

**New York State Department of Environmental Conservation
Air Permit Application**



**Department of
Environmental
Conservation**

DEC ID										
2	-	6	3	0	1	-	0	0	0	6

Application ID																
2	-	6	3	0	1	-	0	0	0	6	/	0	0	0	8	1

Application Type	
State Facility	<input checked="" type="checkbox"/> Title V

Section I - Certification

Certification	
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information required to complete this application, I believe the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.	
Responsible Official Venetia A. Lannon	Title Vice President, EH&S
Signature	Date 4.18.23
Professional Engineer Certification	
I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments as they pertain to the practice of engineering. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.	
Professional Engineer Alexander J. Hoffman	NYS License No. 099913
Signature	Date 4/4/2023



Section II - Identification Information

Type of Permit Action Requested				
<input type="checkbox"/> New	<input type="checkbox"/> Renewal	<input type="checkbox"/> Significant Modification	<input type="checkbox"/> Administrative Amendment	<input type="checkbox"/> Minor Modification
<input checked="" type="checkbox"/> Application for the construction of a new facility * Application involves the construction of new emission unit(s)				
Facility Information				
Name CON ED - ASTORIA FACILITY				
Location Address 31-01 20th Avenue				
City / * Town / Village Astoria				Zip 11105
Owner/Firm Information				Business Taxpayer ID
Name Consolidated Edison Company of New York, Inc.				
Street Address 4 Irving Place, Room 15-110				
City New York	State/Province NY	Country USA	Zip 10003	
Owner Classification: <input type="checkbox"/> Federal <input type="checkbox"/> State <input type="checkbox"/> Municipal <input checked="" type="checkbox"/> Corporation/Partnership <input type="checkbox"/> Individual				
Owner/Firm Contact Information				
Name Femi Ogunsola			Phone 212-460-1223	
E-mail Address ogunsolaf@coned.com			Fax	
Affiliation			Title Sr. Engineer	
Street Address 4 Irving Place, Room 15-112				
City New York	State/Province NY	Country USA	Zip 10003	
Facility Contact Information				
Name Femi Ogunsola			Phone 212-460-1223	
E-mail Address ogunsolaf@coned.com			Fax	
Affiliation			Title Sr. Engineer	
Street Address 4 Irving Place, Room 15-112				
City New York	State/Province NY	Country USA	Zip 10003	

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Project Description	<input type="checkbox"/> Continuation Sheet(s)

Section III - Facility Information

Facility Classification
<input type="checkbox"/> Hospital <input type="checkbox"/> Residential <input type="checkbox"/> Educational/Institutional <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Utility

Affected States (Title V Applications Only)
<input type="checkbox"/> Vermont <input type="checkbox"/> Massachusetts <input type="checkbox"/> Rhode Island <input type="checkbox"/> Pennsylvania Tribal Land: _____ <input type="checkbox"/> New Hampshire <input type="checkbox"/> Connecticut <input type="checkbox"/> New Jersey <input type="checkbox"/> Ohio Tribal Land: _____

SIC Code(s)	NAICS Code(s)

Facility Description	<input type="checkbox"/> Continuation Sheet(s)

Compliance Statements (Title V Applications Only)
<p>I certify that as of the date of this application the facility is in compliance with all applicable requirements. <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If one or more emission units at the facility are not in compliance with all applicable requirements at the time of signing this application (the 'NO' box must be checked), the noncomplying units must be identified in the "Compliance Plan" block on page 8 of this form along with the compliance plan information required. For all emission units at the facility that are operating <u>in compliance</u> with all applicable requirements, complete the following:</p> <p><input type="checkbox"/> This facility will continue to be operated and maintained in such a manner as to assure compliance for the duration of the permit, except those emission units referenced in the compliance plan portion of this application.</p> <p><input type="checkbox"/> For all emission units subject to any applicable requirements that will become effective during the term of the permit, this facility will meet such requirements on a timely basis.</p> <p><input type="checkbox"/> Compliance certification reports will be submitted at least once per year. Each report will certify compliance status with respect to each applicable requirement, and the method used to determine the status.</p>

Facility Applicable Federal Requirements										<input type="checkbox"/> Continuation Sheet(s)
Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause	

Facility State Only Requirements										<input type="checkbox"/> Continuation Sheet(s)
Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause	

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Facility Compliance Certification Continuation Sheet(s)

Rule Citation									
Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause
<input type="checkbox"/> Applicable Federal Requirement		<input type="checkbox"/> Capping		CAS Number		Contaminant Name			
<input type="checkbox"/> State Only Requirement									

Monitoring Information

Work Practice Involving Specific Operations Ambient Air Monitoring Record Keeping/Maintenance Procedures

Compliance Activity Description

Work Practice Type Code	Process Material		Reference Test Method		
	Code	Description			
Monitored Parameter			Manufacturer's Name/Model Number		
Code	Description				
Limit		Limit Units			
Upper	Lower	Code	Description		
Averaging Method		Monitoring Frequency		Reporting Requirements	
Code	Description	Code	Description	Code	Description

Facility Emissions Summary Continuation Sheet(s)

CAS Number	Contaminant Name	Potential to Emit (tons/yr)	Actual Emissions (pounds/yr)
ONY075 - 00 - 5	PM-10		
ONY750 - 02 - 5	PM-2.5		
007446 - 09 - 5	Sulfur Dioxide		
ONY210 - 00 - 0	Oxides of Nitrogen		
000630 - 08 - 0	Carbon Monoxide		
007439 - 92 - 1	Lead (elemental)		
ONY998 - 00 - 0	Total Volatile Organic Compounds		
ONY100 - 00 - 0	Total Hazardous Air Pollutants		
ONY750 - 00 - 0	Carbon Dioxide Equivalent		

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Section IV - Emission Unit Information

Emission Unit Description										<input type="checkbox"/> Continuation Sheet(s)
Emission Unit	-									

Building Information					<input type="checkbox"/> Continuation Sheet(s)	
Building ID	Building Name			Length (ft)	Width (ft)	Orientation

Emission Unit	Emission Unit Emissions Summary								<input type="checkbox"/> Continuation Sheet(s)
-									
CAS Number	Contaminant Name								
ERP (lbs/yr)	Potential to Emit				Actual Emissions				
	(lbs/hr)		(lbs/yr)		(lbs/hr)		(lbs/yr)		
CAS Number	Contaminant Name								
ERP (lbs/yr)	Potential to Emit				Actual Emissions				
	(lbs/hr)		(lbs/yr)		(lbs/hr)		(lbs/yr)		
CAS Number	Contaminant Name								
ERP (lbs/yr)	Potential to Emit				Actual Emissions				
	(lbs/hr)		(lbs/yr)		(lbs/hr)		(lbs/yr)		
CAS Number	Contaminant Name								
ERP (lbs/yr)	Potential to Emit				Actual Emissions				
	(lbs/hr)		(lbs/yr)		(lbs/hr)		(lbs/yr)		

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Emission Point Information							<input type="checkbox"/> Continuation Sheet(s)
Emission Point							
Ground Elevation (ft)	Height (ft)	Height Above Structure (ft)	Inside Diameter (in)	Exit Temp. (°F)	Cross Section		
					Length (in)	Width (in)	
Exit Velocity (FPS)	Exit Flow (ACFM)	NYTM (E) (KM)	NYTM (N) (KM)	Building	Distance to Property Line (ft)	Date of Removal	
Emission Point							
Ground Elevation (ft)	Height (ft)	Height Above Structure (ft)	Inside Diameter (in)	Exit Temp. (°F)	Cross Section		
					Length (in)	Width (in)	
Exit Velocity (FPS)	Exit Flow (ACFM)	NYTM (E) (KM)	NYTM (N) (KM)	Building	Distance to Property Line (ft)	Date of Removal	
Emission Point							
Ground Elevation (ft)	Height (ft)	Height Above Structure (ft)	Inside Diameter (in)	Exit Temp. (°F)	Cross Section		
					Length (in)	Width (in)	
Exit Velocity (FPS)	Exit Flow (ACFM)	NYTM (E) (KM)	NYTM (N) (KM)	Building	Distance to Property Line (ft)	Date of Removal	

Emission Source/Control Information								<input type="checkbox"/> Continuation Sheet(s)
Emission Source		Date of Construction	Date of Operation	Date of Removal	Control Type		Manufacturer's Name/Model Number	
ID	Type				Code	Description		
Design Capacity	Design Capacity Units			Waste Feed		Waste Type		
	Code	Description		Code	Description	Code	Description	
Emission Source		Date of Construction	Date of Operation	Date of Removal	Control Type		Manufacturer's Name/Model Number	
ID	Type				Code	Description		
Design Capacity	Design Capacity Units			Waste Feed		Waste Type		
	Code	Description		Code	Description	Code	Description	
Emission Source		Date of Construction	Date of Operation	Date of Removal	Control Type		Manufacturer's Name/Model Number	
ID	Type				Code	Description		
Design Capacity	Design Capacity Units			Waste Feed		Waste Type		
	Code	Description		Code	Description	Code	Description	

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Section IV - Emission Unit Information

Emission Unit Description										<input type="checkbox"/> Continuation Sheet(s)
Emission Unit	-									

Building Information					<input type="checkbox"/> Continuation Sheet(s)	
Building ID	Building Name			Length (ft)	Width (ft)	Orientation

Emission Unit	Emission Unit Emissions Summary								<input type="checkbox"/> Continuation Sheet(s)
-									
CAS Number	Contaminant Name								
ERP (lbs/yr)	Potential to Emit				Actual Emissions				
	(lbs/hr)		(lbs/yr)		(lbs/hr)		(lbs/yr)		
CAS Number	Contaminant Name								
ERP (lbs/yr)	Potential to Emit				Actual Emissions				
	(lbs/hr)		(lbs/yr)		(lbs/hr)		(lbs/yr)		
CAS Number	Contaminant Name								
ERP (lbs/yr)	Potential to Emit				Actual Emissions				
	(lbs/hr)		(lbs/yr)		(lbs/hr)		(lbs/yr)		
CAS Number	Contaminant Name								
ERP (lbs/yr)	Potential to Emit				Actual Emissions				
	(lbs/hr)		(lbs/yr)		(lbs/hr)		(lbs/yr)		

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Emission Point Information							<input type="checkbox"/> Continuation Sheet(s)
Emission Point							
Ground Elevation (ft)	Height (ft)	Height Above Structure (ft)	Inside Diameter (in)	Exit Temp. (°F)	Cross Section		
					Length (in)	Width (in)	
Exit Velocity (FPS)	Exit Flow (ACFM)	NYTM (E) (KM)	NYTM (N) (KM)	Building	Distance to Property Line (ft)	Date of Removal	
Emission Point							
Ground Elevation (ft)	Height (ft)	Height Above Structure (ft)	Inside Diameter (in)	Exit Temp. (°F)	Cross Section		
					Length (in)	Width (in)	
Exit Velocity (FPS)	Exit Flow (ACFM)	NYTM (E) (KM)	NYTM (N) (KM)	Building	Distance to Property Line (ft)	Date of Removal	
Emission Point							
Ground Elevation (ft)	Height (ft)	Height Above Structure (ft)	Inside Diameter (in)	Exit Temp. (°F)	Cross Section		
					Length (in)	Width (in)	
Exit Velocity (FPS)	Exit Flow (ACFM)	NYTM (E) (KM)	NYTM (N) (KM)	Building	Distance to Property Line (ft)	Date of Removal	

Emission Source/Control Information								<input type="checkbox"/> Continuation Sheet(s)
Emission Source		Date of Construction	Date of Operation	Date of Removal	Control Type		Manufacturer's Name/Model Number	
ID	Type				Code	Description		
Design Capacity		Design Capacity Units		Waste Feed		Waste Type		
		Code	Description	Code	Description	Code	Description	
Emission Source		Date of Construction	Date of Operation	Date of Removal	Control Type		Manufacturer's Name/Model Number	
ID	Type				Code	Description		
Design Capacity		Design Capacity Units		Waste Feed		Waste Type		
		Code	Description	Code	Description	Code	Description	
Emission Source		Date of Construction	Date of Operation	Date of Removal	Control Type		Manufacturer's Name/Model Number	
ID	Type				Code	Description		
Design Capacity		Design Capacity Units		Waste Feed		Waste Type		
		Code	Description	Code	Description	Code	Description	

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-										
Process Information								<input type="checkbox"/> Continuation Sheet(s)		
Emission Unit						-			Process	
Process Description										
Source Classification Code (SCC)		Total Throughput			Throughput Quantity Units					
		Quantity/Hr		Quantity/Yr	Code		Description			
<input type="checkbox"/> Confidential <input type="checkbox"/> Operating at Maximum Capacity			Operating Schedule			Building		Floor/Location		
			Hours/Day	Days/Year						
Emission Point Identifier(s)										
Emission Source/Control Identifier(s)										
Emission Unit						-			Process	
Process Description										
Source Classification Code (SCC)		Total Throughput			Throughput Quantity Units					
		Quantity/Hr		Quantity/Yr	Code		Description			
<input type="checkbox"/> Confidential <input type="checkbox"/> Operating at Maximum Capacity			Operating Schedule			Building		Floor/Location		
			Hours/Day	Days/Year						
Emission Point Identifier(s)										
Emission Source/Control Identifier(s)										

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Process Emissions Summary							<input type="checkbox"/> Continuation Sheet(s)		
Emission Unit	-						Process		
CAS Number	Contaminant Name		% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined		
Potential to Emit			Standard Units	Potential to Emit How Determined	Actual Emissions				
(lbs/hr)	(lbs/yr)	(standard units)			(lbs/hr)	(lbs/yr)			
Emission Unit	-						Process		
CAS Number	Contaminant Name		% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined		
Potential to Emit			Standard Units	Potential to Emit How Determined	Actual Emissions				
(lbs/hr)	(lbs/yr)	(standard units)			(lbs/hr)	(lbs/yr)			
Emission Unit	-						Process		
CAS Number	Contaminant Name		% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined		
Potential to Emit			Standard Units	Potential to Emit How Determined	Actual Emissions				
(lbs/hr)	(lbs/yr)	(standard units)			(lbs/hr)	(lbs/yr)			

Emission Source Emissions Summary							<input type="checkbox"/> Continuation Sheet(s)		
Emission Source							Process		
CAS Number	Contaminant Name		% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined		
Potential to Emit			Standard Units	Potential to Emit How Determined	Actual Emissions				
(lbs/hr)	(lbs/yr)	(standard units)			(lbs/hr)	(lbs/yr)			
Emission Source							Process		
CAS Number	Contaminant Name		% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined		
Potential to Emit			Standard Units	Potential to Emit How Determined	Actual Emissions				
(lbs/hr)	(lbs/yr)	(standard units)			(lbs/hr)	(lbs/yr)			
Emission Source							Process		
CAS Number	Contaminant Name		% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined		
Potential to Emit			Standard Units	Potential to Emit How Determined	Actual Emissions				
(lbs/hr)	(lbs/yr)	(standard units)			(lbs/hr)	(lbs/yr)			

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-									

Emission Unit	Emission Point	Process	Emission Source	Emission Unit Applicable Federal Requirements							<input type="checkbox"/> Continuation Sheet(s)		
				Title	Type	Part	Subpart	Section	Subdiv.	Parag.	Subparag.	Cl.	Subcl.

Emission Unit	Emission Point	Process	Emission Source	Emission Unit State Only Requirements							<input type="checkbox"/> Continuation Sheet(s)		
				Title	Type	Part	Subpart	Section	Subdiv.	Parag.	Subparag.	Cl.	Subcl.

Emission Unit Compliance Certification Continuation Sheet(s)

Rule Citation									
Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause

Applicable Federal Requirement State Only Requirement Capping

Emission Unit	Emission Point	Process	Emission Source	CAS Number	Contaminant Name

Monitoring Information

Continuous Emission Monitoring Monitoring of a Process or Control Device Parameters as a Surrogate
 Intermittent Emission Testing Work Practice Involving Specific Operations
 Ambient Air Monitoring Record Keeping/Maintenance Procedures

Compliance Activity Description

Work Practice Type Code	Process Material		Reference Test Method
	Code	Description	

Monitored Parameter		Manufacturer's Name/Model Number
Code	Description	

Limit		Limit Units	
Upper	Lower	Code	Description

Averaging Method		Monitoring Frequency		Reporting Requirements	
Code	Description	Code	Description	Code	Description

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Emission Unit	Emission Point	Process	Emission Source	Emission Unit Applicable Federal Requirements							<input type="checkbox"/> Continuation Sheet(s)		
				Title	Type	Part	Subpart	Section	Subdiv.	Parag.	Subparag.	Cl.	Subcl.

Emission Unit	Emission Point	Process	Emission Source	Emission Unit State Only Requirements							<input type="checkbox"/> Continuation Sheet(s)		
				Title	Type	Part	Subpart	Section	Subdiv.	Parag.	Subparag.	Cl.	Subcl.

Emission Unit Compliance Certification Continuation Sheet(s)

Rule Citation

Title	Type	Part	Subpart	Section	Subdivision	Paragraph	Subparagraph	Clause	Subclause

Applicable Federal Requirement State Only Requirement Capping

Emission Unit	Emission Point	Process	Emission Source	CAS Number	Contaminant Name

Monitoring Information

- Continuous Emission Monitoring
- Intermittent Emission Testing
- Ambient Air Monitoring
- Monitoring of a Process or Control Device Parameters as a Surrogate
- Work Practice Involving Specific Operations
- Record Keeping/Maintenance Procedures

Compliance Activity Description

Work Practice Type Code	Process Material		Reference Test Method
	Code	Description	

Monitored Parameter		Manufacturer's Name/Model Number
Code	Description	

Limit		Limit Units	
Upper	Lower	Code	Description

Averaging Method		Monitoring Frequency		Reporting Requirements	
Code	Description	Code	Description	Code	Description

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Request for Emission Reduction Credits Continuation Sheet(s)

Emission Source

--	--	--	--	--	--	--	--	--	--

Emission Reduction Description

Contaminant Emission Reduction Data

Baseline Period ____/____/____ to ____/____/____		Reduction	
		Date	Method
CAS Number	Contaminant Name	ERC (lbs/yr)	
		Netting	Offset

Facility to Use Future Reduction

Name	Application ID									
	- /									
Location Address										
<input type="checkbox"/> City/ <input type="checkbox"/> Town / <input type="checkbox"/> Village							State		Zip	

Use of Emission Reduction Credits Continuation Sheet(s)

Emission Source

--	--	--	--	--	--	--	--	--	--

Proposed Project Description

Contaminant Emissions Increase Data

CAS Number	Contaminant Name	Project Emission Potential (lbs/yr)

Statement of Compliance

All facilities under the ownership of this "owner/firm" are operating in compliance with all applicable requirements and state regulations including any compliance certification requirements under Section 114(a)(3) of the Clean Air Act Amendments of 1990, or are meeting the schedule of a consent order.

Source of Emission Reduction Credit - Facility

Name	Permit ID									
	- /									
Location Address										
<input type="checkbox"/> City/ <input type="checkbox"/> Town / <input type="checkbox"/> Village							State		Zip	

Emission Source	CAS Number	Contaminant Name	ERC (lbs/yr)	
			Netting	Offset

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Supporting Documentation and Attachments	
Required Supporting Documentation	Date of Document
<input type="checkbox"/> List of Exempt Activities (attach form)	
<input type="checkbox"/> Plot Plan	
<input type="checkbox"/> Process Flow Diagram	
<input type="checkbox"/> Methods Used to Determine Compliance (attach form)	
<input type="checkbox"/> Emissions Calculations	
Optional Supporting Documentation	Date of Document
<input type="checkbox"/> Air Quality Model	
<input type="checkbox"/> Confidentiality Justification	
<input type="checkbox"/> Ambient Air Quality Monitoring Plan or Reports	
<input type="checkbox"/> Stack Test Protocol	
<input type="checkbox"/> Stack Test Report	
<input type="checkbox"/> Continuous Emissions Monitoring Plan	
<input type="checkbox"/> Lowest Achievable Emission Rate (LAER) Demonstration	
<input type="checkbox"/> Best Available Control Technology (BACT) Demonstration	
<input type="checkbox"/> Reasonably Available Control Technology (RACT) Demonstration	
<input type="checkbox"/> Toxic Impact Assessment (TIA)	
<input type="checkbox"/> Environmental Rating Demonstration	
<input type="checkbox"/> Operational Flexibility Protocol/Description of Alternate Operating Scenarios	
<input type="checkbox"/> Title IV Permit Application	
<input type="checkbox"/> Emission Reduction Credit (ERC) Quantification (attach form)	
<input type="checkbox"/> Baseline Period Demonstration	
<input type="checkbox"/> Use of Emission Reduction Credits (attach form)	
<input type="checkbox"/> Analysis of Contemporaneous Emissions Increase/Decrease	
Other Supporting Documentation	Date of Document

Attachment B

REGULATORY ANALYSIS OVERVIEW

The Nitrogen Refrigeration Cycle Replacement Project (Project), which entails the in-kind replacement of the existing 82 MMBtu/hr gas turbine (GT014) used for natural gas liquefaction, with a new, more efficient Siemens 54 MMBtu/hr gas turbine (GT015), is located in our Astoria Facility's existing Liquefied Natural Gas LNG (LNG) Plant (Plant) in the Borough of Queens in New York City. This location is designated as attainment/unclassified with respect to the National Ambient Air Quality Standards (NAAQS) for all criteria pollutants with the exception of Ozone. The New York State Department of Environmental Conservation (DEC) has classified the New York City Metropolitan Area (which includes the Project site) as a severe ozone nonattainment area based on the 2008 8-hour O₃ standard. The Project will be a modification of the existing Facility, which is classified as a major source under both the 6 NYCRR Part 231 Prevention of Significant Deterioration (PSD) and Non-Attainment New Source Review (NNSR) air permitting programs. The Project will substantially reduce the Facility's air emissions.

40 CFR 98 – Mandatory Greenhouse Gas Reporting

The Facility is not required to report to USEPA's electronic Greenhouse Gas Reporting Tool (e-GGRT) annual GHG reporting portal. The Project will not be subject to the requirements of Part 98 if the actual GHG emissions from the facility is not greater than 25,000 tons of CO_{2e}.

New Source Performance Standards

NSPS are technology-based standards applicable to certain new and modified stationary sources in certain source categories. Based upon a review of these standards, the Project is subject to NSPS Subpart KKKK and any applicable general NSPS provisions in Subpart A, as discussed below.

40 CFR 60 – Subpart A – General Provisions

Any source subject to an applicable standard under 40 CFR 60 is also subject to the general provisions under Subpart A. Because the Project is subject to other Subparts of the regulation, the requirements of Subpart A will also apply. The Project will comply with the applicable notifications, performance testing, recordkeeping and reporting outlined in Subpart A.

40 CFR 60 Subpart GG – Stationary Gas Turbines

NSPS Subpart GG, *Standards of Performance for Stationary Gas Turbines*, applies to all stationary gas turbines with a heat input at peak load equal to or greater than 10 MMBtu/hr, based on the lower heating value of the fuel fired, that are constructed, modified, or reconstructed after October 3, 1977. The new combustion turbine is subject to NSPS Subpart KKKK which supersedes Subpart GG and therefore Subpart GG is not applicable.

40 CFR 60 Subpart KKKK – Stationary Combustion Turbines

NSPS Subpart KKKK, *Standards of Performance for Stationary Combustion Turbines*, applies to all stationary combustion turbines with a heat input at peak load equal to or greater than 10 MMBtu/hr, based on the lower heating value of the fuel fired, that were constructed, reconstructed, or modified after February 18, 2005. The proposed replacement natural gas-fired turbine has a heat input capacity of 54 MMBtu/hr, therefore NO_x emissions from the new turbine shall be limited to 25 ppm at 15 percent O₂ (or 150 ng/J of useful output (1.2 lb/MWh) [Table 1 to Subpart KKKK of Part 60 - Nitrogen Oxide Emission Limits for New Stationary Combustion Turbines].

40 CFR 60 Subpart TTTT – Standards for Performance for Greenhouse Gas Emissions for Electric Generating Units.

Subpart TTTT is not applicable to the Project since the new turbine being installed is not an electric generating unit and its baseload is less than the 250 MMBtu/hr. The new turbine is rated at 54 MMBtu/hr.

National Emission Standards for Hazardous Air Pollutants

40 CFR 63 Subpart YYYYY – Stationary Combustion Turbines

Subpart YYYYY for Stationary Combustion Turbines is applicable to turbines located at major sources of hazardous air pollutant (HAP) emissions. Major sources of HAPs have potential emissions of a single HAP compound greater than 10 tpy or all HAPs combined greater than 25 tpy. The Facility is not an existing major source of HAP emissions and will remain an area (non-major) source of HAPS after completion of the Project.

NEW SOURCE REVIEW (NSR) ANALYSIS – NETTING

The attached relevant pages of the “Part 231 New Source Review for New and Modified Facilities Applicability Worksheets” show the NSR Netting Analysis supporting this application for modification. The highlighted worksheets in the Table of Contents of the “Part 231 New Source Review for New and Modified Facilities Applicability Worksheets” are the relevant worksheets to the NSR Netting analysis (see Attachment C).

These worksheets show that the net emission increases (NEI) of NO_x and VOC for the Project are 12.15 and 4.65 tons per year respectively. Per 6 NYCRR 231-4.1(b)(41)(i)(a), this NEI is calculated on a potential-to-emit basis for the new combustion turbine and does not include emissions decreases associated with the retirement of the existing combustion turbine. These NEI for NO_x and VOC for the project are below their respective significant net emission increase thresholds (SNEIT) of 25 tons per year for both non-attainment (NA) ozone precursor contaminants and as such this project is not a NSR major modification. However, the operation of the new turbine must comply with the applicable provisions of § 231-6.2 and 231-11.1.

NO_x RACT FOR STATIONARY COMBUSTION INSTALLATION - 6 NYCRR PART 227

6 NYCRR Part 227-2.4(e)(1): Emission Unit AS005B – The presumptive NO_x emission limit for a simple cycle combustion turbine burning natural gas such as the new turbine in the Project is 50 ppmvd corrected to 15 percent O₂. Con Edison, in its December 2011 NO_x RACT compliance plan, re-submitted on October 18, 2018, based on the economic analysis for the feasible NO_x control technologies, proposed an alternate NO_x RACT limit as per 6 NYCRR Part 227- 2.5(c) for the existing turbine located at the Facility. In the compliance plan, it was demonstrated that the cost for controls will be more than the Department established reasonable cost per ton of NO_x reduced. Based on the economic feasibility, a case-by-case NO_x emission limit for the existing turbine was established at 92 ppm (0.34 lb/MMBtu) was determined to be the Reasonable NO_x limit. The most recent stack test emissions from this unit (September 2018) demonstrated compliance with this permit limit.

The proposed new turbine will meet the presumptive NO_x emission limit for a simple cycle combustion turbine burning natural gas since it is expected to meet the lower NSPS Subpart KKKK standard of 25 ppmvd corrected to 15% O₂.

Attachment C

Part 231 New Source Review Applicability Worksheets

PART 231 New Source Review for New and Modified Facilities (effective 2/25/21) Applicability Worksheets

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Acronyms Used in Part 231 Worksheets

SUBPARTS 231-5 & 6 Nonattainment Area NSR Applicability

<u>Worksheet (WKS) Number</u>	<u>Description</u>
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WKS-3	Proposed New Facility in a PM-10 NA area – Applicability Worksheet
WKS-4	Existing Facility – Applicability Worksheet
WKS-5A	Existing Major Facility Modification – Severe Ozone NA area – Applicability Worksheet
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WKS-8	Existing Non-Major Facility Modification – Severe Ozone NA Area – Applicability Worksheet
WKS-9	Existing Non-Major Facility Modification – PM-10 NA Area – Applicability Worksheet
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WKS-11	Facility Potential To Emit Calculation Worksheet
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WKS-13A	Net Emission Increase Analysis Worksheet
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SUBPARTS 231-7 & 8 Attainment Area NSR (PSD) Applicability

WKS-14	Facility Type/Applicability Determination Worksheet
WKS-15	Proposed New Facility – Applicability Worksheet
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WKS-21A	Net Emission Increase Analysis Worksheet
WKS-21B	Contemporaneous Creditable Emission Increases/Emission Reduction Credits Worksheet

Acronyms Used in Part 231 Worksheets

- 1) BAE – Baseline Actual Emissions
- 2) BACT – Best Available Control Technology
- 3) CO₂ – Carbon Dioxide
- 4) CO₂e – Carbon Dioxide Equivalents
- 5) CO – Carbon Monoxide
- 6) CFR – Code of Federal Regulations
- 7) CEI – Creditable Emission Increase
- 8) ES – Emission Source
- 9) ERC – Emission Reduction Credits
- 10) FC – Flowchart
- 11) GHG – Greenhouse Gas
- 12) GHG_e – Greenhouse Gas measured by CO₂ equivalents
- 13) GHG_m – Greenhouse Gas measured by mass
- 14) LAER – Lowest Achievable Emission Rate
- 15) MFT – Major Facility Threshold
- 16) NA – Nonattainment
- 17) NEI – Net Emission Increase
- 18) NO_x – Oxides of Nitrogen
- 19) NSR – New Source Review
- 20) OTR – Ozone Transport Region
- 21) PAE – Projected Actual Emissions
- 22) PEP – Project Emission Potential
- 23) PM – Particulate Matter
- 24) PM-10 – Particulate Matter less than 10 micrometers
- 25) PM-2.5 – Particulate Matter less than 2.5 micrometers
- 26) PSD – Prevention of Significant Deterioration
- 27) PTE – Potential to Emit
- 28) SNEIT – Significant Net Emission Increase Threshold
- 29) SO₂ – Sulfur Dioxide
- 30) SPT – Significant Project Threshold
- 31) TPY – Tons per Year
- 32) VOC – Volatile Organic Compounds
- 33) WKS – Worksheet

Subparts 231-5 & 6 NA Area NSR Applicability

SUBPARTS 231-5 & 6, FACILITY TYPE/APPLICABILITY DETERMINATION WORKSHEET

FACILITY NAME: Astoria Facility
 ADDRESS: 31-01 20th Avenue, Astoria, NY 11105
 APPLICATION DEC ID#: 2-6301-00006
 COUNTY: Queens
 PROPOSED PROJECT DESCRIPTION: **The proposed project is a replacement of Astoria LNG refrigeration project which involve replacement of the current turbine with a new turbine which is more efficient and lower emissions of NO_x.**

EMISSION SOURCE ID#s AS005B

PREPARER'S NAME Femi Ogunsola TITLE Senior Engineer
 SIGNATURE _____ DATE / /

REVIEWER'S NAME _____ REGION # DATE / /

	Y	N	ACTION
1. NA contaminant review. For PSD applicability go to WKS-14			Go to 2
2. Identify NA contaminants based on facility location (See NOTE #1 and maps in Appendix B): VOC <input checked="" type="checkbox"/> NO _x <input checked="" type="checkbox"/> PM-10			Go to 3
3. Is a new facility with emissions of any NA contaminant being proposed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	YES – Go to 4 NO – Go to 5
4. Follow each applicable path			Ozone NA – go to WKS-2 PM 10 – go to WKS-3
5. Is a modification, see NOTE #2, being proposed to an existing facility?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	YES – Go to WKS-4 NO – See NOTE #3

COMMENTS:

NOTE #1 - All of New York State is within the Ozone Transport Region as designated by the Clean Air Act. Therefore, VOC and NO_x are treated as nonattainment contaminants statewide as precursors to ozone.

NOTE #2 - *Modification 231-4.1(b)(30)*. Any physical change in, or change in the method of operation of, a facility which results in a level of annual emissions (not including any emission reductions) in excess of the Baseline Actual Emissions of any Regulated NSR Contaminant emitted by such facility or which results in the emission of any Regulated NSR Contaminant not previously emitted. A modification shall not include the following:

- (i) routine maintenance, repair, or replacement as defined in 6 NYCRR Part 200.
- (ii) use of an alternative fuel or raw material by reason of an order under sections 2(a) and (b) of the Energy Supply and Environmental Coordination Act of 1974 (or any superseding legislation) or by reason of a natural gas curtailment plan pursuant to the Federal Power Act;
- (iii) use of an alternative fuel by reason of an order or rule under section 125 of the Clean Air Act;
- (iv) use of an alternative fuel at a steam generating unit to the extent that the fuel is generated from municipal solid waste;
- (v) use of an alternative fuel or raw material by a facility which:

(continued)

- (a) the facility was capable of accommodating before January 6, 1975, unless such change would be prohibited under any federally enforceable permit condition which was established after January 6, 1975 pursuant to 40 CFR 52.21 or under regulations approved pursuant to 40 CFR Part 51 Subpart I or 40 CFR 51.166; or

- (b) the facility is approved to use, pursuant to this Part, or which is included in a permit issued pursuant to 40 CFR 52.21.

- (vi) an increase in the hours of operation or in the production rate, unless such change would be prohibited under any permit condition which was established after January 6, 1975, pursuant to 40 CFR 52.21 or under regulations approved pursuant to 40 CFR Part 51 Subpart I or 40 CFR 51.166;

- (vii) any change in ownership at a facility.

NOTE #3 - Not subject to Subparts 231-5 or 6, however, project may be subject to the notification requirements of subdivision 231-3.5(c) if the applicant determines that the proposed project does not constitute a *modification* because all the project emission increases are attributable to independent factors in accordance with clause 231-4.1(b)(42)(i)(c).

SUBPARTS 231-5 & 6, EXISTING FACILITY – APPLICABILITY WORKSHEET			
FACILITY NAME: <u>Astoria Facility</u>			
APPLICATION DEC ID# <u>2-6301-00006</u>			
	Y	N	ACTION
1. Is a modification being proposed? (Re: paragraph 231-4.1(b)(30) and NOTE #1 on WKS-1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	YES - Go to 2 NO - see NOTE #1
2. Identify NA contaminant(s) based on existing facility location (See maps in Appendix B). Ozone Precursors: VOC <input checked="" type="checkbox"/> NOx <input checked="" type="checkbox"/> PM-10 _____			Go to 3
3. For any identified NA contaminant, is the existing facility's PTE ≥ MFT? * (Use WKS-11 for calculating PTE) Severe Ozone NA Area: VOC (PTE) <u>16.13</u> tpy ≥ 25 tpy? NOx (PTE) <u>128.21</u> tpy ≥ 25 tpy? Marginal/Moderate Ozone NA or attainment portion of the OTR: VOC (PTE) _____ tpy ≥ 50 tpy? NOx (PTE) _____ tpy ≥ 100 tpy? PM-10 NA Area: PM-10 (PTE) _____ tpy ≥ 100 tpy?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	YES - Go to 4 NO - Go to 5
4. Major facility, follow each applicable path.			Severe Ozone NA – WKS-5A PM-10 NA - WKS-6 Marginal/Moderate Ozone NA or attainment portion of the OTR - WKS-7
5. Non-major facility, follow each applicable path			Severe Ozone NA – WKS-8 PM-10 NA - WKS-9 Marginal/Moderate Ozone NA or attainment portion of the OTR - WKS-10
NOTE #1 - Not subject to Subpart 231-5 or 6 but may be subject to subdivision 231-3.5(c).			

*For a facility in an area that is NA for multiple contaminants, if the facility PTE is greater than or equal to the MFT for one NA contaminant it is considered to be major for all applicable NA contaminants

SUBPART 231-6, EXISTING MAJOR FACILITY MODIFICATION – SEVERE OZONE NA AREA – APPLICABILITY WORKSHEET			
FACILITY NAME <u>Astoria Facility</u>			
APPLICATION DEC ID# <u>2-6301-00006</u>			
EMISSION SOURCE ID#S <u>AS005B</u>			
	Y	N	ACTION
1. Major facility. For VOC or NO _x , is PEP ≥ SPT?* (Use WKS-12 for calculating PEP) VOC (PEP) <u>4.65</u> tpy ≥ 2.5 tpy? NO _x (PEP) <u>12.15</u> tpy ≥ 2.5 tpy?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	YES - Go to 2 NO - See NOTE #1
2. Has a NEI analysis been provided by the applicant? (Re: paragraph 231-4.1(b)(31))	<input checked="" type="checkbox"/>	<input type="checkbox"/>	YES - Go to 3 NO - See NOTE #2
3. For VOC or NO _x , is NEI > SNEIT?* (Use WKS-13A & B for calculating NEI) VOC (NEI) <u>4.65</u> tpy > 25 tpy? NO _x (NEI) <u>12.15</u> tpy > 25 tpy?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	YES - See NOTE #3, go to 4 NO - See NOTE #4
4. Has the applicant complied with all of the following permit requirements (Re: section 231-6.3): a. Compliance certification (Re: subdivision 231-6.3(a)). b. Submittal of a benefit analysis (Re: subdivision 231-6.3(b)). c. Submittal of a LAER demonstration, if required. (Re: subdivision 231-6.3(c) and section 231-6.5) d. Submittal of an air quality impact evaluation, if required. (Re: subdivision 231-6.3(d)) e. Identification of emission sources providing internal offset or emission offset and submittal of copies of modified permits for the emission sources (Re: subdivision 231-6.3(d)).	<input type="checkbox"/>	<input type="checkbox"/>	YES - See NOTE #5 NO - See NOTE #2
NOTE #1 -	Not subject to Subpart 231-6 review, however, must comply with applicable section 231-11.2 reasonable possibility requirements for insignificant modifications.		
NOTE #2 -	Notice of incomplete application should be sent.		
NOTE #3 -	Modification subject to Subpart 231-6 for each NA contaminant for which the modification's NEI > SNEIT. Control technology and emission offset† required as provided in special rules (see WKS-5B)		
NOTE #4 -	Must comply with applicable sections 231-6.2 and 231-11.1 Netting requirements.		
NOTE #5 -	Detailed NA review may proceed.		

* Each NA contaminant is evaluated independently and can result in the need to follow the “yes” path for one and the “no” path for another

† An offset may be obtained from another NA area of equal or higher classification if emissions from such other area contribute to a violation of the National Ambient Air Quality Standard for the NA contaminant in the NA area of the modification (Re: section 231-6.6).

SUBPARTS 231-5 & 6, FACILITY POTENTIAL TO EMIT CALCULATION WORKSHEET

FACILITY NAME: Astoria Facility
 APPLICATION DEC ID# 2-6301-00006

NOTE: Facility PTE is -

A. For a proposed new facility - Sum of the PTE of each proposed emission source.

B. For an existing facility - Sum of the PTE of each existing emission source.

NOTE: PTE - The maximum capacity of an air contamination source to emit any regulated air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the emission source to emit a regulated air pollutant, including air pollution control equipment and/or restrictions on the hours of operation, or on the type or amount of material combusted, stored, or processed, shall be treated as a part of the design if the limitation is enforceable by the department and the administrator. Fugitive emissions, to the extent that they are quantifiable, are included in determining the potential to emit where required by an applicable requirement. Secondary emissions (as defined in Part 231-4 of this Title) are not to be included when calculating an emission source's potential to emit. For emergency power generating stationary internal combustion engines, the potential to emit will be based on a maximum of 500 hours of operation per year per engine unless a more restrictive limitation exists in a permit or registration. (Re: subdivision 200.1(b))

Nonattainment contaminant(s): (check) VOC NOx PM-10

Facility Emission Potential Calculation

EMISSION SOURCE ID#	PTE of VOC (tpy)	PTE of NOx (tpy)	PTE of PM-10 (tpy)
A-S005B	8.62	122.11	
A-S0020	0.33	5.62	
A-S0021	0.04	0.48	
A-S0008	2.61	-	
A-S0007	4.53	-	
Facility Potential To Emit (tpy) = (Sum of the potential to emit of each emission source)	16.13	128.21	

SUBPARTS 231-5 & 6, PROJECT EMISSION POTENTIAL CALCULATION WORKSHEET

FACILITY NAME: Astoria Facility

APPLICATION DEC ID# 2-6301-00006

EMISSION SOURCE ID#s AS005B

	Y	N	ACTION
1. Does the proposed modification involve addition of one or more new emission sources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	YES - Go to 2 NO - Go to 3
2. For each new emission source, what is the PTE, see NOTE #1, in tpy of each identified NA contaminant? ES ID# _____ VOC = <u>4.65</u> _____ NOx = <u>12.15</u> _____ PM-10 = _____			Go to 4
3. Therefore, the modification is of one or more existing emission sources.			Go to 5
4. Does the modification involve one or more existing emission sources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	YES - Go to 5 NO - Go to 7
5. For each existing emission source undergoing modification, what is the BAE, see NOTE # 2, in tpy of each NA contaminant? ES ID# _____ VOC = _____ NOx = _____ PM-10 = _____			Go to 6
6. For each existing emission source undergoing modification, what is the PAE, see NOTE #3, or the PTE, see NOTE #1, (if used in lieu of PAE) in tpy of each NA contaminant after modification? ES ID# _____ VOC = _____ NOx = _____ PM-10 = _____ Please indicate whether the numbers are PTE or PAE: PTE <input type="checkbox"/> PAE <input type="checkbox"/>			Go to 7
7. Project Emission Potential of VOC = Sum of: a. Row 2 for VOC from each new emission source <u>4.65</u> + _____ + _____ + _____ + _____ + _____ = <u>4.65</u> tpy; and b. Where Row 6 > Row 5: the difference between future and baseline emissions (Row 6 - Row 5) for VOC from each modification of an existing emission source Where Row 6 ≤ Row 5: enter a zero for the VOC increase from that emission source <u>0</u> + _____ + _____ + _____ + _____ + _____ = <u>0</u> tpy PEP of VOC = a + b = <u>4.65</u> tpy			

(continued)

Project Emission Potential of NOx = Sum of:

a. Row 2 for NOx from each new emission source
12.15 + _____ + _____ + _____ + _____ + _____ + _____ = 12.15 tpy;

and

b. Where Row 6 > Row 5: the difference between future and baseline emissions (Row 6 - Row 5) for NOx from each modification of an existing emission source
 Where Row 6 ≤ Row 5: enter a zero for the NOx increase from that emission source
0 + _____ + _____ + _____ + _____ + _____ + _____ = 0 tpy

PEP of NOx = a + b = 12.15 tpy

Project Emission Potential of PM-10 = Sum of:

a. Row 2 for PM-10 from each new emission source
 _____ + _____ + _____ + _____ + _____ + _____ + _____ = _____ tpy;

and

b. Where Row 6 > Row 5: the difference between future and baseline emissions (Row 6 - Row 5) for PM-10 from each modification of an existing emission source
 Where Row 6 ≤ Row 5: enter a zero for the PM-10 increase from that emission source
 _____ + _____ + _____ + _____ + _____ + _____ + _____ = _____ tpy

PEP of PM-10 = a + b = _____ tpy

NOTE #1 - *Potential to emit 200.1(b)*. The maximum capacity of an air contamination source to emit any regulated air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the emission source to emit a regulated air pollutant, including air pollution control equipment and/or restrictions on the hours of operation, or on the type or amount of material combusted, stored, or processed, shall be treated as a part of the design if the limitation is enforceable by the department and the administrator. Fugitive emissions, to the extent that they are quantifiable, are included in determining the potential to emit where required by an applicable requirement. Secondary emissions (as defined in Part 231-4 of this Title) are not to be included when calculating an emission source's potential to emit. For emergency power generating stationary internal combustion engines, the potential to emit will be based on a maximum of 500 hours of operation per year per engine unless a more restrictive limitation exists in a permit or registration.

NOTE #2 - *Baseline actual emissions 231-4.1(b)(4)*. The annual rate of emissions of a regulated NSR contaminant from an emission source determined as follows:

(i) The average rate (as defined in clauses a, b, c, d, and e below), in tpy, at which an emission source physically emitted the contaminant during its baseline period, determined by using the source's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected baseline period.

(a) The average rate includes fugitive emissions to the extent quantifiable if the facility belongs to one of the source categories listed in Part 201-2.1(b)(21)(iii) of this Title, and emissions associated with startups, shutdowns, and malfunctions.

(b) The average rate must be adjusted downward to exclude any non-compliant emissions that occurred while the emission source was operating above any applicable emission limitation.

(continued)

(c) Except for electric utility steam generating units, the average rate must be adjusted downward to exclude any emissions that exceeded an emission limitation with which the emission source must currently comply, had such emission source been required to comply with such limitations during the baseline period. However, if an emission limitation is part of a maximum achievable control technology standard that the administrator proposed or promulgated under 40 CFR Part 63, the baseline actual emissions rate need only be adjusted if the State has taken credit for such emissions reductions in an attainment demonstration or maintenance plan consistent with the requirements of 40 CFR 51.165(a)(3)(ii)(G). For the purposes of a creditable emission increase or emission reduction credit used for netting, currently means at the time that the increase or reduction actually occurred.

(d) For a regulated NSR contaminant, when a project involves multiple emissions sources, one baseline period must be used to determine the baseline actual emissions of the emission sources being modified. A different baseline period cannot be used for each regulated NSR contaminant.

(e) For multiple emission sources shutting down or taking limits not in conjunction with a modification, a different baseline period may be used for each emission source.

(ii) The applicant must use a reliable basis for quantifying the baseline actual emissions. Continuous emissions monitoring (CEM) data or stack test data approved by the department must be used if the facility is required to generate such data. Facilities required to submit annual emission statements in accordance with Subpart 202-2 of this Title must use the same method for determining baseline actual emissions as was used for the approved emission statements for the time period encompassing the baseline period, unless CEM or stack test data is available. If such data is not available, acceptable bases for quantifying baseline actual emissions include, but are not limited to, EPA's AP-42 emission factors, and fuel and solvent purchase records, with department approval.

NOTE #3 -

Projected actual emissions 231-4.1(b)(42). The maximum annual rate, in tpy, at which an existing emission source is projected to emit a regulated NSR contaminant in any one of the five years (12-month period) following the date the source commences operation after a modification, or in any one of the 10 years following that date if the project involves increasing the emission source's design capacity or its potential to emit that regulated NSR contaminant and full utilization of the emission source would result in exceeding the applicable significant project threshold in Tables 3, 4 or 6 of Subpart 231-13 of this Part or a significant net emissions increase at the major facility. Projected actual emissions are calculated only for existing major facilities.

(i) In determining the projected actual emissions as defined in this Section (before beginning actual construction), the owner or operator of the major facility:

(a) must consider all relevant information, including but not limited to, historical operational data, the facility's own representations, the facility's expected business activity and the facility's highest projections of business activity, the facility's filings with the State or federal regulatory authorities, and compliance plans under the approved State Implementation Plan; and

(b) must include fugitive emissions to the extent quantifiable if the facility belongs to one of the source categories listed in Part 201-2.1(b)(21)(iii) of this Title, and emissions associated with startups and shutdowns; and

(c) may exclude, in calculating any increase in emissions that results from the particular project, that portion of the emission source's emissions following the project that the existing emission source could have accommodated during the consecutive 24 month period used to establish the baseline actual emissions and that are also unrelated to the particular project.

(ii) In lieu of using the method set out in subparagraph (i) of this paragraph, the owner or operator of the facility may elect to use the potential to emit of the emission source(s), in tpy.

SUBPART 231-6, NET EMISSION INCREASE ANALYSIS WORKSHEET (Re: paragraph 231-4.1(b)(31))

FACILITY NAME: **Astoria Facility**
 APPLICATION DEC ID# **2-6301-00006**
 EMISSION SOURCE ID#s **AS005B**

NOTE: A net emission increase analysis is required for each nonattainment contaminant for which the PEP equals or exceeds the SPT.

Nonattainment contaminant(s) for which PEP ≥ SPT (check one): VOC NOx PM-10

Contemporaneous Period: (Re: FC-12, FC-13, and/or FC-14 and paragraph 231-4.1(b)(14))

Marginal/Moderate Ozone Nonattainment Areas and Attainment Portion of the Ozone Transport Region for VOC or NOx; and PM-10 Nonattainment Area - The period beginning five years prior to the scheduled commence construction date of the new or modified emission source, and ending with the scheduled commence operation date. These dates must be proposed by an applicant in a permit application.

Severe Ozone Nonattainment Area - for emissions of VOC or NOx only, the five consecutive calendar year period which ends with the calendar year that the proposed modification is scheduled to commence operation, as stated by the applicant in a permit application.

Alternative Operating Scenario - for facilities proposing to use an alternative operating scenario pursuant to Part 201 of this Title, the period beginning five years prior to the date of complete application (as defined in section 621.2 of this Title) for the permit modification and ending with the final permit issuance date.

Contemporaneous periods, as applicable:

Scheduled commence construction date: 08/31/2023 _____
 Scheduled commence operation date: 12/31/2025 _____
 Start date of contemporaneous period: 01/01/2021 _____
 End date of contemporaneous period: 12/31/2025 _____

Net Emission Increase - The aggregate increase in emissions of a regulated NSR contaminant in tpy at an existing major facility resulting from the sum of:
 (i) the project emission potential of the modification; and
 (ii) every creditable emission increase at the facility which is contemporaneous and for which an emission offset was not obtained; and
 (iii) any ERC at the facility, or portion thereof, selected by the applicant which is contemporaneous, and which was not previously used as part of an emission offset, an internal offset, or relied upon in the issuance of a permit under this Part.

Net Emission Increase Summary

	VOC	NOx	PM-10
Project Emission Potential (tpy, use WKS-12)	4.65	12.15	
Contemporaneous creditable emission increase/ERC (±tpy, use WKS-13B)	0	0	
NET EMISSION INCREASE (±tpy)	4.65	12.15	

Attachment D - PTE EMISSION CALCULATIONS

Astoria LNG Gas Turbine - Existing PTE (8,760 hours)

Emission Unit ID AS005B

Current: Hispano Suiza 1203

Gas Turbine rated at 82 MMBtu/hr

Pollutant	Emission Factor [lb/MMBtu]	POTENTIAL TO EMIT		
		Emission Rate		[tons/yr]
		[lb/hr]	[lb/yr]	
NO _x	0.340	28	244,229	122.1
VOC	0.024	2	17,240	8.6
CO	0.216	17.7	155,157	77.6
SO ₂	0.0006	0.049	431	0.22
PM	0.014	1.1	10,056	5.0
PM ₁₀	0.014	1.1	10,056	5.0
CO ₂	117.08	9,601	84,100,906	42,050
CH ₄	0.0086	0.7052	6,178	3.09
N ₂ O	0.003	0.246	2,155	1.08

Astoria LNG Gas Turbine – Future PTE (4,380 hours)

Emission Unit ID: AS005B

Replacement: Siemens SGT-100-2S

Gas Turbines rated at 54 MMBtu/hr

Pollutant	Emissions Guaranteed [ppmvd @ 15% O ₂]	Emission Factor [lb/MMBtu]	Data Source	POTENTIAL TO EMIT		
				Emission Rate		[tons per yr.]
				(lb/hr)	(lb/yr.)	@4380hrs/yr
NO _x	25	0.1027	Siemens	5.17	45,289	12.15
VOC	10	0.0393	Siemens	1.98	17,345	4.65
CO	25	0.0625	Siemens	3.14	27,506	7.39
SO ₂		0.0006	EPA AP-42	0.032	284	0.07
PM		0.014	EPA AP-42	0.76	6,623	1.66
PM ₁₀		0.014	EPA AP-42	0.76	6,623	1.66
CO ₂		152.89	Siemens	8,256	72,323,086	18,081
CH ₄		0.0086	EPA AP-42	0.4644	4,068	1.02
N ₂ O		0.003	EPA AP-42	0.162	1,419	0.35

Entire Facility – Potential To Emit
Consolidated Edison - Astoria Facility (existing)

Pollutant	Potential to Emit	
	(lb/yr)	(tons/yr)
SO ₂	3,555	1.78
NO _x	256,438	128.22
PM	55,303	27.65
PM ₁₀	50,562	25.28
CO	202,714	101.36
VOC	32,243	16.12
CO ₂	99,914,892	49,958
Hazardous Air Pollutants		
Acetaldehyde	28.7328	0.0144
Acrolein	4.5972	0.0023
Antimony		0.0000
Arsenic	0.4452	0.0002
Benzene	8.6198	0.0043
Beryllium	0.0002	0.0000
Bis(2-ethylhexyl) phthalate		0.0000
1,3-Butadiene	0.3089	0.0002
Cadmium	0.0152	0.0000
Chromium	2.0429	0.0010
Cobalt	0.2219	0.0001
Dichlorobenzene		0.0000
Ethylbenzene	369.7643	0.1849
Formaldehyde	796.1827	0.3981
Hexane	0.0000	0.0000
Hydrochloric Acid Mist		0.0000
Lead	0.5054	0.0003
Manganese	0.7061	0.0004
Mercury	0.0036	0.0000
MEK	137.1277	0.0686
Methanol	0.0000	0.0000
MIBK	0.0000	0.0000
Naphthalene	1.3838	0.0007
Nickel	6.6700	0.0033
Phenol		0.0000
Phosphorus		0.0000
Selenium	0.0003	0.0000
Toluene	722.4681	0.3612
Xylene	1197.9546	0.5990
PAH's & other POM	1.5803	0.0008
Total HAPs	3,279.3	1.6397

Attachment E

SITE PLAN

Attachment F

Climate Leadership and Community Protection Act (CLCPA) Analysis

**CONSOLIDATED EDISON COMPANY OF NEW YORK, INC
CON EDISON - ASTORIA FACILITY
TITLE V PERMIT MODIFICATION**

**31-01 20TH AVENUE
ASTORIA, NEW YORK 1105**

CLCPA GREENHOUSE GAS ASSESSMENT

Prepared by AKRF, Inc.

Henry Kearney

Kevin Edwards

May 2023

Consolidated Edison Company of New York, Inc.
Astoria Facility Title V Permit Modification
Climate Leadership and Community Protection Act
Greenhouse Gas Assessment

A. INTRODUCTION

In July 2019, New York State enacted the Climate Leadership and Community Protection Act (CLCPA) establishing statewide greenhouse gas (GHG) emission limits that represent a 40 percent reduction from 1990 levels by 2030, and an 85 percent reduction from 1990 levels by 2050. Among other requirements to meet the state's emission reduction goals, the CLCPA directs state agencies to determine if their decisions are consistent with the statewide GHG emission limits established by the CLCPA in the Environmental Conservation Law (ECL) Article 75¹ as well as ensure that decisions shall not disproportionately burden disadvantaged communities.² Under the program policy enacted by the New York State Department of Environmental Conservation (NYSDEC) (DAR-21, *The Climate Leadership and Community Protection Act and Air Permit Applications*), a CLCPA consistency determination is required for applications for new state facility permits, new Title V permits, certain air facility registrations and certain modifications to state facility permits and Title V permits.

Consolidated Edison Company of New York, Inc. (Con Edison) is seeking a modification of its Title V Permit its Astoria Facility (Facility), which includes Con Edison's Liquefied Natural Gas (LNG) Plant (Plant). Under the permit modification application, Con Edison would install a new combustion turbine as an in-kind replacement of the existing combustion turbine used to power the Plant's nitrogen refrigeration cycle (the proposed project), for conversion of natural gas to LNG, which is then stored on site. The existing combustion turbine has been in operation since the 1970s and is in need of replacement due to its age and condition. The proposed modification to the existing Title V Permit would also restrict usage of the proposed turbine to 4,380 hours of operation per year. The proposed turbine would be installed at the same site as the current Plant. Other equipment regulated under the Title V permit would not be affected by the proposed project.

Per NYSDEC policy, a CLCPA consistency assessment was performed for the proposed combustion turbine at the Plant, as discussed in more detail below. This assessment demonstrates that the proposed project would result in decreased energy consumption associated with the Plant's liquefaction process. Therefore, the proposed modification to the Title V Permit would result in a significant net reduction of GHG emissions and is not expected to interfere with achieving the statewide GHG emission reduction targets for 2030 and 2050, consistent with the GHG reduction goals of the CLCPA.

Co-pollutant emissions from the proposed project have also been quantified and there is a demonstrated reduction at the Facility resulting from the proposed project. Additionally, as a result, any localized effects of co-pollutants beyond the Facility at nearby disadvantaged communities would decrease with

¹ CLCPA Section 7(2)

² CLCPA Section 7(3)

the use of more efficient equipment. Therefore, the proposed modification to the Title V permit would also be consistent with the goals of avoiding disproportionate impacts on disadvantaged communities, consistent with the environmental justice goals under the CLCPA.

B. PROJECT DESCRIPTION

PROCESS DESCRIPTION

The LNG Plant at the Con Edison Astoria Facility provides a backup supply of natural gas that enables Con Edison to maintain service to utility customers -- including hospitals, schools, businesses and homes -- during unplanned gas supply contingencies and extreme winter weather. The Plant's combustion turbine powers the nitrogen refrigeration cycle that liquefies natural gas for storage at the Facility. The LNG is stored in an existing storage tank with a capacity of approximately 1 billion standard cubic feet of natural gas (SCF). The Plant stores only pipeline gas and does not receive natural gas delivered via surface transportation (truck or rail).

PROPOSED PROJECT

Con Edison operates the Plant on an approximately 25-acre site within Con Edison's larger approximately 200-acre complex in Astoria, Queens (NY). The proposed project entails the in-kind replacement of the existing 82 MMBtu/hr combustion turbine, which powers the nitrogen refrigeration cycle, with a new, more efficient 54 MMBTU/hr combustion turbine on the same site. The existing 82 MMBtu/hr combustion turbine would be decommissioned and removed. As mentioned above, there is a present operational need to replace this existing turbine, since it is obsolete and the original equipment manufacturer no longer manufactures turbines and, thus, cannot provide replacement parts. As a result, Con Edison has had difficulty sourcing spare parts needed to maintain the turbine, a situation that threatens the continued availability and reliability of the Plant to store backup gas and supply public utility customers during system contingencies.

The proposed modification to the Title V Permit would include the installation of the new combustion turbine to replace the existing combustion turbine. Additionally, the Title V Permit would restrict the proposed turbine's operating hours to 4,380 hours per year, compared to the existing combustion turbine, which has no restrictions on operating hours.

With the combustion turbine replacement, the Plant would be able to meet the design intent of the LNG tank to be filled at approximately 6 million SCF per day. The proposed project would not, however, change the Plant's LNG storage capacity or the amount of LNG vaporized.

C. METHODOLOGY FOR ESTIMATING GHG EMISSIONS

POLLUTANTS OF CONCERN

GREENHOUSE GASES

GHGs are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere, and clouds. The general warming of the Earth's atmosphere caused by this phenomenon is known as the "greenhouse effect." The United States Environmental Protection Agency (EPA) identifies seven types of GHGs that are relevant for GHG inventory purposes: carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), nitrogen trifluoride (NF₃), and sulfur hexafluoride (SF₆). There are no significant direct or indirect

sources of HFCs, PFCs, NF₃, or SF₆ associated with the proposed project; therefore, the GHG assessment focuses on CO₂, N₂O, and methane.

To present a complete inventory of all GHGs, component emissions are added together and presented as carbon dioxide equivalent (CO₂e) emissions—a unit representing the quantity of each GHG weighted by its effectiveness using CO₂ as a reference. This is achieved by multiplying the quantity of each GHG emitted by a factor called global warming potential (GWP). GWPs account for the lifetime and the radiative forcing³ of each chemical over a period of 20 years (e.g., CO₂ has a much shorter atmospheric lifetime than N₂O and therefore has a much lower GWP). The GWPs for the main GHGs discussed here are presented in **Table 1**.

Table 1
Global Warming Potential (GWP) for Major GHGs

Greenhouse Gas	20-Year Horizon GWP
Carbon Dioxide (CO ₂)	1
Methane (CH ₄)	84
Nitrous Oxide (N ₂ O)	264

Source: 6 NYCRR 496.5

CO-POLLUTANTS

Co-pollutants represent air contaminants with the potential to affect human health within the local community nearby an emission source. This would include major air pollutants carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and particulate matter (PM), and volatile organic compounds (VOCs). Ambient concentrations of CO, PM, NO₂, SO₂, ozone, and lead are regulated by the U.S. Environmental Protection Agency (EPA) under the Clean Air Act (CAA) and are referred to as criteria pollutants; emissions of VOCs, NO_x, and other precursors to criteria pollutants from certain source categories are also regulated by EPA.

In addition to the criteria pollutants, non-criteria air pollutants, also called hazardous air pollutants (HAPs), may be of concern. HAPs are those pollutants that are known or suspected to cause serious health effects in small doses. HAPs are emitted by a wide range of human-made and naturally occurring sources.

STATEWIDE GHG INVENTORY AND EMISSION LIMITS

As part of the regulations adopted at 6 NYCRR Part 496 in 2020, the New York State Energy Research and Development Authority (NYSERDA) developed the 1990 baseline GHG emissions for New York State consistent with the calculation requirements specified under the CLCPA. The statewide inventory is separated into four sectors—Energy Sector, Industrial Processes and Product Use, Agriculture Forestry and Other Land Use, and Waste. The GHG emissions associated with the LNG Plant would fall within the following sectors:

1. Energy Sector—This sector includes direct fuel combustion within the state (associated with building fuel usage, vehicle travel, and electricity generation), fugitive emissions within the state (associated with emissions released during production and transportation of fuels), electricity

³ *Radiative forcing* is a measure of the influence a gas has in altering the balance of incoming and outgoing energy in the Earth-atmosphere system and is an index of the importance of the gas as a GHG.

transmission (associated with the leakage of GHGs during the manufacture, use, and disposal of equipment used in the transmission and distribution of electricity), fuels imported into the state (associated with emissions from out of state industrial production and transportation), and electricity imported into the state (associated with emissions from out of state generation and transmission). The energy sector also includes GHG emissions from fuel consumption at the LNG Plant.

2. Industrial Processes and Product Use—This sector includes emissions from the manufacturing process or from a manufactured product and are separate from the combustion of fossil fuels by industries, which is accounted for in the Energy sector. However, since natural gas would not come from any one origin, the upstream component for fuel extraction within the state would be accounted for within the Industrial Processes and Product Use Sector.

The GHG inventory performed by NYSERDA determined a statewide 1990 annual baseline emission total of 409.78 million metric tons (MMT) of CO₂e. Subsequently, this established the statewide annual CO₂e emission limits for 2030 and 2050 as 245.87 MMT and 61.47 MMT, respectively.

GHG EMISSIONS

The GHG emission estimates associated with the combustion turbine replacement were performed consistent with NYSDEC guidelines (as specified in DAR-21). Emissions were estimated for both the maximum operations as allowed by the permit (Potential to Emit, or “PTE”) and the actual anticipated emissions from the GHG emissions sources. In addition, emissions associated with natural gas that is liquefied to produce LNG that is stored at the Facility and later vaporized were estimated.

The proposed modifications to the Title V Permit would not impact consumption of electricity or changes in fuel type that could result in changes in emissions in future years. Therefore, GHG emission estimates would represent the Plant’s GHG emissions in future years.

COMBUSTION TURBINES

Fuel Usage

As discussed above, the proposed turbine would both: (1) operate with a higher energy efficiency compared to the existing unit; and (2) be restricted to 4,380 hours of operation per year. The PTE for the combustion turbines were based on the maximum allowable hours of operation—8,760 hours per year for the existing turbine (since there is no hours limit in the permit currently) and 4,380 hours per year for the proposed turbine (Con Edison’s proposed hourly permit limit). Consequently, the turbine replacement would result in a decrease of the maximum potential natural gas consumed from 718,320 MMBtu per year using the existing turbine compared to 236,520 MMBtu per year using the proposed turbine—a 67.1 percent reduction.

Consistent with DAR-21, actual emissions are reflective of the highest 24-month average GHG emissions during the latest five years. Therefore, actual emissions for the combustion turbines were based on the maximum 24-month average number of hours the turbines would operate observed within five years of records (2017-2021)—2,929 hours per year as observed over the 2017-2018 time period. While the higher efficiency of the proposed turbine is anticipated to significantly reduce the number of hours of operation needed to produce LNG for storage at the Plant compared to the existing turbine, it was conservatively assumed that the new combustion turbine would operate for the same number of hours as the existing combustion turbine in the calculation of actual anticipated emissions associated

with the future condition.⁴ Consequently, the turbine replacement would result in a decrease of the anticipated amount of natural gas consumed from 221,242 MMBtu per year using the existing turbine compared to 158,166 MMBtu per year using the proposed turbine—a 28.5 percent reduction.

Furthermore, in the calculation of actual anticipated emissions, the proposed turbine was assumed to operate at full load during the actual hours of operation, while the existing turbine operated at less than full load. Therefore, GHG emissions associated with the proposed turbine would be less than the conservative estimates of actual GHG emissions presented, and the proposed project would in actuality result in a larger reduction of GHG emissions.

Direct Emissions

GHG emissions from the existing and proposed turbines were calculated based on estimated fuel consumption over a single year. The quantity of fuel was then multiplied by unit-specific emission factors of 117 lb CO₂ per MMBtu and 153 lb CO₂ per MMBtu for the existing and proposed turbines, respectively, obtained from a published emission factor (U.S. Energy Information Administration (EIA)) and manufacturer's specifications. In order to develop CO₂e emission factors, emission factors of N₂O and CH₄ for natural gas combustion (0.10 g/MMBtu and 1.00 g/MMBtu, respectively) were taken from EPA Emission Factors for Greenhouse Gas Inventories for stationary combustion.⁵ These emissions would correlate to direct fuel combustion under the Energy Sector of the 1990 baseline GHG Inventory.

Upstream Emissions

Upstream emissions were projected for the annual fuel consumed by the existing and proposed combustion turbine under the PTE and anticipated actual operations. Upstream emission factors for natural gas have been specified by NYSDEC for upstream and out-of-state emissions.⁶ Fuel may originate from either in-state or out-of-state sources; therefore, portions of the Plant's upstream emissions would correlate to the Industrial Processes and Product Use Sector as fuel production emissions. The remaining portion would correlate to the Energy Sector as either direct fuel combustion associated with in-state vehicle travel, fugitive emissions occurring within the state, as well out-of-state emissions associated with the production and transport of imported fuel.

LNG THROUGHPUT

As discussed above, the proposed project would not change the Plant's LNG storage capacity, the amount of LNG vaporized, or increase transmission of natural gas to the site for liquefaction. Therefore, the working capacity of the LNG storage tank would remain as 1,000,000,000 standard cubic feet. The assessment of GHG emissions associated with the amount of LNG liquefied per year during actual operations were estimated based on the 24-month average annual amount of LNG as recorded over the 2018-2019 time period—267,576,696 standard cubic feet of natural gas.

The emissions associated with the operation of the LNG process included the upstream emissions associated with the natural gas delivered to the site for LNG storage, the downstream emissions associated with the distribution of natural gas from the site after vaporization, and the combustion of

⁴ As noted in the analysis, the comparison is reasonable given that the project will not change the LNG storage capacity, or the amount of LNG vaporized at the Facility.

⁵ EPA. Emission Factors for Greenhouse Gas Inventories. 26 March 2020.

⁶ NYSDEC. Preliminary Interim Draft Emission Factors for Use by State Agencies and Project Proponents. February 2021

this natural gas at the end user. In this situation, the quantity of fuels to be produced, stored at the Plant as LNG, and distributed to end-users would be the same before and after the proposed project. This is because the amount of natural gas stored at LNG is limited by the existing capacity of the LNG storage tank, which is not changing as part of the proposed project.

D. GREENHOUSE GAS EMISSIONS

POTENTIAL TO EMIT

The maximum potential fuel consumption, usage, emission factors, and resulting GHG PTE emissions for the combustion turbine and LNG usage for the existing Plant and in the future with the proposed project are presented in **Tables 2** and **3**, respectively.

Table 2
Annual GHG PTE Emissions from Combustion Turbine and LNG Usage
Existing LNG Plant

Type	Annual Usage	Category	Emission Factors			Emissions (metric tons CO ₂ e/year)
			CO ₂	CH ₄	N ₂ O	
Natural Gas for Combustion Turbine	704,235,294 scf	Direct ^{(1) (2)}	53,107 g/MMBtu	1.00 g/MMBtu	0.10 g/MMBtu	38,227
		Upstream ⁽³⁾	12,131 g/MMBtu	357 g/MMBtu	0.140 g/MMBtu	30,282
		Natural Gas Total				68,508
Natural Gas for LNG Liquefaction and Storage	1,000,000,000 scf	Direct ⁽²⁾	53,060 g/MMBtu	1.00 g/MMBtu	0.10 g/MMBtu	0 ⁽⁵⁾
		Upstream ⁽³⁾	12,131 g/MMBtu	357 g/MMBtu	0.140 g/MMBtu	42,999
		Downstream ⁽⁴⁾ (Transmission)	2 g/MMBtu	68 g/MMBtu	N/A	5,828
		Downstream ⁽²⁾ (End Use)	53,060 g/MMBtu	1.00 g/MMBtu	0.10 g/MMBtu	54,234
LNG Total					103,061	
Plant Total					171,569	

Notes:

Totals may not sum due to rounding. See detailed calculations in Appendix A.

scf—standard cubic feet

g—grams

MMBtu—million British thermal units

(1) A direct CO₂ emission factor of 117 lb/MMBtu for natural gas consumption within the existing units taken from a published emission factor (EIA).

(2) Direct emission factors for natural gas consumption and end use combustion of the vaporized LNG taken from EPA Emission Factors for Greenhouse Gas Inventories for stationary combustion (<https://www.epa.gov/sites/production/files/2020-04/documents/ghg-emission-factors-hub.pdf>).

(3) Upstream emission factors for natural gas and diesel fuel specified by NYSDEC, Appendix A of the 2021 *Statewide GHG Emission Report*. January 2022.

(4) Downstream CH₄ and CO₂ emission factors for transmission of natural gas specified by NYSDEC, Appendix A of the 2021 *Statewide GHG Emission Report*. January 2022.

(5) No direct emissions are associated with the natural gas for LNG storage at the Facility. However, the assessment includes the upstream emissions associated with the extraction and transport of natural gas to the Plant for liquefaction and vaporization, downstream emissions associated with transmission of the vaporized LNG from the Plant, and combustion of the vaporized LNG at the end user.

Table 3
Annual GHG PTE Emissions from Combustion Turbine and LNG Usage
Future LNG Plant

Type	Annual Usage	Category	Emission Factors			Emissions (metric tons CO ₂ e/year)
			CO ₂	CH ₄	N ₂ O	
Natural Gas for Combustion Turbine	231,882,353 scf	Direct ^{(1) (2)}	69,350 g/MMBtu	1.00 g/MMBtu	0.10 g/MMBtu	16,429
		Upstream ⁽³⁾	12,131 g/MMBtu	357 g/MMBtu	0.140 g/MMBtu	9,971
		Natural Gas Total				
Natural Gas for LNG Liquefaction and Storage	1,000,000,000 scf	Direct ⁽²⁾	53,060 g/MMBtu	1.00 g/MMBtu	0.10 g/MMBtu	0 ⁽⁵⁾
		Upstream ⁽³⁾	12,131 g/MMBtu	357 g/MMBtu	0.140 g/MMBtu	42,999
		Downstream ⁽⁴⁾ (Transmission)	2 g/MMBtu	68 g/MMBtu	N/A	5,828
		Downstream ⁽²⁾ (End Use)	53,060 g/MMBtu	1.00 g/MMBtu	0.10 g/MMBtu	54,234
LNG Total					103,061	
Plant Total					129,461	

Notes:
 Totals may not sum due to rounding. See detailed calculations in Appendix A.
 scf—standard cubic feet
 g—grams
 MMBtu—million British thermal units

(1) A direct CO₂ emission factor of 153 lb/MMBtu for natural gas consumption within the proposed combustion turbine taken from manufacturer’s data.
 (2) Direct emission factors for natural gas consumption and end use combustion of the vaporized LNG taken from EPA Emission Factors for Greenhouse Gas Inventories for stationary combustion (<https://www.epa.gov/sites/production/files/2020-04/documents/ghg-emission-factors-hub.pdf>).
 (3) Upstream emission factors for natural gas and diesel fuel specified by NYSDEC, Appendix A of the 2021 Statewide GHG Emission Report. January 2022.
 (4) Downstream CH₄ and CO₂ emission factors for transmission of natural gas specified by NYSDEC, Appendix A of the 2021 Statewide GHG Emission Report. January 2022.
 (5) No direct emissions are associated with the natural gas for LNG storage at the Facility. However, the assessment includes the upstream emissions associated with the extraction and transport of natural gas to the Plant for liquefaction and vaporization, downstream emissions associated with transmission of the vaporized LNG from the Plant, and combustion of the vaporized LNG at the end user.

Due to the reduced potential on-site natural gas consumption, the Plant’s GHG emissions associated with the combustion turbine are estimated to decrease by approximately 42,109 metric tons of CO₂e per year on a PTE basis. Total GHG emissions when combined with the emissions associated with the liquefaction and storage are estimated to be 171,569 metric tons when using the existing combustion turbine and 129,461 metric tons when fully utilizing the proposed combustion turbine.⁷

⁷ Totals may not sum due to rounding. See detailed calculations in Appendix A.

ACTUAL GHG EMISSIONS

The anticipated actual fuel consumption, usage, emission factors, and resulting GHG emissions for the combustion turbine and LNG usage for the existing Plant and in the future with the project are presented in **Tables 4 and 5**, respectively.

Table 4
Annual Actual GHG Emissions from Combustion Turbine and LNG Usage
Existing LNG Plant

Type	Annual Usage	Category	Emission Factors			Emissions (metric tons CO ₂ e/year)
			CO ₂	CH ₄	N ₂ O	
Natural Gas for Combustion Turbine	216,903,669 scf	Direct ^{(1) (2)}	53,107 g/MMBtu	1.00 g/MMBtu	0.10 g/MMBtu	11,774
		Upstream ⁽³⁾	12,131 g/MMBtu	357 g/MMBtu	0.140 g/MMBtu	9,327
		Natural Gas Total				
Natural Gas for LNG Liquefaction and Storage	267,576,696 scf	Direct ⁽²⁾	53,060 g/MMBtu	1.00 g/MMBtu	0.10 g/MMBtu	0 ⁽⁵⁾
		Upstream ⁽³⁾	12,131 g/MMBtu	357 g/MMBtu	0.140 g/MMBtu	11,506
		Downstream ⁽⁴⁾ (Transmission)	2 g/MMBtu	68 g/MMBtu	N/A	1,560
		Downstream ⁽²⁾ (End Use)	53,060 g/MMBtu	1.00 g/MMBtu	0.10 g/MMBtu	14,512
		LNG Total				
Plant Total					48,677	

Notes:
 Totals may not sum due to rounding. See detailed calculations in Appendix A.
 scf—standard cubic feet
 g—grams
 MMBtu—million British thermal units

(1) A direct CO₂ emission factor of 117 lb/MMBtu for natural gas consumption within the existing units taken from a published emission factor (EIA).
 (2) Direct emission factors for natural gas consumption and end use combustion of the vaporized LNG taken from EPA Emission Factors for Greenhouse Gas Inventories for stationary combustion (<https://www.epa.gov/sites/production/files/2020-04/documents/ghg-emission-factors-hub.pdf>).
 (3) Upstream emission factors for natural gas and diesel fuel specified by NYSDEC, Appendix A of the *2021 Statewide GHG Emission Report*. January 2022.
 (4) Downstream CH₄ and CO₂ emission factors for transmission of natural gas specified by NYSDEC, Appendix A of the *2021 Statewide GHG Emission Report*. January 2022.
 (5) No direct emissions are associated with the natural gas for LNG storage at the Facility. However, the assessment includes the upstream emissions associated with the extraction and transport of natural gas to the Plant for liquefaction and vaporization, downstream emissions associated with transmission of the vaporized LNG from the Plant, and combustion of the vaporized LNG at the end user.

Table 5
Annual Actual GHG Emissions from Combustion Turbine and LNG Usage
Future LNG Plant

Type	Annual Usage	Category	Emission Factors			Emissions (metric tons CO ₂ e/year)
			CO ₂	CH ₄	N ₂ O	
Natural Gas for Combustion Turbine	155,064,706 scf	Direct ^{(1) (2)}	69,350 g/MMBtu	1.00 g/MMBtu	0.10 g/MMBtu	10,986
		Upstream ⁽³⁾	12,131 g/MMBtu	357 g/MMBtu	0.140 g/MMBtu	6,668
		Natural Gas Total				
Natural Gas for LNG Liquefaction and Storage	267,576,696 scf	Direct ⁽²⁾	53,060 g/MMBtu	1.00 g/MMBtu	0.10 g/MMBtu	0 ⁽⁵⁾
		Upstream ⁽³⁾	12,131 g/MMBtu	357 g/MMBtu	0.140 g/MMBtu	11,506
		Downstream ⁽⁴⁾ (Transmission)	2 g/MMBtu	68 g/MMBtu	N/A	1,560
		Downstream ⁽²⁾ (End Use)	53,060 g/MMBtu	1.00 g/MMBtu	0.10 g/MMBtu	14,512
LNG Total					27,577	
Plant Total					45,231	

Notes:
 Totals may not sum due to rounding. See detailed calculations in Appendix A.
 scf—standard cubic feet
 g—grams
 MMBtu—million British thermal units

(1) A direct CO₂ emission factor of 153 lb/MMBtu for natural gas consumption within the proposed combustion turbines taken from manufacturer’s data.
 (2) Direct emission factors for natural gas consumption and end use combustion of the vaporized LNG taken from EPA Emission Factors for Greenhouse Gas Inventories for stationary combustion (<https://www.epa.gov/sites/production/files/2020-04/documents/ghg-emission-factors-hub.pdf>).
 (3) Upstream emission factors for natural gas and diesel fuel specified by NYSDEC, Appendix A of the 2021 Statewide GHG Emission Report. January 2022.
 (4) Downstream CH₄ and CO₂ emission factors for transmission of natural gas specified by NYSDEC, Appendix A of the 2021 Statewide GHG Emission Report. January 2022.
 (5) No direct emissions are associated with the natural gas for LNG storage at the Facility. However, the assessment includes the upstream emissions associated with the extraction and transport of natural gas to the Plant for liquefaction and vaporization, downstream emissions associated with transmission of the vaporized LNG from the Plant, and combustion of the vaporized LNG at the end user.

Due to the reduced on-site natural gas consumption from the proposed project, the GHG emissions from on-site fuel usage are estimated to decrease by approximately 3,447 metric tons of CO₂e per year. Total emissions when combined with the emissions associated with LNG liquefaction, storage and vaporization are estimated to be 48,677 metric tons when using the existing turbine and 45,231 metric tons when utilizing the proposed turbine.⁸

⁸ Totals may not sum due to rounding. See detailed calculations in Appendix A.

E. CO-POLLUTANT EMISSIONS

Similar to GHG emissions, co-pollutant emissions from the proposed project were estimated based on the number of hours of operation for the combustion turbines as well as the maximum potential to emit. The fuel consumption, emission factors, and resulting co-pollutant emissions for the existing turbine and the proposed project are presented in **Tables 6 and 7**, along with the net change in co-pollutants. The decrease in fuel consumption would result in a reduction in annual co-pollutant emissions from the combustion turbines. The co-pollutant emissions calculations are attached to this assessment.

**Table 6
Annual Co-Pollutant PTE Emissions**

Pollutant ⁽¹⁾	Emission Factor ⁽²⁾	Existing Turbine		Future Turbine		Net Emissions (tons/year)
		Usage	Emissions (tons/year)	Usage	Emissions (tons/year)	
Criteria Pollutants						
Nitrogen Dioxide ⁽³⁾	272 lb/mmcf	704,235,294 scf	95.64	231,882,353 scf	---	(83.50)
	105 lb/mmcf		---		12.15	
Carbon Monoxide	84 lb/mmcf		29.58		9.74	(19.84)
Volatile Organic Compounds	5.5 lb/mmcf		1.94		0.64	(1.30)
Particulate Matter (PM ₁₀)	7.6 lb/mmcf		2.68		0.88	(1.79)
Particulate Matter (PM _{2.5})	7.6 lb/mmcf		2.68		0.88	(1.79)
Sulfur Dioxide	0.6 lb/mmcf		0.21		0.07	(0.14)
Hazardous Air Pollutants						
Benzene	0.0021 lb/mmcf	704,235,294 scf	7.39E-04	231,882,353 scf	2.43E-04	(4.96E-04)
Toluene	0.0034 lb/mmcf		1.20E-03		3.94E-04	(8.03E-04)
Formaldehyde	0.0750 lb/mmcf		2.64E-02		8.70E-03	(1.77E-02)
Naphthalene	0.0006 lb/mmcf		2.15E-04		7.07E-05	(1.44E-04)
Hexane	1.8000 lb/mmcf		6.34E-01		2.09E-01	(4.25E-01)
Total HAPs			0.66	Total HAPs	0.22	(0.44)
Notes:						
Totals may not sum due to rounding. See detailed calculations in Appendix A.						
Mmcf—million cubic feet						
scf—standard cubic feet						
MMBtu—million British thermal units						
(1) Note that co-pollutant emissions from other existing sources at the Facility are not included since they would not be affected by the proposed project.						
(2) Emission factors for all pollutants other than NO _x taken from AP-42 Tables 1.4-1 through 1.4-3.						
(3) NO _x emissions factors for the existing turbine and proposed turbine taken from emission testing data and manufacturer's data, respectively.						

**Table 7
Annual Actual Co-Pollutant Emissions**

Pollutant ⁽¹⁾	Emission Factor ⁽²⁾	Existing Turbine		Future Turbine		Net Emissions (tons/year)
		Usage	Emissions (tons/year)	Usage	Emissions (tons/year)	
Criteria Pollutants						
Nitrogen Dioxide ⁽³⁾	272 lb/mmcf	216,903,669 scf	29.46	155,064,706 scf	---	(21.34)
	105 lb/mmcf		---		8.12	
Carbon Monoxide	84 lb/mmcf		9.11		6.51	(2.60)
Volatile Organic Compounds	5.5 lb/mmcf		0.60		0.43	(0.17)
Particulate Matter (PM ₁₀)	7.6 lb/mmcf		0.82		0.59	(0.23)
Particulate Matter (PM _{2.5})	7.6 lb/mmcf		0.82		0.59	(0.23)
Sulfur Dioxide	0.6 lb/mmcf		0.07		0.05	(0.02)
Hazardous Air Pollutants						
Benzene	0.0021 lb/mmcf	216,903,669 scf	2.28E-04	155,064,706 scf	1.63E-04	(6.49E-05)
Toluene	0.0034 lb/mmcf		3.69E-04		2.64E-04	(1.05E-04)
Formaldehyde	0.0750 lb/mmcf		8.13E-03		5.81E-03	(2.32E-03)
Naphthalene	0.0006 lb/mmcf		6.62E-05		4.73E-05	(1.89E-05)
Hexane	1.8000 lb/mmcf		1.95E-01		1.40E-01	(5.57E-02)
Total HAPs			0.20	Total HAPs	0.15	(0.06)
Notes:						
Totals may not sum due to rounding. See detailed calculations in Appendix A.						
Mmcf—million cubic feet						
scf—standard cubic feet						
MMBtu—million British thermal units						
(1) Note that co-pollutant emissions from other existing sources at the Facility are not included since they would not be affected by the proposed project.						
(2) Emission factors for all pollutants other than NO _x taken from AP-42 Tables 1.4-1 through 1.4-3.						
(3) NO _x emissions factors for the existing turbine and proposed turbine taken from emission testing data and manufacturer's data, respectively.						

F. CONCLUSIONS

As explained above, the proposed project would result in a net decrease of both PTE and projected actual emissions from the Plant of approximately 42,109 and 3,447 metric tons of CO₂e per year, respectively. These reductions are representative of Con Edison's commitment to reduce its direct carbon emissions. The significant reductions in GHG emissions demonstrate that the proposed modification to the Title V Permit would support the State in achieving its emission reduction goals. Furthermore, since the proposed modification would not expand the capacity of the existing natural gas system, the proposed combustion turbine would only represent an investment to reduce GHG emissions within the State's existing fossil fuel infrastructure. In the future, with increased electrification, it is also anticipated that the new combustion turbine would also run less frequently than what is projected in this CLCPA analysis. Consequently, it is consistent with and will not interfere with the attainment of the statewide greenhouse gas emissions limits in 6 NYCRR Part 496 and is therefore in compliance with Section 7(2) of the CLCPA.

In addition, the proposed project benefits disadvantaged communities through reducing local emissions of co-pollutants and by providing reliable gas service to socioeconomically vulnerable communities, consistent with Section 7(3) of the CLCPA.

Therefore, the proposed project complies with the requirements of the CLCPA.