

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

**PSEG Power Connecticut, LLC
Bridgeport Harbor Station
Bridgeport, CT
Unit 5 Combined Cycle Project**

**Application # 201411158 (CCGT/Duct Burner)
Application # 201411160 (Auxiliary Boiler)**

Submitted to:

Connecticut Department of Energy
and Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

Submitted by:

AKRF, Inc.
307 Fellowship Road, Suite 214
Mt. Laurel, NJ 08054

Amendment 2

March 2016

EXHIBIT D
Excerpts from Air Permits
Applications to Connecticut
Department of Energy &
Environmental Protection

Contents

Permit Application for Stationary Sources of Air Pollution New Source Review (DEEP-NSR-APP-200)

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

DEEP-NSR-APP-200

**PSEG Power Connecticut, LLC
Bridgeport Harbor Station
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Unit 5 Combined Cycle Project
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Department of Energy &
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**Connecticut Department of
Energy & Environmental Protection**
Bureau of Air Management
Engineering & Enforcement Division

App No.: _____
 Doc No.: _____
 Check No.: _____
 Program: Air Engineering

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:	PSEG Power Connecticut LLC	Town Where Site is Located:	Bridgeport
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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.
50	Unit 5 CCGT/Duct Burner	<input checked="" type="checkbox"/> New <input type="checkbox"/> Non-Minor Mod			
51	Auxiliary Boiler	<input checked="" type="checkbox"/> New <input type="checkbox"/> Non-Minor Mod			
		<input type="checkbox"/> New <input type="checkbox"/> Non-Minor Mod			
		<input type="checkbox"/> New <input type="checkbox"/> Non-Minor Mod			
		<input type="checkbox"/> New <input type="checkbox"/> Non-Minor Mod			
		<input type="checkbox"/> New <input type="checkbox"/> 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:	Add a combined cycle electric generating unit. Primary fuel for the combustion turbine is natural gas with ULSD as a backup fuel. Project includes ancillary emission units: auxiliary boiler, emergency diesel generator, emergency fire pump diesel engine, small auxiliary cooling tower, and three ULSD storage tanks.
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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	2
	Application Fee per source	\$940
	Municipality	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, 50% disc.
	Total Enclosed	\$1,880 (fee was paid with original application)
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	10/20/2014

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	PSEG Power Connecticut LLC Check at least one: <input checked="" type="checkbox"/> equipment owner <input checked="" type="checkbox"/> equipment operator <i>The applicant must be either the owner or operator of the equipment.</i>				
Mailing Address	1 Atlantic Street				
City/Town	Bridgeport	State	CT	Zip Code	06604
Business Phone No.	(203) 551-6001	Extension No.			
Contact Person	Michael Stagliola				
Title	Plant Manager				
Email	michael.stagliola@pseg.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.				

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: <input type="checkbox"/> equipment owner <input type="checkbox"/> 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	George G. McComb				
Title	Vice President				
Company/Individual Name	AKRF, Inc.				
Mailing Address	307 Fellowship Road, Suite 214				
City/Town	Mt. Laurel	State	NJ	Zip Code	08054
Business Phone No.	(646) 388-9640	Extension No.			
Email	gmccomb@akrf.com				
Service Provided	Preparation of application				

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		Bridgeport Harbor Station			
Street Address or Location Description		1 Atlantic Street			
City/Town		Bridgeport	State	CT	Zip Code 06604
2. SITE OWNERSHIP INFORMATION					
For site locations that <i>do not</i> currently have an air permit or registration associated with it:					
Please provide the date the owner or operator established a presence at this site.					
For site locations that <i>do</i> currently have an air permit or registration associated with it:					
Does this site have a new owner or operator?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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?		<input type="checkbox"/> Replacing <input type="checkbox"/> 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?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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).		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, <u>and</u> 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)		<input type="checkbox"/> Yes <input type="checkbox"/> No			

Part IV: Site Information (continued)

5. NATURAL DIVERSITY DATA BASE (NDDDB) - ENDANGERED AND THREATENED SPECIES	
<p>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?</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Date of Map: June, 2014</p>
<p>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?</p> <p>For more information visit the DEEP website at http://www.ct.gov/deep/nddbrequest or call the NDDDB at 860-424-3011.</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If yes, <u>and</u> 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 NDDDB State Listed Species Review Form (DEP-APP-007) to the address specified on the form.</p> <p>Please note NDDDB review generally takes 4 to 6 weeks and may require additional documentation from the applicant.</p> <p>The CT NDDDB response <i>must</i> be submitted with this completed application as Attachment P.</p>
6. AQUIFER PROTECTION AREAS	
<p>Is the site located within a town required to establish Aquifer Protection Areas, as defined in CGS sections 22a-354a through 354bb?</p> <p>To view the applicable list of towns and maps visit the DEEP website at www.ct.gov/deep/aquiferprotection</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p>If yes, is the site within an area identified on a Level A or B map?</p>	<p><input type="checkbox"/> Level A <input type="checkbox"/> Level B</p> <p>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.</p> <p>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.</p>
7. CONSERVATION OR PRESERVATION RESTRICTION	
<p>Is the premises subject to a conservation or preservation restriction?</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>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.</p>

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)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, and this application is for a new or expanded permit, prior to submitting this application prepare an <i>Environmental Justice Public Participation Plan</i> (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: <input checked="" type="checkbox"/> Severe Non-Attainment <input type="checkbox"/> Serious Non-Attainment
10. MAJOR STATIONARY SOURCE	
Is the premises a major stationary source?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, indicate the pollutant(s), if any, for which the premises exceeds the major stationary source threshold: <input checked="" type="checkbox"/> PM <input checked="" type="checkbox"/> PM ₁₀ <input checked="" type="checkbox"/> PM _{2.5} <input checked="" type="checkbox"/> SO ₂ <input checked="" type="checkbox"/> NO _x <input checked="" type="checkbox"/> CO <input checked="" type="checkbox"/> VOC <input type="checkbox"/> Pb <input checked="" type="checkbox"/> CO ₂ <input checked="" type="checkbox"/> HAPs
Is the premises operating under the GPLPE?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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	<i>Copy of Public Notice of Application and Original Certification of Notice Form</i>	DEP-APP-005A	Required	<input checked="" type="checkbox"/>	
A	<i>Executive Summary</i>	DEEP-NSR-APP-222	Required	<input checked="" type="checkbox"/>	
B	<i>Applicant Background Information</i>	DEP-APP-008	Required	<input checked="" type="checkbox"/>	
C	<i>Site Plan - An 8 ½" X 11" copy of the Site Plan</i>	<i>No DEEP form</i>	Required	<input checked="" type="checkbox"/>	
D	<i>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</i>	<i>No DEEP form</i>	Required	<input checked="" type="checkbox"/>	
E	<i>Supplemental Application Forms</i>			--	
	Select the appropriate forms for the source types listed in Part II of this form.	E201: <i>Manufacturing or Processing Operations</i>	DEEP-NSR-APP-201	If Applicable	<input checked="" type="checkbox"/>
		E202: <i>Fuel Burning Equipment</i>	DEEP-NSR-APP-202	If Applicable	<input checked="" type="checkbox"/>
		E203: <i>Incinerators or Landfill Flares</i>	DEEP-NSR-APP-203	If Applicable	<input type="checkbox"/>
		E204: <i>Volatile Liquid Storage</i>	DEEP-NSR-APP-204	If Applicable	<input checked="" type="checkbox"/>
		E205: <i>Surface Coating or Printing Operations</i>	DEEP-NSR-APP-205	If Applicable	<input type="checkbox"/>
		E206: <i>Metal Plating or Surface Treatment Operations</i>	DEEP-NSR-APP-206	If Applicable	<input type="checkbox"/>
		E207: <i>Metal Cleaning Degreasers</i>	DEEP-NSR-APP-207	If Applicable	<input type="checkbox"/>
		E208: <i>Concrete, Asphalt Concrete, Mineral Processing or Other Similar Equipment</i>	DEEP-NSR-APP-208	If Applicable	<input type="checkbox"/>
		E209: <i>Site Remediation Equipment</i>	DEEP-NSR-APP-209	If Applicable	<input type="checkbox"/>
	E210: <i>Air Pollution Control Equipment</i>	DEEP-NSR-APP-210	If Applicable	<input checked="" type="checkbox"/>	
	E211: <i>Stack Parameters</i>	DEEP-NSR-APP-211	Required	<input checked="" type="checkbox"/>	
	E212: <i>Unit Emissions</i>	DEEP-NSR-APP-212	Required	<input checked="" type="checkbox"/>	
F	<i>Premises Information Form</i>	DEEP-NSR-APP-217	Required	<input checked="" type="checkbox"/>	
G	<i>BACT Determination Form</i>	DEEP-NSR-APP-214	Required	<input checked="" type="checkbox"/>	
H	<i>Major Modification Determination Form</i>	DEEP-NSR-APP-213	If Applicable	<input checked="" type="checkbox"/>	
I	<i>Prevention of Significant Deterioration (PSD) of Air Quality Form</i>	DEEP-NSR-APP-216	If Applicable	<input checked="" type="checkbox"/>	
J	<i>Non-Attainment Review Form</i>	DEEP-NSR-APP-215	If Applicable	<input checked="" type="checkbox"/>	
K	<i>Operation and Maintenance Plan</i>	<i>No DEEP form</i>	If Applicable	<input type="checkbox"/>	
L	<i>Ambient Air Quality Analysis Form</i>	DEEP-NSR-APP-218	Required	<input checked="" type="checkbox"/>	
M	<i>Applicant Compliance Information</i>	DEP-APP-002	Required	<input checked="" type="checkbox"/>	

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	<input type="checkbox"/>
O	<i>Coastal Consistency Review Form</i>	DEP-APP-004	If Applicable	<input checked="" type="checkbox"/>
P	Copy of Response to Request for Natural Diversity Data Base (NDDDB) State Listed Species Review Form and additional documentation	---	If Applicable	<input checked="" type="checkbox"/>
Q	Conservation or Preservation Restriction Information	<i>No DEEP form</i>	If Applicable	<input type="checkbox"/>
R	Copy of the Written Environmental Justice Public Participation Plan Approval Letter	---	If Applicable	<input checked="" type="checkbox"/>

Part VI: Applicant Certification

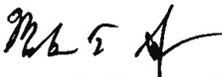
The authorized representative and the individual(s) responsible for actually preparing the application must sign this part. An application will be considered insufficient unless all required signatures are provided.

"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		Date	3/1/2016
Name of Applicant (print or type)	Mark F. Strickland		
Title (if applicable)	Director - Fossil Environmental Affairs		
PREPARER:			
Signature of Preparer		Date	3/1/2016
Name of Preparer (print or type)	George G. McComb		
Title (if applicable)	Vice President - AKRF, Inc.		

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 A: Executive Summary

**Includes Supplemental Text as Attachment A0 –
Table of Contents and Project Description**

DEEP-NSR-APP-222

EXHIBIT D
Excerpts from Air Permits
Applications to Connecticut
Department of Energy &
Environmental Protection

Attachment A: Executive Summary

Applicant Name: PSEG Power 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	Bridgeport Harbor Station
Part II: Application Table of Contents Provide a Table of Contents of the application which includes the <i>Permit Application for Stationary Sources of Air Pollution Form</i> (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.).	
See supplemental text (Attachment A0).	

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 supplemental text (Attachment A0).

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

Attachment A0

Supplemental Text to Attachment A

Project Description
Application Table of Contents

PROJECT DESCRIPTION

This document supplements the information provided in the Attachment A Executive Summary.

The Attachment A, Part II Application Table of Contents is provided as Table A-0.

Part III: Project Description

PSEG Power Connecticut, LLC (“PSEG”) is proposing development of a new, clean, natural gas-fired, combined-cycle electric generating unit (“Unit 5”) at its existing Bridgeport Harbor Station (“BHS”) located at 1 Atlantic Avenue, Bridgeport, CT. The location of BHS is shown in Attachment C of this application.

Construction and operation of the Unit 5 Combined Cycle Project (“Unit 5 Project” or “Project”) requires a *New Source Review Permit to Construct and Operate A Stationary Source* (NSR Permit) which addresses Prevention of Significant Deterioration (“PSD”) and other Federal and CTDEEP requirements. RCSEA Section 22a-174-3a(i) requires performance of an air quality impact study as an integral part of the air permitting process.

This is the second revision (hereafter “Amendment 2”) to the original NSR Permit application for Unit 5.

In the Fall of 2014, PSEG submitted NSR Permit applications to the Connecticut Department of Energy and Environmental Protection (“CTDEEP” or the “Department”) for two equipment alternatives: an alternative featuring a General Electric (GE) 7HA.02 combustion turbine and an alternative featuring a Mitsubishi Hitachi Power Systems Americas, Inc. (MHPSA) M501JAC combustion turbine. PSEG has withdrawn the application for the M501JAC equipment alternative.

The current application is for the GE 7HA.02 alternative.

The original application for the GE 7HA.02 equipment alternative was submitted to CTDEEP on November 13, 2014. PSEG requested NSR Permits for the Unit 5 combined cycle gas turbine (“CCGT”)/duct burner unit and for an auxiliary boiler, which is part of the ancillary equipment that makes up the Unit 5 Project. CTDEEP has assigned the following application numbers to these two applications:

- CCGT/Duct Burner - Application # 201411158
- Auxiliary Boiler - Application # 201411160

PSEG submitted the first revision (“Amendment 1”) to the original November 2014 application on December 15, 2014.

This Amendment 2 replaces the original November 2014 application and Amendment 1. If a CTDEEP form has been revised since November 2014, the new form has been used.

Attachments AA, D, and R of the original November 2014 application have not changed. The reader is referred to the original November 2014 application for these three (3) Attachments.

This application includes all permit forms and associated studies required for the NSR Permit with the exception of the refined modeling analysis and additional impacts analysis. A report covering these requirements has been submitted under separate cover.¹

See the Table of Contents in Table A0-1 for an outline of the structure of this application.

The generating capability of Unit 5 will be approximately 485 MW and the combined cycle unit will be constructed in a “1 X 1” configuration; that is, a single combustion turbine generator (“CTG”) exhausting to a single Heat Recovery Steam Generator (“HRSG”). Steam generated in the HRSG would drive a single steam turbine generator (“STG”).

The proposed unit will be equipped with state-of-the-art emissions control technology, including:

- A combination of dry low NO_x combustors, a Selective Catalytic Reduction (“SCR”) system, and water injection to reduce oxides of nitrogen emissions
- An oxidation catalyst to reduce carbon monoxide (“CO”) and volatile organic compound (“VOC”) emissions
- An air-cooled condenser (“ACC”) to minimize water use for cooling and avoid relying on the harbor water for cooling purposes.

Unit 5 will be dual fuel capable, utilizing both natural gas and ultra-low sulfur distillate fuel (“ULSD”), firing natural gas when supplies are available and economical. Natural gas would be utilized as the primary fuel with provisions to use ULSD for up to the equivalent of 30 days per year. The new plant will be sited in the area where the four fuel oil storage tanks are currently located. The existing tanks, which were for the purpose of serving the Units 1 – 3 boiler plant, will be removed, and replaced with a new tank for ULSD storage in support of proposed Unit 5.

The Unit 5 Combined Cycle Project will include certain ancillary equipment. Items of ancillary equipment that produce air emissions include the auxiliary boiler (exclusively natural gas fired), a diesel fire pump engine (limited testing/maintenance and emergency use only), an emergency generator (limited testing/maintenance and emergency use only), a small, 3-cell auxiliary evaporative cooling tower using city water as makeup, and a fuel oil tank. The main steam cycle condensing is accomplished using the ACC which has zero emissions to the atmosphere.

By this application, PSEG is requesting that CTDEEP issue an NSR permit for the CTG/duct burner and an NSR permit for the auxiliary boiler. PSEG will comply with the emergency engine conditions in RCSA Section 22a-174-3b for the emergency generator; therefore, an NSR permit is not required for the emergency generator. Based on discussions with CTDEEP², PSEG has committed to accept a limit of 300 hrs/year for the diesel fire pump engine for testing/maintenance and use in emergencies. The limit will be added as a collateral condition to the auxiliary boiler NSR permit. Potential emissions from the remaining Project sources are low enough as to not trigger NSR Permit requirements. PSEG supplies detailed information in the application for the sources that do not require an NSR Permit.

¹ *Bridgeport Harbor Station Updated Dispersion Modeling Report for Proposed Combined Cycle Unit 5*, dated February 17, 2016.

² Telephone conversation held with Lydia Howard on November 24, 2014

Under the PSD program, the Unit 5 Combined Cycle Project is considered to be a major modification to a major stationary source (the Bridgeport Harbor Station). The Unit 5 Project is subject to PSD for particulate matter (PM/PM₁₀/PM_{2.5}), oxides of nitrogen (NO_x), carbon monoxide (CO), sulfuric acid (H₂SO₄) and greenhouse gases (GHGs). The project emission units are required to be controlled to Best Available Control Technology (BACT) emission levels.

Fairfield County is designated as a marginal nonattainment area for the 2008 8-hour ozone National Ambient Air Quality Standard (NAAQS).³ Pursuant to RCSA Sec. 22a-174-3a(l)(3) a NO_x and VOC Lowest Achievable Emission Rate determination must be submitted to CTDEEP for approval. Section 22a-174-3a(l) prescribes additional permit requirements for non-attainment areas that PSEG must meet.

A detailed BACT/LAER analysis is provided as Attachment G0 to supplement the BACT and LAER information required by CTDEEP in Attachments G and J respectively.

Construction is scheduled to begin in March 2017 and commercial operation is targeted for June 2019.

³ 40 CFR §81.307.

Table A0–1
Attachment A
Part II: Application Table of Contents

ATT.	Document	No. of Pages
MAIN	Permit Application for Stationary Sources of Air Pollution - New Source Review	12
AA	No changes in this Attachment from the original November 2014 NSR Permit Application. Copy of Public Notice of Application and Certification of Notice Form of Application Certification of Notice Form - Notice of Application (DEP-APP-005A) Copy of Public Notice of Application Certificate of Publication	5 Total 1 1 2
A	Executive Summary A Executive Summary (DEEP-NSR-APP-222) A0 Supplemental Text	9 Total 3 6
B	Applicant Background Information (DEEP-APP-008)	6
C	Site Plan	4
D	No changes in this Attachment from the original November 2014 NSR Permit Application. USGS Map	2
E	Supplemental Application Forms	151
F	Premises Information Form (DEEP-NSR-APP-217)	11
G	BACT Determination Form G Analysis of Best Available Control Technology (BACT) G1 Background Search – Existing BACT Determination G3 Summary of Best Available Control Technology Review G0 Supplemental Text – BACT/LAER analysis	211 Total 67 100 1 43
H	Major Modification Determination Form (DEEP-NSR-APP-213)	3
I	Prevention of Significant Deterioration (PSD) of Air Quality Form (DEEP-NSR-APP-216)	9
J	Non-Attainment Review Form (DEEP-NSR-APP-215) J Non-Attainment Review Form 215-B Analysis of Alternatives 215-C Secondary or Cumulative Impact Analysis 215-D Offsetting Emission Reductions or Emission Reduction Credits Determination 215-E Required Number of CERCs Determination	20 Total 12 5 1 1 1
K	Operation and Maintenance Plan	1
L	Ambient Air Quality Analysis Form (DEEP-NSR-APP-218)	5
M	Applicant Compliance Information	8

N	Marked Up Permit (not required)	1
O	Coastal Consistency Review Form	80
P	Copy of Response to Request for Natural Diversity Data Base (NDDB) State Listed Species Review Form	26
Q	Conservation or Preservation Restriction Information (not required)	1
R	No changes in this Attachment from the original November 2014 NSR Permit Application. Copy of the Written Environmental Justice Public Participation Plan Approval Letter	2
APP A	Appendix A	29

Attachment B: Applicant Background Information

DEP-APP-008

EXHIBIT D
Excerpts from Air Permits
Applications to Connecticut
Department of Energy &
Environmental Protection



**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: **PSEG Fossil LLC**
Mailing Address: 1 Atlantic Street
City/Town: Bridgeport State: CT Zip Code: 06604
Business Phone: (203) 551-6001 ext.:
E-mail: michael.stagliola@pseg.com

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:
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:

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:			

Applicant Background Information (continued)

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

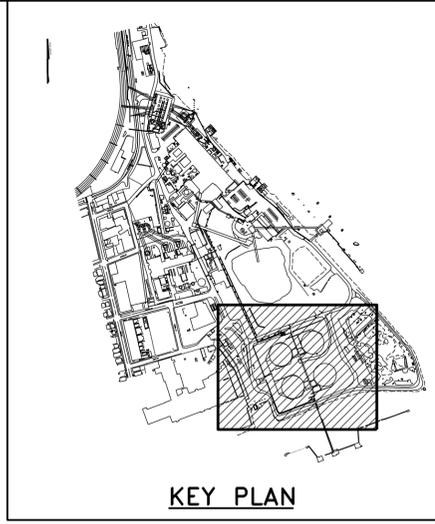
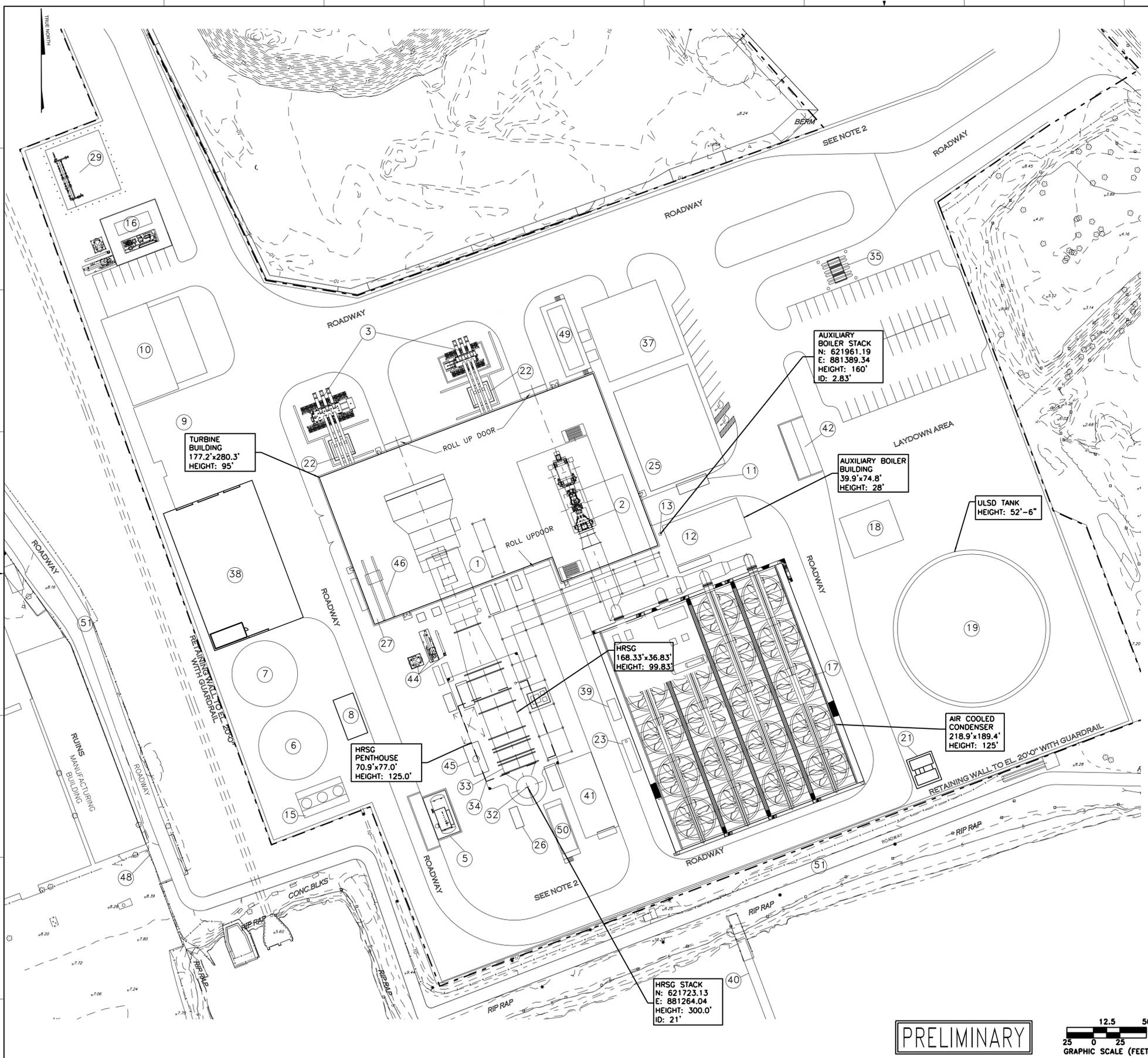
Please see the following figures which supplement the site plan (site arrangement):

- Aerial View of Bridgeport Harbor Station Showing Currently Installed Equipment
- Site Arrangement of Unit 5 Equipment
- Three-Dimensional CAD Rendering of Proposed Unit 5 With Major Plant Components

EXHIBIT D
Excerpts from Air Permits
Applications to Connecticut
Department of Energy &
Environmental Protection

Aerial View of Bridgeport Harbor Station Showing Currently Installed Equipment





LEGENDS/SYMBOL KEYS:

- X-X- PSEG FENCE LINE
- PROPOSED STRUCTURES
- ⊙ ITEM NUMBER
- - - PSEG PROPERTY LINE
- - - LIMIT OF AREA OF DISTURBANCE

Figure 1-3
Site Arrangement of Unit No. 5 Equipment

- DESIGN NOTES:**
- STORM WATER DRAINAGE WILL BE DESIGNED IN ACCORDANCE WITH THE CITY OF BRIDGEPORT CONN. DEPT. OF PUBLIC FACILITIES STORM WATER MANAGEMENT MANUAL.
 - FINAL FINISHED GRADE (EXTERIOR) AT EL. 16'-6" (PER NAVD83). TOP OF CONCRETE SLABS OF FLOOR AT EL. 18'-6".
 - TOP OF RETAINING WALL AT EL. 20'-0" NAVD 88.
 - THIS DRAWING WAS DEVELOPED FROM DRAWINGS BPH-DWG-16 AND BPH-DWG-23 (STCC EXPANSION PROJECT FEASIBILITY STUDY PHASE II).

INDEX

ITEM	DESCRIPTION	NOTES
1	COMBUSTION TURBINE GENERATOR (CTG)	
2	STEAM TURBINE GENERATOR (STG)	
3	GSU TRANSFORMERS 345KV (CTG/STG)	
4	PACKAGE ELECTRONIC & ELECTRICAL CONTROL COMPARTMENT (PECC)	(NOT SHOWN)
5	AMMONIA TRUCK UNLOADING AND STORAGE	20,000 GALLON
6	RO/DEMINERALIZED WATER TANK	1,000,000 GALLON
7	SERVICE WATER/FIRE WATER STORAGE TANK	900,000 GALLON
8	FIRE PROTECTION AND SERVICE WATER PUMP HOUSE	3,000 sqft (75'x40')
9	DEMINERALIZED WATER TRAILERS/REVERSE OSMOSIS	BY VENDOR
10	345KV GIS BUILDING	6,450sqft (75.5'x85.5')
11	EMERGENCY DIESEL GENERATOR	2000KW
12	AUX. BOILER BUILDING	40'x75' (EL. 44'-6")
13	AUX. BOILER STACK	2.83'DIA. (EL.176'-6")
14	(NOT USED)	
15	AUX. COOLING TOWER	1,125 sqft (45'x25'x23')
16	FUEL GAS PROCESSING BUILDING	2,632 sqft (47'x56')
17	AIR COOLED CONDENSERS (ACC) 20 CELLS	219'x189' (EL.141'-6")
18	FUEL OIL FORWARDING PUMP HOUSE	2,000 sqft (50'x40')
19	ULSD TANK (TANK DIA. 140'/CONTAINMENT DIA 148')	5.5 MIL. GAL. EL. 69'-0"
20	EXCITATION TRANSFORMER	(NOT SHOWN)
21	MANUFACTURED TREATMENT DEVICE (BELOW GROUND)	
22	AUX. TRANSFORMER	
23	OIL/WATER SEPARATOR (BELOW GROUND)	550 GAL. 55GPM
24	STATIC START ISOLATION TRANSFORMER	(NOT SHOWN)
25	CONTROLS SERVICE/AUX ELECT BUILDING (2 STORIES)	(2x 8,500sqft) 17,000 sqft
26	CEMS EQUIPMENT MODULE	225 sqft (15'x15')
27	TURBINE BUILDING	44,546 sqft (EL.113'-6") (79'x150'-7")x(99'-8"x25'-5")
28	BATTERY COMPARTMENT	(NOT SHOWN)
29	FUEL GAS METERING & REGULATING STATION	3,240 sqft (54'x60')
30	LCI AND EXCITER COMPARTMENT	(NOT SHOWN)
31	ST GENERATOR EXCITATION COMPARTMENT	(NOT SHOWN)
32	HRSG STACK	21' DIA. (EL.316'-6") 168'-4"x36'-10" (EL.116'-4")
33	HEAT RECOVERY STEAM GENERATOR (HRSG)	
34	HRSG PENTHOUSE	71'-0"x77'-0" EL.141'-6"
35	HYDROGEN STORAGE VESSELS	
36	MAINTENANCE BUILDING (NOT SHOWN)	800 sqft (20'x40')
37	WAREHOUSE	5,625 sqft (75'x75')
38	GENERAL SERVICES BUILDING	12,270 sqft (138'x90')
39	WASTE WATER SUMP	
40	FUEL OIL UNLOADING DOCK (EXISTING)	
41	BOILER FEED WATER PUMP BUILDING	2,475 sqft (75'x33')
42	FUEL OIL TRUCK UNLOADING AREA (2 STATIONS)	
43	AIR COMPRESSOR SKID	(NOT SHOWN)
44	FUEL GAS PERFORMANCE HEATER, FUEL GAS ABSOLUTE SEPARATOR & FEED WATER HEATER	
45	HSRG BLOWDOWN TANK	
46	OVERHEAD CRANE	
47	GENERATOR CIRCUIT BREAKERS (2)	(NOT SHOWN)
48	PROPERTY LINE	
49	CT PDC	
50	HRSG PDC	
51	EXISTING ROADWAY TO LIGHTHOUSE	

REFERENCES:

NO.	DATE	ACCT.	DESCRIPTION	DWN	CKD	EXD	REV	REV	APD
OC	2/01/16		SEE REVISION NOTE OC	KW	SB	TF	-	-	-
OB	12/08/15		SEE REVISION NOTE OB	KW	SB	TF	-	-	-
OA	11/25/15		SEE REVISION NOTE OA	KW	SB	TF	-	-	-

PRELIMINARY

12.5
0 25
GRAPHIC SCALE (FEET)

TECHNICAL TABLES/SPECIFICATIONS:

REV. 0A-ISSUED FOR INFORMATION
REV. 0B-REVISED PER LATEST GE/ALSTOM HRSG DRAWINGS/ADDED ULSD TANK INFO.
REV. 0C-REVISED TURBINE BUILDING SIZE.

REVISION NOTES:

DWG SCALE:
SEAL:

RCM Technologies
Power System Services

BRIDGEPORT 05
PLANT LAYOUT
COMBINED CYCLE PROJECT
PROPOSED GENERAL ARRANGEMENT
ARRANGEMENT DESIGN-CIVIL GENERAL

PROJECT ENGINEERING DIVISION

PSEG
Power LLC

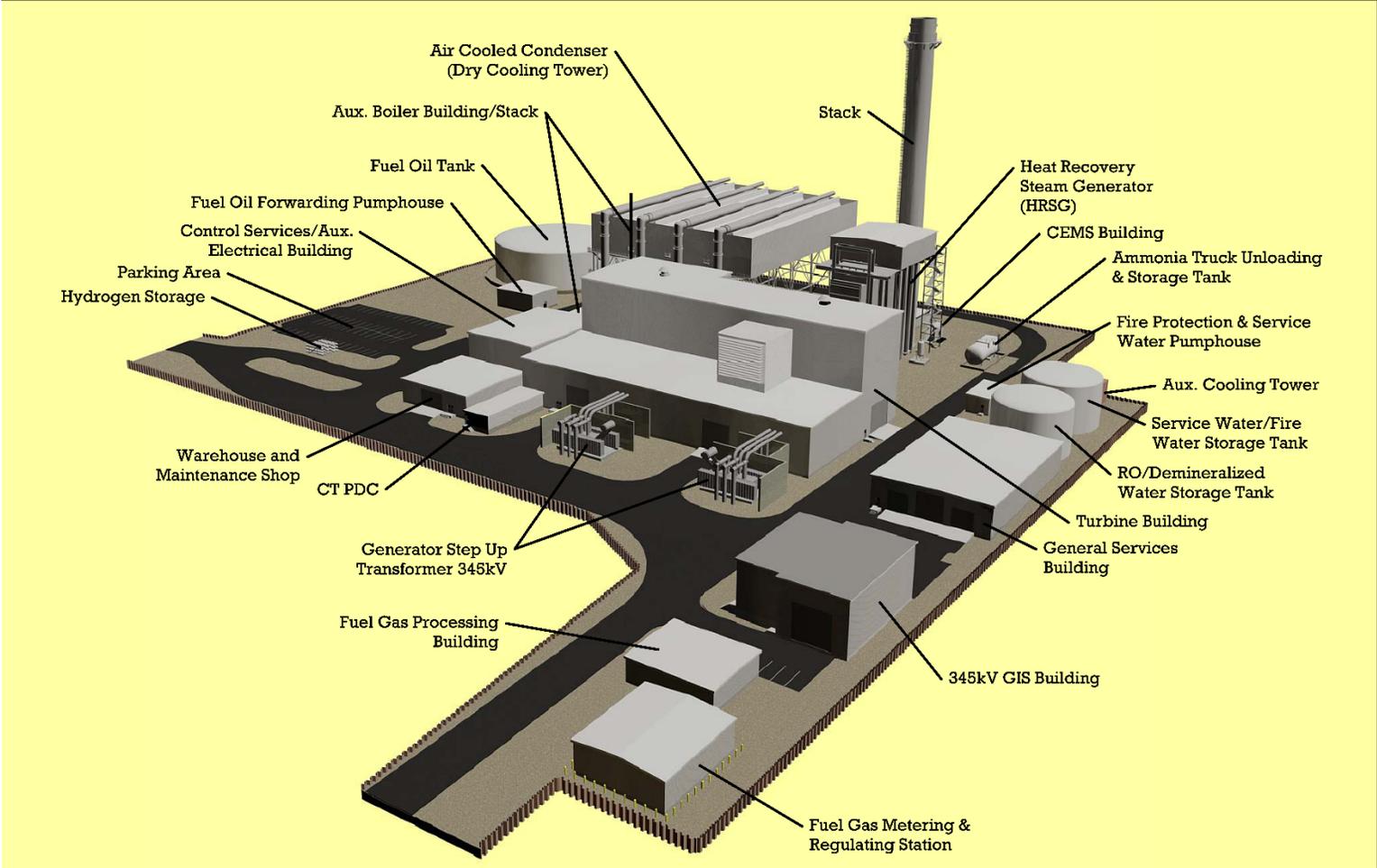
DRAWN (BY RCMT) KEN WALLACE	CHECKED (BY RCMT) SCOT BLANTON	EXAMINED (SR DESIGNER) (BY RCMT) TONY FOSTER
REVIEWED (ENGR)	REVIEWED (PROJ ENGR)	APPROVED (PRINCIPAL)

VENDOR NO.
BPHU5-DWG-014-C-0102A

SPONSOR: DONALD A. SAUERBORN
ANSI D SIZE
VERSION: **OC**

Three-Dimensional CAD Rendering of Proposed Unit 5 With Major Plant Components

Bridgeport Harbor Unit 5 Combined Cycle Project



Attachment E: Supplemental Application Forms

**Includes Supplemental Text as Attachment E0 –
Summary of Emissions and Estimation
Methodology**

EXHIBIT D
Excerpts from Air Permits
Applications to Connecticut
Department of Energy &
Environmental Protection

Attachment E

Table of Contents

Attachment	Description
E	Supplemental Application Forms
E201	Manufacturing or Processing Operations - Aux Cooling Tower DEEP-NSR-APP-201
E202	Fuel Burning Equipment - Gas Turbine DEEP-NSR-APP-202 Fuel Burning Equipment - Duct Burner DEEP-NSR-APP-202 Fuel Burning Equipment - Aux Boiler DEEP-NSR-APP-202 Fuel Burning Equipment - Emer Generator DEEP-NSR-APP-202 Fuel Burning Equipment - Emer Fire Pump DEEP-NSR-APP-202 E202-A: Process Information and Flow Diagram
E204	E204: Volatile Liquid Storage DEEP-NSR-APP-204 E204-C: Material Safety Data Sheets DEEP-NSR-APP-204 E204-D: EPA TANKS Program Output DEEP-NSR-APP-204
E210	Air Pollution Control Equipment DEEP-NSR-APP-210
E211	Stack and Building Parameters DEEP-NSR-APP-211
E212	Unit Emissions - CCGT/Duct Burner (CTG on Nat. Gas, without duct firing) DEEP-NSR-APP-212 Unit Emissions - CCGT/Duct Burner (CTG on Nat. Gas, with duct firing) DEEP-NSR-APP-212 Unit Emissions - CCGT/Duct Burner (CTG on ULSD, without duct firing) DEEP-NSR-APP-212

	<p>Unit Emissions - CCGT/Duct Burner (CTG on ULSD, with duct firing) DEEP-NSR-APP-212</p> <p>HRSO Stack – 30-Minute Averaging Time E212-B: MASC Spreadsheet DEEP-NSR-APP-212</p> <p>HRSO Stack – 8-Hour Averaging Time E212-B: MASC Spreadsheet DEEP-NSR-APP-212</p> <p>Unit Emissions - Aux Boiler DEEP-NSR-APP-212</p> <p>Aux Boiler – 30-Minute Averaging Time E212-B: MASC Spreadsheet DEEP-NSR-APP-212</p> <p>Aux Boiler – 8-Hour Averaging Time E212-B: MASC Spreadsheet DEEP-NSR-APP-212</p> <p>Unit Emissions - Emer Generator DEEP-NSR-APP-212</p> <p>Emer Generator – 30-Minute Averaging Time E212-B: MASC Spreadsheet DEEP-NSR-APP-212</p> <p>Emer Generator – 8-Hour Averaging Time E212-B: MASC Spreadsheet DEEP-NSR-APP-212</p> <p>Unit Emissions - Emer Fire Pump Engine DEEP-NSR-APP-212</p> <p>Emer Fire Pump Engine – 30-Minute Averaging Time E212-B: MASC Spreadsheet DEEP-NSR-APP-212</p> <p>Emer Fire Pump Engine – 8-Hour Averaging Time E212-B: MASC Spreadsheet DEEP-NSR-APP-212</p> <p>Unit Emissions - Aux Cooling Tower DEEP-NSR-APP-212</p>
<p>E0</p>	<p>Supplemental Text – Summary of Emissions and Estimation Methodology</p>

Attachment E201: Manufacturing or Processing Operations Supplemental Application Form pg. E-4

Applicant Name: PSEG Power Connecticut LLC
 Unit No.: EU-54 - Aux Cooling Tower

DEEP USE ONLY
App. No.: _____

Complete this form in accordance with the [instructions](#) (DEEP-NSR-INST-201) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete a separate form for *each* distinct manufacturing or process operation.

Questions? Visit the [Air Permitting](#) web page or contact the Air Permitting Engineer of the Day at 860-424-4152.

Part I: General

Manufacturing or Process Description: Auxiliary Cooling Tower

Subunit No.	Make & Model	Construction Date	Subunit Function	Cont. (C) or Batch (B)	Hrs/Batch Batches/Day	Maximum Operating Schedule
N/A		Mar 2017	Cooling	C		8760 h/yr
Is this unit subject to Title 40 CFR Part 60, NSPS?		<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, Subpart(s)				
Is this unit subject to Title 40 CFR Part 63, MACT?		<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, Subpart(s)				

Part II: Raw Material and Product Information

Subunit No.	Raw Material(s) Used	Maximum Hourly Quantity Input of Each Raw Material	List of Product(s)	Quantity Product Output	
				Maximum Hourly	Maximum Annual
	Water	13,000 gpm	0.001% Drift		

Part III: Process Heat Information

Complete this part **only** if the fuel burning source is **not** currently permitted and the fuel burning source does **not** meet the requirements indicated in the Fuel Burning Equipment form (DEEP-NSR-APP-202), i.e., the primary purpose of the fuel burning source is **not** for heat or power generation.

Subunit No.	Fuel Type	% Sulfur by Weight	Burner Maximum Rated Capacity (MMBtu/hr)	Maximum Hourly Fuel Firing Rate	Maximum Annual Fuel Consumption	Provides Heat to Subunit(s)

Part IV: 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 E201-A, etc.) and be sure to include the applicant's name.

- Attachment E201-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 E201-B: *Manufacturer Information* - Submit copies of the manufacturer specification sheets for the unit, and any air pollution control equipment and monitoring systems. **REQUIRED**

Attachment E202: Fuel Burning Equipment Supplemental Application Form

Applicant Name: PSEG Power Connecticut LLC
 Unit No.: EU-50 - GE Gas Turbine

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 (<i>check one</i>)	<input type="checkbox"/> Boiler	<input type="checkbox"/> Heater/Furnace
	<input type="checkbox"/> IC Engine	<input checked="" type="checkbox"/> Turbine
	<input type="checkbox"/> Duct Burner	<input type="checkbox"/> Other (specify):
Manufacturer and Model Number	General Electric 7HA.02	
Construction Date	March 2017	
Manufacture Date	Not Available	
Is this unit subject to Title 40 CFR Part 60, NSPS?	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes, Subpart(s) KKKK	
Is this unit subject to Title 40 CFR Part 63, MACT?	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes, Subpart(s) YYYY Per 40 CFR 63.6095(d) standards stayed.	
Maximum Design Heat Input	3,439 (ULSD) 3,292 (nat. gas) MMBtu/hr	
Typical Heat Input	3,321 (ULSD) 3,131 (nat. gas) 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	0.0017	1,020 / scf	3.227	N/A	MMscf
ULSD	0.0015	19,581 / lb	24,912	16.7 MM	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	<input type="checkbox"/> Tangentially Fired <input type="checkbox"/> Horizontally Opposed (normal) Fired <input type="checkbox"/> Other (specify):
Pulverized Coal Fired Unit	<input type="checkbox"/> Dry Bottom <input type="checkbox"/> Wet Bottom <input type="checkbox"/> Wall Fired <input type="checkbox"/> Tangentially Fired <input type="checkbox"/> Horizontally Fired <input type="checkbox"/> Vertically Fired <input type="checkbox"/> Other (specify):
Coal/Wood Fired Stoker Unit	<input type="checkbox"/> Overfeed <input type="checkbox"/> Underfeed <input type="checkbox"/> Spreader <input type="checkbox"/> Hand Fed <input type="checkbox"/> IGCC (Integrated Gasification Combined Cycle) <input type="checkbox"/> Other (specify):
Coal/Wood Fired Fluidized Bed Combustor	<input type="checkbox"/> Circulating Bed <input type="checkbox"/> Bubbling Bed <input type="checkbox"/> Cyclone Furnace <input type="checkbox"/> Other (specify):
Other Coal/Wood Fired Unit	<input type="checkbox"/> Suspension Firing <input type="checkbox"/> Dutch Oven/Fuel Cell Oven <input type="checkbox"/> Over Fire Air <input type="checkbox"/> Other (specify):

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

IC Engine Information	
IC Engine Operation (check one)	<input type="checkbox"/> Emergency Only <input type="checkbox"/> Emergency/Non-Emergency
IC Engine Ignition (check one)	<input type="checkbox"/> Compression <input type="checkbox"/> Spark
IC Engine Type (check one)	<input type="checkbox"/> 4-Stroke Rich Burn (4SRB) <input type="checkbox"/> 4-Stroke Lean Burn (4SLB) <input type="checkbox"/> 2-Stroke Lean Burn (2SLB)
IC Engine Brake Horsepower	HP
IC Engine Power Output	MW
Turbine Information	
Turbine Operation (check one)	<input type="checkbox"/> Emergency Only <input type="checkbox"/> Emergency/Non-Emergency
Turbine Type (check one)	<input type="checkbox"/> Simple Cycle <input checked="" type="checkbox"/> Combined Cycle
Turbine Power Output	368 gross MW

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

Type of Combustion Control(s) or Modifications(s)	<input checked="" type="checkbox"/> Low NOx Burners	<input type="checkbox"/> Fly Ash Reinjection
	<input type="checkbox"/> Flue Gas Recirculation	<input type="checkbox"/> Reburn
	<input checked="" type="checkbox"/> Selective Catalytic Reduction	<input type="checkbox"/> Selective Non-Catalytic Reduction
	<input type="checkbox"/> Coal Reburn	<input checked="" type="checkbox"/> Oxidation Catalyst
	<input type="checkbox"/> Gas Reburn	<input type="checkbox"/> 3-way Catalyst
	<input type="checkbox"/> Lean Burn	<input type="checkbox"/> Over Fire Air
	<input type="checkbox"/> Rich Burn	<input type="checkbox"/> Biased Burner Firing
	<input type="checkbox"/> Low Excess Air	<input type="checkbox"/> Burners Out of Service
	<input checked="" type="checkbox"/> Other (specify): Water Injection	<input type="checkbox"/> 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.

- | | |
|--|--|
| <input checked="" type="checkbox"/> Attachment E202-A: | <i>Process Information and Flow Diagram</i> – 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 |
| <input type="checkbox"/> Attachment E202-B: | <i>Manufacturer Information</i> - Submit copies of the manufacturer specification sheets for the unit, the air pollution control equipment and the monitoring systems. REQUIRED |
| <input type="checkbox"/> Attachment E202-C: | <i>Turbine Emissions Profiles</i> - 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: PSEG Power Connecticut LLC
 Unit No.: EU-50 - Duct Burner - GE 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 (<i>check one</i>)	<input type="checkbox"/> Boiler	<input type="checkbox"/> Heater/Furnace
	<input type="checkbox"/> IC Engine	<input type="checkbox"/> Turbine
	<input checked="" type="checkbox"/> Duct Burner	<input type="checkbox"/> Other (specify):
Manufacturer and Model Number	Not Available	
Construction Date	March 2017	
Manufacture Date	Not Available	
Is this unit subject to Title 40 CFR Part 60, NSPS?	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes, Subpart(s) KKKK	
Is this unit subject to Title 40 CFR Part 63, MACT?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, Subpart(s)	
Maximum Design Heat Input	267 MMBtu/hr	
Typical Heat Input	241 (CTG on ULSD) MMBtu/hr	
Maximum Operating Schedule	24 hours/day	3,605 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	0.0017	1,020 / scf	0.262	N/A	MMscf

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	<input type="checkbox"/> Tangentially Fired <input type="checkbox"/> Horizontally Opposed (normal) Fired <input type="checkbox"/> Other (specify):
Pulverized Coal Fired Unit	<input type="checkbox"/> Dry Bottom <input type="checkbox"/> Wet Bottom <input type="checkbox"/> Wall Fired <input type="checkbox"/> Tangentially Fired <input type="checkbox"/> Horizontally Fired <input type="checkbox"/> Vertically Fired <input type="checkbox"/> Other (specify):
Coal/Wood Fired Stoker Unit	<input type="checkbox"/> Overfeed <input type="checkbox"/> Underfeed <input type="checkbox"/> Spreader <input type="checkbox"/> Hand Fed <input type="checkbox"/> IGCC (Integrated Gasification Combined Cycle) <input type="checkbox"/> Other (specify):
Coal/Wood Fired Fluidized Bed Combustor	<input type="checkbox"/> Circulating Bed <input type="checkbox"/> Bubbling Bed <input type="checkbox"/> Cyclone Furnace <input type="checkbox"/> Other (specify):
Other Coal/Wood Fired Unit	<input type="checkbox"/> Suspension Firing <input type="checkbox"/> Dutch Oven/Fuel Cell Oven <input type="checkbox"/> Over Fire Air <input type="checkbox"/> Other (specify):

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

IC Engine Information	
IC Engine Operation <i>(check one)</i>	<input type="checkbox"/> Emergency Only <input type="checkbox"/> Emergency/Non-Emergency
IC Engine Ignition <i>(check one)</i>	<input type="checkbox"/> Compression <input type="checkbox"/> Spark
IC Engine Type <i>(check one)</i>	<input type="checkbox"/> 4-Stroke Rich Burn (4SRB) <input type="checkbox"/> 4-Stroke Lean Burn (4SLB) <input type="checkbox"/> 2-Stroke Lean Burn (2SLB)
IC Engine Brake Horsepower	HP
IC Engine Power Output	MW
Turbine Information	
Turbine Operation <i>(check one)</i>	<input type="checkbox"/> Emergency Only <input type="checkbox"/> Emergency/Non-Emergency
Turbine Type <i>(check one)</i>	<input type="checkbox"/> Simple Cycle <input type="checkbox"/> Combined Cycle
Turbine Power Output	MW

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

Type of Combustion Control(s) or Modifications(s)	<input type="checkbox"/> Low NOx Burners	<input type="checkbox"/> Fly Ash Reinjection
	<input type="checkbox"/> Flue Gas Recirculation	<input type="checkbox"/> Reburn
	<input checked="" type="checkbox"/> Selective Catalytic Reduction	<input type="checkbox"/> Selective Non-Catalytic Reduction
	<input type="checkbox"/> Coal Reburn	<input checked="" type="checkbox"/> Oxidation Catalyst
	<input type="checkbox"/> Gas Reburn	<input type="checkbox"/> 3-way Catalyst
	<input type="checkbox"/> Lean Burn	<input type="checkbox"/> Over Fire Air
	<input type="checkbox"/> Rich Burn	<input type="checkbox"/> Biased Burner Firing
	<input type="checkbox"/> Low Excess Air	<input type="checkbox"/> Burners Out of Service
	<input type="checkbox"/> Other (specify):	<input type="checkbox"/> 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.

- | | | |
|-------------------------------------|--------------------|--|
| <input checked="" type="checkbox"/> | Attachment E202-A: | <i>Process Information and Flow Diagram</i> – 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 |
| <input type="checkbox"/> | Attachment E202-B: | <i>Manufacturer Information</i> - Submit copies of the manufacturer specification sheets for the unit, the air pollution control equipment and the monitoring systems. REQUIRED |
| <input type="checkbox"/> | Attachment E202-C: | <i>Turbine Emissions Profiles</i> - 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: PSEG Power Connecticut LLC
 Unit No.: EU-51 - Auxiliary Boiler

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 (<i>check one</i>)	<input checked="" type="checkbox"/> Boiler	<input type="checkbox"/> Heater/Furnace
	<input type="checkbox"/> IC Engine	<input type="checkbox"/> Turbine
	<input type="checkbox"/> Duct Burner	<input type="checkbox"/> Other (specify):
Manufacturer and Model Number	Not Available	
Construction Date	March 2017	
Manufacture Date	Not Available	
Is this unit subject to Title 40 CFR Part 60, NSPS?	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes, Subpart(s) Dc	
Is this unit subject to Title 40 CFR Part 63, MACT?	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes, Subpart(s) DDDDD	
Maximum Design Heat Input	80 MMBtu/hr	
Typical Heat Input	80 MMBtu/hr	
Maximum Operating Schedule	24 hours/day	8,760 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	0.0017	1,020 / scf	0.078	687	MMscf

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	Not Available
Number of Burners	One
Burner Maximum Rated Capacity (per burner)	80 MMBtu/hr
Firing Type and Method Information (Choose all that apply)	
Oil/Gas Fired Unit	<input type="checkbox"/> Tangentially Fired <input type="checkbox"/> Horizontally Opposed (normal) Fired <input type="checkbox"/> Other (specify): Not Available
Pulverized Coal Fired Unit	<input type="checkbox"/> Dry Bottom <input type="checkbox"/> Wet Bottom <input type="checkbox"/> Wall Fired <input type="checkbox"/> Tangentially Fired <input type="checkbox"/> Horizontally Fired <input type="checkbox"/> Vertically Fired <input type="checkbox"/> Other (specify):
Coal/Wood Fired Stoker Unit	<input type="checkbox"/> Overfeed <input type="checkbox"/> Underfeed <input type="checkbox"/> Spreader <input type="checkbox"/> Hand Fed <input type="checkbox"/> IGCC (Integrated Gasification Combined Cycle) <input type="checkbox"/> Other (specify):
Coal/Wood Fired Fluidized Bed Combustor	<input type="checkbox"/> Circulating Bed <input type="checkbox"/> Bubbling Bed <input type="checkbox"/> Cyclone Furnace <input type="checkbox"/> Other (specify):
Other Coal/Wood Fired Unit	<input type="checkbox"/> Suspension Firing <input type="checkbox"/> Dutch Oven/Fuel Cell Oven <input type="checkbox"/> Over Fire Air <input type="checkbox"/> Other (specify):

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

IC Engine Information	
IC Engine Operation <i>(check one)</i>	<input type="checkbox"/> Emergency Only <input type="checkbox"/> Emergency/Non-Emergency
IC Engine Ignition <i>(check one)</i>	<input type="checkbox"/> Compression <input type="checkbox"/> Spark
IC Engine Type <i>(check one)</i>	<input type="checkbox"/> 4-Stroke Rich Burn (4SRB) <input type="checkbox"/> 4-Stroke Lean Burn (4SLB) <input type="checkbox"/> 2-Stroke Lean Burn (2SLB)
IC Engine Brake Horsepower	HP
IC Engine Power Output	MW
Turbine Information	
Turbine Operation <i>(check one)</i>	<input type="checkbox"/> Emergency Only <input type="checkbox"/> Emergency/Non-Emergency
Turbine Type <i>(check one)</i>	<input type="checkbox"/> Simple Cycle <input type="checkbox"/> Combined Cycle
Turbine Power Output	MW

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

Type of Combustion Control(s) or Modifications(s)	<input checked="" type="checkbox"/> Low NOx Burners	<input type="checkbox"/> Fly Ash Reinjection
	<input checked="" type="checkbox"/> Flue Gas Recirculation	<input type="checkbox"/> Reburn
	<input type="checkbox"/> Selective Catalytic Reduction	<input type="checkbox"/> Selective Non-Catalytic Reduction
	<input type="checkbox"/> Coal Reburn	<input type="checkbox"/> Oxidation Catalyst
	<input type="checkbox"/> Gas Reburn	<input type="checkbox"/> 3-way Catalyst
	<input type="checkbox"/> Lean Burn	<input type="checkbox"/> Over Fire Air
	<input type="checkbox"/> Rich Burn	<input type="checkbox"/> Biased Burner Firing
	<input type="checkbox"/> Low Excess Air	<input type="checkbox"/> Burners Out of Service
	<input type="checkbox"/> Other (specify):	<input type="checkbox"/> 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.

- | | |
|--|--|
| <input checked="" type="checkbox"/> Attachment E202-A: | <i>Process Information and Flow Diagram</i> – 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 |
| <input type="checkbox"/> Attachment E202-B: | <i>Manufacturer Information</i> - Submit copies of the manufacturer specification sheets for the unit, the air pollution control equipment and the monitoring systems. REQUIRED |
| <input type="checkbox"/> Attachment E202-C: | <i>Turbine Emissions Profiles</i> - 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: PSEG Power Connecticut LLC
 Unit No.: EU-52 - Emergency Generator

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 (<i>check one</i>)	<input type="checkbox"/> Boiler	<input type="checkbox"/> Heater/Furnace
	<input checked="" type="checkbox"/> IC Engine	<input type="checkbox"/> Turbine
	<input type="checkbox"/> Duct Burner	<input type="checkbox"/> Other (specify):
Manufacturer and Model Number	Caterpillar 3516C or equivalent	
Construction Date	March 2017	
Manufacture Date	Not Available	
Is this unit subject to Title 40 CFR Part 60, NSPS?	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes, Subpart(s) IIII	
Is this unit subject to Title 40 CFR Part 63, MACT?	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes, Subpart(s) ZZZZ	
Maximum Design Heat Input	19.1 MMBtu/hr	
Typical Heat Input	19.1 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	19,581 / lb	138	41,400	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	<input type="checkbox"/> Tangentially Fired <input type="checkbox"/> Horizontally Opposed (normal) Fired <input type="checkbox"/> Other (specify):
Pulverized Coal Fired Unit	<input type="checkbox"/> Dry Bottom <input type="checkbox"/> Wet Bottom <input type="checkbox"/> Wall Fired <input type="checkbox"/> Tangentially Fired <input type="checkbox"/> Horizontally Fired <input type="checkbox"/> Vertically Fired <input type="checkbox"/> Other (specify):
Coal/Wood Fired Stoker Unit	<input type="checkbox"/> Overfeed <input type="checkbox"/> Underfeed <input type="checkbox"/> Spreader <input type="checkbox"/> Hand Fed <input type="checkbox"/> IGCC (Integrated Gasification Combined Cycle) <input type="checkbox"/> Other (specify):
Coal/Wood Fired Fluidized Bed Combustor	<input type="checkbox"/> Circulating Bed <input type="checkbox"/> Bubbling Bed <input type="checkbox"/> Cyclone Furnace <input type="checkbox"/> Other (specify):
Other Coal/Wood Fired Unit	<input type="checkbox"/> Suspension Firing <input type="checkbox"/> Dutch Oven/Fuel Cell Oven <input type="checkbox"/> Over Fire Air <input type="checkbox"/> Other (specify):

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

IC Engine Information	
IC Engine Operation <i>(check one)</i>	<input checked="" type="checkbox"/> Emergency Only <input type="checkbox"/> Emergency/Non-Emergency
IC Engine Ignition <i>(check one)</i>	<input checked="" type="checkbox"/> Compression <input type="checkbox"/> Spark
IC Engine Type <i>(check one)</i>	<input type="checkbox"/> 4-Stroke Rich Burn (4SRB) <input type="checkbox"/> 4-Stroke Lean Burn (4SLB) <input type="checkbox"/> 2-Stroke Lean Burn (2SLB)
IC Engine Brake Horsepower	2,937 HP
IC Engine Power Output	2.0 MW
Turbine Information	
Turbine Operation <i>(check one)</i>	<input type="checkbox"/> Emergency Only <input type="checkbox"/> Emergency/Non-Emergency
Turbine Type <i>(check one)</i>	<input type="checkbox"/> Simple Cycle <input type="checkbox"/> Combined Cycle
Turbine Power Output	MW

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

Type of Combustion Control(s) or Modifications(s)	<input type="checkbox"/> Low NOx Burners	<input type="checkbox"/> Fly Ash Reinjection
	<input type="checkbox"/> Flue Gas Recirculation	<input type="checkbox"/> Reburn
	<input type="checkbox"/> Selective Catalytic Reduction	<input type="checkbox"/> Selective Non-Catalytic Reduction
	<input type="checkbox"/> Coal Reburn	<input type="checkbox"/> Oxidation Catalyst
	<input type="checkbox"/> Gas Reburn	<input type="checkbox"/> 3-way Catalyst
	<input type="checkbox"/> Lean Burn	<input type="checkbox"/> Over Fire Air
	<input type="checkbox"/> Rich Burn	<input type="checkbox"/> Biased Burner Firing
	<input type="checkbox"/> Low Excess Air	<input type="checkbox"/> Burners Out of Service
	<input type="checkbox"/> Other (specify):	<input type="checkbox"/> 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.

- | | | |
|--------------------------|--------------------|--|
| <input type="checkbox"/> | Attachment E202-A: | <i>Process Information and Flow Diagram</i> – 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 |
| <input type="checkbox"/> | Attachment E202-B: | <i>Manufacturer Information</i> - Submit copies of the manufacturer specification sheets for the unit, the air pollution control equipment and the monitoring systems. REQUIRED |
| <input type="checkbox"/> | Attachment E202-C: | <i>Turbine Emissions Profiles</i> - 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: PSEG Power Connecticut LLC
 Unit No.: EU-53 - Emergency Fire Pump

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 (<i>check one</i>)	<input type="checkbox"/> Boiler	<input type="checkbox"/> Heater/Furnace
	<input checked="" type="checkbox"/> IC Engine	<input type="checkbox"/> Turbine
	<input type="checkbox"/> Duct Burner	<input type="checkbox"/> Other (specify):
Manufacturer and Model Number	Cummins CFP9E-F50 or equivalent	
Construction Date	March 2017	
Manufacture Date	Not Available	
Is this unit subject to Title 40 CFR Part 60, NSPS?	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes, Subpart(s) IIII	
Is this unit subject to Title 40 CFR Part 63, MACT?	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes, Subpart(s) ZZZZ	
Maximum Design Heat Input	2.6 MMBtu/hr	
Typical Heat Input	2.6 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	19,581 / lb	18.6	5,580	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	<input type="checkbox"/> Tangentially Fired <input type="checkbox"/> Horizontally Opposed (normal) Fired <input type="checkbox"/> Other (specify):
Pulverized Coal Fired Unit	<input type="checkbox"/> Dry Bottom <input type="checkbox"/> Wet Bottom <input type="checkbox"/> Wall Fired <input type="checkbox"/> Tangentially Fired <input type="checkbox"/> Horizontally Fired <input type="checkbox"/> Vertically Fired <input type="checkbox"/> Other (specify):
Coal/Wood Fired Stoker Unit	<input type="checkbox"/> Overfeed <input type="checkbox"/> Underfeed <input type="checkbox"/> Spreader <input type="checkbox"/> Hand Fed <input type="checkbox"/> IGCC (Integrated Gasification Combined Cycle) <input type="checkbox"/> Other (specify):
Coal/Wood Fired Fluidized Bed Combustor	<input type="checkbox"/> Circulating Bed <input type="checkbox"/> Bubbling Bed <input type="checkbox"/> Cyclone Furnace <input type="checkbox"/> Other (specify):
Other Coal/Wood Fired Unit	<input type="checkbox"/> Suspension Firing <input type="checkbox"/> Dutch Oven/Fuel Cell Oven <input type="checkbox"/> Over Fire Air <input type="checkbox"/> Other (specify):

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

IC Engine Information	
IC Engine Operation <i>(check one)</i>	<input checked="" type="checkbox"/> Emergency Only <input type="checkbox"/> Emergency/Non-Emergency
IC Engine Ignition <i>(check one)</i>	<input checked="" type="checkbox"/> Compression <input type="checkbox"/> Spark
IC Engine Type <i>(check one)</i>	<input type="checkbox"/> 4-Stroke Rich Burn (4SRB) <input type="checkbox"/> 4-Stroke Lean Burn (4SLB) <input type="checkbox"/> 2-Stroke Lean Burn (2SLB)
IC Engine Brake Horsepower	360 HP
IC Engine Power Output	0.277 MW
Turbine Information	
Turbine Operation <i>(check one)</i>	<input type="checkbox"/> Emergency Only <input type="checkbox"/> Emergency/Non-Emergency
Turbine Type <i>(check one)</i>	<input type="checkbox"/> Simple Cycle <input type="checkbox"/> Combined Cycle
Turbine Power Output	MW

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

Type of Combustion Control(s) or Modifications(s)	<input type="checkbox"/> Low NOx Burners	<input type="checkbox"/> Fly Ash Reinjection
	<input type="checkbox"/> Flue Gas Recirculation	<input type="checkbox"/> Reburn
	<input type="checkbox"/> Selective Catalytic Reduction	<input type="checkbox"/> Selective Non-Catalytic Reduction
	<input type="checkbox"/> Coal Reburn	<input type="checkbox"/> Oxidation Catalyst
	<input type="checkbox"/> Gas Reburn	<input type="checkbox"/> 3-way Catalyst
	<input type="checkbox"/> Lean Burn	<input type="checkbox"/> Over Fire Air
	<input type="checkbox"/> Rich Burn	<input type="checkbox"/> Biased Burner Firing
	<input type="checkbox"/> Low Excess Air	<input type="checkbox"/> Burners Out of Service
	<input checked="" type="checkbox"/> Other (specify): EPA Tier 3	<input type="checkbox"/> None

Part VI: Attachments

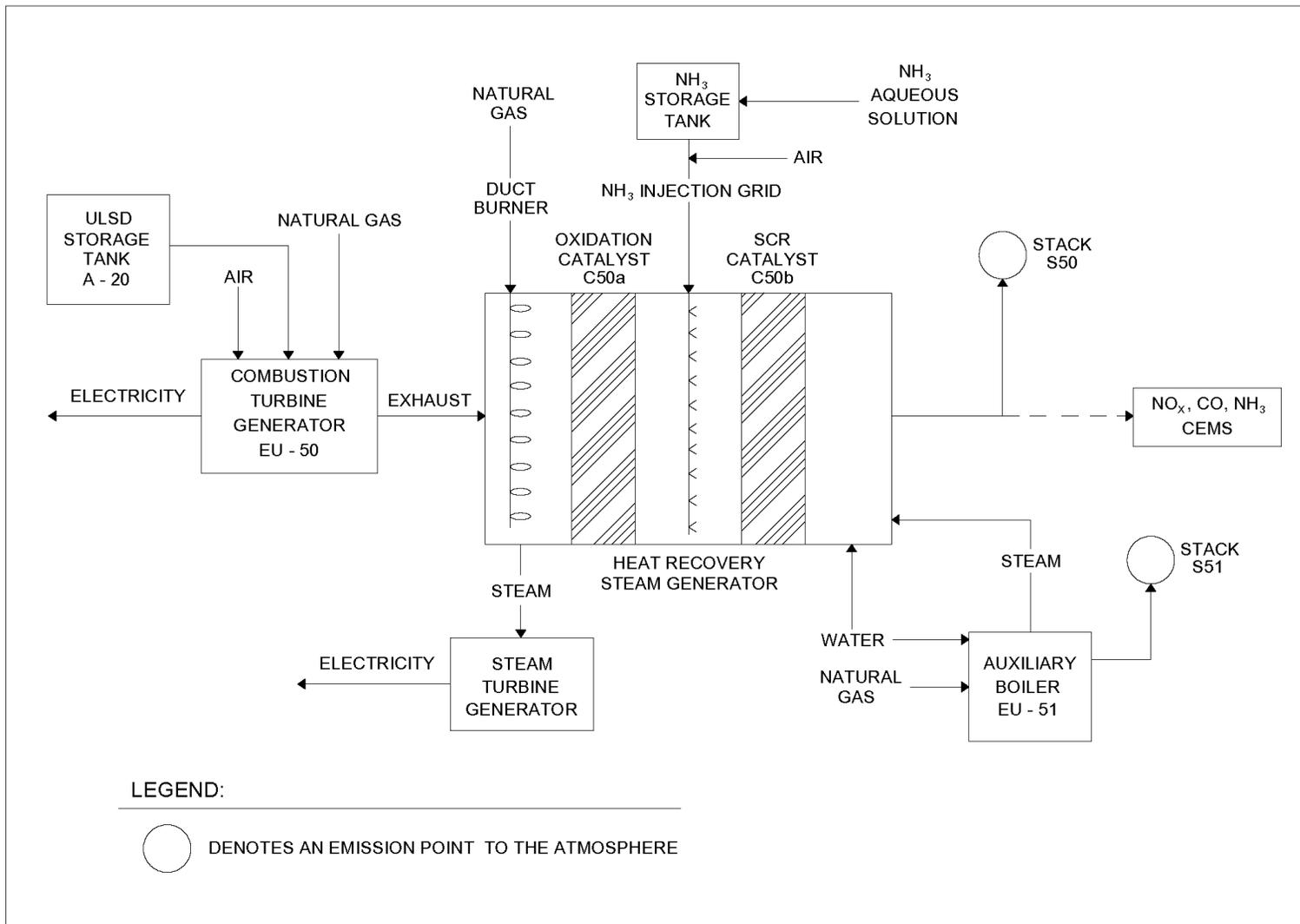
Please check the attachments being submitted as verification that all applicable attachments have been submitted with this application form. When submitting such documents, please label the documents as indicated in this Part (e.g., Attachment E202-A, etc.) and be sure to include the applicant's name.

- | | | |
|--------------------------|--------------------|--|
| <input type="checkbox"/> | Attachment E202-A: | <i>Process Information and Flow Diagram</i> – 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 |
| <input type="checkbox"/> | Attachment E202-B: | <i>Manufacturer Information</i> - Submit copies of the manufacturer specification sheets for the unit, the air pollution control equipment and the monitoring systems. REQUIRED |
| <input type="checkbox"/> | Attachment E202-C: | <i>Turbine Emissions Profiles</i> - Submit copies of manufacturer's emissions profile data for steady state and transient operation of the turbine. IF APPLICABLE |

PSEG Power Connecticut LLC

PROCESS INFORMATION AND FLOW DIAGRAM

ATTACHMENT E202-A TO DEEP-NSR-APP-200



Attachment E204: Volatile Liquid Storage Supplemental Application Form

Applicant Name: PSEG Power Connecticut LLC
 Unit No.: A-20, A-21, A-22 - ULSD

DEEP USE ONLY
App. No.: _____

Complete this form in accordance with the [instructions](#) (DEEP-NSR-INST-204) to ensure the proper handling of your application. Print or type unless otherwise noted.

Complete a separate form for *each* tank farm.

Questions? Visit the [Air Permitting](#) web page or contact the Air Permitting Engineer of the Day at 860-424-4152.

Part I: General

Tank ID No.	Tank Type	Construction Date	Tank Capacity (gal)	Product Type	Subject to Title 40 CFR Part 60, NSPS?	Subject to Title 40 CFR Part 63, MACT?
A-20	Fixed Roof	March 2017	5,500,000	ULSD	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, Subpart	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, Subpart
A-21	Fixed Roof	March 2017	3,000	ULSD	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, Subpart	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, Subpart
A-22	Fixed Roof	March 2017	500	ULSD	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, Subpart	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, Subpart
					<input type="checkbox"/> No <input type="checkbox"/> Yes, Subpart	<input type="checkbox"/> No <input type="checkbox"/> Yes, Subpart
					<input type="checkbox"/> No <input type="checkbox"/> Yes, Subpart	<input type="checkbox"/> No <input type="checkbox"/> Yes, Subpart
					<input type="checkbox"/> No <input type="checkbox"/> Yes, Subpart	<input type="checkbox"/> No <input type="checkbox"/> Yes, Subpart

In lieu of completing Parts II – IV of this form, the output from EPA Tanks Emissions Estimation Software Program may be attached for each tank.

Is the EPA Tanks Emissions Estimation Software Program Output Attached? No Yes
 If yes, go to Part V.

Part II: Product Information

Tank ID No.	Product Type	Density (lb/gal)	Molecular Weight	True Vapor Pressure (psi)	
				At Maximum Storage Temperature	At Annual Average Storage Temperature

Part III: Bulk Gasoline Plants or Terminals Only

Tank Farm Type	<input type="checkbox"/> Bulk Gasoline Plant	<input type="checkbox"/> Bulk Gasoline Terminal
For loading incoming gasoline into the storage tanks	Submerged fill pipe	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Bottom fill	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Splash fill	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is there a vapor balance system for filling storage tanks from transport vehicle tanks?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Is there a vapor balance system for filling transport vehicle tanks from storage tanks?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Is there a vapor recovery system for filling gasoline transport vehicles from storage tanks?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	If yes, specify type of vapor control device used:	

Part IV: Storage Tank Information

A: All New, Modified or Replacement Storage Tanks

Tank ID No.	Tank Diameter (ft)	Tank Height or Length (ft)	Maximum Hourly Filling Rate (gal/hr)	Maximum Annual Throughput (gal/yr)	Tank Capacity (gal)

B: Fixed Roof Tanks Only

Tank ID No.	Paint Color		Average Vapor Space Height (ft)	Horizontal (H) or Vertical (V)	Underground (Yes/No)
	Roof	Sides			

Part IV: Storage Tank Information (continued)

C: Variable Vapor Space Tanks Only

Tank ID No.	Volume Expansion Capacity (gal)	Number of Transfers into the Tank per Year

D: All Floating Roof Tanks

Tank ID No	Riveted (R) or Welded (W) Tank Sides	Type of Primary Seal	Type of Secondary Seal	Shell Condition	Number of Support Columns	Effective Column Diameter (ft)

Part IV: Storage Tank Information (continued)**E: Internal Floating Roof Tanks Only**

Tank ID No.	Types of Deck Fittings	Number of Each Type	Design of Each Deck Fitting	Number of Each Design	Bolted Decks Only Length of Deck Seam (ft)

Part V: 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 E204-A, etc.) and be sure to include the applicant's name.

<input checked="" type="checkbox"/>	Attachment E204-A: <i>Process Information and Flow Diagram</i> – 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
<input type="checkbox"/>	Attachment E204-B: <i>Manufacturer Information</i> - Submit copies of the manufacturer specification sheets for the unit, the air pollution control equipment and the monitoring systems. REQUIRED
<input checked="" type="checkbox"/>	Attachment E204-C: <i>Material Safety Data Sheets</i> – Submit a Material Safety Data Sheet for each product stored. REQUIRED
<input checked="" type="checkbox"/>	Attachment E204-D: <i>EPA Tanks Emissions Estimation Software Program Output</i> – Submit the <i>EPA Tanks Emissions Estimation Software Program</i> output data for each tank. IF APPLICABLE

PSEG POWER CONNECTICUT LLC

MATERIAL SAFETY DATA SHEETS

ATTACHMENT E204-C TO DEEP-NSR-APP-204

The two Material Safety Data Sheets for ULSD are from two suppliers of ULSD to PSEG Power Connecticut LLC's New Haven Harbor Station. PSEG Power Connecticut LLC would likely use the same suppliers for the Bridgeport Harbor Station, however, PSEG Power Connecticut LLC may use a different supplier.



Safety Data Sheet

Material Name: Diesel Fuel, All Types

SDS No. 9909
US GHS

Synonyms: Ultra Low Sulfur Diesel; Low Sulfur Diesel; No. 2 Diesel; Motor Vehicle Diesel Fuel; Non-Road Diesel Fuel; Locomotive/Marine Diesel Fuel

*** Section 1 - Product and Company Identification ***

Manufacturer Information

Hess Corporation
1 Hess Plaza
Woodbridge, NJ 07095-0961

Phone: 732-750-6000 Corporate EHS
Emergency # 800-424-9300 CHEMTREC
www.hess.com (Environment, Health, Safety Internet Website)

*** Section 2 - Hazards Identification ***

GHS Classification:

Flammable Liquids - Category 3
Skin Corrosion/Irritation – Category 2
Germ Cell Mutagenicity – Category 2
Carcinogenicity - Category 2
Specific Target Organ Toxicity (Single Exposure) - Category 3 (respiratory irritation, narcosis)
Aspiration Hazard – Category 1
Hazardous to the Aquatic Environment, Acute Hazard – Category 3

GHS LABEL ELEMENTS

Symbol(s)



Signal Word

DANGER

Hazard Statements

Flammable liquid and vapor.
Causes skin irritation.
Suspected of causing genetic defects.
Suspected of causing cancer.
May cause respiratory irritation.
May cause drowsiness or dizziness.
May be fatal if swallowed and enters airways.
Harmful to aquatic life.

Precautionary Statements

Prevention

Keep away from heat/sparks/open flames/hot surfaces. No smoking
Keep container tightly closed.
Ground/bond container and receiving equipment.

Safety Data Sheet

Material Name: Diesel Fuel, All Types

SDS No. 9909

Use explosion-proof electrical/ventilating/lighting/equipment.
 Use only non-sparking tools.
 Take precautionary measures against static discharge.
 Wear protective gloves/protective clothing/eye protection/face protection.
 Wash hands and forearms thoroughly after handling.
 Obtain special instructions before use.
 Do not handle until all safety precautions have been read and understood.
 Avoid breathing fume/mist/vapours/spray.

Response

In case of fire: Use water spray, fog or foam to extinguish.
 IF ON SKIN (or hair): Wash with plenty of soap and water. Remove/Take off immediately all contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical advice/attention.
 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell.
 If swallowed: Immediately call a poison center or doctor. Do NOT induce vomiting.
 IF exposed or concerned: Get medical advice/attention.

Storage

Store in a well-ventilated place. Keep cool.
 Keep container tightly closed.
 Store locked up.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

* * * Section 3 - Composition / Information on Ingredients * * *

CAS #	Component	Percent
68476-34-6	Fuels, diesel, no. 2	100
91-20-3	Naphthalene	<0.1

A complex mixture of hydrocarbons with carbon numbers in the range C9 and higher.

* * * Section 4 - First Aid Measures * * *

First Aid: Eyes

In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 min. Hold eyelids open to ensure adequate flushing. Seek medical attention.

First Aid: Skin

Remove contaminated clothing. Wash contaminated areas thoroughly with soap and water or with waterless hand cleanser. Obtain medical attention if irritation or redness develops. Thermal burns require immediate medical attention depending on the severity and the area of the body burned.

First Aid: Ingestion

DO NOT INDUCE VOMITING. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Monitor for breathing difficulties. Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated.

Safety Data Sheet

Material Name: Diesel Fuel, All Types

SDS No. 9909

First Aid: Inhalation

Remove person to fresh air. If person is not breathing, provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

* * * Section 5 - Fire Fighting Measures * * *

General Fire Hazards

See Section 9 for Flammability Properties.

Vapors may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

Hazardous Combustion Products

Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

Extinguishing Media

SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, CO₂, water spray, fire fighting foam, and other gaseous agents.

LARGE FIRES: Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

Unsuitable Extinguishing Media

None

Fire Fighting Equipment/Instructions

Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other fire fighting equipment. Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing. Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam.

* * * Section 6 - Accidental Release Measures * * *

Recovery and Neutralization

Carefully contain and stop the source of the spill, if safe to do so.

Materials and Methods for Clean-Up

Take up with sand or other oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal. Caution, flammable vapors may accumulate in closed containers.

Emergency Measures

Evacuate nonessential personnel and remove or secure all ignition sources. Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction of product travel, diking, sewers, etc. to confirm spill areas. Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact.

Safety Data Sheet

Material Name: Diesel Fuel, All Types

SDS No. 9909

Personal Precautions and Protective Equipment

Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).

Environmental Precautions

Protect bodies of water by diking, absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of fire fighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection.

Prevention of Secondary Hazards

None

* * * Section 7 - Handling and Storage * * *

Handling Procedures

Handle as a combustible liquid. Keep away from heat, sparks, excessive temperatures and open flame! No smoking or open flame in storage, use or handling areas. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion.

Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil) is loaded into tanks previously containing low flash point products (such as this product) - see API Publication 2003, "Protection Against Ignitions Arising Out Of Static, Lightning and Stray Currents."

Storage Procedures

Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers. Keep containers closed and clearly labeled. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Store in a well-ventilated area. This storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". Avoid storage near incompatible materials. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks."

Incompatibilities

Keep away from strong oxidizers.

* * * Section 8 - Exposure Controls / Personal Protection * * *

Component Exposure Limits

Fuels, diesel, no. 2 (68476-34-6)

ACGIH: 100 mg/m³ TWA (inhalable fraction and vapor, as total hydrocarbons, listed under Diesel fuel)
Skin - potential significant contribution to overall exposure by the cutaneous route (listed under Diesel fuel)

Safety Data Sheet

Material Name: Diesel Fuel, All Types

SDS No. 9909

Naphthalene (91-20-3)

ACGIH: 10 ppm TWA
15 ppm STEL
Skin - potential significant contribution to overall exposure by the cutaneous route

OSHA: 10 ppm TWA; 50 mg/m³ TWA

NIOSH: 10 ppm TWA; 50 mg/m³ TWA
15 ppm STEL; 75 mg/m³ STEL

Engineering Measures

Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

Personal Protective Equipment: Respiratory

A NIOSH/MSHA-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited.

Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.

Personal Protective Equipment: Hands

Gloves constructed of nitrile, neoprene, or PVC are recommended.

Personal Protective Equipment: Eyes

Safety glasses or goggles are recommended where there is a possibility of splashing or spraying.

Personal Protective Equipment: Skin and Body

Chemical protective clothing such as of E.I. DuPont TyChem®, Saranex® or equivalent recommended based on degree of exposure. Note: The resistance of specific material may vary from product to product as well as with degree of exposure. Consult manufacturer specifications for further information.

* * * Section 9 - Physical & Chemical Properties * * *

Appearance:	Clear, straw-yellow.	Odor:	Mild, petroleum distillate odor
Physical State:	Liquid	pH:	ND
Vapor Pressure:	0.009 psia @ 70 °F (21 °C)	Vapor Density:	>1.0
Boiling Point:	320 to 690 °F (160 to 366 °C)	Melting Point:	ND
Solubility (H₂O):	Negligible	Specific Gravity:	0.83-0.876 @ 60°F (16°C)
Evaporation Rate:	Slow; varies with conditions	VOC:	ND
Percent Volatile:	100%	Octanol/H₂O Coeff.:	ND
Flash Point:	>125 °F (>52 °C) minimum	Flash Point Method:	PMCC
Upper Flammability Limit (UFL):	7.5	Lower Flammability Limit (LFL):	0.6
Burning Rate:	ND	Auto Ignition:	494°F (257°C)

* * * Section 10 - Chemical Stability & Reactivity Information * * *

Chemical Stability

This is a stable material.

Hazardous Reaction Potential

Will not occur.

Safety Data Sheet

Material Name: Diesel Fuel, All Types

SDS No. 9909

Conditions to Avoid

Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources.

Incompatible Products

Keep away from strong oxidizers.

Hazardous Decomposition Products

Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

* * * Section 11 - Toxicological Information * * *

Acute Toxicity

A: General Product Information

Harmful if swallowed.

B: Component Analysis - LD50/LC50

Naphthalene (91-20-3)

Inhalation LC50 Rat >340 mg/m³ 1 h; Oral LD50 Rat 490 mg/kg; Dermal LD50 Rat >2500 mg/kg; Dermal LD50 Rabbit >20 g/kg

Potential Health Effects: Skin Corrosion Property/Stimulativeness

Practically non-toxic if absorbed following acute (single) exposure. May cause skin irritation with prolonged or repeated contact. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are repeatedly exposed.

Potential Health Effects: Eye Critical Damage/ Stimulativeness

Contact with eyes may cause mild irritation.

Potential Health Effects: Ingestion

Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.

Potential Health Effects: Inhalation

Excessive exposure may cause irritations to the nose, throat, lungs and respiratory tract. Central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.

WARNING: the burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

Respiratory Organs Sensitization/Skin Sensitization

This product is not reported to have any skin sensitization effects.

Generative Cell Mutagenicity

This material has been positive in a mutagenicity study.

Carcinogenicity

A: General Product Information

Suspected of causing cancer.

Safety Data Sheet

Material Name: Diesel Fuel, All Types

SDS No. 9909

Studies have shown that similar products produce skin tumors in laboratory animals following repeated applications without washing or removal. The significance of this finding to human exposure has not been determined. Other studies with active skin carcinogens have shown that washing the animal's skin with soap and water between applications reduced tumor formation.

B: Component Carcinogenicity

Fuels, diesel, no. 2 (68476-34-6)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans (listed under Diesel fuel)

Naphthalene (91-20-3)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

NTP: Reasonably Anticipated To Be A Human Carcinogen (Possible Select Carcinogen)

IARC: Monograph 82 [2002] (Group 2B (possibly carcinogenic to humans))

Reproductive Toxicity

This product is not reported to have any reproductive toxicity effects.

Specified Target Organ General Toxicity: Single Exposure

This product is not reported to have any specific target organ general toxicity single exposure effects.

Specified Target Organ General Toxicity: Repeated Exposure

This product is not reported to have any specific target organ general toxicity repeat exposure effects.

Aspiration Respiratory Organs Hazard

The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

* * * Section 12 - Ecological Information * * *

Ecotoxicity

A: General Product Information

Keep out of sewers, drainage areas and waterways. Report spills and releases, as applicable, under Federal and State regulations.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

Fuels, diesel, no. 2 (68476-34-6)

Test & Species

96 Hr LC50 Pimephales promelas	35 mg/L [flow-through]	Conditions
--------------------------------	------------------------	-------------------

Naphthalene (91-20-3)

Test & Species

96 Hr LC50 Pimephales promelas	5.74-6.44 mg/L [flow-through]	Conditions
96 Hr LC50 Oncorhynchus mykiss	1.6 mg/L [flow-through]	
96 Hr LC50 Oncorhynchus mykiss	0.91-2.82 mg/L [static]	
96 Hr LC50 Pimephales promelas	1.99 mg/L [static]	

Safety Data Sheet

Material Name: Diesel Fuel, All Types

SDS No. 9909

96 Hr LC50 Lepomis macrochirus	31.0265 mg/L [static]
72 Hr EC50 Skeletonema costatum	0.4 mg/L
48 Hr LC50 Daphnia magna	2.16 mg/L
48 Hr EC50 Daphnia magna	1.96 mg/L [Flow through]
48 Hr EC50 Daphnia magna	1.09 - 3.4 mg/L [Static]

Persistence/Degradability

No information available.

Bioaccumulation

No information available.

Mobility in Soil

No information available.

*** Section 13 - Disposal Considerations ***

Waste Disposal Instructions

See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

Disposal of Contaminated Containers or Packaging

Dispose of contents/container in accordance with local/regional/national/international regulations.

*** Section 14 - Transportation Information ***

DOT Information

Shipping Name: Diesel Fuel

NA #: 1993 **Hazard Class:** 3 **Packing Group:** III

Placard:



*** Section 15 - Regulatory Information ***

Regulatory Information

Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Naphthalene (91-20-3)

CERCLA: 100 lb final RQ; 45.4 kg final RQ

SARA Section 311/312 – Hazard Classes

<u>Acute Health</u>	<u>Chronic Health</u>	<u>Fire</u>	<u>Sudden Release of Pressure</u>	<u>Reactive</u>
X	X	X	--	--

Safety Data Sheet

Material Name: Diesel Fuel, All Types

SDS No. 9909

SARA SECTION 313 - SUPPLIER NOTIFICATION

This product may contain listed chemicals below the de minimis levels which therefore are not subject to the supplier notification requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372. If you may be required to report releases of chemicals listed in 40 CFR 372.28, you may contact Hess Corporate Safety if you require additional information regarding this product.

State Regulations

Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
Fuels, diesel, no. 2	68476-34-6	No	No	No	Yes	No	No
Naphthalene	91-20-3	Yes	Yes	Yes	Yes	Yes	No

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.

Component Analysis - WHMIS IDL

No components are listed in the WHMIS IDL.

Additional Regulatory Information

Component Analysis - Inventory

Component	CAS #	TSCA	CAN	EEC
Fuels, diesel, no. 2	68476-34-6	Yes	DSL	EINECS
Naphthalene	91-20-3	Yes	DSL	EINECS

* * * Section 16 - Other Information * * *

NFPA® Hazard Rating

Health	1
Fire	2
Reactivity	0



HMIS® Hazard Rating

Health	1*	Slight
Fire	2	Moderate
Physical	0	Minimal

*Chronic

Safety Data Sheet

Material Name: Diesel Fuel, All Types

SDS No. 9909

Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists; ADG = Australian Code for the Transport of Dangerous Goods by Road and Rail; ADR/RID = European Agreement of Dangerous Goods by Road/Rail; AS = Standards Australia; DFG = Deutsche Forschungsgemeinschaft; DOT = Department of Transportation; DSL = Domestic Substances List; EEC = European Economic Community; EINECS = European Inventory of Existing Commercial Chemical Substances; ELINCS = European List of Notified Chemical Substances; EU = European Union; HMIS = Hazardous Materials Identification System; IARC = International Agency for Research on Cancer; IMO = International Maritime Organization; IATA = International Air Transport Association; MAK = Maximum Concentration Value in the Workplace; NDSL = Non-Domestic Substances List; NFPA = National Fire Protection Association; NOHSC = National Occupational Health & Safety Commission; NTP = National Toxicology Program; STEL = Short-term Exposure Limit; TDG = Transportation of Dangerous Goods; TLV = Threshold Limit Value; TSCA = Toxic Substances Control Act; TWA = Time Weighted Average

Literature References

None

Other Information

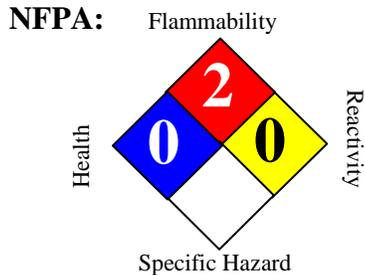
Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgment.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.

End of Sheet

Safety Data Sheet

Diesel Low Sulfur (LSD) and Ultra Low Sulfur Diesel (ULSD)



SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Diesel Low Sulfur (LSD) and Ultra Low Sulfur Diesel (ULSD)		
Synonyms	:	CARB Diesel, 888100004478		
MSDS Number		888100004478	Version	2.31
Product Use Description				
Company		For: Tesoro Refining & Marketing Co. 19100 Ridgewood Parkway, San Antonio, TX 78259		
Tesoro Call Center		(877) 783-7676	Chemtrec (Emergency Contact)	(800) 424-9300

SECTION 2. HAZARDS IDENTIFICATION

Classifications

Flammable Liquid – Category 3
 Skin Irritation – Category 2
 Eye Irritation – Category 2B
 Aspiration Hazard – Category 1
 Carcinogenicity – Category 2
 Acute Toxicity - Inhalation – Category 4
 Chronic Aquatic Toxicity – Category 2

Pictograms



Signal Word

Danger

Hazard Statements

Flammable liquid and vapor.
 May be fatal if swallowed and enters airways – do not siphon diesel by mouth.
 Causes skin irritation.
 Causes eye irritation.
 Suspected of causing skin cancer if repeated and prolonged skin contact occurs.
 Suspected of causing cancer in the respiratory system if repeated and prolonged over-exposure by inhalation occurs.
 May cause damage to liver, kidneys and nervous system by repeated and prolonged inhalation.

Toxic if inhaled.
May cause drowsiness or dizziness by inhalation.
Toxic to aquatic life with long lasting effects.

Precautionary statements**Prevention**

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat, sparks, open flames, welding and hot surfaces.
No smoking.
Keep container tightly closed.
Ground and/or bond container and receiving equipment.
Use explosion-proof electrical equipment.
Use only non-sparking tools if tools are used in flammable atmosphere.
Take precautionary measures against static discharge.
Wear gloves, eye protection and face protection as needed to prevent skin and eye contact with liquid.
Wash hands or liquid-contacted skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Avoid breathing vapors or mists.
Use only outdoors or in a well-ventilated area.

Response

In case of fire: Use dry chemical, CO₂, water spray or fire fighting foam to extinguish.
If swallowed: Immediately call a poison center, doctor, hospital emergency room, medical clinic or 911. Do NOT induce vomiting. Rinse mouth.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
If in eye: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If skin or eye irritation persists, get medical attention.
If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call or doctor or emergency medical provider. See Section 4 and Section 11 for medical treatment information.

Storage

Store in a well ventilated place. Keep cool. Store locked up. Keep container tightly closed. Use only approved containers.

Disposal

Dispose of contents/containers to approved disposal site in accordance with local, regional, national, and/or international regulations.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Weight %
Fuels, diesel, No 2; Gasoil - unspecified	68476-34-6	100%
Nonane	111-84-2	0 - 5%
Naphthalene	91-20-3	0 - 1%

1,2,4-Trimethylbenzene	95-63-6	0 - 2%
Xylene	1330-20-7	0 - 2%
Sulfur	7704-34-9	15 ppm maximum

SECTION 4. FIRST AID MEASURES

Inhalation	: Move to fresh air. Give oxygen. If breathing is irregular or stopped, administer artificial respiration. Seek medical attention immediately.
Skin contact	: Take off all contaminated clothing immediately. Wash off immediately with soap and plenty of water. Wash contaminated clothing before re-use. If skin irritation persists, seek medical attention immediately.
Eye contact	: Remove contact lenses. Rinse thoroughly with plenty of water for at least 15 minutes. If symptoms persist, seek medical attention.
Ingestion	: Do not induce vomiting without medical advice. If a person vomits when lying on his back, place him in the recovery position. Seek medical attention immediately.
Notes to physician	: Symptoms: Dizziness, Discomfort, Headache, Nausea, Disorder, Vomiting, Lung edema, Liver disorders, Kidney disorders. Aspiration may cause pulmonary edema and pneumonitis.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	: SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, CO ₂ , water spray or fire fighting foam. LARGE FIRES: Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers. Keep containers and surroundings cool with water spray.
Specific hazards during fire fighting	: Fire Hazard Do not use a solid water stream as it may scatter and spread fire. Cool closed containers exposed to fire with water spray.
Special protective equipment for fire-fighters	: Wear self-contained breathing apparatus and protective suit. Use personal protective equipment.
Further information	: Exposure to decomposition products may be a hazard to health. Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions	: Evacuate nonessential personnel and remove or secure all ignition sources. Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction of product travel, diking, sewers, etc. to contain spill areas. Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact. Ensure adequate ventilation. Use personal protective equipment.
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- Environmental precautions** : Carefully contain and stop the source of the spill, if safe to do so. Protect bodies of water by diking, absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of fire fighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection. Discharge into the environment must be avoided. If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods for cleaning up** : Take up with sand or oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal - caution, flammable vapors may accumulate in closed containers. Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).

SECTION 7. HANDLING AND STORAGE

- Precautions for safe handling** :
- Keep away from fire, sparks and heated surfaces. No smoking near areas where material is stored or handled. The product should only be stored and handled in areas with intrinsically safe electrical classification.
 - Hydrocarbon liquids including this product can act as a non-conductive flammable liquid (or static accumulators), and may form ignitable vapor-air mixtures in storage tanks or other containers. Precautions to prevent static-initiated fire or explosion during transfer, storage or handling, include but are not limited to these examples:
 - (1) Ground and bond containers during product transfers. Grounding and bonding may not be adequate protection to prevent ignition or explosion of hydrocarbon liquids and vapors that are static accumulators.
 - (2) Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil or diesel) is loaded into tanks previously containing low flash point products (such gasoline or naphtha).
 - (3) Storage tank level floats must be effectively bonded.
 For more information on precautions to prevent static-initiated fire or explosion, see NFPA 77, Recommended Practice on Static Electricity (2007), and API Recommended Practice 2003, Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents (2008).
- Conditions for safe storage, including incompatibilities** :
- Keep away from flame, sparks, excessive temperatures and open flame. Use approved containers. Keep containers closed and clearly labeled. Empty or partially full product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose containers to sources of ignition. Store in a well-ventilated area. The storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks".
 - Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure.
- Keep away from food, drink and animal feed. Incompatible with oxidizing agents. Incompatible with acids.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

List	Components	CAS-No.	Type:	Value
OSHA Z1	Xylene	1330-20-7	PEL	100 ppm 435 mg/m3
	Naphthalene	91-20-3	PEL	10 ppm 50 mg/m3
ACGIH	Diesel Fuel	68476-30-2	TWA	100 mg/m3
	Xylene	1330-20-7	TWA	100 ppm
		1330-20-7	STEL	150 ppm
	Naphthalene	91-20-3	TWA	10 ppm
		91-20-3	STEL	15 ppm
	Nonane	111-84-2	TWA	200 ppm

- Engineering measures** : Use adequate ventilation to keep gas and vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces. Use only intrinsically safe electrical equipment approved for use in classified areas.
- Eye protection** : Safety glasses or goggles are recommended where there is a possibility of splashing or spraying.
- Hand protection** : Gloves constructed of nitrile, neoprene, or PVC are recommended. Consult manufacturer specifications for further information.
- Skin and body protection** : If needed to prevent skin contact, chemical protective clothing such as of DuPont TyChem®, Saranex or equivalent recommended based on degree of exposure. The resistance of specific material may vary from product to product as well as with degree of exposure.
- Respiratory protection** : A NIOSH/ MSHA-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited. Refer to OSHA 29 CFR 1910.134, ANSI Z88.2-1992, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection. Use a NIOSH/ MSHA-approved positive-pressure supplied-air respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.
- Work / Hygiene practices** : Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Clear to straw colored liquid								
Odor	Characteristic petroleum or kerosene-like odor								
Odor threshold	0.1 - 1 ppm typically reported								
pH	Not applicable								
Melting point/freezing point	Gel point can be about -15°F; freezing requires laboratory conditions								
Initial boiling point & range	154 - 372 °C (310° - 702 °F)								
Flash point	38°C Minimum for #1 Diesel, 52°C Minimum for #2 Diesel								
Evaporation rate	Higher initially and declining as lighter components evaporate								
Flammability (solid, gas)	Flammable vapor released by liquid								
Upper explosive limit	6.5 %(V)								
Lower explosive limit	0.6 %(V)								
Vapor pressure	< 2 mm Hg at 20 °C								
Vapor density (air = 1)	> 4.5								
Relative density (water = 1)	0.86 g/mL								
Solubility (in water)	0.0005 g/100 mL								
Partition coefficient (n-octanol/water)	> 3.3 as log Pow								
Auto-ignition temperature	257 °C (495 °F)								
Decomposition temperature	Will evaporate or boil and possibly ignite before decomposition occurs.								
Kinematic viscosity	1 to 6 mm ² /s range reported for No.1 or No.2 diesel at ambient temperatures								
Conductivity (conductivity can be reduced by environmental factors such as a decrease in temperature)	<table border="0"> <tr> <td>Diesel Fuel Oils at terminal load rack:</td> <td>At least 25 pS/m</td> </tr> <tr> <td>Ultra Low Sulfur Diesel (ULSD) without conductivity additive:</td> <td>0 pS/m to 5 pS/m</td> </tr> <tr> <td>ULSD at terminal load rack with conductivity additive:</td> <td>At least 50 pS/m</td> </tr> <tr> <td>JP-8 at terminal load rack:</td> <td>150 pS/m to 600 pS/m</td> </tr> </table>	Diesel Fuel Oils at terminal load rack:	At least 25 pS/m	Ultra Low Sulfur Diesel (ULSD) without conductivity additive:	0 pS/m to 5 pS/m	ULSD at terminal load rack with conductivity additive:	At least 50 pS/m	JP-8 at terminal load rack:	150 pS/m to 600 pS/m
Diesel Fuel Oils at terminal load rack:	At least 25 pS/m								
Ultra Low Sulfur Diesel (ULSD) without conductivity additive:	0 pS/m to 5 pS/m								
ULSD at terminal load rack with conductivity additive:	At least 50 pS/m								
JP-8 at terminal load rack:	150 pS/m to 600 pS/m								

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: Vapors may form explosive mixture with air. Hazardous polymerization does not occur.
Chemical stability	Stable under normal conditions.
Possibility of hazardous reactions	Can react with strong oxidizing agents, peroxides, acids and alkalies. Do not use with Viton or Fluorel gaskets or seals.
Conditions to avoid	Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources. Avoid static charge accumulation and discharge (see Section 7).
Hazardous decomposition products	Ignition and burning can release carbon monoxide, carbon dioxide, non-combusted hydrocarbons (smoke) and, depending on formulation, trace amounts

of sulfur dioxide. Diesel exhaust particulates may be a lung hazard (see Section 11).

SECTION 11. TOXICOLOGICAL INFORMATION

Inhalation	: Vapors or mists from this material can irritate the nose, throat, and lungs, and can cause signs and symptoms of central nervous system depression, depending on the concentration and duration of exposure.
Skin contact	Skin irritation leading to dermatitis may occur upon prolonged or repeated contact. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are repeatedly exposed. Long-term, repeated skin contact may cause skin cancer.
Eye contact	Eye irritation may result from contact with liquid, mists, and/or vapors.
Ingestion	Harmful or fatal if swallowed. Do NOT induce vomiting. This material can irritate the mouth, throat, stomach, and cause nausea, vomiting, diarrhea and restlessness. Aspiration hazard if liquid is inhaled into lungs, particularly from vomiting after ingestion. Aspiration may result in chemical pneumonia, severe lung damage, respiratory failure and even death.
Target organs	Central nervous system, Eyes, Skin, Kidney, Liver
Further information	Studies have shown that similar products produce skin cancer or skin tumors in laboratory animals following repeated applications without washing or removal. The significance of this finding to human exposure has not been determined. Other studies with active skin carcinogens have shown that washing the animal's skin with soap and water between applications reduced tumor formation. Repeated over-exposure may cause liver and kidney injury. IARC classifies whole diesel fuel exhaust particulates as carcinogenic to humans (Group 1). NIOSH regards whole diesel fuel exhaust particulates as a potential cause of occupational lung cancer based on animal studies and limited evidence in humans.

Component:

Fuels, diesel, No 2; Gasoil - unspecified	68476-34-6	<u>Acute oral toxicity:</u> LD50 rat Dose: 5,001 mg/kg <u>Acute dermal toxicity:</u> LD50 rabbit Dose: 2,001 mg/kg <u>Acute inhalation toxicity:</u> LC50 rat Dose: 7.64 mg/l Exposure time: 4 h <u>Skin irritation:</u> Classification: Irritating to skin. Result: Severe skin irritation <u>Eye irritation:</u> Classification: Irritating to eyes. Result: Mild eye irritation
Nonane	111-84-2	<u>Acute oral toxicity:</u> LD50 mouse Dose: 218 mg/kg <u>Acute inhalation toxicity:</u> LC50 rat Exposure time: 4 h
Naphthalene	91-20-3	<u>Acute oral toxicity:</u> LD50 rat Dose: 2,001 mg/kg <u>Acute dermal toxicity:</u> LD50 rat Dose: 2,501 mg/kg

SAFETY DATA SHEET

Diesel Low Sulfur (LSD) and Ultra Low Sulfur Diesel (ULSD)

Acute inhalation toxicity: LC50 rat
Dose: 101 mg/l
Exposure time: 4 h

Skin irritation: Classification: Irritating to skin.
Result: Mild skin irritation

Eye irritation: Classification: Irritating to eyes.
Result: Mild eye irritation

Carcinogenicity: N11.00422130

1,2,4-Trimethylbenzene 95-63-6

Acute inhalation toxicity: LC50 rat
Dose: 18 mg/l
Exposure time: 4 h

Skin irritation: Classification: Irritating to skin.
Result: Skin irritation

Eye irritation: Classification: Irritating to eyes.
Result: Eye irritation

Xylene 1330-20-7

Acute oral toxicity: LD50 rat
Dose: 2,840 mg/kg

Acute dermal toxicity: LD50 rabbit
Dose: ca. 4,500 mg/kg

Acute inhalation toxicity: LC50 rat
Dose: 6,350 mg/l
Exposure time: 4 h

Skin irritation: Classification: Irritating to skin.
Result: Mild skin irritation
Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.
Eye irritation: Classification: Irritating to eyes.
Result: Mild eye irritation

Carcinogenicity

NTP Naphthalene (CAS-No.: 91-20-3)

IARC Naphthalene (CAS-No.: 91-20-3)

OSHA No component of this product which is present at levels greater than or equal to 0.1 % is identified as a carcinogen or potential carcinogen by OSHA.

CA Prop 65 WARNING! This product contains a chemical known to the State of California to cause cancer.
naphthalene (CAS-No.: 91-20-3)

SECTION 12. ECOLOGICAL INFORMATION

Additional ecological information : Keep out of sewers, drainage areas, and waterways. Report spills and releases, as applicable, under Federal and State regulations.

Component:

Diesel 68476-34-6 Toxicity to fish:
LC50
Species: Jordanella floridae
Dose: 54 mg/l

Exposure time: 96 h

Toxicity to crustacea:
Species: Palaemonetes pugio
TLm (48 hour) = 3.4 mg/l

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal : Dispose of container and unused contents in accordance with federal, state and local requirements.

SECTION 14. TRANSPORT INFORMATION**CFR**

Proper shipping name : DIESEL FUEL
UN-No. : UN1202 (NA 1993)
Class : 3
Packing group : III

TDG

Proper shipping name : DIESEL FUEL
UN-No. : UN1202 (NA 1993)
Class : 3
Packing group : III

IATA Cargo Transport

UN UN-No. : UN1202 (NA 1993)
Description of the goods : DIESEL FUEL
Class : 3
Packaging group : III
ICAO-Labels : 3
Packing instruction (cargo aircraft) : 366
Packing instruction (cargo aircraft) : Y344

IATA Passenger Transport

UN UN-No. : UN1202 (NA 1993)
Description of the goods : DIESEL FUEL
Class : 3
Packaging group : III
ICAO-Labels : 3
Packing instruction (passenger aircraft) : 355
Packing instruction (passenger aircraft) : Y344

IMDG-Code

UN-No. : UN 1202 (NA 1993)
Description of the goods : DIESEL FUEL
Class : 3
Packaging group : III
IMDG-Labels : 3

EmS Number : F-E S-E
Marine pollutant : No

SECTION 15. REGULATORY INFORMATION

: **CERCLA SECTION 103 and SARA SECTION 304 (RELEASE TO THE ENVIROMENT)**
The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts crude oil. Fractions of crude oil, and products (both finished and intermediate) from the crude oil refining process and any indigenous components of such from the CERCLA Section 103 reporting requirements. However, other federal reporting requirements, including SARA Section 304, as well as the Clean Water Act may still apply.

TSCA Status : On TSCA Inventory

DSL Status : All components of this product are on the Canadian DSL list.

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard
Chronic Health Hazard

SARA III US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required

Components**CAS-No.**

Xylene 1330-20-7

1,2,4-Trimethylbenzene 95-63-6

Naphthalene 91-20-3

PENN RTK US. Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

Components**CAS-No.**

Nonane 111-84-2

Naphthalene 91-20-3

1,2,4-Trimethylbenzene 95-63-6

xylene 1330-20-7

Fuels, diesel, No 2; Gasoil - unspecified 68476-34-6

MASS RTK US. Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

Components**CAS-No.**

Xylene 1330-20-7

1,2,4-Trimethylbenzene 95-63-6

Naphthalene 91-20-3

Nonane 111-84-2

NJ RTK US. New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

Components**CAS-No.**

Nonane 111-84-2

Naphthalene	91-20-3
1,2,4-Trimethylbenzene	95-63-6
Xylene	1330-20-7
Fuels, diesel, No 2; Gasoil - unspecified	68476-34-6

California Prop. 65 : WARNING! This product contains a chemical known to the State of California to cause cancer.

Naphthalene 91-20-3

SECTION 16. OTHER INFORMATION

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

10/29/2012

1153, 1250, 1443, 1454, 1814, 1815, 1866, 1925

PSEG POWER CONNECTICUT LLC

TANKS VERSION 4.09D OUTPUT

ATTACHMENT E204-D TO DEEP-NSR-APP-204

PSEG POWER CONNECTICUT LLC

TANKS VERSION 4.09D OUTPUT

TANK A-20

UNIT 5 ULSD STORAGE TANK

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification:	A-20
City:	Bridgeport
State:	Connecticut
Company:	PSEG
Type of Tank:	Vertical Fixed Roof Tank
Description:	Unit 5 ULSD Storage tank (5,500,000 gal)

Tank Dimensions

Shell Height (ft):	42.00
Diameter (ft):	150.00
Liquid Height (ft) :	40.00
Avg. Liquid Height (ft):	35.00
Volume (gallons):	5,500,000.00
Turnovers:	3.04
Net Throughput(gal/yr):	16,700,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	5.25
Slope (ft/ft) (Cone Roof)	0.00

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meteorological Data used in Emissions Calculations: Bridgeport, Connecticut (Avg Atmospheric Pressure = 14.73 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

A-20 - Vertical Fixed Roof Tank
Bridgeport, Connecticut

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	All	53.32	49.06	57.58	51.70	0.0052	0.0044	0.0060	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0065

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

A-20 - Vertical Fixed Roof Tank
Bridgeport, Connecticut

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	266.92	201.05	467.96

PSEG POWER CONNECTICUT LLC

TANKS VERSION 4.09D OUTPUT

TANK A-21

EMERGENCY GENERATOR ULSD STORAGE TANK

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification: A-21
City:
State:
Company:
Type of Tank: Horizontal Tank
Description: ULSD Tank for Emergency Generator (3,000 gal)

Tank Dimensions

Shell Length (ft): 16.00
Diameter (ft): 6.00
Volume (gallons): 3,000.00
Turnovers: 13.80
Net Throughput(gal/yr): 41,400.00
Is Tank Heated (y/n): N
Is Tank Underground (y/n): N

Paint Characteristics

Shell Color/Shade: White/White
Shell Condition: Good

Breather Vent Settings

Vacuum Settings (psig): -0.03
Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Bridgeport, Connecticut (Avg Atmospheric Pressure = 14.73 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

A-21 - Horizontal Tank

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	All	53.32	49.06	57.58	51.70	0.0052	0.0044	0.0060	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0065

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

A-21 - Horizontal Tank

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.66	0.38	1.04

PSEG POWER CONNECTICUT LLC

TANKS VERSION 4.09D OUTPUT

TANK A-22

EMERGENCY FIRE PUMP ENGINE ULSD STORAGE TANK

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Identification and Physical Characteristics

Identification

User Identification:	A-22
City:	
State:	
Company:	
Type of Tank:	Horizontal Tank
Description:	500 gal. Fire Pump tank

Tank Dimensions

Shell Length (ft):	8.00
Diameter (ft):	4.00
Volume (gallons):	500.00
Turnovers:	11.16
Net Throughput(gal/yr):	5,580.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meteorological Data used in Emissions Calculations: Bridgeport, Connecticut (Avg Atmospheric Pressure = 14.73 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

A-22 - Horizontal Tank

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	All	53.32	49.06	57.58	51.70	0.0052	0.0044	0.0060	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0065

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

A-22 - Horizontal Tank

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.09	0.08	0.17

Attachment E210: Air Pollution Control Equipment Supplemental Application Form

Applicant Name: **PSEG Power Connecticut LLC**
 Unit No(s): **EU-50, EU-51**

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				
EU-50	CCGT/Duct Burner	C50a	Oxid. Catalyst	75 est.	CO, VOC	Vendor data	S50
EU-50	CCGT/Duct Burner	C50b	SCR	90 est.	NOx	Vendor data	S50
EU-51	Aux Boiler	C51a	ULNB & FGR	80 est.	NOx	Literature	S51

* 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		<input type="checkbox"/> Activated Charcoal Type: <input type="checkbox"/> Granulated <input type="checkbox"/> Other (specify): <input type="checkbox"/> Powdered
Number of Beds		
Dimensions of Beds <input type="checkbox"/> 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		°F
Design Pressure Drop Range Across Unit		inches H ₂ O
Gas Flow Rate		scfm
Type of Regeneration		<input type="checkbox"/> Replacement <input type="checkbox"/> Steam <input type="checkbox"/> Other (specify):
Method of Regeneration		<input type="checkbox"/> Alternate use of beds <input type="checkbox"/> Source shut down <input type="checkbox"/> 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?		<input type="checkbox"/> Yes <input type="checkbox"/> 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: _____

Unit Number of Unit which Uses Afterburner: _____

Manufacturer and Model Number					
Construction Date					
Type of Afterburner		<input type="checkbox"/> Thermal <input type="checkbox"/> Catalytic <input type="checkbox"/> Other (specify):			
Combustion Chamber Dimensions	Length	inches			
	Cross-section area	square inches			
Inlet Gas Temperature		°F			
Operating Temperature Range of Chamber		°F			
Auxiliary Fuel Information					
Fuel Type	% Sulfur by Weight	Higher Heating Value (BTU)	Maximum Hourly Firing Rate	Maximum Annual Fuel Usage	Units (gal or ft³)
Number of Burners					
Burner Maximum Heat Input	Burner No. 1	BTU per hour			
	Burner No. 2	BTU per hour			
	Burner No. 3	BTU per hour			
Catalyst Used		<input type="checkbox"/> Yes <input type="checkbox"/> No			
Catalyst Type					
Catalyst Sampling Interval					
Heat Exchanger Used		<input type="checkbox"/> Yes <input type="checkbox"/> No			
Type of Heat Exchanger					
Heat Recovery					
Reagent Used					
Gas Flow Rate		scfm			
Combustion Chamber Design Residence Time		seconds			
Moisture Content of Exhaust Gas		%			
Heat Recovery		%			
Pollutant(s) Controlled					
Collection Efficiency(s) of Afterburner		%			

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	<input type="checkbox"/> Shaker <input type="checkbox"/> Reverse Air <input type="checkbox"/> Pulse Air <input type="checkbox"/> Pulse Jet <input type="checkbox"/> Other (specify):
Gas Cooling Method	<input type="checkbox"/> Ductwork Length: ft. Diameter: in. <input type="checkbox"/> Heat Exchanger <input type="checkbox"/> Bleed-in Air <input type="checkbox"/> Water Spray <input type="checkbox"/> Other (specify): <input type="checkbox"/> Not Applicable
Cooling Medium Flow Rate	<input type="checkbox"/> Bleed-in Air: scfm <input type="checkbox"/> Water Spray: gpm
Exhaust Gas Flow Rate	scfm
Inlet Gas Temperature	°F
Inlet Gas Dew Point	°F
Grain Loading	In: grains/scf Out: grains/scf
Design Pressure Drop Across Unit	inches H ₂ O
Operating Pressure Drop Range Across Unit	inches H ₂ O
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	<input type="checkbox"/> Single <input type="checkbox"/> Multiple: Number of Cyclones
Gas Flow Rate	scfm
Grain Loading	In: grains/scf Out: grains/scf
Design Pressure Drop Across Unit	inches H ₂ O
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 <input type="checkbox"/> Vertical Flow <input type="checkbox"/> Horizontal Flow <input type="checkbox"/> Diagonal
Design Pressure Drop Range Across Unit	inches H ₂ O
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		<input type="checkbox"/> Venturi
		<input type="checkbox"/> Wet Fan
		<input type="checkbox"/> Packed: Packing Material Size: Packed Height: inches
		<input type="checkbox"/> Spray: Number of Nozzles: Nozzle No. 1 Pressure: psig Nozzle No. 2 Pressure: psig Nozzle No. 3 Pressure: psig Nozzle No. 4 Pressure: psig
		<input type="checkbox"/> Other (specify):
Design Pressure Drop Range Across Unit		inches H ₂ O
Type of Flow		<input type="checkbox"/> Concurrent <input type="checkbox"/> Countercurrent <input type="checkbox"/> 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		<input type="checkbox"/> One Pass <input type="checkbox"/> Recirculated
Scrubber Liquid/Reagent pH		
Gas Flow Rate		scfm
Inlet Gas Temperature		°F
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	<input type="checkbox"/> Refrigerator Chiller <input type="checkbox"/> Water Spray <input type="checkbox"/> 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 EquipmentName of Control Equipment: Oxidation Catalyst SystemControl Equipment Number of Control Equipment: C50aUnit Number of Unit which Uses Control Equipment: EU-50

Manufacturer and Model Number	TBD
Construction Date	March 2017
Pollutant(s) Controlled	CO, VOC
Collection Efficiency(s) of Control Equipment	100 %
Control Efficiency(s) of Control Equipment	75 est. %
Overall Control Efficiency(s)	75 est. %

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**

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: **Selective Catalytic Reduction (SCR)**

Control Equipment Number of Control Equipment: **C50b**

Unit Number of Unit which Uses Control Equipment: **EU-50**

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

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**

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: **Ultra-LNB & Flue Gas Recirculation**

Control Equipment Number of Control Equipment: **C51**

Unit Number of Unit which Uses Control Equipment: **EU-51**

Manufacturer and Model Number	TBD
Construction Date	March 2017
Pollutant(s) Controlled	NOx
Collection Efficiency(s) of Control Equipment	100%
Control Efficiency(s) of Control Equipment	80% (est.)
Overall Control Efficiency(s)	80% (est.)

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.

<input type="checkbox"/> Attachment E210: <i>Manufacturer Information</i> - 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 Parameters Supplemental Application Form

Applicant Name: PSEG Power 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 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.

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				
S-50	EU-50	C50a	300	21	223	170	1.8E6	9.8E5	V	N	Rfrac	199
S-50	EU-50	C50b	300	21	223	170	1.8E6	9.8E5	V	N	Rfrac	199
S-51	EU-51	C51a	160	2.833	300		23000		V	N	Steel	400
S-52	EU-52	none	35	1.167	752		15293		V	N	Steel	388
S-53	EU-53	none	25	1	1097		2053		V	N	Steel	125
S-54	EU-54	none	25	12	Ambnt		8.4E5		V	N	Steel	110

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

Attachment E212: Unit Emissions Supplemental Application Form

Applicant Name: PSEG Power Connecticut LLC
 Unit No.: EU-50 CCGT/Duct Burner (CTG on Nat. Gas, without duct firing)

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	11.90	52	11.90		
PM₁₀	11.90	52	11.90		
PM_{2.5} Total (filterable + condensable)	11.90	52	11.90		
SO_x	5.52	24	5.52		
NO_x	314.00	1,375	25.10		
CO	50.50	221	6.88		
VOC	4.89	21	4.37		
Pb	0	0	0		
GHG	385,450	1,688,272			
Hazardous or Other Air Pollutants					
NH3	9.29	41	9.29		
H2SO4	3.55	16	3.55		

Potential Emissions Calculation Basis: Vendor Data, AP-42

Proposed Allowable Emissions Calculation Basis: Vendor Data, AP-42, 8,760 hours/year

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) <i>(specify units)</i>	Proposed Allowable Emissions <i>(specify units)</i>	Regulatory Citation(s)
Criteria Air Pollutants			
PM			
PM₁₀			
PM_{2.5} Total <i>(filterable + condensable)</i>			
SO_x	Fuel 0.060 lb SO ₂ /MMBtu	0.0020 lb SO ₂ /MMBtu	40 CFR 60.4330(a)(2)
NO_x	15 ppm @ 15% O ₂	2.0 ppmvd @ 15% O ₂	40 CFR 60.4320(a), 60.4325
CO			
VOC			
Pb			
GHG			
Hazardous or Other Air Pollutants <i>(Standards other than RCSA §22a-174-29)</i>			

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 [CO₂ Equivalents Calculator Spreadsheet](#), or equivalent, used to quantify Greenhouse Gas emissions, **REQUIRED**

Attachment E212: Unit Emissions Supplemental Application Form

Applicant Name: PSEG Power Connecticut LLC
 Unit No.: EU-50 CCGT/Duct Burner (CTG on Nat. Gas, with duct firing)

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	14.60	64	14.60		
PM₁₀	14.60	64	14.60		
PM_{2.5} Total (filterable + condensable)	14.60	64	14.60		
SO_x	5.64	25	5.64		
NO_x	335.34	1,469	25.70		
CO	74.50	326	13.30		
VOC	8.94	39	8.94		
Pb	0.0001	0.001	0.0001		
GHG	416,690	1,825,102			
Hazardous or Other Air Pollutants					
NH3	9.50	42	9.50		
H2SO4	3.63	16	3.63		

Potential Emissions Calculation Basis: Vendor Data, AP-42

Proposed Allowable Emissions Calculation Basis: Vendor Data, AP-42, 8,760 hours/year

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) <i>(specify units)</i>	Proposed Allowable Emissions <i>(specify units)</i>	Regulatory Citation(s)
Criteria Air Pollutants			
PM			
PM₁₀			
PM_{2.5} Total <i>(filterable + condensable)</i>			
SO_x	Fuel 0.060 lb SO ₂ /MMBtu	0.0020 lb SO ₂ /MMBtu	40 CFR 60.4330(a)(2)
NO_x	15 ppm @ 15% O ₂	2.0 ppmvd @ 15% O ₂	40 CFR 60.4320(a), 60.4325
CO			
VOC			
Pb			
GHG			
Hazardous or Other Air Pollutants <i>(Standards other than RCSA §22a-174-29)</i>			

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 [CO₂ Equivalents Calculator Spreadsheet](#), or equivalent, used to quantify Greenhouse Gas emissions, **REQUIRED**

Attachment E212: Unit Emissions Supplemental Application Form

Applicant Name: PSEG Power Connecticut LLC
 Unit No.: EU-50 CCGT/Duct Burner (CTG on ULSD, without duct firing)

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	60.00	263	60.00		
PM₁₀	60.00	263	60.00		
PM_{2.5} Total (filterable + condensable)	60.00	263	60.00		
SO_x	6.60	29	6.60		
NO_x	589.00	2,580	56.1		
CO	110.00	482	17.1		
VOC	12.40	54	9.76		
Pb	0.05	0.2	0.05		
GHG	562,695	2,464,606			
Hazardous or Other Air Pollutants					
NH3	25.9	113	25.9		
H2SO4	4.27	19	4.27		

Potential Emissions Calculation Basis: Vendor Data, AP-42

Proposed Allowable Emissions Calculation Basis: Vendor Data, AP-42, 8,760 hours/year

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) <i>(specify units)</i>	Proposed Allowable Emissions <i>(specify units)</i>	Regulatory Citation(s)
Criteria Air Pollutants			
PM			
PM₁₀			
PM_{2.5} Total <i>(filterable + condensable)</i>			
SO_x	Fuel 0.060 lb SO ₂ /MMBtu	0.0021 lb SO ₂ /MMBtu	40 CFR 60.4330(a)(2)
NO_x	42 ppm @ 15% O ₂	4.0 ppmvd @ 15% O ₂	40 CFR 60.4320(a), 60.4325
CO			
VOC			
Pb			
GHG			
Hazardous or Other Air Pollutants <i>(Standards other than RCSA §22a-174-29)</i>			

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 [CO₂ Equivalents Calculator Spreadsheet](#), or equivalent, used to quantify Greenhouse Gas emissions, **REQUIRED**

Attachment E212: Unit Emissions Supplemental Application Form

Applicant Name: PSEG Power Connecticut LLC
 Unit No.: EU-50 CCGT/Duct Burner (CTG on ULSD, with duct firing)

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	65.00	285	65.00		
PM₁₀	65.00	285	65.00		
PM_{2.5} Total (filterable + condensable)	65.00	285	65.00		
SO_x	7.08	31	7.08		
NO_x	610.34	2,673	60.20		
CO	134.00	587	55.00		
VOC	20.90	92	20.90		
Pb	0.05	0.2	0.05		
GHG	593,935	2,601,436			
Hazardous or Other Air Pollutants					
NH3	27.80	122	27.80		
H2SO4	4.55	20	4.55		

Potential Emissions Calculation Basis: Vendor Data, AP-42

Proposed Allowable Emissions Calculation Basis: Vendor Data, AP-42, 8,760 hours/year

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) <i>(specify units)</i>	Proposed Allowable Emissions <i>(specify units)</i>	Regulatory Citation(s)
Criteria Air Pollutants			
PM			
PM₁₀			
PM_{2.5} Total <i>(filterable + condensable)</i>			
SO_x	Fuel 0.060 lb SO ₂ /MMBtu	0.0021 lb SO ₂ /MMBtu	40 CFR 60.4330(a)(2)
NO_x	42 ppm @ 15% O ₂	4.0 ppmvd @ 15% O ₂	40 CFR 60.4320(a), 60.4325
CO			
VOC			
Pb			
GHG			
Hazardous or Other Air Pollutants <i>(Standards other than RCSA §22a-174-29)</i>			

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 [CO₂ Equivalents Calculator Spreadsheet](#), or equivalent, used to quantify Greenhouse Gas emissions, **REQUIRED**

PSEG Power Connecticut LLC

**Maximum Allowable Stack Concentration
(MASC) Spreadsheet**

Attachment E212-B to DEEP-NSR-APP-212

HRSO Stack

30-Minute Averaging Time



CT DEEP Maximum Allowable Stack Concentration (MASC) Calculator

Company Name:	PSEG Power Connecticut LLC -- Bridgeport Harbor Station
Source Description:	GE SET 1 -- Worst-Case HRSG Stack - Unit No. 5 Expansion

Instructions

Stack Parameter Units: ft

Stack Height = ft

Minimum Distance from Stack to Property Line = ft

Exhaust Stack Flow Rate = acfm

Hazard Limiting Values (HLV) Averaging Times = No

Notes:
Emission rate for xylenes applied to each of the three isomers.

Additional HAPs

Print

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?
Vanadium, as Pentoxide, -Dust	1314-62-1	5	6.02E-04	8.44E+02	1.00E-01	yes
Benzene	71-43-2	750	1.90E-01	1.27E+05	3.17E+01	yes
Nickel (metal)	7440-02-0	25	1.64E-02	4.22E+03	2.73E+00	yes
Polynuclear aromatic hydrocarbons (PAH) *	50-32-8	0.5	1.38E-01	8.44E+01	2.30E+01	yes
Butane	106-97-8	190000	5.49E-01	3.21E+07	9.17E+01	yes
Butadiene (1,3-butadiene)	106-99-0	110000	5.50E-02	1.86E+07	9.18E+00	yes
Acetaldehyde	75-07-0	18000	1.32E-01	3.04E+06	2.20E+01	yes
Formaldehyde	50-00-0	60	9.83E-01	1.01E+04	1.64E+02	yes
Hexan (n-hexane)	110-54-3	18000	4.71E-01	3.04E+06	7.86E+01	yes
Acrolein	107-02-8	25	2.11E-02	4.22E+03	3.52E+00	yes
Naphthalene	91-20-3	5000	1.21E-01	8.44E+05	2.01E+01	yes
Pentane	109-66-0	35000	6.80E-01	5.91E+06	1.13E+02	yes
Toluene	108-88-3	37500	4.29E-01	6.33E+06	7.16E+01	yes
Arsenic & compounds (as As)	7440-38-2	0.25	3.79E-02	4.22E+01	6.32E+00	yes
Barium (soluble compound) as Ba	7440-39-3	50	1.15E-03	8.44E+03	1.92E-01	yes
Beryllium	7440-41-7	0.05	1.07E-03	8.44E+00	1.78E-01	yes
Cadmium	7440-43-9	2	1.68E-02	3.37E+02	2.80E+00	yes
Chromium, metal	7440-47-3	12.5	3.82E-02	2.11E+03	6.37E+00	yes
Cobalt metal, dust & fume (as Co)	7440-48-4	10	2.20E-05	1.69E+03	3.67E-03	yes
Copper-dust & mists (as Cu)	7440-50-8	100	2.22E-04	1.69E+04	3.71E-02	yes
Ammonia	7664-41-7	1800	2.78E+01	3.04E+05	4.64E+03	yes

Footnotes

PSEG Power Connecticut LLC**Maximum Allowable Stack Concentration
(MASC) Spreadsheet**

Attachment E212-B to DEEP-NSR-APP-212**HRSO Stack****8-Hour Averaging Time**

Note: The Actual Stack Concentration (“ASC”) in the MASC spreadsheet for PAH exceeds the MASC. Using detailed stack parameter information and a worst-case PAH emission rate for the stack, PSEG conducted refined AERMOD modeling to estimate a maximum 8-hour PAH impact. The predicted maximum 8-hour impact is well below the 8-hour Hazard Limiting Value (“HLV”), thus demonstrating compliance with the MASC requirements of Sec. 22a-174-29. See the Bridgeport Harbor Station Unit 5 Dispersion Modeling Report for details.



CT DEEP Maximum Allowable Stack Concentration (MASC) Calculator

Company Name:	PSEG Power Connecticut LLC -- Bridgeport Harbor Station
Source Description:	GE SET 1 -- Worst-Case HRSG Stack - Unit No. 5 Expansion

Instructions

Stack Parameter Units: ft

Stack Height = ft

Minimum Distance from Stack to Property Line = ft

Exhaust Stack Flow Rate = acfm

Hazard Limiting Values (HLV) Averaging Times =

Adjustments to the MASC for Time Periods < 8 hrs =

Notes:
Emission rate for xylenes applied to each of the three isomers.

Additional HAPs

Print

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?
Vanadium, as Pentoxide, -Dust	1314-62-1	1	6.02E-04	1.69E+02	1.00E-01	yes
Benzene	71-43-2	150	1.90E-01	2.53E+04	3.17E+01	yes
Nickel (metal)	7440-02-0	5	1.64E-02	8.44E+02	2.73E+00	yes
Polynuclear aromatic hydrocarbons (PAH) *	50-32-8	0.1	1.38E-01	1.69E+01	2.30E+01	no
Butane	106-97-8	38000	5.49E-01	6.41E+06	9.17E+01	yes
Butadiene (1,3-butadiene)	106-99-0	22000	5.50E-02	3.71E+06	9.18E+00	yes
Acetaldehyde	75-07-0	3600	1.32E-01	6.07E+05	2.20E+01	yes
Formaldehyde	50-00-0	12	9.83E-01	2.02E+03	1.64E+02	yes
Hexan (n-hexane)	110-54-3	3600	4.71E-01	6.07E+05	7.86E+01	yes
Acrolein	107-02-8	5	2.11E-02	8.44E+02	3.52E+00	yes
Naphthalene	91-20-3	1000	1.21E-01	1.69E+05	2.01E+01	yes
Pentane	109-66-0	7000	6.80E-01	1.18E+06	1.13E+02	yes
Toluene	108-88-3	7500	4.29E-01	1.27E+06	7.16E+01	yes
Arsenic & compounds (as As)	7440-38-2	0.05	3.79E-02	8.44E+00	6.32E+00	yes
Barium (soluble compound) as Ba	7440-39-3	10	1.15E-03	1.69E+03	1.92E-01	yes
Beryllium	7440-41-7	0.01	1.07E-03	1.69E+00	1.78E-01	yes
Cadmium	7440-43-9	0.4	1.68E-02	6.75E+01	2.80E+00	yes
Chromium, metal	7440-47-3	2.5	3.82E-02	4.22E+02	6.37E+00	yes
Cobalt metal, dust & fume (as Co)	7440-48-4	2	2.20E-05	3.37E+02	3.67E-03	yes
Copper-dust & mists (as Cu)	7440-50-8	20	2.22E-04	3.37E+03	3.71E-02	yes
Ammonia	7664-41-7	360	2.78E+01	6.07E+04	4.64E+03	yes

Footnotes

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) <i>(specify units)</i>	Proposed Allowable Emissions <i>(specify units)</i>	Regulatory Citation(s)
Criteria Air Pollutants			
PM			
PM₁₀			
PM_{2.5} Total <i>(filterable + condensable)</i>			
SO_x			
NO_x			
CO			
VOC			
Pb			
GHG			
Hazardous or Other Air Pollutants <i>(Standards other than RCSA §22a-174-29)</i>			

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 [CO₂ Equivalents Calculator Spreadsheet](#), or equivalent, used to quantify Greenhouse Gas emissions, **REQUIRED**

PSEG Power Connecticut LLC

**Maximum Allowable Stack Concentration
(MASC) Spreadsheet**

Attachment E212-B to DEEP-NSR-APP-212

Auxiliary Boiler

30-Minute Averaging Time



CT DEEP Maximum Allowable Stack Concentration (MASC) Calculator

Company Name:	PSEG Power Connecticut LLC -- Bridgeport Harbor Station
Source Description:	Auxiliary Boiler - Unit No. 5 Expansion Project

Instructions

Stack Parameter Units: ft

Stack Height = ft

Minimum Distance from Stack to Property Line = ft

Exhaust Stack Flow Rate = acfm

Hazard Limiting Values (HLV) Averaging Times = No

Notes:
Emission rate for xylenes applied to each of the three isomers.

Additional HAPs

Print

Hazardous Air Pollutant(s)	CAS No.	HLV ($\mu\text{g}/\text{m}^3$)	Proposed Allowable Emission Rate (lb/hr)	MASC ($\mu\text{g}/\text{m}^3$)	ASC ($\mu\text{g}/\text{m}^3$)	Complies?
Vanadium, as Pentoxide, -Dust	1314-62-1	5	1.80E-04	9.47E+03	2.09E+00	yes
Benzene	71-43-2	750	1.65E-04	1.42E+06	1.91E+00	yes
Nickel (metal)	7440-02-0	25	1.65E-04	4.74E+04	1.91E+00	yes
Polynuclear aromatic hydrocarbons (PAH) *	50-32-8	0.5	5.50E-05	9.47E+02	6.38E-01	yes
Butane	106-97-8	190000	1.65E-01	3.60E+08	1.91E+03	yes
Selenium compounds (as Se)	--	20	1.88E-06	3.79E+04	2.18E-02	yes
Dibenz(a,h) anthracene	53-70-3	--	9.41E-08	--	1.09E-03	--
Formaldehyde	50-00-0	60	5.88E-03	1.14E+05	6.82E+01	yes
Hexan (n-hexane)	110-54-3	18000	1.41E-01	3.41E+07	1.64E+03	yes
Indeno (1,2,3-cd) pyrene	193-39-5	--	1.41E-07	--	1.64E-03	--
Naphthalene	91-20-3	5000	4.78E-05	9.47E+06	5.55E-01	yes
Pentane	109-66-0	35000	2.04E-01	6.63E+07	2.37E+03	yes
Toluene	108-88-3	37500	2.67E-04	7.10E+07	3.10E+00	yes
Arsenic & compounds (as As)	7440-38-2	0.25	1.57E-05	4.74E+02	1.82E-01	yes
Barium (soluble compound) as Ba	7440-39-3	50	3.45E-04	9.47E+04	4.00E+00	yes
Beryllium	7440-41-7	0.05	9.41E-07	9.47E+01	1.09E-02	yes
Cadmium	7440-43-9	2	8.63E-05	3.79E+03	1.00E+00	yes
Chromium, metal	7440-47-3	12.5	1.10E-04	2.37E+04	1.28E+00	yes
Cobalt metal, dust & fume (as Co)	7440-48-4	10	6.59E-06	1.89E+04	7.65E-02	yes
Copper-dust & mists (as Cu)	7440-50-8	100	6.67E-05	1.89E+05	7.74E-01	yes
Mercury vapor	--	5	2.04E-05	9.47E+03	2.37E-01	yes

Footnotes

PSEG Power Connecticut LLC

**Maximum Allowable Stack Concentration
(MASC) Spreadsheet**

Attachment E212-B to DEEP-NSR-APP-212

Auxiliary Boiler

8-Hour Averaging Time



CT DEEP Maximum Allowable Stack Concentration (MASC) Calculator

Company Name:	PSEG Power Connecticut LLC -- Bridgeport Harbor Station
Source Description:	Auxiliary Boiler - Unit No. 5 Expansion Project

Instructions

Stack Parameter Units: ft

Stack Height = ft

Minimum Distance from Stack to Property Line = ft

Exhaust Stack Flow Rate = acfm

Hazard Limiting Values (HLV) Averaging Times =

Adjustments to the MASC for Time Periods < 8 hrs =

Notes:
Emission rate for xylenes applied to each of the three isomers.

Additional HAPs

Print

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?
Vanadium, as Pentoxide, -Dust	1314-62-1	1	1.80E-04	1.89E+03	2.09E+00	yes
Benzene	71-43-2	150	1.65E-04	2.84E+05	1.91E+00	yes
Nickel (metal)	7440-02-0	5	1.65E-04	9.47E+03	1.91E+00	yes
Polynuclear aromatic hydrocarbons (PAH) *	50-32-8	0.1	5.50E-05	1.89E+02	6.38E-01	yes
Butane	106-97-8	38000	1.65E-01	7.20E+07	1.91E+03	yes
Selenium compounds (as Se)	--	4	1.88E-06	7.58E+03	2.18E-02	yes
Dibenz(a,h) anthracene	53-70-3	--	9.41E-08	--	1.09E-03	--
Formaldehyde	50-00-0	12	5.88E-03	2.27E+04	6.82E+01	yes
Hexan (n-hexane)	110-54-3	3600	1.41E-01	6.82E+06	1.64E+03	yes
Indeno (1,2,3-cd) pyrene	193-39-5	--	1.41E-07	--	1.64E-03	--
Naphthalene	91-20-3	1000	4.78E-05	1.89E+06	5.55E-01	yes
Pentane	109-66-0	7000	2.04E-01	1.33E+07	2.37E+03	yes
Toluene	108-88-3	7500	2.67E-04	1.42E+07	3.10E+00	yes
Arsenic & compounds (as As)	7440-38-2	0.05	1.57E-05	9.47E+01	1.82E-01	yes
Barium (soluble compound) as Ba	7440-39-3	10	3.45E-04	1.89E+04	4.00E+00	yes
Beryllium	7440-41-7	0.01	9.41E-07	1.89E+01	1.09E-02	yes
Cadmium	7440-43-9	0.4	8.63E-05	7.58E+02	1.00E+00	yes
Chromium, metal	7440-47-3	2.5	1.10E-04	4.74E+03	1.28E+00	yes
Cobalt metal, dust & fume (as Co)	7440-48-4	2	6.59E-06	3.79E+03	7.65E-02	yes
Copper-dust & mists (as Cu)	7440-50-8	20	6.67E-05	3.79E+04	7.74E-01	yes
Mercury vapor	--	1	2.04E-05	1.89E+03	2.37E-01	yes

Footnotes

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) <i>(specify units)</i>	Proposed Allowable Emissions <i>(specify units)</i>	Regulatory Citation(s)
Criteria Air Pollutants			
PM	0.15 g/hp-hr	0.15 g/hp-hr	40 CFR 60.4202(a)(2)
PM₁₀			
PM_{2.5} Total <i>(filterable + condensable)</i>			
SO_x			
NO_x	4.8 g/hp-hr (NMHC + NO _x)	4.8 g/hp-hr (NMHC + NO _x)	40 CFR 60.4202(a)(2)
CO	2.6 g/hp-hr	2.6 g/hp-hr	40 CFR 60.4202(a)(2)
VOC			
Pb			
GHG			
Hazardous or Other Air Pollutants <i>(Standards other than RCSA §22a-174-29)</i>			

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 [CO₂ Equivalents Calculator Spreadsheet](#), or equivalent, used to quantify Greenhouse Gas emissions, **REQUIRED**

PSEG Power Connecticut LLC

**Maximum Allowable Stack Concentration
(MASC) Spreadsheet**

Attachment E212-B to DEEP-NSR-APP-212

Emergency Generator

30-Minute Averaging Time



CT DEEP Maximum Allowable Stack Concentration (MASC) Calculator

Company Name:	PSEG Power Connecticut LLC -- Bridgeport Harbor Station
Source Description:	Emergency Generator - Unit No. 5 Expansion Project

Instructions

Stack Parameter Units: English

Stack Height = 35 ft

Minimum Distance from Stack to Property Line = 388 ft

Exhaust Stack Flow Rate = 15,293 acfm

Hazard Limiting Values (HLV) Averaging Times = 30-Minute

Notes:
The spreadsheet did not indicate it, but each ASC is less than the respective MASC. Emission rate for xylenes applied to each of the three isomers.

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?
Benzene	71-43-2	750	1.48E-02	1.65E+05	2.58E+02	
Toluene	108-88-3	37500	5.35E-03	8.27E+06	9.34E+01	
o-Xylene	1330-20-7	43400	3.68E-03	9.58E+06	6.42E+01	
m-Xylene	1330-20-7	43400	3.68E-03	9.58E+06	6.42E+01	
p-Xylene	1330-20-7	43400	3.68E-03	9.58E+06	6.42E+01	
Propylene	115-07-1	--	5.32E-02	--	9.28E+02	
Formaldehyde	50-00-0	60	1.50E-03	1.32E+04	2.62E+01	
Acetaldehyde	75-07-0	18000	4.80E-04	3.97E+06	8.38E+00	
Acrolein	107-02-8	25	1.50E-04	5.52E+03	2.62E+00	
Naphthalene	91-20-3	5000	2.48E-03	1.10E+06	4.32E+01	
Benz(a)anthracene	56-55-3	--	1.18E-05	--	2.07E-01	
Chrysene	218-01-9	--	2.91E-05	--	5.09E-01	
Benzo(b)fluoranthene	205-99-2	--	2.11E-05	--	3.69E-01	
Benz(a)pyrene *	50-32-8	--	4.90E-06	--	8.54E-02	
Indeno (1,2,3-cd) pyrene	193-39-5	--	7.89E-06	--	1.38E-01	
Dibenz(a,h) anthracene	53-70-3	--	6.59E-06	--	1.15E-01	
Polynuclear aromatic hydrocarbons (PAH) *	50-32-8	0.5	4.03E-03	1.10E+02	7.03E+01	
Sulfuric acid	7664-93-9	100	2.89E-02	2.21E+04	5.05E+02	

Footnotes

* Benz(a)pyrene - See Polycyclic Aromatic Hydrocarbons (PAH)

* Polynuclear aromatic hydrocarbons (PAH) - Benzene-soluble fraction

PSEG Power Connecticut LLC

Maximum Allowable Stack Concentration (MASC) Spreadsheet

Attachment E212-B to DEEP-NSR-APP-212

Emergency Generator

8-Hour Averaging Time

Note: The Actual Stack Concentration ("ASC") in the MASC spreadsheet for PAH exceeds the MASC. Using detailed stack parameter information and a worst-case PAH emission rate for the stack, PSEG conducted refined AERMOD modeling to estimate a maximum 8-hour PAH impact. The predicted maximum 8-hour impact is well below the 8-hour Hazard Limiting Value ("HLV"), thus demonstrating compliance with the MASC requirements of Sec. 22a-174-29. See the Bridgeport Harbor Station Unit 5 Dispersion Modeling Report for details.



CT DEEP Maximum Allowable Stack Concentration (MASC) Calculator

Company Name:	PSEG Power Connecticut LLC -- Bridgeport Harbor Station
Source Description:	Emergency Generator - Unit No. 5 Expansion Project

Instructions

Stack Parameter Units: ft

Stack Height = ft

Minimum Distance from Stack to Property Line = ft

Exhaust Stack Flow Rate = acfm

Hazard Limiting Values (HLV) Averaging Times =

Adjustments to the MASC for Time Periods < 8 hrs =

Notes:
Emission rate for xylenes applied to each of the three isomers.

Additional HAPs

Print

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?
Benzene	71-43-2	150	1.48E-02	3.31E+04	2.58E+02	yes
Toluene	108-88-3	7500	5.35E-03	1.65E+06	9.34E+01	yes
o-Xylene	1330-20-7	8680	3.68E-03	1.92E+06	6.42E+01	yes
m-Xylene	1330-20-7	8680	3.68E-03	1.92E+06	6.42E+01	yes
p-Xylene	1330-20-7	8680	3.68E-03	1.92E+06	6.42E+01	yes
Propylene	115-07-1	--	5.32E-02	--	9.28E+02	--
Formaldehyde	50-00-0	12	1.50E-03	2.65E+03	2.62E+01	yes
Acetaldehyde	75-07-0	3600	4.80E-04	7.94E+05	8.38E+00	yes
Acrolein	107-02-8	5	1.50E-04	1.10E+03	2.62E+00	yes
Naphthalene	91-20-3	1000	2.48E-03	2.21E+05	4.32E+01	yes
Benz(a)anthracene	56-55-3	--	1.18E-05	--	2.07E-01	--
Chrysene	218-01-9	--	2.91E-05	--	5.09E-01	--
Benzo(b)fluoranthene	205-99-2	--	2.11E-05	--	3.69E-01	--
Benz(a)pyrene *	50-32-8	--	4.90E-06	--	8.54E-02	--
Indeno (1,2,3-cd) pyrene	193-39-5	--	7.89E-06	--	1.38E-01	--
Dibenz(a,h) anthracene	53-70-3	--	6.59E-06	--	1.15E-01	--
Polynuclear aromatic hydrocarbons (PAH) *	50-32-8	0.1	4.03E-03	2.21E+01	7.03E+01	no
Sulfuric acid	7664-93-9	20	2.89E-02	4.41E+03	5.05E+02	yes

Footnotes

* Benz(a)pyrene - See Polycyclic Aromatic Hydrocarbons (PAH)

* Polynuclear aromatic hydrocarbons (PAH) - Benzene-soluble fraction

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) <i>(specify units)</i>	Proposed Allowable Emissions <i>(specify units)</i>	Regulatory Citation(s)
Criteria Air Pollutants			
PM	0.15 g/hp-hr	0.15 g/hp-hr	40 CFR 60.4205 (c)
PM₁₀			
PM_{2.5} Total <i>(filterable + condensable)</i>			
SO_x			
NO_x	3.0 g/hp-hr (NMHC + NO _x)	3.0 g/hp-hr (NMHC + NO _x)	40 CFR 60.4205 (c)
CO	2.6 g/hp-hr	2.6 g/hp-hr	40 CFR 60.4205 (c)
VOC			
Pb			
GHG			
Hazardous or Other Air Pollutants <i>(Standards other than RCSA §22a-174-29)</i>			

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 [CO₂ Equivalents Calculator Spreadsheet](#), or equivalent, used to quantify Greenhouse Gas emissions, **REQUIRED**

PSEG Power Connecticut LLC

**Maximum Allowable Stack Concentration
(MASC) Spreadsheet**

Attachment E212-B to DEEP-NSR-APP-212

Emergency Fire Pump Engine

30-Minute Averaging Time



CT DEEP Maximum Allowable Stack Concentration (MASC) Calculator

Company Name:	PSEG Power Connecticut LLC -- Bridgeport Harbor Station
Source Description:	Diesel Fire Pump - Unit No. 5 Expansion Project

Instructions

Stack Parameter Units: English

Stack Height = 25 ft

Minimum Distance from Stack to Property Line = 125 ft

Exhaust Stack Flow Rate = 2,053 acfm

Hazard Limiting Values (HLV) Averaging Times = 30-Minute

Notes:
The spreadsheet did not indicate it, but each ASC is less than the respective MASC. Emission rate for xylenes applied to each of the three isomers.

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?
Benzene	71-43-2	750	2.40E-03	2.09E+05	3.11E+02	
Toluene	108-88-3	37500	1.05E-03	1.05E+07	1.37E+02	
o-Xylene	1330-20-7	43400	7.32E-04	1.21E+07	9.51E+01	
m-Xylene	1330-20-7	43400	7.32E-04	1.21E+07	9.51E+01	
p-Xylene	1330-20-7	43400	7.32E-04	1.21E+07	9.51E+01	
Propylene	115-07-1	--	6.62E-03	--	8.61E+02	
Butadiene (1,3-butadiene)	106-99-0	110000	1.00E-04	3.07E+07	1.31E+01	
Formaldehyde	50-00-0	60	3.03E-03	1.67E+04	3.94E+02	
Acetaldehyde	75-07-0	18000	1.97E-03	5.02E+06	2.56E+02	
Acrolein	107-02-8	25	2.38E-04	6.97E+03	3.09E+01	
Naphthalene	91-20-3	5000	2.18E-04	1.39E+06	2.83E+01	
Benz(a)anthracene	56-55-3	--	4.31E-06	--	5.61E-01	
Chrysene	218-01-9	--	9.06E-07	--	1.18E-01	
Benzo(b)fluoranthene	205-99-2	--	2.54E-07	--	3.31E-02	
Benz(a)pyrene *	50-32-8	--	4.83E-07	--	6.28E-02	
Indeno (1,2,3-cd) pyrene	193-39-5	--	9.63E-07	--	1.25E-01	
Dibenz(a,h) anthracene	53-70-3	--	1.50E-06	--	1.95E-01	
Polynuclear aromatic hydrocarbons (PAH) *	50-32-8	0.5	4.32E-04	1.39E+02	5.61E+01	
Sulfuric acid	7664-93-9	100	6.02E-04	2.79E+04	7.83E+01	

Footnotes

* Benz(a)pyrene - See Polycyclic Aromatic Hydrocarbons (PAH)

* Polynuclear aromatic hydrocarbons (PAH) - Benzene-soluble fraction

PSEG Power Connecticut LLC**Maximum Allowable Stack Concentration
(MASC) Spreadsheet**

Attachment E212-B to DEEP-NSR-APP-212**Emergency Fire Pump Engine****8-Hour Averaging Time**

Note: The Actual Stack Concentration ("ASC") in the MASC spreadsheet for PAH exceeds the MASC. Using detailed stack parameter information and a worst-case PAH emission rate for the stack, PSEG conducted refined AERMOD modeling to estimate a maximum 8-hour PAH impact. The predicted maximum 8-hour impact is well below the 8-hour Hazard Limiting Value ("HLV"), thus demonstrating compliance with the MASC requirements of Sec. 22a-174-29. See the Bridgeport Harbor Station Unit 5 Dispersion Modeling Report for details.



CT DEEP Maximum Allowable Stack Concentration (MASC) Calculator

Company Name:	PSEG Power Connecticut LLC -- Bridgeport Harbor Station
Source Description:	Diesel Fire Pump - Unit No. 5 Expansion Project

Instructions

Stack Parameter Units: ft

Stack Height = ft

Minimum Distance from Stack to Property Line = ft

Exhaust Stack Flow Rate = acfm

Hazard Limiting Values (HLV) Averaging Times =

Adjustments to the MASC for Time Periods < 8 hrs =

Notes:
Emission rate for xylenes applied to each of the three isomers.

Additional HAPs

Print

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?
Benzene	71-43-2	150	2.40E-03	4.18E+04	3.11E+02	yes
Toluene	108-88-3	7500	1.05E-03	2.09E+06	1.37E+02	yes
o-Xylene	1330-20-7	8680	7.32E-04	2.42E+06	9.51E+01	yes
m-Xylene	1330-20-7	8680	7.32E-04	2.42E+06	9.51E+01	yes
p-Xylene	1330-20-7	8680	7.32E-04	2.42E+06	9.51E+01	yes
Propylene	115-07-1	--	6.62E-03	--	8.61E+02	--
Butadiene (1,3-butadiene)	106-99-0	22000	1.00E-04	6.14E+06	1.31E+01	yes
Formaldehyde	50-00-0	12	3.03E-03	3.35E+03	3.94E+02	yes
Acetaldehyde	75-07-0	3600	1.97E-03	1.00E+06	2.56E+02	yes
Acrolein	107-02-8	5	2.38E-04	1.39E+03	3.09E+01	yes
Naphthalene	91-20-3	1000	2.18E-04	2.79E+05	2.83E+01	yes
Benz(a)anthracene	56-55-3	--	4.31E-06	--	5.61E-01	--
Chrysene	218-01-9	--	9.06E-07	--	1.18E-01	--
Benzo(b)fluoranthene	205-99-2	--	2.54E-07	--	3.31E-02	--
Benz(a)pyrene *	50-32-8	--	4.83E-07	--	6.28E-02	--
Indeno (1,2,3-cd) pyrene	193-39-5	--	9.63E-07	--	1.25E-01	--
Dibenz(a,h) anthracene	53-70-3	--	1.50E-06	--	1.95E-01	--
Polynuclear aromatic hydrocarbons (PAH) *	50-32-8	0.1	4.32E-04	2.79E+01	5.61E+01	no
Sulfuric acid	7664-93-9	20	6.02E-04	5.58E+03	7.83E+01	yes

Footnotes

* Benz(a)pyrene - See Polycyclic Aromatic Hydrocarbons (PAH)

* Polynuclear aromatic hydrocarbons (PAH) - Benzene-soluble fraction

Attachment E212: Unit Emissions Supplemental Application Form

Applicant Name: PSEG Power Connecticut LLC
 Unit No.: EU-54 Auxiliary Cooling Tower

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 <i>(specify)</i>	tpy
Criteria Air Pollutants					
PM	0.16	0.71	0.16		0.71
PM₁₀	0.16	0.71	0.16		0.71
PM_{2.5} Total <small>(filterable + condensable)</small>	0.16	0.71	0.16		0.71
SO_x					
NO_x					
CO					
VOC					
Pb					
GHG					
Hazardous or Other Air Pollutants					

Potential Emissions Calculation Basis: Vendor Data

Proposed Allowable Emissions Calculation Basis: Vendor Data, 8,760 hours/year

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) <i>(specify units)</i>	Proposed Allowable Emissions <i>(specify units)</i>	Regulatory Citation(s)
Criteria Air Pollutants			
PM			
PM ₁₀			
PM _{2.5} Total <i>(filterable + condensable)</i>			
SO _x			
NO _x			
CO			
VOC			
Pb			
GHG			
Hazardous or Other Air Pollutants <i>(Standards other than RCSA §22a-174-29)</i>			

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.

<input checked="" type="checkbox"/>	Attachment E212-A: <i>Sample Calculations</i> - Submit sample calculations used to determine all emissions rates, excluding GHG. See Attachment E212-C for GHG emissions. REQUIRED
<input type="checkbox"/>	Attachment E212-B: <i>RCSA section 22a-174-29 Hazardous Air Pollutants Compliance</i> – Submit a completed CTMASC spreadsheet , or equivalent, to demonstrate compliance with RCSA section 22a-174-29. REQUIRED
<input type="checkbox"/>	Attachment E212-C: <i>Greenhouse Gas Emissions</i> – Submit a completed CO₂ Equivalents Calculator Spreadsheet , or equivalent, used to quantify Greenhouse Gas emissions, REQUIRED

Attachment E0 Supplemental Text to Attachment E

Summary of Emissions and Estimation Methodology

Summary of Emissions and Estimation Methodology

This document supplements the information provided in the Attachment E permit forms and the detailed emissions calculations provided in Appendix A. Equipment details are provided along with a summary of PSEG's emission estimation methodology and a summary of maximum hourly and annual potential to emit (PTE).

Unit 5 will consist of a single dual-fuel-capable combustion turbine generator. The combustion turbine will be fired primarily by natural gas, with ULSD use limited to no more than an equivalent of 30 days (720 hours) per year. The hot exhaust from the turbine is passed through a HRSG and then to the HRSG stack.

The generating capacity of the new unit will be approximately 485 megawatts ("MW") with supplemental duct firing. The combined-cycle unit would be constructed in a "1 X 1" configuration; that is, a single combustion turbine generator ("CTG") exhausting to a single supplementary-fired Heat Recovery Steam Generator ("HRSG"). Steam generated in the HRSG will drive a single steam turbine generator ("STG").

The Project's CTG is a model 7HA.02 supplied by GE. The CTG is capable of producing about 345 MW (gross) when firing natural gas at a reference ambient temperature of 59° F and 347 MW (gross) when fired with ULSD at the same ambient temperature. The CTG will be equipped with an air intake evaporative cooling system. Evaporative cooling is used to increase the power production of the combustion turbine during hot summer weather.

Pollution controls integral to the CTG include Dry Low NOx ("DLN") combustors for natural gas operation and water injection for ULSD operation. The turbine exhaust pollutants are further controlled downstream in catalytic control equipment located within the HRSG and are comprised of an oxidation catalyst and a Selective Catalytic Reduction (SCR) system. The SCR requires ammonia vapor to be injected for the desired chemical reaction; however, the oxidation catalyst requires no reagents. The catalysts are placed in the gas path within the HRSG at locations chosen to achieve optimum operating temperatures. Particulate emissions are controlled through exclusive use of natural gas and ULSD fuels.

During start-up or shutdown of the CTG, certain transient operating conditions occur which can affect the performance of the systems integral to pollutant emissions control. These conditions are inherent in the operating principles of a DLN-equipped CTG in combined-cycle service. For instance, at start-up, the catalyst temperatures are below those required for optimum removal of pollutants. As the start-up progresses, the catalysts are warmed by the hot CTG exhaust gas and eventually reach an effective operating temperature. Similarly, very early in the start-up process, the CTG has not yet reached turbine minimum emission compliance load ("MECL") where DLN operation (or water injection for ULSD) would be fully functioning.

For a shutdown, the reverse process occurs as the CTG load is brought gradually down below MECL and is switched out of the DLN mode to complete the ramp-down. The time required for a shutdown, however, is substantially less than that required for a start-up and NOx emissions during shutdown are substantially lower than during startup on a pound per event basis.

PSEG has selected the Rapid Response Lite option for the 7HA-02-based combined-cycle plant which substantially reduces the amount of time Unit 5 will operate in transient conditions. This has the effect of reducing emissions of pollutants such as CO, NO_x, and VOC during start-up operations.

Unit 5 may operate with or without supplemental firing using the natural gas-fired duct burner. Generally, the duct burner would not typically be operated when the CTG is operating at partial load conditions. Maximum heat input to the duct burner is 267 million British Thermal Units per hour (“MMBtu/hr”) high heating value (“HHV”); however, the supplemental firing system can be throttled to less than this maximum heat input depending on plant operating conditions, fuel availability, and grid requirements.

Auxiliary equipment will be installed to support Unit 5’s operation. Auxiliary equipment that produces air emissions includes:

- Auxiliary Boiler (exclusively natural gas fired)
- Diesel Fire Pump Engine (limited testing and emergency use only)
- Emergency Generator (limited testing and emergency use only)
- A small, 3-cell Auxiliary Evaporative Cooling Tower
- Fuel oil tanks
 - Unit 5 ULSD Storage (5.5 million gallons)
 - Emergency Generator ULSD Storage (3,000 gallons)
 - Emergency Fire Pump Engine ULSD Storage (500 gallons)

The auxiliary boiler is used to provide steam to the plant when the CTG is either not in operation or is starting up. The plant requires this source of auxiliary steam to provide for certain heating functions prior to and during startups in order to allow shorter startup time durations. The maximum firing rate is 80 MMBtu/hr (HHV) and it is exclusively fired by natural gas. The auxiliary boiler does not typically operate when the CTG, HRSG, or STG are up at load in steady-state operation.

An approximately 2,000 KWe diesel-driven emergency generator will be installed to provide emergency power in the event of a power interruption. The generator will be used exclusively for emergency purposes and will be periodically tested to assure readiness. The emergency generator will be used 300 hours/year for testing, maintenance, and emergencies.

An emergency fire pump engine will be installed having a nominal output of 360 BHP. Similar to the emergency generator, the emergency fire pump engine will be limited to 300 hours/year for testing, maintenance, and emergencies.

Unit 5 will have an Auxiliary Cooling System (“ACS”) which will handle the cooling loads of all mechanical equipment, including typically the CTG and STG cooling and generator cooling loads, the fuel gas compressor cooling loads, and other miscellaneous equipment cooling loads. The ACS will include an auxiliary mechanical draft, evaporative cooling tower. The ACS preliminary design requires that the cooling tower be sized for a cooling water flow of 13,000 gpm and be capable of handling a heat load of 65 MMBtu/hr at an ambient wet bulb temperature of 78° F. The makeup water sources include fresh city water, recycled reverse osmosis reject, CTG inlet evaporative cooler blowdown, and HRSG boiler blowdown. Small drift emissions to the atmosphere from three 12 foot diameter fans will occur at an expected drift rate of 0.001% of the circulating water flow. The size and design of the cooling tower is similar to that of commercial type cooling towers often applied to large building chilled water systems

and should not be confused with evaporative cooling systems at other combined-cycle facilities which depend on wet mechanical draft cooling towers for main steam cycle purposes. The worst case particulate emissions from this cooling tower, assuming 250 ppm of total dissolved solids (“TDS”) in the make-up water and 10 cycles of concentration will be equal to or less than 0.16 pounds per hour (“lb/hr”).

The methodology used by PSEG to estimate emissions is summarized next.

The Unit 5 combined cycle will operate under numerous, varied operating conditions:

- two fuels fired in the CTG
- duct burning on or off
- evaporative cooling on or off
- numerous ambient temperatures and CTG operating loads
- normal steady state operation
- short-term transient operation (startup and shutdown)

The basic approach used for the emissions calculations supporting the air permitting of the Unit 5 combined cycle was to identify the maximum hourly emissions for each fuel, and to determine the worst-case annual PTE assuming the CTG fires up to an equivalent of 30 days per year on ULSD.

In addition, in order to provide necessary operating flexibility, PSEG is proposing the following annual heat input operating limitations. Because they are consistent with the worst-case annual PTE calculations, limiting the annual heat inputs to these levels will ensure that the proposed annual PTE values are not exceeded.

Maximum CTG Heat Input - Natural Gas (MMBtu/yr (HHV))	-	25,885,944
Maximum CTG Heat Input - ULSD (MMBtu/yr (HHV))	-	2,309,684
Maximum Duct Burner Heat Input (MMBtu/yr (HHV))	-	849,934

The natural gas heat input limit above was developed based on the total heat input from the CTG when firing any fuel so that PSEG has the operational flexibility to fire any fuel during a 12-month period, given market and fuel availability conditions. PSEG is proposing that during a 12-month period, this limit will be reduced by 1 MMBtu for every 1 MMBtu of ULSD fired in the CTG. The ULSD heat input limit will ensure that the CTG is limited to the equivalent of 30 days of ULSD firing that were inherent in the annual PTE calculations. Similarly, the duct burner heat input limit will ensure that the duct burner assumptions inherent in the PTE calculations are included in the NSR permit.

The derivation of the annual PTE values discussed below and the heat input limitations listed above is fully documented in Appendix A to this application.

GE provided performance and emissions data under numerous ambient temperature and CTG load conditions including operation with the duct burners on or off. Maximum hourly emission rates were identified for the CT/duct burner, which exhausts through the HRSG stack, by selecting the maximum emission rate during any of these operating scenarios.

GE also provided estimates of emissions during startup and shutdown operations.

Maximum emission rates for the auxiliary equipment were based on maximum operating capacities and emission estimates provided by the manufacturer or emissions factors found in AP-42.

Appendix A documents the basis for the negligible 0.16 lb/hr emission rate calculated for the auxiliary cooling tower.

EPA's TANKS program was used to estimate VOC emissions from the ULSD storage tanks.

Worst-case hazardous air pollutant emission rates were estimated for all combustion sources that were included in the Maximum Allowable Stack Concentration (MASC) screening. Details of these calculations are provided in Appendix A.

Tables E0-1 through E0-4 summarize the allowable emissions proposed for the CTG/duct burner under steady state conditions for the CTG firing natural gas without duct firing, the CTG firing natural gas with duct firing, the CTG firing ULSD without duct firing, and the CTG firing ULSD with duct firing, respectively. Table E0-5 lists the proposed total allowable annual emissions (tons per 12 consecutive months) for the CTG/duct burner (HRS stack) including startup and shutdown. Table E0-6 lists the proposed limits on transient operations. Note that the proposed levels are listed in lb/event rather than lb/hr since each event will last less than a full hour (see Appendix A).

Table E0-7 lists the proposed short-term and annual emission limitations for the auxiliary boiler.

The worst case annual PTE estimate for the CT/duct burner is comprised of emissions from firing each fuel in the CTG during normal operations at average annual conditions, which are represented by 59 F ambient ISO conditions with and without duct firing. Emissions during startup and shutdown were also included in the annual PTE. The hours assumed for the annual PTE calculations are documented in Appendix A and are based on the following major assumptions:

- ULSD fired in CTG for an equivalent of 30 days per year (startup and shutdown of the CTG on ULSD are included in those hours)
- A total of 3,605 hours of duct firing were assumed - 250 hours when the CTG is firing ULSD and 3,355 when the CTG is firing natural gas.
- Startup and shutdown hours on each fuel based on durations supplied by GE.
- The following were the assumptions on the number of startups and shutdowns during the year:
 - Cold Starts – 25
 - Warm Starts – 50
 - Hot Starts – 290
 - Shutdowns -- 365

The annual emissions from the auxiliary equipment were based on maximum hourly emissions applied to the following annual hours of operation per year:

- Auxiliary boiler – 8,760
- Emergency generator - 300
- Emergency fire pump engine – 300
- Auxiliary cooling tower – 8,760

Annual potential to emit estimates are provided in Table E0-8.

Table E0–1

**Proposed Allowable Emission Rates – Steady State
 CTG Firing Natural Gas - WITHOUT Duct Firing**

Pollutant	lb/hr	ppmvd @ 15% O₂	lb/MMBtu
PM	11.90		0.0070
PM ₁₀ /PM _{2.5}	11.90		0.0070
SO ₂	5.52		0.0020
NO _x	25.10	2.0	
VOC	4.37	1.0	
CO	6.88	0.9	
Lead	(a)		
H ₂ SO ₄	3.55		
Ammonia		2.0	

(a) – According to AP-42, there are no lead emissions from firing natural gas in a combustion turbine.

Table E0–2

**Proposed Allowable Emission Rates – Steady State
CTG Firing Natural Gas - WITH Duct Firing**

Pollutant	lb/hr	ppmvd @ 15% O₂	lb/MMBtu
PM	14.60		0.0051
PM ₁₀ /PM _{2.5}	14.60		0.0051
SO ₂	5.64		0.0020
NO _x	25.70	2.0	
VOC	8.94	2.0	
CO	13.30	1.7	
Lead	1E-04		
H ₂ SO ₄	3.63		
Ammonia		2.0	

Table E0–3

**Proposed Allowable Emission Rates – Steady State
CTG Firing ULSD - WITHOUT Duct Firing**

Pollutant	lb/hr	ppmvd @ 15% O₂	lb/MMBtu
PM	60.00		0.0296
PM ₁₀ /PM _{2.5}	60.00		0.0296
SO ₂	6.60		0.0021
NO _x	56.10	4.0	
VOC	9.76	2.0	
CO	17.10	2.0	
Lead	5E-02		
H ₂ SO ₄	4.27		
Ammonia		5.0	

Table E0-4

**Proposed Allowable Emission Rates – Steady State
CTG Firing ULSD - WITH Duct Firing**

Pollutant	lb/hr	ppmvd @ 15% O₂	lb/MMBtu
PM	65.00		0.0214
PM ₁₀ /PM _{2.5}	65.00		0.0214
SO ₂	7.08		0.0021
NO _x	60.20	4.0	
VOC	20.90	4.0	
CO	55.00	6.0	
Lead	5E-02		
H ₂ SO ₄	4.55		
Ammonia		5.0	

Table E0–5

**Proposed Allowable Annual Emission Rates
CTG/Duct Burner (HRSO Stack)**

Pollutant	tons per 12 consecutive months
PM	71.8
PM ₁₀ /PM _{2.5}	71.8
SO ₂	22.7
NO _x	126.8
VOC	35.1
CO	95.1
Lead	0.02
H ₂ SO ₄	14.6
Ammonia	47.6

Table E0–6

Proposed Transient Operation Emission Rates

	Type of Event			
	Startup		Shutdown	
	Natural Gas	ULSD	Natural Gas	ULSD
NO_x (lb/event)	99	108	9.8	16
VOC (lb/event)	10.2	31	26	6.2
CO (lb/event)	129	284	124	42

Table E0–7

**Proposed Allowable Emission Rates
 Auxiliary Boiler**

Pollutant	lb/hr		tpy
PM ₁₀	0.48		2.1
PM _{2.5}	0.48		2.1
SO ₂	0.12		0.5
NO _x	0.72	7 ppmvd @ 3% O ₂	3.2
VOC	0.32		1.4
CO	2.88	50 ppmvd @ 3% O ₂	12.6
Lead	3.9E-05		1.7E-04
H ₂ SO ₄	0.02		0.08
CO _{2e}		117 lb/MMBtu	41,031

Table E0–8

Annual Potential To Emit (PTE) Estimates

	Project Total	Worst-Case HRSG Stack Total	Auxiliary Boiler	Emergency Diesel Generator	Emergency Diesel Fire Pump Engine	Auxiliary Cooling Tower	ULSD Storage Tanks
Pollutant	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)
NO_x	136.6	126.8	3.2	6.4	0.3	---	---
PM₁₀	74.7	71.8	2.1	0.04	0.014	0.7	---
PM_{2.5}	74.7	71.8	2.1	0.04	0.014	0.7	---
CO	108.4	95.1	12.6	0.5	0.2	---	---
VOC	36.8	35.1	1.4	0.15	0.01	---	0.23
SO₂	23.3	22.7	0.5	0.028	0.0006	---	---
Pb	0.02	0.02	0.0002	0.00004	0.000005	---	---
PM	74.7	71.8	2.1	0.04	0.014	0.7	---
H₂SO₄	14.7	14.6	0.1	0.0043	0.00009	---	---
CO₂e	1,662,178	1,620,616	41,031	468	63	---	---
CO₂	1,660,007	1,618,489	40,989	466	63	---	---
CH₄	35.4	34.6	0.8	0.019	0.003	---	---
N₂O	4.3	4.2	0.1	0.004	0.0005	---	---