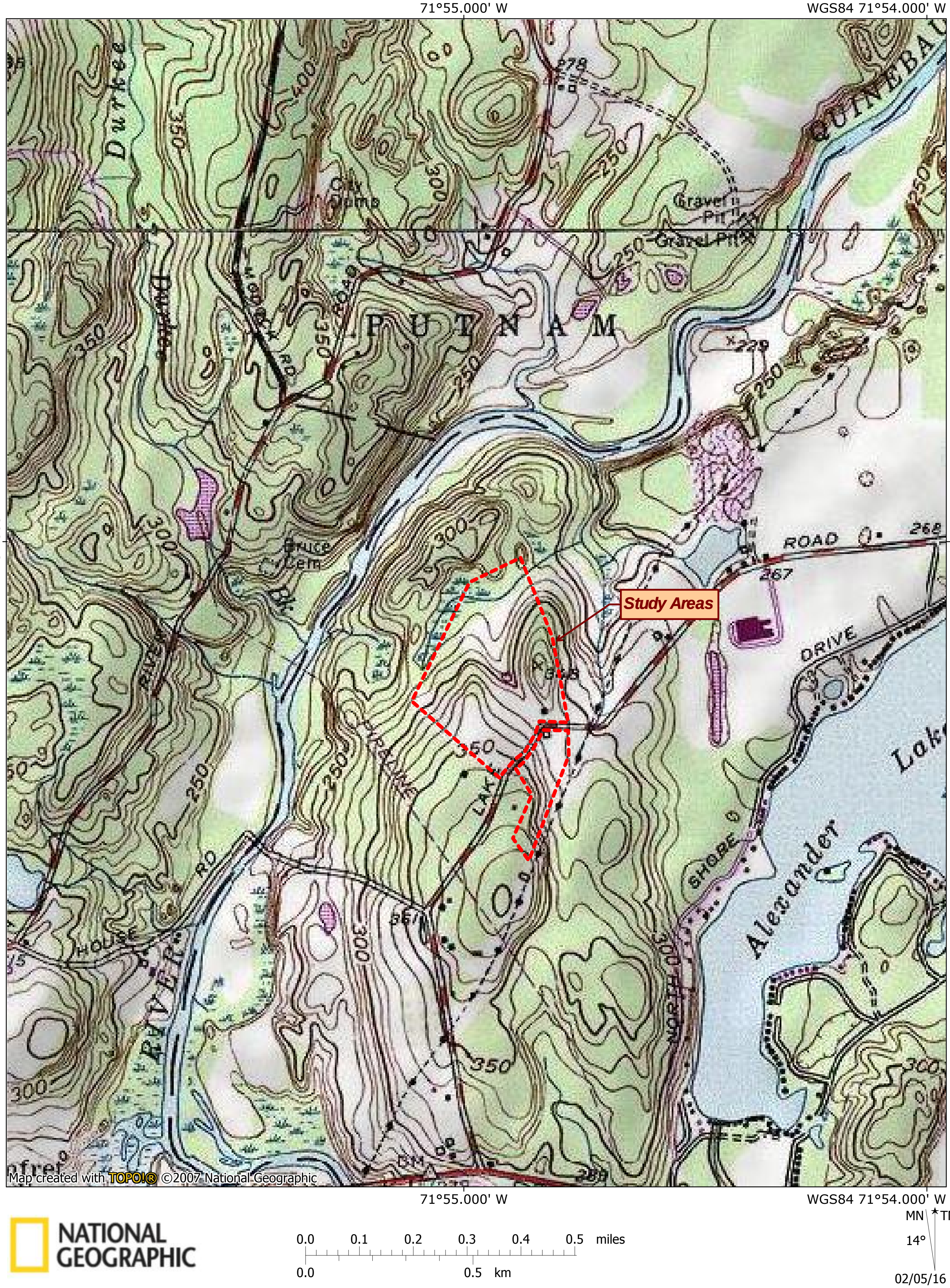
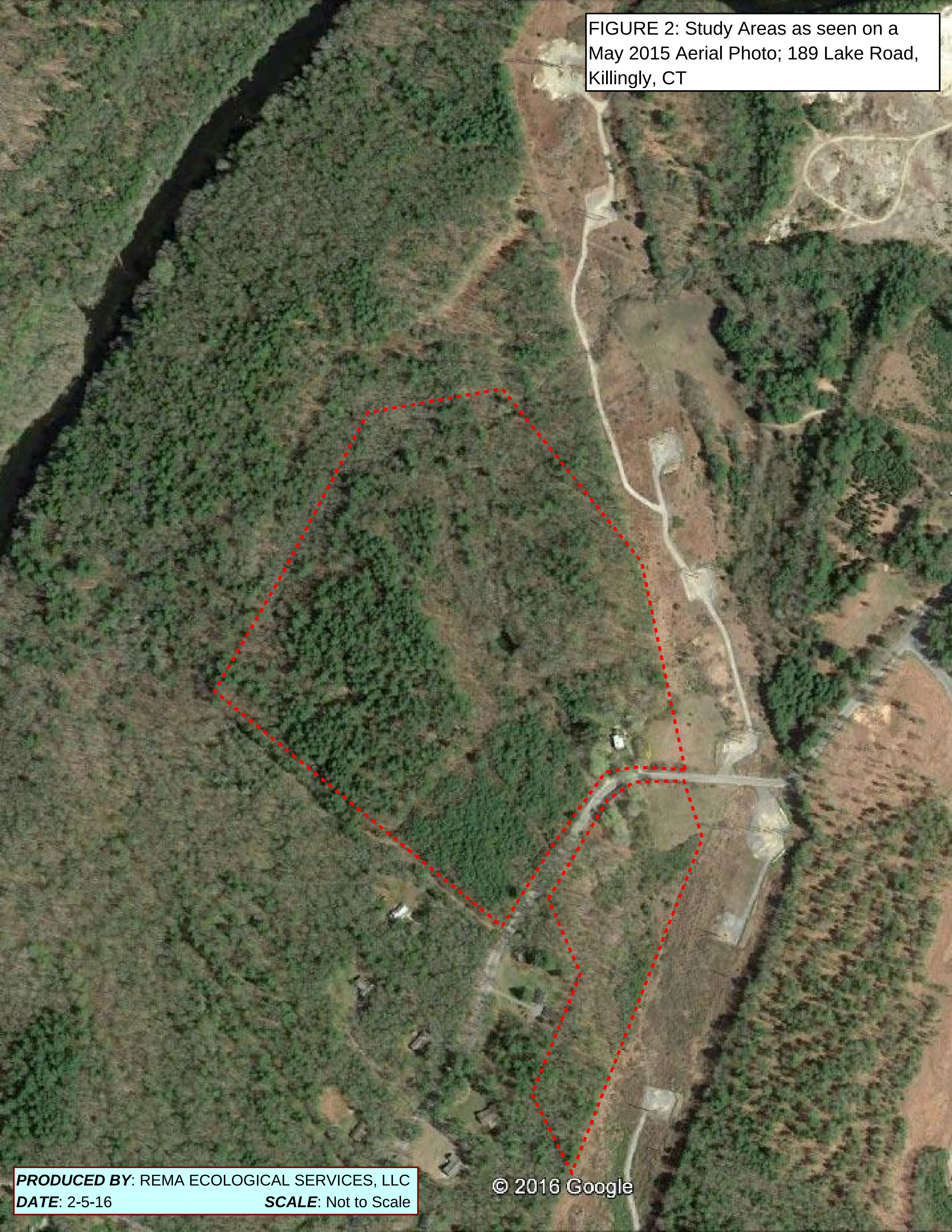


FIGURE 2: Study Areas as seen on a May 2015 Aerial Photo; 189 Lake Road, Killingly, CT



PRODUCED BY: REMA ECOLOGICAL SERVICES, LLC
DATE: 2-5-16 ***SCALE***: Not to Scale

ATTACHMENT Q – CONSERVATION OR PRESERVATION RESTRICTION INFORMATION

Not required, as no conservation or preservation restrictions are associated with the Project site.

ATTACHMENT R – COPY OF WRITTEN ENVIRONMENTAL JUSTICE PUBLIC PARTICIPATION PLAN APPROVAL LETTER

A copy of the letter approving the Project’s Environmental Justice public participation plan is attached.

Connecticut Department of

ENERGY & ENVIRONMENTAL PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

April 5, 2016

Mr. David Groleau
NTE, Connecticut, LLC
24 Cathedral Place, Suite 302
Saint Augustine, FL 32084

Re: **Approval of the Environmental Justice Public Participation Plan for the Killingly Energy Center Facility Permit Application**

Dear: Mr. Groleau:

The Environmental Justice Public Participation Plan (Plan) for the Killingly Energy Center was received on April 4, 2016. The Plan indicates that this is a request for a new facility permit. A review of the information submitted in Parts I, II, III and IV of the Plan satisfy the requirements under Sec. 22a-20a of the Connecticut General Statutes and the Connecticut Department of Environmental Protection's Environmental Equity Policy. The date, time and meeting location were confirmed with the Environmental Justice Program staff prior to submittal of the Plan. The Public Information meeting will take place on April 28, 2016 at 6:00 PM at the Golden Eagle, 8 Tracy Road, Dayville, CT. The Plan indicates that a public notice announcing the informational meeting will be published in the Norwich Bulletin on April 18, 2016.

Should any of the information supplied in the Plan change, please contact the Environmental Justice Program to determine if an amendment to the approved Plan is required. **In addition, a Final Report documenting the implementation of the Plan must also be submitted prior to the issuance of the Notice of Tentative Determination by the Department. A summary of the public's environmental and public health concerns and how you plan to address them should be documented and included in the Final Report.**

The Environmental Justice Plan for is the Killingly Energy Center Facility is approved. If you require additional information regarding my review or assistance in preparing the required Environmental Justice Public Participation Plan Final Report contact me at 860-424-3044.

Sincerely,

Edith Pestana, MPH

cc. Lynn Gresock

APPENDIX A – SUPPORTING EMISSIONS CALCULATIONS

NTE Connecticut, LLC - Killingly Energy Center

Facility-Wide Potential Annual Emissions (TPY)

Pollutant	CTG & Duct Burners	Auxiliary Boiler	Natural Gas Heater	Emergency Generator	Fire Pump	Fugitive Emissions	Facility Total
NO_x	133.9	1.64	0.64	2.92	0.30	N/A	139.4
CO	142.4	7.14	1.94	1.60	0.26	N/A	153.3
VOC	48.3	0.78	0.18	0.15	0.02	N/A	49.4
SO_2	24.7	0.29	0.08	0.003	0.0005	N/A	25.1
PM	100.8	0.97	0.26	0.09	0.02	N/A	102.2
PM_{10}	100.8	0.97	0.26	0.09	0.02	N/A	102.2
$PM_{2.5}$	100.8	0.97	0.26	0.09	0.02	N/A	102.2
CO_2e	1,966,937	22,610	6,151	308	49	547	1,996,602
H_2SO_4	8.76	0.02	0.006	0.0002	0.00003	N/A	8.8
Lead (Pb)	1.8E-03	9.5E-05	2.6E-05	1.4E-06	2.3E-07	N/A	0.002
NH_3	49.5	N/A	N/A	N/A	N/A	N/A	49.5
Total HAPS	14.13	0.36	0.10	0.01	0.003	N/A	14.6

Potential To Emit Operating Scenario

The CTG will operate at full rated load for 8,760 hours per year.
Higher emission rates occur during gas firing with duct firing and ULSD firing without duct firing.
Duct firing will be unlimited.
ULSD firing will be limited to 720 hours per year per turbine without duct firing.
Over the course of 8,760 operating hours, the average annual temperature will be 59°F.
ULSD firing expected to occur during cold winter months.
ULSD emission rate for 720 hrs/yr applied when the lb/hr rate is greater than the duct firing lb/hr rate.
The potential to emit is the sum of the steady state potential to emit plus the net increase due to startup/shutdown operation.

Operating Condition	Operating Load	Fuel	Ambient Temp. (°F)	Duct Firing	Maximum Annual Hours
Case #36	100%	Nat. Gas	59	On	8,760
Case #65	100%	ULSD	-10	Off	720
Total					**8,760**

Pollutant	Case #36	Case #69	8760 PTE	SU/SD	PTE
	lb/hr	lb/hr	tpy	tpy	tpy
NO_x	28.4	54.9	133.9	0.0	133.9
CO	17.3	13.4	75.8	66.6	142.4
VOC	9.9	7.7	43.4	4.9	48.3
$PM_{10}/PM_{2.5}$	22.4	30.0	100.8	0	100.8
SO_2	5.6	4.0	24.7	0	24.7
H_2SO_4	2.0	1.5	8.76	0	8.76
CO_2e	448,064	460,328	1,966,937	0	1,966,937
NH_3	10.5	20.3	49.5	0	49.5

NTE Connecticut, LLC - Killingly Energy Center
Siemens Model SGT6-8000H (or equivalent) Combined Cycle Combustion Turbine Emissions Estimates

Ambient Temperature (°F):	100					59					-10			
Case #:	1	2	3	4	5	36	37	38	39	40	32	33	34	35
Fuel	**Natural Gas**													
Number of GTs Operating														
GT Operating Load	100%	100%	100%	75%	45%	100%	100%	100%	75%	40%	100%	100%	75%	40%
Fuel Heating Value, Btu/lb (HHV)	22,150	22,150	22,150	22,150	22,150	22,150	22,150	22,150	22,150	22,150	22,150	22,150	22,150	22,150
Evaporative Cooler Status (On or Off)	ON	ON	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Duct Burner Status	ON	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
Inlet Fogger State (On or Off)														
Ambient Relative Humidity, %	45	45	45	45	45	60	60	60	60	60	100	100	100	100
Baromteric Pressure, psia	14.52	14.52	14.52	14.52	14.52	14.52	14.52	14.52	14.52	14.52	14.52	14.52	14.52	14.52
GT Heat Input (MMBtu/hr/unit, HHV)	2,672	2,672	2,490	1,983	1,444	2,871	2,869	2,827	2,269	1,515	2,974	2,971	2,380	1,598
DB Heat Input (MMBtu/hr/unit, HHV)	834					895					920			
Net Power (kW)						532,724		433,008						
Gross Power (kW)						549,200		446,400						
Heat Rate (Btu/kW-hr, net, HHV)						7,069		6,529						
HRSG Stack Exhaust Gas														
Exhaust Flow, lb/hr	4,780,636	4,742,975	4,491,475	3,798,752	3,012,719	5,126,628	5,086,165	5,037,546	4,141,668	3,076,733	5,197,878	5,156,718	4,160,194	3,114,531
Stack Temperature, °F	186.0	191.0	188.0	190.0	188.0	185.0	180.0	180.0	178.0	178.0	188.0	180.0	178.0	178.0
Exhaust Flow, acfm	1,360,753	1,352,033	1,271,742	1,077,307	850,706	1,443,471	1,414,751	1,398,751	1,147,081	850,251	1,464,925	1,429,259	1,148,386	857,812
O_2, Vol. %	8.41	11.09	11.33	11.93	12.70	8.74	11.45	11.54	11.85	12.84	8.69	11.46	11.62	12.67
CO_2, Vol. %	5.61	4.34	4.28	4.00	3.64	5.66	4.38	4.36	4.22	3.75	5.80	4.49	4.42	3.92
H_2O, Vol. %	13.83	11.49	10.81	10.28	9.61	11.77	9.39	9.12	8.85	7.98	10.90	8.45	8.31	7.38
N_2, Vol. %	71.32	72.24	72.73	72.93	73.20	72.97	73.91	74.11	74.21	74.56	73.75	74.72	74.78	75.15
Ar, Vol. %	0.84	0.85	0.85	0.86	0.86	0.86	0.87	0.87	0.87	0.87	0.86	0.88	0.88	0.88
MW, lb/lb-mole	27.96	28.10	28.17	28.20	28.24	28.19	28.34	28.36	28.38	28.43	28.30	28.45	28.46	28.51
HRSG Stack Exhaust Gas Emissions														
NOx, ppmvd @ 15% O2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
NOx, lb/MMBtu as NO2 (Siemens)	0.0075	0.0075	0.0076	0.0075	0.0074	0.0075	0.0075	0.0075	0.0074	0.0074	0.0075	0.0075	0.0075	0.0074
NOx, lb/MMBtu as NO2 (EPA Method 19)	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074
NOx, lb/hr as NO2 (Siemens)	26.40	20.10	18.80	14.80	10.70	28.40	21.60	21.30	16.90	11.20	29.30	22.40	17.80	11.80
NOx, lb/hr as NO2 (Method 19)	25.83	19.69	18.35	14.62	10.64	27.75	21.14	20.83	16.72	11.16	28.69	21.90	17.53	11.78
VOC, ppmvd @ 15% O2 as CH4	2.0	1.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0
VOC ppm (Method 19)	2.0	1.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0
VOC, lb/MMBtu (Siemens)	0.0026	0.0013	0.0013	0.0013	0.0013	0.0026	0.0013	0.0013	0.0013	0.0013	0.0026	0.0013	0.0013	0.0013
VOC, lb/MMBtu as CH4 (EPA Method 19)	0.0026	0.0013	0.0013	0.0013	0.0013	0.0026	0.0013	0.0013	0.0013	0.0013	0.0026	0.0013	0.0013	0.0013
VOC, lb/hr as CH4 (Siemens)	9.20	3.60	3.30	2.60	1.90	9.90	3.80	3.80	3.00	2.00	10.30	3.90	3.10	2.10
VOC, lb/hr as CH4 (Method 19)	9.00	3.43	3.20	2.55	1.85	9.67	3.68	3.63	2.91	1.94	10.00	3.81	3.05	2.05
CO, ppmvd @ 15% O2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
CO, lb/MMBtu (Siemens)	0.0046	0.0046	0.0046	0.0045	0.0045	0.0046	0.0046	0.0046	0.0045	0.0045	0.0046	0.0046	0.0045	0.0045
CO, lb/MMBtu (EPA Method 19)	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045
CO, lb/hr (Siemens)	16.10	12.30	11.50	9.00	6.50	17.30	13.20	13.00	10.30	6.80	17.90	13.70	10.80	7.20
CO, lb/hr (Method 19)	15.73	11.99	11.17	8.90	6.48	16.89	12.87	12.68	10.18	6.80	17.47	13.33	10.67	7.17
SO2 ppm (Method 19)	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
SO2, lb/hr (Siemens)	5.00	3.80	3.60	2.90	2.10	5.40	4.10	4.10	3.30	2.20	5.60	4.30	3.40	2.30
SO2, lb/hr (calculated)	5.26	4.01	3.74	2.98	2.17	5.65	4.30	4.24	3.40	2.27	5.84	4.46	3.57	2.40
SO2, lb/MMBtu	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
H2SO4, lb/hr	1.80	1.40	1.30	1.10	0.80	2.00	1.50	1.50	1.20	0.80	2.00	1.60	1.30	0.90
H2SO4, lb/MMBtu	0.00051	0.00052	0.00052	0.00055	0.00055	0.00053	0.00052	0.00053	0.00053	0.00053	0.00051	0.00054	0.00055	0.00056
$PM/PM_{10}/PM_{2.5}$, lb/hr	20.70	11.50	10.90	9.20	8.00	22.40	12.50	12.40	10.20	8.00	22.90	12.80	10.30	8.00
$PM/PM_{10}/PM_{2.5}$, lb/MMBtu	0.0059	0.0043	0.0044	0.0046	0.0055	0.0059	0.0044	0.0044	0.0045	0.0053	0.0059	0.0043	0.0043	0.0050
NH_3, ppmvd @ 15% O2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
NH_3, lb/MMBtu (EPA Method 19)	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027
NH_3, lb/hr (Siemens)	9.80	7.50	7.00	5.50	4.00	10.50	8.00	7.90	6.30	4.20	10.90	8.30	6.60	4.40
NH_3, lb/hr (Method 19)	9.55	7.28	6.78	5.40	3.93	10.25	7.81	7.70	6.18	4.13	10.60	8.09	6.48	4.35
CO_2, lb/hr (40 CFR 75, App. G, Eq. G-4)	416,712	317,605	295,959	235,752	171,635	447,609	341,057	336,047	269,653	180,065	462,871	353,170	282,827	189,969
CH_4, lb/hr (40 CFR 98, Subpart C, Table 2)	7.73	5.89	5.49	4.37	3.18	8.30	6.33	6.23	5.00	3.34	8.59	6.55	5.25	3.52
N_2O, lb/hr (40 CFR 98, Subpart C, Table 2)	0.77	0.59	0.55	0.44	0.32	0.83	0.63	0.62	0.50	0.33	0.86	0.66	0.52	0.35
CO_2e, lb/hr (CH4 GWP = 25, N2O GWP = 298)	417,136	317,927	296,260	235,991	171,810	448,064	341,403	336,388	269,927	180,248	463,341	353,529	283,114	190,162
CO_2e, lb/MMBtu	119.0	119.0	119.0	119.0	119.0	119.0	119.0	119.0	119.0	119.0	119.0	119.0	119.0	119.0
CO_2e, lb/MW-hr (gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
HCOH (lb/hr)	0.767	0.585	0.545	0.434	0.316	0.824	0.628	0.619	0.496	0.332	0.852	0.650	0.521	0.350

NTE Connecticut, LLC - Killingly Energy Cer
Siemens Model SGT6-8000H (or equivalent)

Ambient Temperature (°F):	**100**				**59**				**-10**		
Case #:	**41**	**42**	**43**	**44**	**68**	**69**	**70**	**71**	**65**	**66**	**67**
Fuel	**ULSD**										
Number of GTs Operating											
GT Operating Load	100%	100%	75%	65%	100%	100%	75%	60%	100%	75%	60%
Fuel Heating Value, Btu/lb (HHV)	20,444	20,444	20,444	20,444	20,444	20,444	20,444	20,444	20,444	20,444	20,444
Evaporative Cooler Status (On or Off)	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
Duct Burner Status	---	---	---	---	---	---	---	---	---	---	---
Inlet Fogger State (On or Off)											
Ambient Relative Humidity, %	45	45	45	45	60	60	60	60	100	100	100
Baromteric Pressure, psia	14.52	14.52	14.52	14.52	14.52	14.52	14.52	14.52	14.52	14.52	14.52
GT Heat Input (MMBtu/hr/unit, HHV)	2,740	2,567	2,055	1,874	2,828	2,783	2,226	1,941	2,827	2,289	2,029
DB Heat Input (MMBtu/hr/unit, HHV)											
Net Power (kW)											
Gross Power (kW)											
Heat Rate (Btu/kW-hr, net, HHV)											
HRSG Stack Exhaust Gas											
Exhaust Flow, lb/hr	4,833,827	4,620,398	3,833,176	3,574,417	5,155,459	5,106,515	4,228,784	3,791,268	5,500,484	4,510,924	4,056,678
Stack Temperature, °F	211.0	207.0	202.0	200.0	200.0	199.0	194.0	193.0	212.0	204.0	202.0
Exhaust Flow, acfm	1,409,478	1,336,669	1,098,107	1,020,083	1,463,706	1,446,835	1,187,159	1,060,412	1,577,200	1,276,412	1,143,842
O_2, Vol. %	11.50	11.77	12.24	12.48	12.25	12.34	12.78	13.08	13.13	13.35	13.52
CO_2, Vol. %	5.26	5.17	4.95	4.82	5.15	5.12	4.91	4.75	4.87	4.76	4.67
H_2O, Vol. %	10.88	10.18	9.40	9.08	8.08	7.81	7.13	6.72	5.71	5.32	5.13
N_2, Vol. %	71.52	72.03	72.56	72.76	73.66	73.86	74.32	74.57	75.41	75.68	75.79
Ar, Vol. %	0.84	0.85	0.85	0.85	0.86	0.87	0.87	0.87	0.88	0.89	0.89
MW, lb/lb-mole	28.33	28.39	28.45	28.48	28.62	28.65	28.70	28.73	28.85	28.88	28.89
HRSG Stack Exhaust Gas Emissions											
NOx, ppmvd @ 15% O2	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
NOx, lb/MMBtu as NO2 (Siemens)	0.0178	0.0178	0.0177	0.0176	0.0178	0.0178	0.0177	0.0176	0.0178	0.0176	0.0175
NOx, lb/MMBtu as NO2 (EPA Method 19)	0.0194	0.0194	0.0194	0.0194	0.0194	0.0194	0.0194	0.0194	0.0194	0.0194	0.0194
NOx, lb/hr as NO2 (Siemens)	48.90	45.80	36.30	32.90	50.40	49.60	39.30	34.10	50.40	40.40	35.60
NOx, lb/hr as NO2 (Method 19)	53.25	49.88	39.93	36.42	54.96	54.08	43.26	37.72	54.9	44.49	39.44
VOC, ppmvd @ 15% O2 as CH4	2.0	1.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0
VOC ppm (Method 19)	2.0	1.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0
VOC, lb/MMBtu (Siemens)	0.0026	0.0012	0.0025	0.0025	0.0013	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
VOC, lb/MMBtu as CH4 (EPA Method 19)	0.0027	0.0014	0.0027	0.0027	0.0014	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027
VOC, lb/hr as CH4 (Siemens)	7.00	3.20	5.20	4.60	3.60	7.00	5.60	4.80	7.20	5.80	5.00
VOC, lb/hr as CH4 (Method 19)	7.42	3.48	5.57	5.08	3.83	7.54	6.03	5.26	7.66	6.20	5.50
CO, ppmvd @ 15% O2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
CO, lb/MMBtu (Siemens)	0.0043	0.0044	0.0043	0.0043	0.0043	0.0043	0.0043	0.0043	0.0044	0.0043	0.0043
CO, lb/MMBtu (EPA Method 19)	0.0047	0.0047	0.0047	0.0047	0.0047	0.0047	0.0047	0.0047	0.0047	0.0047	0.0047
CO, lb/hr (Siemens)	11.90	11.20	8.90	8.10	12.30	12.10	9.60	8.30	12.30	9.90	8.70
CO, lb/hr (Method 19)	12.97	12.15	9.72	8.87	13.38	13.17	10.53	9.18	13.38	10.83	9.60
SO2 ppm (Method 19)	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
SO2, lb/hr (Siemens)	3.90	3.60	2.90	2.70	4.00	3.90	3.20	2.80	4.00	3.20	2.90
SO2, lb/hr (calculated)	4.11		3.08	2.81	4.24	4.17	3.34	2.91	4.24	3.43	3.04
SO2, lb/MMBtu	0.0015	0.0014	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
H2SO4, lb/hr	1.40	1.30	1.10	1.00	1.50	1.40	1.20	1.00	1.50	1.20	1.10
H2SO4, lb/MMBtu	0.00051	0.00051	0.00054	0.00053	0.00053	0.00050	0.00054	0.00052	0.00053	0.00052	0.00054
$PM/PM_{10}/PM_{2.5}$, lb/hr	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
$PM/PM_{10}/PM_{2.5}$, lb/MMBtu	0.0109	0.0117	0.0146	0.0160	0.0106	0.0108	0.0135	0.0155	0.0106	0.0131	0.0148
NH_3, ppmvd @ 15% O2	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
NH_3, lb/MMBtu (EPA Method 19)	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072
NH_3, lb/hr (Siemens)	18.10	17.00	13.50	12.20	18.70	18.40	14.60	12.60	18.70	15.00	13.20
NH_3, lb/hr (Method 19)	19.68	18.43	14.76	13.46	20.31	19.99	15.99	13.94	20.30	16.44	14.57
CO_2, lb/hr (40 CFR 75, App. G, Eq. G-4)	444,638	416,510	333,445	304,077	458,908	451,561	361,231	314,929	458,746	371,494	329,315
CH_4, lb/hr (40 CFR 98, Subpart C, Table 2)	18.12	16.98	13.59	12.39	18.71	18.41	14.72	12.84	18.70	15.14	13.42
N_2O, lb/hr (40 CFR 98, Subpart C, Table 2)	3.62	3.40	2.72	2.48	3.74	3.68	2.94	2.57	3.74	3.03	2.68
CO_2e, lb/hr (CH4 GWP = 25, N2O GWP = 298)	446,171	417,946	334,595	305,125	460,491	453,118	362,477	316,015	460,328	372,775	330,450
CO_2e, lb/MMBtu	162.8	162.8	162.8	162.8	162.8	162.8	162.8	162.8	162.8	162.8	162.8
CO_2e, lb/MW-hr (gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
HCOH (lb/hr)	0.633	0.593	0.474	0.433	0.653	0.642	0.514	0.448	0.653	0.529	0.469

NTE Connecticut, LLC - Killingly Energy Center
Summary of Startup and Shutdown Emissions - Siemens Model SGT6-8000H (or equivalent)

Startup/Shutdown Operating Data

hot starts/unit/gas	208	number/yr	0.50	hrs/event	6	Avg. hrs downtime	6.50	hrs/event
warm starts/unit/gas	42	number/yr	0.58	hrs/event	16	Avg. hrs downtime	16.58	hrs/event
cold starts/unit/gas	0	number/yr	0.58	hrs/event	64	Avg. hrs downtime	64.58	hrs/event
shutdowns/unit/gas	250	number/yr	0.30	hrs/event	N/A	Avg. hrs downtime	N/A	hrs/event
hot starts/unit/ULSD	0	number/yr	0.53	hrs/event	6	Avg. hrs downtime	6.53	hrs/event
warm starts/unit/ULSD	10	number/yr	0.58	hrs/event	16	Avg. hrs downtime	16.58	hrs/event
cold starts/unit/ULSD	0	number/yr	0.58	hrs/event	64	Avg. hrs downtime	64.58	hrs/event
shutdowns/unit/ULSD	10	number/yr	0.30	hrs/event	N/A	Avg. hrs downtime	N/A	hrs/event

Startup/Shutdown Emissions Self-Correcting Analysis

		Natural Gas Start				ULSD Start			
		NOx	CO	VOC	PM	NOx	CO	VOC	PM
Emissions per cold start	lbs	100	470	40	6.8	150	2200	240	20.3
Emissions per warm start	lbs	130	430	40	8.1	170	2300	260	20.4
Emissions per hot start	lbs	110	370	40	6.9	150	1970	260	18.5
Emissions per shutdown	lbs	60	200	60	3.3	130	420	170	11.3
Shutdown/Cold start - duration (w/ downtime)	hrs	64.88	64.88	64.88	64.88	64.88	64.88	64.88	64.88
Shutdown/Warm start - duration (w/ downtime)	hrs	16.88	16.88	16.88	16.88	16.88	16.88	16.88	16.88
Shutdown/Hot start - duration (w/ downtime)	hrs	6.80	6.80	6.80	6.80	6.83	6.83	6.83	6.83
Shutdown/Cold start - avg hourly emissions[1]	lb/hr	2.47	10.33	1.54	0.15	4.32	40.38	6.32	0.49
Shutdown/Warm start - avg hourly emissions[1]	lb/hr	11.25	37.31	5.92	0.67	17.77	161.11	25.47	1.87
Shutdown/Hot start - avg hourly emissions[1]	lb/hr	25.00	83.82	14.71	1.49	40.98	349.76	62.93	4.35
Steady state average hourly (annual)[2]	lb/hr	28.40	17.30	9.90	22.40	54.94	13.38	7.66	30.00
Cold Start Net increase	lb/event	0.0	0.0	0.0	0.0	0.0	1752.0	0.0	0.0
Warm Start Net increase	lb/event	0.0	337.9	0.0	0.0	0.0	2494.1	300.7	0.0
Hot Start Net increase	lb/event	0.0	452.4	32.7	0.0	0.0	2298.6	377.7	0.0
Cold start - self correcting?	lb/hr	yes	yes	yes	yes	yes	no	yes	yes
Warm start - self correcting?	lb/hr	yes	no	yes	yes	yes	no	no	yes
Hot start - self correcting?	lb/hr	yes	no	no	yes	yes	no	no	yes

[1] Includes balance of the hour at the steady state annual average hourly rate

[2] Based upon average annual hourly emissions with 4,250 hr/yr gas with duct firing, 720 hr/yr oil firing and gas without duct firing balance of the year.

Startup/Shutdown Potential Emissions Increase (tpy/unit)

SUSD Type	Gas NOx	Gas CO	Gas VOC	Oil NOx	Oil CO	Oil VOC
Shutdown/Cold Start	-	-	-	-	0.00	-
Shutdown/Warm Start	-	7.10	-	-	12.47	1.50
Shutdown/Hot Start	-	47.05	3.40	-	0.00	0.00
TOTAL	**0.00**	**54.14**	**3.40**	**0.00**	**12.47**	**1.50**

Note: Maximum of hot start/warm start/transition used for worst case hot start

NTE Connecticut, LLC - Killingly Energy Center
Summary of Startup and Shutdown Emissions - Siemens Model SGT6-8000H (or equivalent)

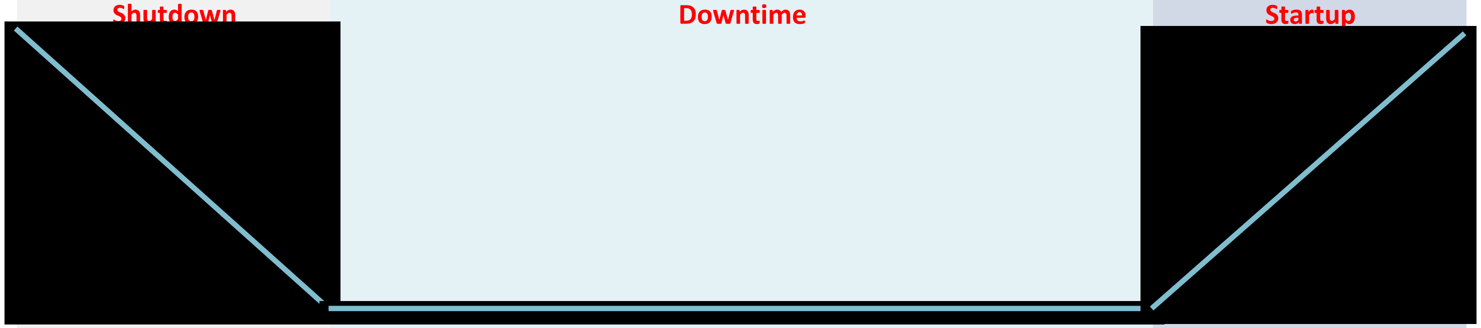
Startup/Shutdown Parameters (per turbine)

Type	Operating Condition	Exhaust Flow (ACFM)	Temp (°F)	Temp (°K)	NOx (lb/hr)	CO (lb/hr)	VOC (lb/hr)	PM (lb/hr)	Stack Diameter (ft)	Exit Velocity (m/s)
Hot Start - gas	Startup	1,105,782	175	352.4	124.2	378.7	45.0	18.1	22.5	14.13
Warm Start - gas	Startup	1,161,532	177	353.6	141.8	437.2	44.1	17.5	22.5	14.84
Cold Start - gas	Startup	952,830	174	351.9	111.8	477.2	44.1	16.1	22.5	12.17
Shutdown - gas	Shutdown	807,358	176	353.0	79.9	212.1	66.9	18.9	22.5	10.32
Hot Start - ULSD	Startup	794,409	267	403.6	175.6	1976.2	263.6	32.5	22.5	10.15
Warm Start - ULSD	Startup	862,055	268	404.1	192.9	2305.6	263.2	32.9	22.5	11.01
Cold Start - ULSD	Startup	781,795	267	403.6	172.9	2205.6	243.2	32.8	22.5	9.99
Shutdown - ULSD	Shutdown	778,466	263	401.3	168.5	429.4	175.4	32.3	22.5	9.95

Notes
1.) Data is from vendor estimates with 25% compliance margin applied
2.) Cold startup (SU) data are based on CTG shutdown (SD) >64 hours
3.) Warm SU data CTG SD between 16 and 64 hours
4.) Hot SU data CTG SD <16 hours, 6 hour average presumed based upon daily cycling of CTG
5.) ULSD starts presumed to be Warm starts

Example Calculation of Net Increase in Emissions Due To Shutdown and Startup Operation

Shutdown and Hot Startup Cycle For CO - Natural Gas Firing



	Shutdown	Downtime	Startup	SUSD Totals	
Duration (hrs)	0.30	6.00	0.50	**6.80**	**A**
Emissions (lbs)	200	0	370	**570.0**	**B**

Shutdown and Startup Cycle Emission Rate (lb/hr) =	83.82	**C** = B / A
Full Load Steady State Emission Rate (lb/hr) =	17.30	**D** (Case #36, full load on gas with duct firing at 59°F)
Net Increase in Emissions Due To Shutdown/Startup (lb/hr) =	66.52	**E** = C - D (avg over the shutdown/downtime/startup cycle)

If "E" is less than or equal to zero then there is no net increase in emissions over steady state from shutdown and startup operation.
If "E" is greater than zero, then there is a net increase in emissions over steady state from shutdown and startup operation.
If there is a net increase in emissions, then the impact on potential annual emissions from shutdown and startup must be quantifed.

Calculation of Impact on Potential Annual Emissions Due to a Net Increase in Emissions From Shutdown and Startup Operation

Net Increase in Emissions Due To Shutdown/Startup (lb/event) =	452.36	**F** = E x A
Number of Shutdown and Startup Cycles Per Year =	208	**G**
Net Increase in Annual Emissions (tpy) =	47.05	**H** = F x G / 2000

The net increase in emissions resulting from shutdown and startup operation is added to the steady state potential annual emissions to determine the total potential to emit from the CTG.

NTE Connecticut, LLC - Killingly Energy Center
Emissions From Ancillary Equipment

Pollutant	Auxiliary Boiler 84.0 MMBtu/hr	Natural Gas Heater 12.0 MMBtu/hr	Emergency Generator kW 1,380 (mechanical)	Fire Pump kW 227.5 (mechanical)
NO_x	7 ppmvd @ 3% O_2	10 ppmvd @ 3% O_2	6.40 g/kW-hr	4.0 g/kW-hr
	0.0085 lb/MMBtu	0.012 lb/MMBtu	1.55 lb/MMBtu	1.00 lb/MMBtu
	0.71 lb/hr	0.146 lb/hr	19.46 lb/hr	2.01 lb/hr
	1.64 TPY	0.64 TPY	2.92 TPY	0.30 TPY
CO	50 ppmvd @ 3% O_2	50 ppmvd @ 3% O_2	3.5 g/kW-hr	3.5 g/kW-hr
	0.037 lb/MMBtu	0.037 lb/MMBtu	0.85 lb/MMBtu	0.87 lb/MMBtu
	3.11 lb/hr	0.444 lb/hr	10.64 lb/hr	1.76 lb/hr
	7.14 TPY	1.94 TPY	1.60 TPY	0.263 TPY
VOC	9.6 ppmvd @ 3% O_2	8 ppmvd @ 3% O_2	0.32 g/kW-hr	0.20 g/kW-hr
	0.0041 lb/MMBtu	0.0034 lb/MMBtu	0.078 lb/MMBtu	0.050 lb/MMBtu
	0.34 lb/hr	0.04 lb/hr	0.97 lb/hr	0.100 lb/hr
	0.78 TPY	0.18 TPY	0.15 TPY	0.015 TPY
$PM_{10}/PM_{2.5}$	N/A ppmvd @ 3% O_2	N/A ppmvd @ 3% O_2	0.20 g/kW-hr	0.20 g/kW-hr
	0.005 lb/MMBtu	0.005 lb/MMBtu	0.048 lb/MMBtu	0.050 lb/MMBtu
	0.42 lb/hr	0.06 lb/hr	0.61 lb/hr	0.10 lb/hr
	0.97 TPY	0.26 TPY	0.091 TPY	0.015 TPY
SO_2	0.0015 lb/MMBtu	0.0015 lb/MMBtu	0.0015 lb/MMBtu	0.0015 lb/MMBtu
	0.13 lb/hr	0.0180 lb/hr	0.02 lb/hr	0.0030 lb/hr
	0.29 TPY	0.08 TPY	0.003 TPY	0.0005 TPY
H_2SO_4	0.00011 lb/MMBtu	0.00011 lb/MMBtu	0.00011 lb/MMBtu	0.00011 lb/MMBtu
	0.010 lb/hr	0.00138 lb/hr	0.0014 lb/hr	0.00023 lb/hr
	0.02 TPY	0.006 TPY	0.0002 TPY	0.00003 TPY
Pb	4.9E-07 lb/MMBtu	4.9E-07 lb/MMBtu	1.1E-06 lb/MMBtu	1.1E-06 lb/MMBtu
	4.1E-05 lb/hr	5.9E-06 lb/hr	1.3E-05 lb/hr	2.1E-06 lb/hr
	9.5E-05 TPY	2.6E-05 TPY	2.0E-06 TPY	3.2E-07 TPY
CO_2	116.9 lb/MMBtu	116.9 lb/MMBtu	163.1 lb/MMBtu	163.1 lb/MMBtu
	9,820 lb/hr	1,403 lb/hr	2,046 lb/hr	329 lb/hr
	22,587 TPY	6,145 TPY	307 TPY	49 TPY
CH_4	0.0022 lb/MMBtu	0.0022 lb/MMBtu	0.0066 lb/MMBtu	0.0066 lb/MMBtu
	0.1852 lb/hr	0.0265 lb/hr	0.083 lb/hr	0.013 lb/hr
	0.43 TPY	0.12 TPY	0.0124 TPY	0.0020 TPY
N_2O	0.00022 lb/MMBtu	0.0 lb/MMBtu	0.0013 lb/MMBtu	0.0013 lb/MMBtu
	0.0185 lb/hr	0.0026 lb/hr	1.7E-02 lb/hr	0.0027 lb/hr
	0.043 TPY	0.012 TPY	2.5E-03 TPY	4.0E-04 TPY
CO_2e	9,831 lb/hr	1,404 lb/hr	2,053 lb/hr	330 lb/hr
	22,610 TPY	6,151 TPY	308 TPY	49 TPY

NOTES:

Natural Gas SO2 emissions based upon a sulfur content of 0.5 gr/100 dscf

ULSD SO_2 emissions based upon a sulfur content of 15 ppmw

Aux Boiler and Gas Heater criteria pollutant emission factors from BACT analysis

Emergency Generator criteria pollutant emission factors based on Tier 2 emission standards in 40 CFR 89.

Fire Pump criteria pollutant emission factors based on post -2009 emission standards in 40 CFR 60 Subpart IIII.

H_2SO_4 emissions assume a 5% conversion of SO2 --> SO3 (on a molar basis)

Fuel specific CO_2, CH_4 and N_2O emission factors from 40 CFR 98, Subpart C

Pb emission factor for ULSD from "Survey of Ultra-Trace Metals in Gas Turbine Fuels"

Potential HAP Emissions (tpy)

HAP	Potential Annual Emissions (tpy)					TOTALS
	CTGs & Duct Burners	Auxiliary Boiler	Nat. Gas Heater	Em. Generator	Fire Pump	
Organic Compounds						
Acetaldehyde	5.03E-01			4.74E-05	2.32E-04	5.03E-01
Acrolein	8.05E-02			1.48E-05	2.80E-05	8.05E-02
Benzene	1.46E-01	4.06E-04	1.10E-04	1.46E-03	2.82E-04	1.48E-01
1,3-Butadiene	4.96E-03				1.18E-05	4.97E-03
Dichlorobenzene	4.70E-03	2.32E-04	6.31E-05			5.00E-03
Ethylbenzene	4.02E-01					4.02E-01
Formaldehyde	3.05E+00	1.43E-02	3.89E-03	1.48E-04	3.57E-04	3.06E+00
Hexane	7.06E+00	3.48E-01	9.46E-02			7.50E+00
Propylene oxide	3.65E-01			7.24E-03	1.08E-03	3.73E-01
Toluene	1.65E+00	6.38E-04	1.73E-04	5.29E-04	1.24E-04	1.65E+00
Xylene	8.05E-01			3.63E-04	3.66E-04	8.06E-01
PAHs						
Acenaphthene	7.06E-06	3.48E-07	9.46E-08	8.81E-06	4.29E-07	1.67E-05
Acenaphthylene	7.06E-06	4.64E-07	1.26E-07	1.74E-05	1.53E-05	4.03E-05
Anthracene	9.41E-06	3.48E-07	9.46E-08	2.31E-06	5.65E-07	1.27E-05
Benzo(a)anthracene	7.06E-06	3.48E-07	9.46E-08	1.17E-06	5.08E-07	9.18E-06
Benzo(a)pyrene	4.70E-06	2.32E-07	6.31E-08	4.84E-07	5.68E-08	5.54E-06
Benzo(b)fluoranthene	7.06E-06	3.48E-07	9.46E-08	4.10E-07	3.00E-08	7.94E-06
Benzo(g,h,i)perylene	4.70E-06	2.32E-07	6.31E-08	1.05E-06	1.48E-07	6.19E-06
Benzo(k)fluoranthene	7.06E-06	3.48E-07	9.46E-08	2.09E-06	4.68E-08	9.63E-06
Chrysene	7.06E-06	3.48E-07	9.46E-08	2.88E-06	1.07E-07	1.05E-05
Dibenz(a,h)anthracene	4.70E-06	2.32E-07	6.31E-08	6.51E-07	1.76E-07	5.83E-06
7,12-Dimethylbenz(a) an	6.27E-05	3.09E-06	8.41E-07			6.67E-05
Fluoranthene	1.18E-05	5.60E-07	1.52E-07	7.58E-06	2.30E-06	2.24E-05
Fluorene	1.10E-05	5.22E-07	1.42E-07	2.41E-05	8.82E-06	4.45E-05
Indeno(1,2,3-cd)pyrene	7.06E-06	3.48E-07	9.46E-08	7.79E-07	1.13E-07	8.39E-06
3-Methylchloranthrene	7.06E-06	3.48E-07	9.46E-08			7.50E-06
2-Methylnaphthalene	9.41E-05	4.64E-06	1.26E-06			1.00E-04
Naphthalene	1.72E-02	1.20E-04	3.26E-05	2.45E-04	2.56E-05	1.76E-02
Phenanthrene	6.66E-05	3.28E-06	8.94E-07		8.89E-06	7.97E-05
Pyrene	1.96E-05	9.47E-07	2.58E-07	6.98E-06	1.44E-06	2.92E-05
TOTAL PAH	2.79E-02	1.31E-04	3.57E-05	3.99E-04	5.08E-05	2.85E-02
Metals						
Arsenic	7.84E-04	3.86E-05	1.05E-05	8.69E-08	1.40E-08	8.33E-04
Beryllium	4.33E-05	2.32E-06	6.31E-07			4.62E-05
Cadmium	4.31E-03	2.13E-04	5.78E-05	9.65E-09	1.55E-09	4.58E-03
Chromium	5.04E-03	2.70E-04	7.36E-05	2.33E-05	3.75E-06	5.41E-03
Chromium VI	9.07E-04	4.83E-05	1.31E-05	4.21E-06	6.77E-07	9.74E-04
Cobalt	3.21E-04	1.58E-05	4.31E-06			3.42E-04

Potential HAP Emissions (tpy)

HAP	Potential Annual Emissions (tpy)					TOTALS
	CTGs & Duct Burners	Auxiliary Boiler	Nat. Gas Heater	Em. Generator	Fire Pump	
Lead	1.77E-03	9.47E-05	2.58E-05	1.45E-06	2.32E-07	1.89E-03
Manganese	1.62E-03	7.15E-05	1.94E-05	5.31E-07	8.52E-08	1.71E-03
Mercury	9.80E-04	4.83E-05	1.31E-05	1.94E-08	3.11E-09	1.04E-03
Nickel	7.56E-03	4.06E-04	1.10E-04	2.78E-06	4.47E-07	8.08E-03
Selenium	9.54E-05	4.64E-06	1.26E-06	4.82E-07	7.74E-08	1.02E-04
Max. Single HAP						**7.50**
Total All HAPs	**1.41E+01**	**3.65E-01**	**9.92E-02**	**1.06E-02**	**2.60E-03**	**14.61**

NTE Connecticut, LLC - Killingly Energy Center
CTG and Duct Burner Potential HAP Emissions

HAP	CTG and Duct Burner HAP Emissions						
	CTG (gas)		CTG (ULSD)		Duct Burners		Potential To Emit
	lb/MMBtu	lb/hr	lb/MMBtu	lb/hr	lb/MMBtu	lb/hr	tpy
Organic Compounds							
Acetaldehyde	4.00E-05	1.15E-01					5.03E-01
Acrolein	6.40E-06	1.84E-02					8.05E-02
Benzene	1.20E-05	3.45E-02	5.50E-05	1.56E-01	2.10E-06	1.88E-03	1.46E-01
1,3-Butadiene	4.30E-07	1.23E-03	1.60E-05	4.52E-02			4.96E-03
Dichlorobenzene					1.20E-06	1.07E-03	4.70E-03
Ethylbenzene	3.20E-05	9.19E-02					4.02E-01
Formaldehyde	2.19E-04	6.28E-01	2.31E-04	6.53E-01	7.50E-05	6.71E-02	3.05E+00
Hexane					1.80E-03	1.61E+00	7.06E+00
Propylene oxide	2.90E-05	8.33E-02					3.65E-01
Toluene	1.30E-04	3.73E-01			3.40E-06	3.04E-03	1.65E+00
Xylene	6.40E-05	1.84E-01					8.05E-01
PAHs							
Acenaphthene					1.80E-09	1.61E-06	7.06E-06
Acenaphthylene					1.80E-09	1.61E-06	7.06E-06
Anthracene					2.40E-09	2.15E-06	9.41E-06
Benzo(a)anthracene					1.80E-09	1.61E-06	7.06E-06
Benzo(a)pyrene					1.20E-09	1.07E-06	4.70E-06
Benzo(b)fluoranthene					1.80E-09	1.61E-06	7.06E-06
Benzo(g,h,i)perylene					1.20E-09	1.07E-06	4.70E-06
Benzo(k)fluoranthene					1.80E-09	1.61E-06	7.06E-06
Chrysene					1.80E-09	1.61E-06	7.06E-06
Dibenz(a,h)anthracene					1.20E-09	1.07E-06	4.70E-06
7,12-Dimethylbenz(a) anthracene					1.60E-08	1.43E-05	6.27E-05
Fluoranthene					3.00E-09	2.69E-06	1.18E-05
Fluorene					2.80E-09	2.51E-06	1.10E-05
Indeno(1,2,3-cd)pyrene					1.80E-09	1.61E-06	7.06E-06
3-Methylchloranthrene					1.80E-09	1.61E-06	7.06E-06
2-Methylnaphthalene					2.40E-08	2.15E-05	9.41E-05
Naphthalene	1.30E-06	3.73E-03	3.50E-05	9.90E-02	6.10E-07	5.46E-04	1.72E-02
Phenanthrene					1.70E-08	1.52E-05	6.66E-05
Pyrene					5.00E-09	4.48E-06	1.96E-05
TOTAL PAH	2.20E-06	6.32E-03	4.00E-05	1.13E-01	6.98E-07	6.25E-04	2.79E-02
Metals							
Arsenic			4.60E-08	1.30E-04	2.00E-07	1.79E-04	0.0007841
Beryllium			3.10E-07	8.77E-04	1.20E-08	1.07E-05	4.329E-05
Cadmium			5.11E-09	1.44E-05	1.10E-06	9.85E-04	0.0043123
Chromium			1.24E-05	3.50E-02	1.40E-06	1.25E-03	0.0050412
Chromium VI			2.23E-06	6.30E-03	2.52E-07	2.26E-04	0.0009074
Cobalt					8.20E-08	7.34E-05	0.0003215

NTE Connecticut, LLC - Killingly Energy Center
CTG and Duct Burner Potential HAP Emissions

HAP	CTG and Duct Burner HAP Emissions						
	CTG (gas)		CTG (ULSD)		Duct Burners		Potential To Emit
	lb/MMBtu	lb/hr	lb/MMBtu	lb/hr	lb/MMBtu	lb/hr	tpy
Lead			1.05E-06	2.97E-03	4.90E-07	4.39E-04	0.0017681
Manganese			1.80E-07	5.10E-04	3.70E-07	3.31E-04	0.0016157
Mercury			1.02E-08	2.89E-05	2.50E-07	2.24E-04	0.0009801
Nickel			1.48E-06	4.17E-03	2.10E-06	1.88E-03	0.0075576
Selenium			2.55E-07	7.22E-04	2.40E-08	2.15E-05	9.535E-05
Max. Single HAP							
Total All HAPs	**5.36E-04**		**3.95E-04**		**1.89E-03**		**1.41E+01**

Notes:

1. Blank entry indicates no emission factor reported in the reference cited.
2. Organic HAP emission factors for CTGs are from Tables 3.1-3 and 3.1.4 of AP-42 except gas-firing for formaldehyde which is based on the NESHAP Subpart YYYY MACT floor limit of 91 ppb at 15% O2.
3. Emission factors for the HRSG and auxiliary boiler are from AP-42 Tables 1.4-3 and 1.4-4.
4. Emission factors for organics from the emergency diesel generator are from AP-42 Tables 3.4-3 and 3.4-4, for the fire pump from AP-42 Table 3.3-2.
5. Metal emission factors for ULSD firing are based on the paper “Survey of Ultra-Trace Metals in Gas Turbine Fuels”, 11th Annual International Petroleum Conference, Oct 12-15, 2004. Where trace metals were detected in any of 13 samples, the average result is used. Where no metals were detected in any of 13 samples, the detection limit was used.
6. Hexavalent chrome is based on 18% of the total chrome emissions per EPA 453/R-98-004a.
7. No reduction by oxidation catalysts presumed for organic HAPs.
8. lb/hr values are at 59°F and do not represent maximum values at higher firing rates at colder temperatures.

NTE Connecticut, LLC - Killingly Energy Center
Ancillary Source Potential HAP Emissions (lb/hr)

HAP	Auxiliary Boiler		Natural Gas Heater		Em. Generator		Fire Pump	
	lb/MMBtu	lb/hr	lb/MMBtu	lb/hr	lb/MMBtu	lb/hr	lb/MMBtu	lb/hr
Organic Compounds								
Acetaldehyde					2.52E-05	3.16E-04	7.67E-04	1.55E-03
Acrolein					7.88E-06	9.88E-05	9.25E-05	1.86E-04
Benzene	2.10E-06	1.76E-04	2.10E-06	2.52E-05	7.76E-04	9.73E-03	9.33E-04	1.88E-03
1,3-Butadiene							3.91E-05	7.88E-05
Dichlorobenzene	1.20E-06	1.01E-04	1.20E-06	1.44E-05				
Ethylbenzene								
Formaldehyde	7.40E-05	6.22E-03	7.40E-05	8.88E-04	7.89E-05	9.90E-04	1.18E-03	2.38E-03
Hexane	1.80E-03	1.51E-01	1.80E-03	2.16E-02				
Propylene oxide					3.85E-03	4.83E-02	3.56E-03	7.17E-03
Toluene	3.30E-06	2.77E-04	3.30E-06	3.96E-05	2.81E-04	3.52E-03	4.09E-04	8.24E-04
Xylene					1.93E-04	2.42E-03	2.85E-04	2.44E-03
PAHs								
Acenaphthene	1.80E-09	1.51E-07	1.80E-09	2.16E-08	4.68E-06	5.87E-05	1.42E-06	2.86E-06
Acenaphthylene	2.40E-09	2.02E-07	2.40E-09	2.88E-08	9.23E-06	1.16E-04	5.06E-05	1.02E-04
Anthracene	1.80E-09	1.51E-07	1.80E-09	2.16E-08	1.23E-06	1.54E-05	1.87E-06	3.77E-06
Benzo(a)anthracene	1.80E-09	1.51E-07	1.80E-09	2.16E-08	6.22E-07	7.80E-06	1.68E-06	3.38E-06
Benzo(a)pyrene	1.20E-09	1.01E-07	1.20E-09	1.44E-08	2.57E-07	3.22E-06	1.88E-07	3.79E-07
Benzo(b)fluoranthene	1.80E-09	1.51E-07	1.80E-09	2.16E-08	2.18E-07	2.73E-06	9.91E-08	2.00E-07
Benzo(g,h,i)perylene	1.20E-09	1.01E-07	1.20E-09	1.44E-08	5.56E-07	6.97E-06	4.89E-07	9.85E-07
Benzo(k)fluoranthene	1.80E-09	1.51E-07	1.80E-09	2.16E-08	1.11E-06	1.39E-05	1.55E-07	3.12E-07
Chrysene	1.80E-09	1.51E-07	1.80E-09	2.16E-08	1.53E-06	1.92E-05	3.53E-07	7.11E-07
Dibenz(a,h)anthracene	1.20E-09	1.01E-07	1.20E-09	1.44E-08	3.46E-07	4.34E-06	5.83E-07	1.17E-06
7,12-Dimethylbenz(a) anthracene	1.60E-08	1.34E-06	1.60E-08	1.92E-07				
Fluoranthene	2.90E-09	2.44E-07	2.90E-09	3.48E-08	4.03E-06	5.06E-05	7.61E-06	1.53E-05
Fluorene	2.70E-09	2.27E-07	2.70E-09	3.24E-08	1.28E-05	1.61E-04	2.92E-05	5.88E-05
Indeno(1,2,3-cd)pyrene	1.80E-09	1.51E-07	1.80E-09	2.16E-08	4.14E-07	5.19E-06	3.75E-07	7.56E-07
3-Methylchloranthrene	1.80E-09	1.51E-07	1.80E-09	2.16E-08				
2-Methylnaphthalene	2.40E-08	2.02E-06	2.40E-08	2.88E-07				
Naphthalene	6.20E-07	5.21E-05	6.20E-07	7.44E-06	1.30E-04	1.63E-03	8.48E-05	1.71E-04
Phenanthrene	1.70E-08	1.43E-06	1.70E-08	2.04E-07			2.94E-05	5.92E-05
Pyrene	4.90E-09	4.12E-07	4.90E-09	5.88E-08	3.71E-06	4.65E-05	4.78E-06	9.63E-06
TOTAL PAH	6.80E-07	5.71E-05	6.80E-07	8.16E-06	2.12E-04	2.66E-03	1.68E-04	3.38E-04
Metals								
Arsenic	2.00E-07	1.68E-05	2.00E-07	2.40E-06	4.62E-08	5.80E-07	4.62E-08	9.31E-08
Beryllium	1.20E-08	1.01E-06	1.20E-08	1.44E-07				
Cadmium	1.10E-06	9.24E-05	1.10E-06	1.32E-05	5.13E-09	6.44E-08	5.13E-09	1.03E-08
Chromium	1.40E-06	1.18E-04	1.40E-06	1.68E-05	1.24E-05	1.56E-04	1.24E-05	2.50E-05
Chromium VI	2.50E-07	2.10E-05	2.50E-07	3.00E-06	2.24E-06	2.81E-05	2.24E-06	4.51E-06
Cobalt	8.20E-08	6.89E-06	8.20E-08	9.84E-07				
Lead	4.90E-07	4.12E-05	4.90E-07	5.88E-06	7.69E-07	9.65E-06	7.69E-07	1.55E-06
Manganese	3.70E-07	3.11E-05	3.70E-07	4.44E-06	2.82E-07	3.54E-06	2.82E-07	5.68E-07
Mercury	2.50E-07	2.10E-05	2.50E-07	3.00E-06	1.03E-08	1.29E-07	1.03E-08	2.08E-08
Nickel	2.10E-06	1.76E-04	2.10E-06	2.52E-05	1.48E-06	1.86E-05	1.48E-06	2.98E-06
Selenium	2.40E-08	2.02E-06	2.40E-08	2.88E-07	2.56E-07	3.21E-06	2.56E-07	5.16E-07
Max. Single HAP								
Total All HAPs	**1.89E-03**	**1.59E-01**	**1.89E-03**	**2.27E-02**	**5.61E-03**	**7.04E-02**	**7.66E-03**	**1.73E-02**

NTE Connecticut, LLC - Killingly Energy Center
CTG and Duct Burner Maximum Potential MASC Toxic Emissions

HAP	CTG and Duct Burner MASC Toxic Emissions						
	CTG (gas)		Duct Burners		CTG + Duct Burners	CTG (ULSD)	
	lb/MMBtu	lb/hr	lb/MMBtu	lb/hr	lb/hr	lb/MMBtu	lb/hr
Organic Compounds							
Acetaldehyde	4.00E-05	1.19E-01			1.19E-01		
Acrolein	6.40E-06	1.90E-02			1.90E-02		
Benzene	1.20E-05	3.57E-02	2.10E-06	1.93E-03	3.76E-02	5.50E-05	1.55E-01
Dichlorobenzene			1.20E-06	1.10E-03	1.10E-03		
Ethylbenzene	3.20E-05	9.52E-02			9.52E-02		
Formaldehyde	2.19E-04	6.51E-01	7.50E-05	6.90E-02	7.20E-01	2.31E-04	6.53E-01
Hexane			1.80E-03	1.66E+00	1.66E+00		
Toluene	1.30E-04	3.87E-01	3.40E-06	3.13E-03	3.90E-01		
Xylene	6.40E-05	1.90E-01			1.90E-01		
PAHs							
Naphthalene	1.30E-07	3.87E-04	6.10E-08	5.61E-05	4.43E-04	3.50E-06	9.89E-03
TOTAL PAH	2.20E-07	6.54E-04	6.98E-08	6.42E-05	7.19E-04	4.00E-06	1.13E-02
Metals							
Arsenic			2.00E-07	1.84E-04	1.84E-04	4.60E-08	1.30E-04
Cadmium			1.10E-06	1.01E-03	1.01E-03	5.11E-09	1.44E-05
Chromium			1.40E-06	1.29E-03	1.29E-03	1.24E-05	3.50E-02
Cobalt			8.20E-08	7.54E-05	7.54E-05		
Lead			4.90E-07	4.51E-04	4.51E-04	1.05E-06	2.97E-03
Manganese			3.70E-07	3.40E-04	3.40E-04	1.80E-07	5.10E-04
Mercury			2.50E-07	2.30E-04	2.30E-04	1.02E-08	2.89E-05
Nickel			2.10E-06	1.93E-03	1.93E-03	1.48E-06	4.17E-03
Selenium						2.55E-07	7.22E-04

Notes:
1. Only emission factors reported above their detection limited in AP-42 used in the analysis.
2. Organic HAP emission factors for CTGs are from Tables 3.1-3 and 3.1.4 of AP-42 except gas-firing for formaldehyde which is based on the NESHAP Subpart YYYY MACT floor limit of 91 ppb at 15% O2.
3. Emission factors for the HRSG and auxiliary boiler are from AP-42 Tables 1.4-3 and 1.4-4.
4. Emission factors for organics from the emergency diesel generator are from AP-42 Tables 3.4-3 and 3.4-4, for the fire pump from AP-42 Table 3.3-2.
5. Metal emission factors for ULSD firing are based on the paper "Survey of Ultra-Trace Metals in Gas Turbine Fuels", 11th Annual International Petroleum Conference, Oct 12-15, 2004. Where trace metals were detected in any of 13 samples, the average result is used. Where no metals were detected in any of 13 samples, the detection limit was used.
6. Hexavalent chrome is based on 18% of the total chrome emissions per EPA 453/R-98-004a.
7. No reduction by oxidation catalysts presumed for organic HAPs except for PAHs where a 90% efficiency is taken into account for polycyclic compounds.
8. lb/hr values are at 59°F and do not represent maximum values at higher firing rates at colder temperatures.

NTE Connecticut, LLC - Killingly Energy Center
Summary of Estimated Fugitive GHG Emissions

Circuit Breaker SF6 Emissions

SF6 Storage Capacity	111	lbs
SF6 Leak Rate	0.5%	per year
SF6 emissions	0.555	lbs/year
GHG emissions (CO2e)	**6.3**	**tons per year**

Natural Gas Handling Fugitive Emissions

Component Type	Component Count	Emission factor (scfh/component)[1]	CH4 Emissions (tpy)[2]	GHG Emissions (tpy)
Connector	10	1.69	3.08	77.04
Flanges, Regulator, Other	10	0.772	1.41	35.19
Control Valves	10	9.34	17.03	425.76
Orifice Meter	3	0.212	0.12	2.90
TOTALS			**21.64**	**540.9**

[1] Emission factors are from 40 CFR 98, Subpart W, Table W-7

[2] Conservatively assumes 100% CH4

NTE Connecticut, LLC - Killingly Energy Center
Summary of Baseline Emissions

SUMMARY OF BASELINE EMISSION RATES AND REDUCTIONS

Pollutant	Combustion Turbine				Auxiliary Boiler			
	Baseline Emission Rate (lb/MMBtu)[2]	Baseline (tpy)[3]	BACT (tpy)[4]	Reduction (tpy)	Baseline Emission Rate (lb/MMBtu)[5]	Baseline (tpy)[6]	BACT (tpy)[7]	Reduction (tpy)
NO_x	0.32	5278	133.9	5144	0.10	16.8	1.6	15.2
CO	0.082	1352.6	75.8	1276.8	0.084	14.1	7.1	7.0
VOC	0.0021	34.6	4.9	29.7	0.0055	0.92	0.78	0.1
GHGs[8]	119	2,866,710	1,966,937	899,773	N/A	N/A	N/A	N/A

[1] Emissions presented are on a per turbine basis

[2] From AP-42 Section 3.1 for uncontrolled natural gas fired combustion turbines except for GHGs

[3] Baseline calculated from gas firing at 59F of 2,827 MMBtu/hr (CT) and 895 MMBtu/hr (DB) for 8,760 hr/yr

[4] Proposed ton per year emissions excluding contribution from startup and shutdown emissions.

[5] From AP-42 Section 1.4 for uncontrolled natural gas fired boilers <100 MMBtu/hr.

[6] Based upon the rated heat input of the auxiliary boiler of 84 MMBtu/hr for 4,000 hr/yr

[7] Proposed ton per year emissions.

[8] Baseline based upon conventional steam generation with a heat rate of 10,000 Btu/kWh for 550MW firing gas

CT DEEP Maximum Allowable Stack Concentration (MASC) Calculator

Company Name:	NTE Connecticut, LLC
Source Description:	Combined Cycle Combustion Turbine Facility - Gas Firing

Instructions

Stack Parameter Units:	English	
Stack Height =	150	ft
Minimum Distance from Stack to Property Line =	425	ft
Exhaust Stack Flow Rate =	1,464,925	acfm
Hazard Limiting Values (HLV) Averaging Times =	8-Hour	
Adjustments to the MASC for Time Periods < 8 hrs =	No	

Notes:
Maximum gas firing rate and duct firing rate at -10 F. Stack height is an estimate pending completion of ambient air quality impact analysis.

Additional HAPs | Clear All | Print | Footnotes

Hazardous Air Pollutant(s)	CAS No.	HLV (μg/m^3)	Proposed Allowable Emission Rate (lb/hr)	MASC (μg/m^3)	ASC (μg/m^3)	Complies?
Acetaldehyde	75-07-0	3600	1.19E-01	9.01E+04	2.17E+01	yes
Acrolein	107-02-8	5	1.90E-02	1.25E+02	3.47E+00	yes
Benzene	71-43-2	150	3.76E-02	3.75E+03	6.85E+00	yes
Butadiene (1,3-butadiene)	106-46-7	9000	1.10E-03	2.25E+05	2.01E-01	yes
Ethyl benzene	100-41-4	8700	9.52E-02	2.18E+05	1.73E+01	yes
Formaldehyde	50-00-0	12	7.20E-01	3.00E+02	1.31E+02	yes
Hexane, other isomers	110-54-3	36000	1.66E+00	9.01E+05	3.02E+02	yes
Toluene	108-88-3	7500	3.90E-01	1.88E+05	7.10E+01	yes
o-Xylene	1330-20-7	8680	1.90E-01	2.17E+05	3.47E+01	yes
Naphthalene	91-20-3	1000	4.43E-04	2.50E+04	8.07E-02	yes
Polynuclear aromatic hydrocarbons (PAH) *	50-32-8	0.1	7.19E-04	2.50E+00	1.31E-01	yes
Sulfuric acid	7664-93-9	20	2.00E+00	5.00E+02	3.64E+02	yes
Arsenic & compounds (as As)	7440-38-2	0.05	1.84E-04	1.25E+00	3.35E-02	yes
Beryllium	7440-41-7	0.01	1.10E-05	2.50E-01	2.01E-03	yes
Cadmium	7440-43-9	0.4	1.01E-03	1.00E+01	1.84E-01	yes
Chromium, metal	7440-47-3	2.5	1.29E-03	6.25E+01	2.35E-01	yes
Cobalt metal, dust & fume (as Co)	7440-48-4	2	7.54E-05	5.00E+01	1.37E-02	yes
Lead, inorg., fumes & dusts (as Pb)	7439-92-1	3	4.51E-04	7.50E+01	8.21E-02	yes
Manganese fume (as Mn)	7439-96-5	20	3.40E-04	5.00E+02	6.20E-02	yes

Company Name:	NTE Connecticut, LLC
Source Description:	Combined Cycle Combustion Turbine Facility - Gas Firing

Hazardous Air Pollutant(s)	CAS No.	HLV ($\mu g/m^3$)	Proposed Allowable Emission Rate (lb/hr)	MASC ($\mu g/m^3$)	ASC ($\mu g/m^3$)	Complies?
Mercury vapor	--	1	2.30E-04	2.50E+01	4.19E-02	yes
Nickel (metal)	7440-02-0	5	1.93E-03	1.25E+02	3.52E-01	yes
Ammonia	7664-41-7	360	1.09E+01	9.01E+03	1.99E+03	yes

CT DEEP Maximum Allowable Stack Concentration (MASC) Calculator

Company Name:	NTE Connecticut, LLC
Source Description:	Combined Cycle Combustion Turbine Facility - Gas Firing

Instructions

Stack Parameter Units:	English	
Stack Height =	150	ft
Minimum Distance from Stack to Property Line =	425	ft
Exhaust Stack Flow Rate =	1,464,925	acfm
Hazard Limiting Values (HLV) Averaging Times =	30-Minute	
	No	

Notes:
Maximum gas firing rate and duct firing rate at -10 F. Stack height is an estimate pending completion of ambient air quality impact analysis.

Additional HAPs | Clear All | Print | Footnotes

Hazardous Air Pollutant(s)	CAS No.	HLV (μg/m³)	Proposed Allowable Emission Rate (lb/hr)	MASC (μg/m³)	ASC (μg/m³)	Complies?
Acetaldehyde	75-07-0	18000	1.19E-01	4.50E+05	2.17E+01	yes
Acrolein	107-02-8	25	1.90E-02	6.25E+02	3.47E+00	yes
Benzene	71-43-2	750	3.76E-02	1.88E+04	6.85E+00	yes
Butadiene (1,3-butadiene)	106-46-7	45000	1.10E-03	1.13E+06	2.01E-01	yes
Ethyl benzene	100-41-4	43500	9.52E-02	1.09E+06	1.73E+01	yes
Formaldehyde	50-00-0	60	7.20E-01	1.50E+03	1.31E+02	yes
Hexane, other isomers	110-54-3	180000	1.66E+00	4.50E+06	3.02E+02	yes
Toluene	108-88-3	37500	3.90E-01	9.38E+05	7.10E+01	yes
o-Xylene	1330-20-7	43400	1.90E-01	1.09E+06	3.47E+01	yes
Naphthalene	91-20-3	5000	4.43E-04	1.25E+05	8.07E-02	yes
Polynuclear aromatic hydrocarbons (PAH) *	50-32-8	0.5	7.19E-04	1.25E+01	1.31E-01	yes
Sulfuric acid	7664-93-9	100	2.00E+00	2.50E+03	3.64E+02	yes
Arsenic & compounds (as As)	7440-38-2	0.25	1.84E-04	6.25E+00	3.35E-02	yes
Beryllium	7440-41-7	0.05	1.10E-05	1.25E+00	2.01E-03	yes
Cadmium	7440-43-9	2	1.01E-03	5.00E+01	1.84E-01	yes
Chromium, metal	7440-47-3	12.5	1.29E-03	3.13E+02	2.35E-01	yes
Cobalt metal, dust & fume (as Co)	7440-48-4	10	7.54E-05	2.50E+02	1.37E-02	yes
Lead, inorg., fumes & dusts (as Pb)	7439-92-1	15	4.51E-04	3.75E+02	8.21E-02	yes
Manganese fume (as Mn)	7439-96-5	100	3.40E-04	2.50E+03	6.20E-02	yes

Company Name:	NTE Connecticut, LLC
Source Description:	Combined Cycle Combustion Turbine Facility - Gas Firing

Hazardous Air Pollutant(s)	CAS No.	HLV ($\mu g/m^3$)	Proposed Allowable Emission Rate (lb/hr)	MASC ($\mu g/m^3$)	ASC ($\mu g/m^3$)	Complies?
Mercury vapor	--	5	2.30E-04	1.25E+02	4.19E-02	yes
Nickel (metal)	7440-02-0	25	1.93E-03	6.25E+02	3.52E-01	yes
Ammonia	7664-41-7	1800	1.09E+01	4.50E+04	1.99E+03	yes

CT DEEP Maximum Allowable Stack Concentration (MASC) Calculator

Company Name:	NTE Connecticut, LLC
Source Description:	Combined Cycle Combustion Turbine Facility - Oil Firing

Instructions

Stack Parameter Units:	English	
Stack Height =	150	ft
Minimum Distance from Stack to Property Line =	425	ft
Exhaust Stack Flow Rate =	1,577,200	acfm
Hazard Limiting Values (HLV) Averaging Times =	8-Hour	
Adjustments to the MASC for Time Periods < 8 hrs =	No	

Notes:
Maximum oil firing rate at -10 F. Stack height is an estimate pending completion of ambient air quality impact analysis.

Additional HAPs | Clear All | Print | Footnotes

Hazardous Air Pollutant(s)	CAS No.	HLV (μg/m^3)	Proposed Allowable Emission Rate (lb/hr)	MASC (μg/m^3)	ASC (μg/m^3)	Complies?
Ammonia	7664-41-7	360	2.03E+01	8.40E+03	3.44E+03	yes
Benzene	71-43-2	150	1.55E-01	3.50E+03	2.63E+01	yes
Formaldehyde	50-00-0	12	6.53E-01	2.80E+02	1.10E+02	yes
Sulfuric acid	7664-93-9	20	1.50E+00	4.67E+02	2.54E+02	yes
Naphthalene	91-20-3	1000	9.89E-03	2.33E+04	1.67E+00	yes
Polynuclear aromatic hydrocarbons (PAH) *	50-32-8	0.1	1.13E-02	2.33E+00	1.91E+00	yes
Arsenic & compounds (as As)	7440-38-2	0.05	1.30E-04	1.17E+00	2.20E-02	yes
Cadmium	7440-43-9	0.4	1.44E-05	9.33E+00	2.44E-03	yes
Chromium, metal	7440-47-3	2.5	3.50E-02	5.83E+01	5.92E+00	yes
Lead, inorg., fumes & dusts (as Pb)	7439-92-1	3	2.97E-03	7.00E+01	5.03E-01	yes
Manganese fume (as Mn)	7439-96-5	20	5.10E-04	4.67E+02	8.62E-02	yes
Mercury vapor	--	1	2.89E-05	2.33E+01	4.89E-03	yes
Nickel (metal)	7440-02-0	5	4.17E-03	1.17E+02	7.06E-01	yes
Selenium compounds (as Se)	--	4	7.22E-04	9.33E+01	1.22E-01	yes

CT DEEP Maximum Allowable Stack Concentration (MASC) Calculator

Company Name:	NTE Connecticut, LLC
Source Description:	Combined Cycle Combustion Turbine Facility - Oil Firing

Instructions

Stack Parameter Units:	English	
Stack Height =	150	ft
Minimum Distance from Stack to Property Line =	425	ft
Exhaust Stack Flow Rate =	1,577,200	acfm
Hazard Limiting Values (HLV) Averaging Times =	30-Minute	
	No	

Notes:
Maximum oil firing rate at -10 F. Stack height is an estimate pending completion of ambient air quality impact analysis.

Additional HAPs | Clear All | Print | Footnotes

Hazardous Air Pollutant(s)	CAS No.	HLV ($\mu g/m^3$)	Proposed Allowable Emission Rate (lb/hr)	MASC ($\mu g/m^3$)	ASC ($\mu g/m^3$)	Complies?
Ammonia	7664-41-7	1800	2.03E+01	4.20E+04	3.44E+03	yes
Benzene	71-43-2	750	1.55E-01	1.75E+04	2.63E+01	yes
Formaldehyde	50-00-0	60	6.53E-01	1.40E+03	1.10E+02	yes
Sulfuric acid	7664-93-9	100	1.50E+00	2.33E+03	2.54E+02	yes
Naphthalene	91-20-3	5000	9.89E-03	1.17E+05	1.67E+00	yes
Polynuclear aromatic hydrocarbons (PAH) *	50-32-8	0.5	1.13E-02	1.17E+01	1.91E+00	yes
Arsenic & compounds (as As)	7440-38-2	0.25	1.30E-04	5.83E+00	2.20E-02	yes
Cadmium	7440-43-9	2	1.44E-05	4.67E+01	2.44E-03	yes
Chromium, metal	7440-47-3	12.5	3.50E-02	2.92E+02	5.92E+00	yes
Lead, inorg., fumes & dusts (as Pb)	7439-92-1	15	2.97E-03	3.50E+02	5.03E-01	yes
Manganese fume (as Mn)	7439-96-5	100	5.10E-04	2.33E+03	8.62E-02	yes
Mercury vapor	--	5	2.89E-05	1.17E+02	4.89E-03	yes
Nickel (metal)	7440-02-0	25	4.17E-03	5.83E+02	7.06E-01	yes
Selenium compounds (as Se)	--	20	7.22E-04	4.67E+02	1.22E-01	yes

CT DEEP Maximum Allowable Stack Concentration (MASC) Calculator

Company Name:	NTE Connecticut, LLC
Source Description:	Auxiliary Boiler

Instructions

Stack Parameter Units:	English	
Stack Height =	90	ft
Minimum Distance from Stack to Property Line =	430	ft
Exhaust Stack Flow Rate =	20,494	acfm
Hazard Limiting Values (HLV) Averaging Times =	8-Hour	
Adjustments to the MASC for Time Periods < 8 hrs =	No	

Notes:
Maximum gas firing rate

Additional HAPs | Clear All | Print | Footnotes

Hazardous Air Pollutant(s)	CAS No.	HLV ($\mu g/m^3$)	Proposed Allowable Emission Rate (lb/hr)	MASC ($\mu g/m^3$)	ASC ($\mu g/m^3$)	Complies?
Mercury vapor	107-02-8	5	2.10E-05	1.27E+03	2.73E-01	yes
Benzene	71-43-2	150	1.76E-04	3.81E+04	2.30E+00	yes
o-Dichlorobenzene	106-46-7	9000	1.01E-04	2.29E+06	1.31E+00	yes
Hexan (n-hexane)	110-54-3	3600	1.51E-01	9.14E+05	1.97E+03	yes
Formaldehyde	50-00-0	12	6.22E-03	3.05E+03	8.09E+01	yes
Toluene	108-88-3	7500	2.77E-04	1.91E+06	3.61E+00	yes
Nickel (metal)	7440-02-0	5	1.76E-04	1.27E+03	2.30E+00	yes
Naphthalene	91-20-3	1000	5.21E-05	2.54E+05	6.78E-01	yes
Polynuclear aromatic hydrocarbons (PAH) *	50-32-8	0.1	5.71E-05	2.54E+01	7.44E-01	yes
Sulfuric acid	7664-93-9	20	9.65E-03	5.08E+03	1.26E+02	yes
Arsenic & compounds (as As)	7440-38-2	0.05	1.68E-05	1.27E+01	2.19E-01	yes
Beryllium	7440-41-7	0.01	1.01E-06	2.54E+00	1.31E-02	yes
Cadmium	7440-43-9	0.4	9.24E-05	1.02E+02	1.20E+00	yes
Chromium, metal	7440-47-3	2.5	1.18E-04	6.35E+02	1.53E+00	yes
Cobalt metal, dust & fume (as Co)	7440-48-4	2	6.89E-06	5.08E+02	8.97E-02	yes
Lead, inorg., fumes & dusts (as Pb)	7439-92-1	3	4.12E-05	7.62E+02	5.36E-01	yes
Manganese fume (as Mn)	7439-96-5	20	3.11E-05	5.08E+03	4.05E-01	yes

Company Name:	NTE Connecticut, LLC
Source Description:	Auxiliary Boiler

Hazardous Air Pollutant(s)	CAS No.	HLV ($\mu g/m^3$)	Proposed Allowable Emission Rate (lb/hr)	MASC ($\mu g/m^3$)	ASC ($\mu g/m^3$)	Complies?
Mercury vapor	--	1	2.10E-05	2.54E+02	2.73E-01	yes
Nickel (metal)	7440-02-0	5	1.76E-04	1.27E+03	2.30E+00	yes
			1.09E+01		1.42E+05	

CT DEEP Maximum Allowable Stack Concentration (MASC) Calculator

Company Name:	NTE Connecticut, LLC
Source Description:	Auxiliary Boiler

Instructions

Stack Parameter Units: English
Stack Height = 90 ft
Minimum Distance from Stack to Property Line = 430 ft
Exhaust Stack Flow Rate = 20,494 acfm
Hazard Limiting Values (HLV) Averaging Times = 30-Minute
No

Notes:
Maximum gas firing rate

Additional HAPs | Clear All | Print | Footnotes

Hazardous Air Pollutant(s)	CAS No.	HLV (μg/m^3)	Proposed Allowable Emission Rate (lb/hr)	MASC (μg/m^3)	ASC (μg/m^3)	Complies?
Mercury vapor	107-02-8	25	2.10E-05	6.35E+03	2.73E-01	yes
Benzene	71-43-2	750	1.76E-04	1.91E+05	2.30E+00	yes
o-Dichlorobenzene	106-46-7	45000	1.01E-04	1.14E+07	1.31E+00	yes
Hexan (n-hexane)	110-54-3	18000	1.51E-01	4.57E+06	1.97E+03	yes
Formaldehyde	50-00-0	60	6.22E-03	1.52E+04	8.09E+01	yes
Toluene	108-88-3	37500	2.77E-04	9.53E+06	3.61E+00	yes
Nickel (metal)	7440-02-0	25	1.76E-04	6.35E+03	2.30E+00	yes
Naphthalene	91-20-3	5000	5.21E-05	1.27E+06	6.78E-01	yes
Polynuclear aromatic hydrocarbons (PAH) *	50-32-8	0.5	5.71E-05	1.27E+02	7.44E-01	yes
Sulfuric acid	7664-93-9	100	9.65E-03	2.54E+04	1.26E+02	yes
Arsenic & compounds (as As)	7440-38-2	0.25	1.68E-05	6.35E+01	2.19E-01	yes
Beryllium	7440-41-7	0.05	1.01E-06	1.27E+01	1.31E-02	yes
Cadmium	7440-43-9	2	9.24E-05	5.08E+02	1.20E+00	yes
Chromium, metal	7440-47-3	12.5	1.18E-04	3.18E+03	1.53E+00	yes
Cobalt metal, dust & fume (as Co)	7440-48-4	10	6.89E-06	2.54E+03	8.97E-02	yes
Lead, inorg., fumes & dusts (as Pb)	7439-92-1	15	4.12E-05	3.81E+03	5.36E-01	yes
Manganese fume (as Mn)	7439-96-5	100	3.11E-05	2.54E+04	4.05E-01	yes

Company Name:	NTE Connecticut, LLC
Source Description:	Auxiliary Boiler

Hazardous Air Pollutant(s)	CAS No.	HLV ($\mu g/m^3$)	Proposed Allowable Emission Rate (lb/hr)	MASC ($\mu g/m^3$)	ASC ($\mu g/m^3$)	Complies?
Mercury vapor	--	5	2.10E-05	1.27E+03	2.73E-01	yes
Nickel (metal)	7440-02-0	25	1.76E-04	6.35E+03	2.30E+00	yes
			1.09E+01		1.42E+05	

CT DEEP Maximum Allowable Stack Concentration (MASC) Calculator

Company Name:	NTE Connecticut, LLC
Source Description:	Emergency Fire Pump Engine

Instructions

Stack Parameter Units:	English	
Stack Height =	20	ft
Minimum Distance from Stack to Property Line =	130	ft
Exhaust Stack Flow Rate =	1,064	acfm
Hazard Limiting Values (HLV) Averaging Times =	8-Hour	
Adjustments to the MASC for Time Periods < 8 hrs =	No	

Notes:
Maximum firing rate

Additional HAPs | Clear All | Print | Footnotes

Hazardous Air Pollutant(s)	CAS No.	HLV (μg/m^3)	Proposed Allowable Emission Rate (lb/hr)	MASC (μg/m^3)	ASC (μg/m^3)	Complies?
Acetaldehyde	75-07-0	3600	1.56E-03	2.03E+06	3.90E+02	yes
Acrolein	107-02-8	5	1.88E-04	2.82E+03	4.71E+01	yes
Benzene	71-43-2	150	1.89E-03	8.45E+04	4.75E+02	yes
Butadiene (1,3-butadiene)	106-99-0	22000	7.93E-05	1.24E+07	1.99E+01	yes
Formaldehyde	50-00-0	12	2.39E-03	6.76E+03	6.01E+02	yes
Propylene oxide	75-56-9	1000	7.22E-03	5.63E+05	1.81E+03	yes
Toluene	108-88-3	7500	8.30E-04	4.22E+06	2.08E+02	yes
o-Xylene	1330-20-7	8680	2.44E-03	4.89E+06	6.12E+02	yes
Naphthalene	91-20-3	1000	1.72E-04	5.63E+05	4.32E+01	yes
Arsenic & compounds (as As)	7440-38-2	0.05	9.38E-08	2.82E+01	2.35E-02	yes
Cadmium	7440-43-9	0.4	1.04E-08	2.25E+02	2.61E-03	yes
Chromium, metal	7440-47-3	2.5	2.52E-05	1.41E+03	6.31E+00	yes
Lead, inorg., fumes & dusts (as Pb)	7439-92-1	3	4.55E-06	1.69E+03	1.14E+00	yes
Manganese dust & compounds (as Mn)	7489-96-5	--	5.72E-07	--	1.44E-01	--
Mercury vapor	--	1	2.09E-08	5.63E+02	5.24E-03	yes
Nickel (metal)	7440-02-0	5	3.00E-06	2.82E+03	7.53E-01	yes
Selenium compounds (as Se)	--	4	5.20E-07	2.25E+03	1.30E-01	yes

CT DEEP Maximum Allowable Stack Concentration (MASC) Calculator

Company Name:	NTE Connecticut, LLC
Source Description:	Emergency Fire Pump Engine

Instructions

Stack Parameter Units:	English	
Stack Height =	20	ft
Minimum Distance from Stack to Property Line =	130	ft
Exhaust Stack Flow Rate =	1,064	acfm
Hazard Limiting Values (HLV) Averaging Times =	30-Minute	
	No	

Notes:
Maximum firing rate

Additional HAPs | Clear All

Print | Footnotes

Hazardous Air Pollutant(s)	CAS No.	HLV (μg/m^3)	Proposed Allowable Emission Rate (lb/hr)	MASC (μg/m^3)	ASC (μg/m^3)	Complies?
Acetaldehyde	75-07-0	18000	1.56E-03	1.01E+07	3.90E+02	yes
Acrolein	107-02-8	25	1.88E-04	1.41E+04	4.71E+01	yes
Benzene	71-43-2	750	1.89E-03	4.22E+05	4.75E+02	yes
Butadiene (1,3-butadiene)	106-99-0	110000	7.93E-05	6.19E+07	1.99E+01	yes
Formaldehyde	50-00-0	60	2.39E-03	3.38E+04	6.01E+02	yes
Propylene oxide	75-56-9	5000	7.22E-03	2.82E+06	1.81E+03	yes
Toluene	108-88-3	37500	8.30E-04	2.11E+07	2.08E+02	yes
o-Xylene	1330-20-7	43400	2.44E-03	2.44E+07	6.12E+02	yes
Naphthalene	91-20-3	5000	1.72E-04	2.82E+06	4.32E+01	yes
Arsenic & compounds (as As)	7440-38-2	0.25	9.38E-08	1.41E+02	2.35E-02	yes
Cadmium	7440-43-9	2	1.04E-08	1.13E+03	2.61E-03	yes
Chromium, metal	7440-47-3	12.5	2.52E-05	7.04E+03	6.31E+00	yes
Lead, inorg., fumes & dusts (as Pb)	7439-92-1	15	4.55E-06	8.45E+03	1.14E+00	yes
Manganese dust & compounds (as Mn)	7489-96-5	--	5.72E-07	--	1.44E-01	--
Mercury vapor	--	5	2.09E-08	2.82E+03	5.24E-03	yes
Nickel (metal)	7440-02-0	25	3.00E-06	1.41E+04	7.53E-01	yes
Selenium compounds (as Se)	--	20	5.20E-07	1.13E+04	1.30E-01	yes

CT DEEP Maximum Allowable Stack Concentration (MASC) Calculator

Company Name:	NTE Connecticut, LLC
Source Description:	Emergency Generator Engine

Instructions

Stack Parameter Units:	English	
Stack Height =	20	ft
Minimum Distance from Stack to Property Line =	440	ft
Exhaust Stack Flow Rate =	6,626	acfm
Hazard Limiting Values (HLV) Averaging Times =	8-Hour	
Adjustments to the MASC for Time Periods < 8 hrs =	No	

Notes:
Maximum firing rate

Additional HAPs | Clear All | Print | Footnotes

Hazardous Air Pollutant(s)	CAS No.	HLV ($\mu g/m^3$)	Proposed Allowable Emission Rate (lb/hr)	MASC ($\mu g/m^3$)	ASC ($\mu g/m^3$)	Complies?
Acetaldehyde	75-07-0	3600	3.18E-04	2.18E+06	1.28E+01	yes
Acrolein	107-02-8	5	9.96E-05	3.03E+03	4.01E+00	yes
Benzene	71-43-2	150	9.80E-03	9.08E+04	3.95E+02	yes
Formaldehyde	50-00-0	12	9.97E-04	7.26E+03	4.02E+01	yes
Propylene oxide	75-56-9	1000	4.86E-02	6.05E+05	1.96E+03	yes
Toluene	108-88-3	7500	3.55E-03	4.54E+06	1.43E+02	yes
o-Xylene	1330-20-7	8680	2.44E-03	5.25E+06	9.82E+01	yes
Naphthalene	91-20-3	1000	1.64E-03	6.05E+05	6.62E+01	yes
Arsenic & compounds (as As)	7440-38-2	0.05	5.84E-07	3.03E+01	2.35E-02	yes
Cadmium	7440-43-9	0.4	6.48E-08	2.42E+02	2.61E-03	yes
Chromium, metal	7440-47-3	2.5	1.57E-04	1.51E+03	6.31E+00	yes
Lead, inorg., fumes & dusts (as Pb)	7439-92-1	3	9.72E-06	1.82E+03	3.91E-01	yes
Manganese dust & compounds (as Mn)	7489-96-5	--	3.56E-06	--	1.44E-01	--
Mercury vapor	--	1	1.30E-07	6.05E+02	5.24E-03	yes
Nickel (metal)	7440-02-0	5	1.87E-05	3.03E+03	7.53E-01	yes
Selenium compounds (as Se)	--	4	3.23E-06	2.42E+03	1.30E-01	yes

CT DEEP Maximum Allowable Stack Concentration (MASC) Calculator

Company Name:	NTE Connecticut, LLC
Source Description:	Emergency Generator Engine

Instructions

Stack Parameter Units:	English	
Stack Height =	20	ft
Minimum Distance from Stack to Property Line =	440	ft
Exhaust Stack Flow Rate =	6,626	acfm
Hazard Limiting Values (HLV) Averaging Times =	30-Minute	
	No	

Notes:
Maximum firing rate

Additional HAPs | Clear All

Print | Footnotes

Hazardous Air Pollutant(s)	CAS No.	HLV (μg/m^3)	Proposed Allowable Emission Rate (lb/hr)	MASC (μg/m^3)	ASC (μg/m^3)	Complies?
Acetaldehyde	75-07-0	18000	3.18E-04	1.09E+07	1.28E+01	yes
Acrolein	107-02-8	25	9.96E-05	1.51E+04	4.01E+00	yes
Benzene	71-43-2	750	9.80E-03	4.54E+05	3.95E+02	yes
Formaldehyde	50-00-0	60	9.97E-04	3.63E+04	4.02E+01	yes
Propylene oxide	75-56-9	5000	4.86E-02	3.03E+06	1.96E+03	yes
Toluene	108-88-3	37500	3.55E-03	2.27E+07	1.43E+02	yes
o-Xylene	1330-20-7	43400	2.44E-03	2.63E+07	9.82E+01	yes
Naphthalene	91-20-3	5000	1.64E-03	3.03E+06	6.62E+01	yes
Arsenic & compounds (as As)	7440-38-2	0.25	5.84E-07	1.51E+02	2.35E-02	yes
Cadmium	7440-43-9	2	6.48E-08	1.21E+03	2.61E-03	yes
Chromium, metal	7440-47-3	12.5	1.57E-04	7.56E+03	6.31E+00	yes
Lead, inorg., fumes & dusts (as Pb)	7439-92-1	15	9.72E-06	9.08E+03	3.91E-01	yes
Manganese dust & compounds (as Mn)	7489-96-5	--	3.56E-06	--	1.44E-01	--
Mercury vapor	--	5	1.30E-07	3.03E+03	5.24E-03	yes
Nickel (metal)	7440-02-0	25	1.87E-05	1.51E+04	7.53E-01	yes
Selenium compounds (as Se)	--	20	3.23E-06	1.21E+04	1.30E-01	yes

CT DEEP Maximum Allowable Stack Concentration (MASC) Calculator

Company Name:	NTE Connecticut, LLC
Source Description:	Natural Gas Heater

Instructions

Stack Parameter Units:	English	
Stack Height =	10	ft
Minimum Distance from Stack to Property Line =	345	ft
Exhaust Stack Flow Rate =	2,735	acfm
Hazard Limiting Values (HLV) Averaging Times =	8-Hour	
Adjustments to the MASC for Time Periods < 8 hrs =	No	

Notes:
Maximum gas firing rate

Additional HAPs | Clear All | Print | Footnotes

Hazardous Air Pollutant(s)	CAS No.	HLV (μg/m^3)	Proposed Allowable Emission Rate (lb/hr)	MASC (μg/m^3)	ASC (μg/m^3)	Complies?
Mercury vapor	107-02-8	5	3.00E-06	4.98E+03	2.93E-01	yes
Benzene	71-43-2	150	2.52E-05	1.49E+05	2.46E+00	yes
o-Dichlorobenzene	106-46-7	9000	1.44E-05	8.96E+06	1.41E+00	yes
Hexan (n-hexane)	110-54-3	3600	2.16E-02	3.59E+06	2.11E+03	yes
Formaldehyde	50-00-0	12	8.88E-04	1.20E+04	8.67E+01	yes
Toluene	108-88-3	7500	3.96E-05	7.47E+06	3.86E+00	yes
Nickel (metal)	7440-02-0	5	2.52E-05	4.98E+03	2.46E+00	yes
Naphthalene	91-20-3	1000	7.44E-06	9.96E+05	7.26E-01	yes
Polynuclear aromatic hydrocarbons (PAH) *	50-32-8	0.1	8.16E-06	9.96E+01	7.96E-01	yes
Sulfuric acid	7664-93-9	20	1.38E-03	1.99E+04	1.34E+02	yes
Arsenic & compounds (as As)	7440-38-2	0.05	2.40E-06	4.98E+01	2.34E-01	yes
Beryllium	7440-41-7	0.01	1.44E-07	9.96E+00	1.41E-02	yes
Cadmium	7440-43-9	0.4	1.32E-05	3.98E+02	1.29E+00	yes
Chromium, metal	7440-47-3	2.5	1.68E-05	2.49E+03	1.64E+00	yes
Cobalt metal, dust & fume (as Co)	7440-48-4	2	9.84E-07	1.99E+03	9.60E-02	yes
Lead, inorg., fumes & dusts (as Pb)	7439-92-1	3	5.88E-06	2.99E+03	5.74E-01	yes
Manganese fume (as Mn)	7439-96-5	20	4.44E-06	1.99E+04	4.33E-01	yes

Company Name:	NTE Connecticut, LLC
Source Description:	Natural Gas Heater

Hazardous Air Pollutant(s)	CAS No.	HLV ($\mu g/m^3$)	Proposed Allowable Emission Rate (lb/hr)	MASC ($\mu g/m^3$)	ASC ($\mu g/m^3$)	Complies?
Mercury vapor	--	1	2.10E-05	9.96E+02	2.05E+00	yes
Nickel (metal)	7440-02-0	5	1.76E-04	4.98E+03	1.72E+01	yes
			1.09E+01		1.06E+06	

CT DEEP Maximum Allowable Stack Concentration (MASC) Calculator

Company Name:	NTE Connecticut, LLC
Source Description:	Natural Gas Heater

Instructions

Stack Parameter Units:	English	
Stack Height =	10	ft
Minimum Distance from Stack to Property Line =	345	ft
Exhaust Stack Flow Rate =	2,735	acfm
Hazard Limiting Values (HLV) Averaging Times =	30-Minute	
	No	

Notes:
Maximum gas firing rate

Additional HAPs | Clear All | Print | Footnotes

Hazardous Air Pollutant(s)	CAS No.	HLV (μg/m^3)	Proposed Allowable Emission Rate (lb/hr)	MASC (μg/m^3)	ASC (μg/m^3)	Complies?
Mercury vapor	107-02-8	25	3.00E-06	2.49E+04	2.93E-01	yes
Benzene	71-43-2	750	2.52E-05	7.47E+05	2.46E+00	yes
o-Dichlorobenzene	106-46-7	45000	1.44E-05	4.48E+07	1.41E+00	yes
Hexan (n-hexane)	110-54-3	18000	2.16E-02	1.79E+07	2.11E+03	yes
Formaldehyde	50-00-0	60	8.88E-04	5.98E+04	8.67E+01	yes
Toluene	108-88-3	37500	3.96E-05	3.73E+07	3.86E+00	yes
Nickel (metal)	7440-02-0	25	2.52E-05	2.49E+04	2.46E+00	yes
Naphthalene	91-20-3	5000	7.44E-06	4.98E+06	7.26E-01	yes
Polynuclear aromatic hydrocarbons (PAH) *	50-32-8	0.5	8.16E-06	4.98E+02	7.96E-01	yes
Sulfuric acid	7664-93-9	100	1.38E-03	9.96E+04	1.34E+02	yes
Arsenic & compounds (as As)	7440-38-2	0.25	2.40E-06	2.49E+02	2.34E-01	yes
Beryllium	7440-41-7	0.05	1.44E-07	4.98E+01	1.41E-02	yes
Cadmium	7440-43-9	2	1.32E-05	1.99E+03	1.29E+00	yes
Chromium, metal	7440-47-3	12.5	1.68E-05	1.24E+04	1.64E+00	yes
Cobalt metal, dust & fume (as Co)	7440-48-4	10	9.84E-07	9.96E+03	9.60E-02	yes
Lead, inorg., fumes & dusts (as Pb)	7439-92-1	15	5.88E-06	1.49E+04	5.74E-01	yes
Manganese fume (as Mn)	7439-96-5	100	4.44E-06	9.96E+04	4.33E-01	yes

Company Name:	NTE Connecticut, LLC
Source Description:	Natural Gas Heater

Hazardous Air Pollutant(s)	CAS No.	HLV (μg/m^3)	Proposed Allowable Emission Rate (lb/hr)	MASC (μg/m^3)	ASC (μg/m^3)	Complies?
Mercury vapor	--	5	2.10E-05	4.98E+03	2.05E+00	yes
Nickel (metal)	7440-02-0	25	1.76E-04	2.49E+04	1.72E+01	yes
			1.09E+01		1.06E+06	

NTE Connecticut, LLC - Killingly Energy Center
CO BACT Economic Analysis For Oxidation Catalyst - Auxiliary Boiler

Heat Input (MMBtu/hr)	84.0	Total operating hours	4,600
CO Emissions After Control (tpy)	1.43	Reduction from 50 ppm to 10 ppm and proposed 7.14 tpy	

CAPITAL COSTS

Equipment Cost (EC)			
Oxidation Catalyst System		$90,000	*Estimate*
Instrumentation (10% Of Equipment Costs)		$9,000	*OAQPS, Sect. 1, Chap. 2, Table 2.4*
Sales Taxes and Freight (8% Of Equipment Costs)		$7,200	*OAQPS, Sect. 1, Chap. 2, Table 2.4*
Purchased Equipment Cost (PEC)		**$106,200**	**A**
Direct Installation Costs			
Foundation	(PEC*0.08)	$8,496	*OAQPS, Sect. 3.2, Chap 2, Table 2.8*
Erection and Handling	(PEC*0.14)	$14,868	*OAQPS, Sect. 3.2, Chap 2, Table 2.8*
Electrical	(PEC*0.04)	$4,248	*OAQPS, Sect. 3.2, Chap 2, Table 2.8*
Piping	(PEC*0.02)	$2,124	*OAQPS, Sect. 3.2, Chap 2, Table 2.8*
Insulation	(PEC*0.01)	$1,062	*OAQPS, Sect. 3.2, Chap 2, Table 2.8*
Painting	(PEC*0.01)	$1,062	*OAQPS, Sect. 3.2, Chap 2, Table 2.8*
Inlet/Outlet Transitions and Vanes	Estimate	$10,000	
Total Direct Installation Cost		**$41,860**	**B**
Indirect Installation Costs			
Engineering	(TEC*0.10)	$10,620	*OAQPS, Sect. 3.2, Chap 2, Table 2.8*
Construction/Field Expenses	(TEC*0.05)	$5,310	*OAQPS, Sect. 3.2, Chap 2, Table 2.8*
Contractor Fees	(TEC*0.10)	$10,620	*OAQPS, Sect. 3.2, Chap 2, Table 2.8*
Start up & Performance Test	(TEC*0.03)	$3,186	*OAQPS, Sect. 3.2, Chap 2, Table 2.8*
Contingencies	(TEC*0.03)	$3,186	*OAQPS, Sect. 3.2, Chap 2, Table 2.8*
Total Indirect Installation Cost		**$32,922**	**C**
Total Capital Cost (TCC)		**$180,982**	**A + B + C**

ANNUAL COSTS

A. Direct annual costs, $/yr			
Operating Labor		$0	*Assumed zero*
Supervisory Labor (*15% of Operating Labor*)		$0	*Assumed zero*
Maintenance Labor & Materials		$0	*Assumed zero*
Catalyst Replacement (3 yrs @ 7% interest)		$19,427	*Catalyst = 75% of TEC*
Catalyst Disposal (*18 ft^3 x \$15/ft^3 x 0.2439)*)		$66	*Estimate*
Electricity		$0	*Assumed zero*
Performance Loss		$0	*Assumed zero*
Production Loss		$0	*Assumed zero*
	Total Direct Annual Cost	**$19,492**	**D**
B. Indirect annual costs, $/yr			
Overhead (60% of Operating, Supervisory, & Maintenance Labor)		$0	*Assumed zero*
Property Taxes, Insurance and Administration (*0.04 x TCC*)		$7,239	*OAQPS, Sect. 1, Chap. 2, Para. 2.5.5.8*
Capital Recovery(1) *[0.1098 x [total capital invest. - (catalyst replacement /0.2439)]*		$11,125	*15 years at 7% interest*
	Total Indirect Annual Cost	**$18,365**	**E**
	Total Annual Cost	$37,857	**D + E**
	CO (tons controlled/yr)	5.71	
	CO Cost To Control ($/ton controlled)	**$6,630**	

(1) *The capital recovery factor for the non-catalyst components is 0.1098 based on a 15-year equipment life and 7 percent interest rate. The annualized catalyst replacement cost is based upon a 5 year life at 7% interest resulting in a capital recovery factor of 0.2439.*

Sources: OAQPS Control Cost Manual (USEPA, 2002)

APPENDIX B – VENDOR SUPPLIED EMISSIONS DATA

2015 EPA Tier 2 Exhaust Emission Compliance Statement
1250DQGAE
Stationary Emergency
60 Hz Diesel Generator Set

Compliance Information:

The engine used in this generator set complies with Tier 2 emissions limit of U.S. EPA New Source Performance Standards for stationary emergency engines under the provisions of 40 CFR 60 Subpart IIII when tested per ISO8178 D2.

Engine Manufacturer:	Cummins Inc
EPA Certificate Number:	FCEXL050.AAD-017
Effective Date:	09/22/2014
Date Issued:	09/22/2014
EPA Engine Family (Cummins Emissions Family):	FCEXL050.AAD (D283)

Engine Information:

Model:	QSK50-G5 NR2	Bore:	6.25 in. (159 mm)
Engine Nameplate HP:	2220	Stroke:	6.25 in. (159 mm)
Type:	4 Cycle, 60°V, 16 Cylinder Diesel	Displacement:	3067cu. in. (50.2 liters)
Aspiration:	Turbocharged and CAC	Compression Ratio:	15.0:1
Emission Control Device:	Electronic Control		

Diesel Fuel Emission Limits

D2 Cycle Exhaust Emissions	Grams per BHP-hr			Grams per kWm-hr		
	NOx + NMHC	CO	PM	NOx + NMHC	CO	PM
Test Results - Diesel Fuel (300-4000 ppm Sulfur)	4.6	0.9	0.06	6.1	1.2	0.08
EPA Emissions Limit	4.8	2.6	0.15	6.4	3.5	0.20
Test Results - CARB Diesel Fuel (<15 ppm Sulfur)	4.2	0.9	0.05	5.6	1.2	0.07
CARB Emissions Limit	4.8	2.6	0.15	6.4	3.5	0.20

The CARB emission values are based on CARB approved calculations for converting EPA (500 ppm) fuel to CARB (15 ppm) fuel.
Test Methods: EPA/CARB Nonroad emissions recorded per 40CFR89 (ref. ISO8178-1) and weighted at load points prescribed in Subpart E, Appendix A for Constant Speed Engines (ref. ISO8178-4, D2)

Diesel Fuel Specifications: Cetane Number: 40-48. Reference: ASTM D975 No. 2-D.
Reference Conditions: Air Inlet Temperature: 25°C (77°F), Fuel Inlet Temperature: 40°C (104°F). Barometric Pressure: 100 kPa (29.53 in Hg), Humidity: 10.7 g/kg (75 grains H2O/lb) of dry air; required for NOx correction, Restrictions: Intake Restriction set to a maximum allowable limit for clean filter; Exhaust Back Pressure set to a maximum allowable limit.

Tests conducted using alternate test methods, instrumentation, fuel or reference conditions can yield different results.
Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may result in elevated emission levels.

CLARKE
Fire Protection Products, Inc.

JU6H-UFADX8
INSTALLATION & OPERATION DATA (I&O Data)
USA Produced

Basic Engine Description

Engine Manufacturer	John Deere Co.
Ignition Type	Compression (Diesel)
Number of Cylinders	6
Bore and Stroke - in (mm)	4.19 (106) X 5 (127)
Displacement - in³ (L)	415 (6.8)
Compression Ratio	17.0:1
Valves per cylinder	
Intake	2
Exhaust	2
Combustion System	Direct Injection
Engine Type	In-Line, 4 Stroke Cycle
Fuel Management Control	Electronic, High Pressure Common Rail
Firing Order (CW Rotation)	1-5-3-6-2-4
Aspiration	Turbocharged
Charge Air Cooling Type	Raw Water
Rotation, viewed from front of engine, Clockwise (CW)	Standard
Engine Crankcase Vent System	Open
Installation Drawing	D628
Weight - lb (kg)	1747 (792)

Power Rating	**1760**
Nameplate Power - HP (kW)	305 (227.5)

Cooling System - [C051386]	**1760**
Engine Coolant Heat - Btu/sec (kW)	143 (151)
Engine Radiated Heat - Btu/sec (kW)	21.9 (23.1)
Heat Exchanger Minimum Flow	
60°F (15°C) Raw H_20 - gal/min (L/min)	28 (106)
100°F (37°C) Raw H_20 - gal/min (L/min)	38 (144)
Heat Exchanger Maximum Cooling Raw Water	
Inlet Pressure - psi (bar)	60 (4.1)
Flow - gal/min (L/min)	40 (151)
Typical Engine H_20 Operating Temp - °F (°C)[1]	180 (82.2) - 195 (90.6)
Thermostat	
Start to Open - °F (°C)	180 (82.2)
Fully Opened - °F (°C)	203 (95)
Engine Coolant Capacity - qt (L)	22.2 (21)
Coolant Pressure Cap - lb/in² (kPa)	15 (103)
Maximum Engine Coolant Temperature - °F (°C)	230 (110)
Minimum Engine Coolant Temperature - °F (°C)	160 (71.1)
High Coolant Temp Alarm Switch - °F (°C)[2]	235 (113) - 241 (116)

Electric System - DC	**Standard**		**Optional**	
System Voltage (Nominal)	12		24	
Battery Capacity for Ambients Above 32°F (0°C)				
Voltage (Nominal)	12	[C07633]	24	[C07633]
Qty. Per Battery Bank	1		2	
SAE size per J537	8D		8D	
CCA @ 0°F (-18°C)	1400		1400	
Reserve Capacity - Minutes	430		430	
Battery Cable Circuit, Max Resistance - ohm	0.0012		0.0012	
Battery Cable Minimum Size				
0-120 in. Circuit Length[3]	00		00	
121-160 in. Circuit Length[3]	000		000	
161-200 in. Circuit Length[3]	0000		0000	
Charging Alternator Maximum Output - Amp,	40	[C071363]	55	[C071365]
Starter Cranking Amps, Rolling - @60°F (15°C)	440	[RE69704/RE70404]	250	[C07819/C07820]

NOTE: This engine is intended for indoor installation or in a weatherproof enclosure. [1]Engine H_2O temperature is dependent on raw water temperature and flow. [2]High Coolant Switch threshold varies with engine load. [3]Positive and Negative Cables Combined Length.

CLARKE Fire Protection Products, Inc.

JU6H-UFADX8
INSTALLATION & OPERATION DATA (I&O Data)
USA Produced

Exhaust System	**1760**	
Exhaust Flow - ft.³/min (m³/min)	1400 (39.6)	
Exhaust Temperature - °F (°C)	961 (516)	
Maximum Allowable Back Pressure - in H_20 (kPa)	30 (7.5)	
Minimum Exhaust Pipe Dia. - in (mm)[4]	6 (152)	
Fuel System	**1760**	
Fuel Consumption - gal/hr (L/hr)	14.6 (55.3)	
Fuel Return - gal/hr (L/hr)	21.3 (80.6)	
Fuel Supply - gal/hr (L/hr)	35.9 (136)	
Fuel Pressure - lb/in² (kPa)	3 (20.7) - 6 (41.4)	
Minimum Line Size - Supply - in.	.50 Schedule 40 Steel Pipe	
Pipe Outer Diameter - in (mm)	0.848 (21.5)	
Minimum Line Size - Return - in.	.375 Schedule 40 Steel Pipe	
Pipe Outer Diameter - in (mm)	0.675 (17.1)	
Maximum Allowable Fuel Pump Suction Lift with clean Filter - in H_20 (mH_20)	80 (2)	
Maximum Allowable Fuel Head above Fuel pump, Supply or Return - ft (m)	6.6 (2)	
Fuel Filter Micron Size	2 (Secondary)	
Heater System	**Standard**	**Optional**
Engine Coolant Heater		
Wattage (Nominal)	1360	1360
Voltage - AC, 1 Phase	115 (+5% -10%)	230 (+5%, -10%)
Part Number	[C123640]	[C123644]
Air System	**1760**	
Combustion Air Flow - ft.³/min (m³/min)	525 (14.9)	
Air Cleaner	**Standard**	**Optional**
Part Number	[C03244]	[C03327]
Type	Indoor Service Only, with Shield	Canister, Single-Stage
Cleaning method	Washable	Disposable
Air Intake Restriction Maximum Limit		
Dirty Air Cleaner - in H_20 (kPa)	14 (3.5)	14 (3.5)
Clean Air Cleaner - in H_20 (kPa)	7 (1.7)	5 (1.2)
Maximum Allowable Temperature (Air To Engine Inlet) - °F (°C)[5]	130 (54.4)	
Lubrication System		
Oil Pressure - normal - lb/in² (kPa)	40 (276) - 60 (414)	
Low Oil Pressure Alarm Switch - lb/in² (kPa)[6]	30 (207) to 35 (241)	
In Pan Oil Temperature - °F (°C)	220 (104) - 245 (118)	
Total Oil Capacity with Filter - qt (L)	34.3 (32.5)	
Lube Oil Heater	**Optional**	**Optional**
Wattage (Nominal)	150	150
Voltage	120V (+5%, -10%)	240V (+5%, -10%)
Part Number	C04430	C04431
Performance	**1760**	
BMEP - lb/in² (kPa)	331 (2280)	
Piston Speed - ft/min (m/min)	1467 (447)	
Mechanical Noise - dB(A) @ 1m	C133380	
Power Curve	C132969	

[4]Based on Nominal System. Back pressure flow analysis must be done to assure maximum allowable back pressure is not exceeded. (Note: minimum exhaust Pipe diameter is based on: 15 feet of pipe, one 90° elbow, and a silencer pressure drop no greater than one half of the maximum allowable back pressure.) [5]Review for horsepower derate if ambient air entering engine exceeds 77°F (25°C). [6]Low Oil Pressure Switch threshold varies w/engine speed. [ ] indicates component reference part number.

Rating Specific Emissions Data - John Deere Power Systems

JOHN DEERE

Nameplate Rating Information

Clarke Model	JU6H-UFADX8
Power Rating (BHP / kW)	305 / 227.5
Certified Speed (RPM)	1760

Rating Data

Rating	6068HFC48A	
Certified Power (kW)	235	
Rated Speed	1760	
Vehicle Model Number	Clarke Fire Pump	
Units	g/kW-hr	g/hp-hr
NOx	3.61	2.69
HC	0.08	0.06
NOx + HC	N/A	N/A
Pm	0.07	0.06
CO	0.6	0.4

Certificate Data

Engine Model Year	2016
EPA Family Name	GJDXL13.5103
EPA JD Name	650HAA
EPA Certificate Number	GJDXL13.5103-008
CARB Executive Order	Not Applicable
Parent of Family	6135HF485A
Units	g/kW-hr
NOx	3.31
HC	0.11
NOx + HC	N/A
Pm	0.10
CO	0.6

* The emission data listed is measured from a laboratory test engine according to the test procedures of 40 CFR 89 or 40 CFR 1039, as applicable. The test engine is intended to represent nominal production hardw are, and w e do not guarantee that every production engine w ill have identical test results. The family parent data represents multiple ratings and this data may have been collected at a different engine speed and load. Emission results may vary due to engine manufacturing tolerances, engine operating conditions, fuels used, or other conditions beyond our control.

CLARKE®

FIRE PUMP ENGINES

MODELS

JU6H-UFADMG JU6H-UFADP0 JU6H-UFADR0 JU6H-UFADT0
JU6H-UFAD58 JU6H-UFADP8 JU6H-UFADR8 JU6H-UFADW8
JU6H-UFADNG JU6H-UFADQ0 JU6H-UFADS8 JU6H-UFADX8
JU6H-UFADN0 JU6H-UFAD88 JU6H-UFADS0 JU6H-UFAD98

FM-UL-cUL APPROVED RATINGS BHP/*KW*

JU6H MODEL ♦	RATED SPEED 1760		2100		2350		2400		US-EPA (NSPS) Available Until ●
UFADMG			**175**	*131*	**175**	*131*			*No Expiration*
UFAD58	**183**	*137*							*No Expiration*
UFADNG	**190**	*142*	**181**	*135*	**183**	*137*	**183**	*137*	*No Expiration*
UFADN0	**197**	*147*	**197**	*147*	**200**	*149*	**200**	*149*	*No Expiration*
UFADP0			**209**	*156*	**211**	*157*	**211**	*157*	*No Expiration*
UFADP8	**220**	*164*							*No Expiration*
UFADQ0			**224**	*167*	**226**	*169*	**226**	*169*	*No Expiration*
UFAD88	**237**	*177*							*No Expiration*
UFADR0			**238**	*177.5*	**240**	*179*	**240**	*179*	*No Expiration*
UFADR8	**250**	*187*							*No Expiration*
UFADS8	**260**	*194*							*No Expiration*
UFADS0			**260**	*194*	**268**	*200*	**268**	*200*	*No Expiration*
UFADT0			**274**	*204*	**275**	*205*	**275**	*205*	*No Expiration*
UFADW8	**282**	*211*							*No Expiration*
UFADX8	**305**	*227.5*							*No Expiration*
UFAD98	**315**	*235*							*No Expiration*

Picture represents JU6H-TRWA Power Tech Plus Engine Series

● USA EPA (NSPS) Tier 3 Emissions Certified Off-Road (40 CFR Part 89) and NSPS Stationary (40 CFR Part 60 Sub Part IIII). Meet EU Stage IIIA emission levels.

♦ All Models available for Export

SPECIFICATIONS

<table>
<tr><th rowspan="2">ITEM</th><th colspan="16">JU6H MODELS</th></tr>
<tr><th>MG</th><th>58</th><th>NG</th><th>N0</th><th>P8</th><th>88</th><th>P0</th><th>Q0</th><th>R0</th><th>S0</th><th>T0</th><th>R8</th><th>S8</th><th>W8</th><th>X8</th><th>98</th></tr>
<tr><td>Number of Cylinders</td><td colspan="16">6</td></tr>
<tr><td>Aspiration</td><td colspan="16">TRWA</td></tr>
<tr><td>Rotation*</td><td colspan="16">CW</td></tr>
<tr><td>Overall Dimensions – in. (mm)</td><td colspan="6">59.8 (1519) H x 56.7 (1414) L x 36.7 (933) W</td><td colspan="10">60.9 (1547) H x 58.6 (1488) L x 40.0 (1015) W</td></tr>
<tr><td>Crankshaft Centerline Height – in. (mm)</td><td colspan="16">14 (356)</td></tr>
<tr><td>Weight – lb (kg)</td><td colspan="16">1747 (791)</td></tr>
<tr><td>Compression Ratio</td><td colspan="6">19.0:1</td><td colspan="10">17.0:1</td></tr>
<tr><td>Displacement – cu. in. (L)</td><td colspan="16">415 (6.8)</td></tr>
<tr><td>Engine Type</td><td colspan="16">4 Stroke Cycle – Inline Construction</td></tr>
<tr><td>Bore & Stroke – in. (mm)</td><td colspan="16">4.19 x 5.00 (106 x 127)</td></tr>
<tr><td>Installation Drawing</td><td colspan="16">D628</td></tr>
<tr><td>Wiring Diagram AC</td><td colspan="16">C07651</td></tr>
<tr><td>Wiring Diagram DC</td><td colspan="6">C071367, C072146, C071361</td><td colspan="10">C071368, C072146, C071761</td></tr>
<tr><td>Engine Series</td><td colspan="6">John Deere 6068 Series Power Tech E</td><td colspan="10">John Deere 6068 Series Power Tech Plus</td></tr>
<tr><td>Speed Interpolation</td><td colspan="16">N/A</td></tr>
</table>

Abbreviations: CW – Clockwise TRWA – Turbocharged with Raw Water Aftercooling N/A - Not Available L – Length W – Width H - Height

*Rotation viewed from Heat Exchanger / Front of engine

CERTIFIED POWER RATING

- Each engine is factory tested to verify power and performance.
- FM-UL power ratings are shown at specific speeds, Clarke engines can be applied at a single rated RPM setting ± 50 RPM.

c UL us   Meets NFPA 20 Requirements   c FM us APPROVED

ENGINE RATINGS BASELINES

- Engines are to be used for stationary emergency standby fire pump service only. Engines are to be tested in accordance with NFPA 25.
- Engines are rated at standard SAE conditions of 29.61 in. (752.1 mm) Hg barometer and 77°F (25°C) inlet air temperature [approximates 300 ft. (91.4 m) above sea level] by the testing laboratory (see SAE Standard J 1349).
- A deduction of 3 percent from engine horsepower rating at standard SAE conditions shall be made for diesel engines for each 1000 ft. (305 m) altitude above 300 ft. (91.4 m)
- A deduction of 1 percent from engine horsepower rating as corrected to standard SAE conditions shall be made for diesel engines for every 10°F (5.6°C) above 77°F (25°C) ambient temperature.

CLARKE®

FIRE PUMP ENGINES

MODELS

JU6H-UFADMG	JU6H-UFADP0	JU6H-UFADR0	JU6H-UFADT0
JU6H-UFAD58	JU6H-UFADP8	JU6H-UFADR8	JU6H-UFADW8
JU6H-UFADNG	JU6H-UFADQ0	JU6H-UFADS8	JU6H-UFADX8
JU6H-UFADN0	JU6H-UFAD88	JU6H-UFADS0	JU6H-UFAD98

ENGINE EQUIPMENT

EQUIPMENT	STANDARD	OPTIONAL
Air Cleaner	Direct Mounted, Washable, Indoor Service with Drip Shield	Disposable, Drip Proof, Indoor Service Outdoor Type, Single or Two Stage (Cyclonic)
Alarms	Overspeed Alarm & Shutdown, Low Oil Pressure, Low & High Coolant Temperature, Low Raw Water Flow, High Raw Water Temperature, Alternate ECM Warning, Fuel Injection Malfunction, ECM Warning and Failure with Automatic Switching	Low Coolant Level, Low Oil Level, Oil Filter Differential Pressure, Fuel Filter Differential Pressure, Air Filter Restriction
Alternator	12V-DC, 42 Amps with Poly-Vee Belt and Guard	24V-DC, 40 Amps with Poly-Vee Belt and Guard
Coupling	Bare Flywheel	UL Listed Driveshaft and Guard, JU6H-UFAD58/NG/ADMG/ADM8/K0/N0/Q0/R0-CDS30-S1; JU6H-UFADP8/P0/T0/88/R8/S8/S0/W8/X8/98- CDS50-SC at 1760/2100 RPM only
Electronic Control Module	12V-DC, Energized to Stop, Primary ECM always Powered on	24V-DC, Energized to Stop, Primary ECM always Powered on
Engine Heater	115V-AC, 1360 Watt	230V-AC, 1360 Watt
Exhaust Flex Connection	SS Flex, 150# ANSI Flanged Connection, 5" for JU6H-UFAD58/MG/NG/N0/P8/88; SS Flex, 150# ANSI Flanged Connection, 6" for JU6H-UFADP0/Q0/R0/S0/T0/R8/S8/W8/X8/98 (w/ orifice plate)	SS Flex, 150# ANSI Flanged Connection, 6" for JU6H-UFAD58/MG/NG/N0/P8/88; SS Flex, 150# ANSI Flanged Connection, 8" for JU6H-UFADP0/Q0/R0/S0/T0/R8/S8/W8/X8/98 (w/ orifice plate)
Exhaust Protection	Metal Guards on Manifolds and Turbocharger	
Flywheel Housing	SAE #3	
Flywheel Power Take Off	11.5" SAE Industrial Flywheel Connection	
Fuel Connections	Fire Resistant, Flexible, USA Coast Guard Approved, Supply and Return Lines	SS, Braided, cUL Listed, Supply and Return Lines
Fuel Filter	Primary Filter with Priming Pump	
Fuel Injection System	High Pressure Common Rail	
Governor, Speed	Dual Electronic Control Modules	
Heat Exchanger	Tube and Shell Type, 60 PSI (4 BAR), NPT(F) Connections – Sea Water Compatible	
Instrument Panel	Multimeter to Display English and Metric, Tachometer, Hourmeter, Water Temperature, Oil Pressure and One (1) Voltmeter with Toggle Switch, Front Opening	
Junction Box	Integral with Instrument Panel; For DC Wiring Interconnection to Engine Controller	
Lube Oil Cooler	Engine Water Cooled, Plate Type	
Lube Oil Filter	Full Flow with By-Pass Valve	
Lube Oil Pump	Gear Driven, Gear Type	
Manual Start Control	On Instrument Panel with Control Position Warning Light	
Overspeed Control	Electronic, Factory Set, Not Field Adjustable	
Raw Water Cooling Loop w/Alarms	Galvanized	Seawater, All 316SS, High Pressure
Raw Water Cooling Loop Solenoid Operation	Automatic from Fire Pump Controller and from Engine Instrument Panel (for Horizontal Fire Pump Applications)	Not Supplied (for Vertical Turbine Fire Pump Applications)
Run – Stop Control	On Instrument Panel with Control Position Warning Light	
Starters	Two (2) 12V-DC	Two (2) 24V-DC
Throttle Control	Adjustable Speed Control by Increase/Decrease Button, Tamper Proof in Instrument Panel	
Water Pump	Centrifugal Type, Poly-Vee Belt Drive with Guard	

Abbreviations: DC – Direct Current, AC – Alternating Current, SAE – Society of Automotive Engineers, NPT(F) – National Pipe Tapered Thread (Female), ANSI – American National Standards Institute, SS – Stainless Steel

MODEL NOMENCLATURE: (10 Digit Models)

JU6H - UFADR0

John Deere Base Engine
350 Series
6 Cylinders
Heat Exchanger Cooled
Power Curve Number
EPA Tier 3 Certified
Built in USA
FM Approved
UL Listed

CLARKE®

CLARKE Fire Protection Products, Inc.
100 Progress Place, Cincinnati, Ohio 45246
United States of America
Tel +1-513-475-FIRE(3473) Fax +1-513-771-8930
www.clarkefire.com

CLARKE UK, Ltd.
Grange Works, Lomond Rd., Coatbridge, ML5-2NN
United Kingdom
Tel +44-1236-429946 Fax +44-1236-427274
www.clarkefire.com

C133421 revR
19JUN15

OGI Process Equipment
8939 West 21st St.
Sand Springs, OK 74063

Tel: (918) 246-1600
Fax: (918) 246-1699

Estimated Combustion Emissions

Heater Duty	**9.0**	MMBtuh

	Units	Natural Draft	Forced Draft		
			Standard	Low NOx	Ultra Low NOx
Total Burner Input	MMBtuh	12.8571	11.43	11.43	12.00
Higher Heating Value NG	Btu/scf	1,011	1,011	1,011	1,011
Sulfur Content	Grains/scf	0.003	0.003	0.003	0.003
Est. Combustion Efficiency	%	70%	79%	79%	75.0%
NOX Content	PPM	75	75	30	10
	lbs/MMBtu	0.089	0.089	0.036	0.012
	lbs/hr	1.144	1.017	0.407	0.142
Particulate	lbs/MMBtu	0.005	0.005	0.005	0.005
	lbs/hr	0.064	0.057	0.057	0.060
Carbon Monoxide (CO)	ppm	100	50	50	50
	lbs/MMBtu	0.074	0.037	0.037	0.037
	lbs/hr	0.951	0.423	0.423	0.444
SOX Content	ppm	0	0	0	0
	lbs/MMBtu	0.0008	0.0008	0.0008	0.0008
	lbs/hr	0.011	0.009	0.009	0.010
Carbon Dioxide (CO2)	lbs/MMBtu	116.98	116.98	116.98	116.98
	lbs/hr	1,504.0	1,337.0	1,337.0	1,403.8
VOC	ppm	8	8	8	8
	lbs/MMBtu	0.003	0.003	0.003	0.003
	lbs/hr	0.043	0.038	0.038	0.040
H20	% Weight	10.3	10.3	10.3	10.3
	lbs/MMBtu	93.4	93.4	93.4	93.4
	lbs/hr	1,201	1,068	1,068	1,121

Greenhouse Gas Report Rule - Subpart C of Part 98

CO2 (116.89lbs/MMBtu)	lbs/hr	1503	1336	1336	1403
N2O (0.0002lbs/MMBtu)	lbs/hr	0.0028	0.0025	0.0025	0.0026
CH (0.0022lbs/MMBtu)	lbs/hr	0.0283	0.0252	0.0252	0.0265
CO2 (lbs/MMBtu x 1 GWP)	lbs/hr	1,503	1,336	1,336	1,403
N2O (lbs/MMBtu x 310 GWP)	lbs/hr	0.879	0.781	0.781	0.820
CH (lbs/MMBtu x 21 GWP)	lbs/hr	0.709	0.630	0.630	0.661
Equiv. Carbon Dioxide (CO2e)	lbs/hr	1,504.43	1,337.39	1,337.39	1,404.14
	tons/yr	6,589	5,858	5,858	6,150

Note: Concentration Levels are typical only, emission guarantees for forced draft burners are issued on a job specific basis. Please consult TERI for emissions guarantees on your specific application. TERI does not provide emission guarantees for Natural Draft combustion systems.

All Emissions estimated are calculated as parts per million by volume dry and correct to 3% O2. Emissions estimates are based on Burners Operating at 20% excess air. Low Nox burners may utilize additional diluents such as flue gas recirculation to achieve stated emissions levels.

T.E.R.I.

Total Energy Resources, Inc.

"ENGINEERED SOLUTIONS"

Indirect Fired Water Bath Heaters

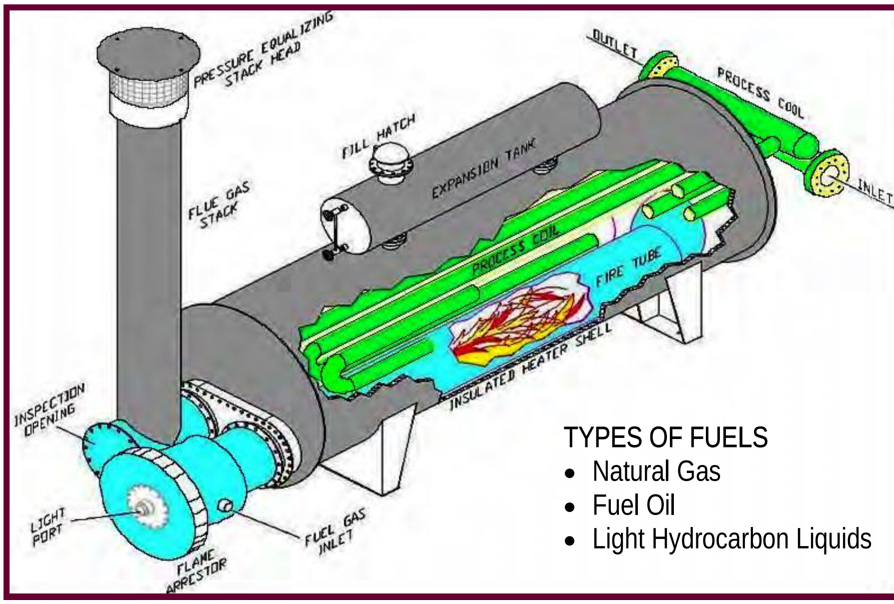
OVERVIEW

Indirect fired water bath heaters are used successfully in hundreds of utility, processing, and upstream oil and gas industry applications.

Water bath heaters are commonly used in applications where process temperatures do not exceed 170°F.

Typical uses include:

- Heating natural gas prior to pressure reduction to eliminate frost formation downstream of expansion valving.
- Preventing hydrate formation in well stream fluids.
- Heating well stream fluids prior to phase separation.
- Heating process streams to maintain fluid viscosity at a minimum to reduce HP pumping requirements.
- Heating critical feed stocks that require tightly controlled film to bulk temperature differentials.
- Heating turbine fuel gases to maintain a given dew point temperature.



TYPES OF FUELS

- Natural Gas
- Fuel Oil
- Light Hydrocarbon Liquids

HEATER OPERATION

The process to be heated flows through a serpentine configured coil that is mounted in the upper reaches of the heater shell. A controlled amount of heat is liberated into the firetube (combustion chamber) which is located in the lower reaches of the heater shell where heat is efficiently transferred form the firetube in the bath media. The heat contained in the bath media is then transferred by natural convection into the process stream which flows through the process coil.

HEATER COMPONENTS

The indirect fired water bath heater consists of the following components each designed to meet specific design criteria:

The heater shell is an atmospheric vessel designed in accordance with API 12 K requirements. The shell contains the process coil, firetube (combustion chamber), and heat media.

The firetube is commonly of the U-tube configuration. The tube is removable & designed to efficiently transfer heat into the surrounding heat media and to minimize flue gas friction losses.

The process coil is a pressure containing part commonly designed in accordance with API—12K or ASME Section VIII Division 1 code requirements.

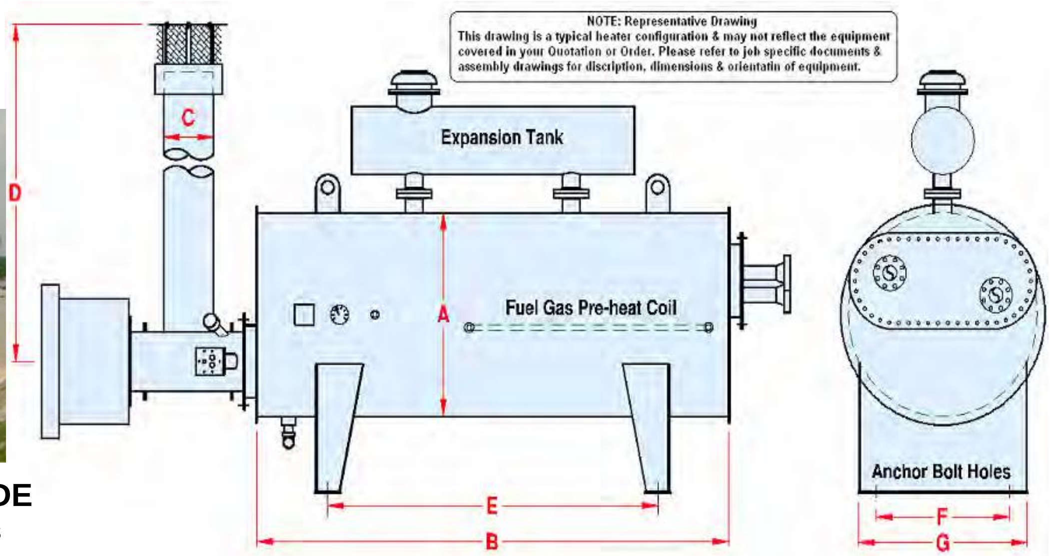
The flue gas stack is designed to provide positive flue gas flow (draft) by overcoming the friction losses in the complete combustion system.

The heat media is commonly a mixture of inhibited ethylene or propylene glycol and water which is blended to a consistency to provide the proper freeze protection for a given application.

The expansion tank is designed to reduce internal corrosion within the heater shell by keeping the heater shell liquid packed & moving the wet dry interface of the expanding bath media from the heater shell into the expansion tank. The expansion tank is designed to contain 100% of the expanded bath media from a temperature of 40° to the maximum operating temperature.

Accessories Items: TERI designs & manufactures heaters with a wide variety of accessories to meet customer specified mechanical & operation requirements. Including simple pneumatic controls to sophisticated remotely controlled & monitored equipment.

"ENGINEERED SOLUTIONS"



STANDARD FEATURES INCLUDE

- Laser cut shop fabricated components
- Individually removable firetubes
- 304 SS Flue gas stack or stacks
- Stack clean out tee
- Flue gas stack anti reverse-draft diverters w/rain cap & bird screens
- "Pilot In A Drawer" assemblies for easy maintenance & inspection
- Basic electric & pneumatic in addition to PLC control systems
- Multi mitered firetube bends (no single miter cut to greater than 22.5°)
- Positive seal flange designs
- Bath media expansion reservoir designed to hold 6% of the total bath media
- Heat media level gauge
- Heat media temperature Indicator
- Shell designed in accordance with API 12K
- Coil designed and stamped in accordance with ASME-8-1
- 100% Radiography on process coil welds
- Process coil, National Board Stamped

Optional Control Enhanced Designs

- Pneumatic controlled equipment operation
- Electrical controlled equipment operation
- Combination pneumatic & electrical controlled equipment operation
- Flame-Safeguard assemblies including, Pneumatic, 120VAC & 12VDC or Solar Power
- Manual OR Automatic pilot ignition designs

Optional Fabricated Enhanced Components

- Cushioned (Electrically Insulated) process coil supports & Tube Sheets
- Shell internally grit or sandblasting w/water soluble rust preventive coating
- Customized heater supports to meet existing pier locations
- Hot dipped galvanized heater skids, ladders & platforms

MM Btu/Hr	A	B	C	D	E	F	G
0.10	20"	6'	6.63"	10'0"	5'8"	1'2"	1'7"
0.25	24"	7'5"	8.63"	10'0"	7'2"	1'2"	1'7"
0.50	30"	10'0"	10.75"	12'0"	7'0"	1'8"	2'3"
0.75	36"	12'0"	10.75"	12'0"	9'0"	2'0"	2'8"
1.00	42"	15'0"	12.75"	14'0"	10'0"	2'2"	3'1"
1.25	42"	15'0"	12.75"	14'0"	10'0"	2'2"	3'1"
1.50	48"	17'5"	14"	15'0"	12'6"	2'10"	3'7"
1.75	48"	20'0"	16"	15'0"	16'0"	2'10"	3'7"
2.00	54"	20'0"	18"	15'0"	15'0"	3'0"	3'11"
2.50	54"	22'5"	18"	16'0"	17'6"	3'0"	3'11"
3.00	60"	22'5"	20"	16'0"	18'6"	3'0"	4'4"
3.50	72"	27'7"	22"	17'5"	22'6"	4'0"	5'3"
4.00	72"	30'0"	24"	17'5"	25'0"	4'0"	5'3"
4.50	84"	32'0"	24"	17'5"	27'0"	4'6"	6'2"
5.00	84"	32'0"	26"	17'5"	27'0"	4'6"	6'2"
6.00	84"	32'0"	28"	17'5"	27'0"	4'6"	6'2"
7.00	96"	30'0"	2@22"	17'5"	25'0"	5'6"	6'11"
8.00	96"	32'0"	2@22"	17'5"	27'0"	5'6"	6'11"
10.00	102"	32'0"	2@26"	20'0"	27'0"	6'0"	7'6"

(OTHER SIZES ARE AVAILABLE . . . "ENGINEERED SOLUTIONS")

	Units	Ethylene	Propylene
Freezing Point	**Temp (°F)**	**-32**	**-24**
Boiling Point (1 Atm)	**Temp (°F)**	**225**	**222**
Specific Gravity	**60 / 60**	**1.064**	**1.043**
Viscosity @ 200°F	**Centipoises**	**0.75**	**0.75**
Specific Heat @ 200°F	**Btu / Lb / °F**	**0.83**	**0.91**
Thermal Conductivity	**Btu / Hr, Sq Ft, °F / Ft**	**0.28**	**0.022**

*Properties are representative of 50% Glycol / 50% Water

Heater Type	Process Temp (F)
Water/Glycol	160°
LP Steam (<15 Psig)	220°
Heat Transfer Oil	400°
Eutectic Salt	600°
Flue Gas Recirculation	625°

www.terisales.com
8939 West 21st St., Sand Springs, OK 74063
(918) 447-0844 • Fax (918) 447-0877