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Memorandum

To: Caitlyn Nichols, Division of Environmental Permits
New York State Department of Environmental Conservation

From: Henry Kearney, Kevin Edwards

Date: July 15, 2022

Re: Rikers Island Title V—Climate Leadership and Community Protection Act Greenhouse Gas Assessment

cc: Sheveta Sharma/AKRF

INTRODUCTION

In July of 2019, New York State enacted the Climate Leadership and Community Protection Act (CLCPA). Among other requirements, the CLCPA directs state agencies to determine if their decisions are consistent with the Statewide greenhouse gas (GHG) emission limits established by the CLCPA in Environmental Conservation Law (ECL) Article 75. On December 8, 2021, NYSDEC issued draft guidance for determining if a permitting action requires an analysis to determine consistency with the CLCPA (The Climate Leadership and Community Protection Act and Air Permit Applications New York State Department of Environmental Conservation, DAR-21). Applicable permit actions would include new Title V and Air State Facility (ASF) permits, modifications to existing Title V and ASF permits, renewals of existing Title V and ASK permits, and Air Facility Registrations where NYSDEC determines an analysis is necessary or appropriate to ensure consistency with CLCPA.

METHODOLOGY

POLLUTANTS OF CONCERN

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 facility; therefore, the GHG assessment of the facility focuses on CO₂, N₂O, and methane.

To present a complete inventory of all GHGs, component emissions are added together and presented as 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 forcing¹ of each chemical over a period of 20 years (e.g., CO₂ has a much shorter atmospheric lifetime than SF₆, 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	

STATEWIDE GHG INVENTORY AND EMISSION LIMITS

As part of the adopted 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 was separated into four sectors across the statewide and included:

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 emission released during production and transportation of fuels), electricity 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 generation and transmission).
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.
3. Agriculture Forestry and Other Land Use—This sector includes emission sources associated with land management relating to livestock, land use, and other aggregated sources.
4. Waste—This sector includes emissions associated with solid waste disposal, biological treatment of solid waste, waste combustion, and wastewater treatment.

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.

FACILITY SOURCES

NYCDOC operates a facility on Rikers Island to generate electricity for various uses on the island, as well as to generate steam for heating, hot water and for other process uses such as the on-site laundry. The proposed modifications to the Rikers Island Title V would not involve any physical modifications to the existing installed equipment at the facility or the installation of additional equipment. Therefore, under the modified permit the Rikers Island facility would continue to consist of:

¹ *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.

- Eight (8) 96 MMBtu/hr boilers firing primarily natural gas or Number 2 Fuel Oil as backup fuel;
- Two (2) 7.5 megawatt (MW) natural gas-fired combustion turbines equipped with a heat recovery steam generator (HRSG) that can be operated with a supplemental natural gas-fired duct burner in tandem;
- Nineteen (19) diesel-fired internal combustion engines which, under the expired Title V permit had the option to enroll in a peak load management (PLM); and
- One (1) spray booth.

During periods of peak steam demand on Rikers Island, or when one or both of the combustion turbines are undergoing maintenance, the existing boilers are needed to supply steam. Under the existing Title V permit, the boilers cannot be operated as needed due to annual emission limits, especially during short-term periods of peak demand or combustion turbine maintenance conditions. For this reason, modifications to the Rikers Island facility's Title V air permit have been proposed to ensure that the facility has additional operating flexibility, and to operate in compliance with the applicable regulations and permit conditions. These conditions include allowing the facility to operate the eight existing boilers as needed during periods of peak steam demand or when the combustion turbines are undergoing maintenance.

The operation of the facility's boilers and combustion turbines would be unchanged from current operations. In order to accurately reflect the operation of these pieces of equipment, the proposed permit modifications would revise the annual limit on NO_x emissions for the combustion turbines to 52 tpy (from the 42 tpy under the current Title V Permit) and would remove the annual limit on NO_x emissions for the boilers.

Of the nineteen engines, five have not undergone stack testing to show compliance with the NO_x RACT requirements. Four of the fourteen engines would no longer be eligible to operate under the PLM program due to the potential for exceedances of the 1-hour average nitrogen dioxide (NO₂) National Ambient Air Quality Standards (NAAQS). Furthermore, to ensure compliance with the 1-hour NO₂ NAAQS, the remaining engines would be operated at lower peak capacities. While the Title V Permit does not revise the NO_x emission cap associated with the PLM engines, this would lower the peak generating capacity of the engines when used in a PLM program from 19,765 kilowatts (kW) across nineteen engines to 5,223 kW across ten engines under the proposed permit modifications—a reduction of approximately 73 percent.

Under a PLM program, on-site electrical generation is performed to reduce the peak demand on the electric grid during periods where demand is expected to exceed generation capacity of the electrical grid. The frequency and duration of peak demand events is not dependent on the facility's generation capacity; therefore, the number of hours that the engines would be eligible to participate a PLM program is not anticipated to increase and GHG emissions would likely decrease by a similar amount as the facility's peak PLM generation capacity. This reduction is also anticipated for co-pollutants and would have direct benefits associated with short-term air quality conditions within close proximity to the facility. However, estimates of the facility's GHG emissions on a potential to emit basis assumes that annual generation would remain unchanged, since the annual limit on NO_x emissions to 22.5 tons per year (tpy) would remain unchanged under the proposed Title V permit modifications.

The facility's electricity consumption would not be affected by the proposed permit modifications; therefore, the facility emissions did not include estimates of emissions associated with in-state fossil-fuel fired electrical generation sources (including upstream emissions), in-state electricity transmission, and imported electricity.

FACILITY EMISSIONS

Direct Emissions

As a result of the proposed permit modifications, the permitted NO_x potential to emit (PTE) from the facility would increase due to modification of the permit conditions for emission limits for combustion turbines and boiler units to reflect the current equipment usage. Under the revised annual PTE limit on NO_x emissions, the combustion turbines are estimated to use 1,922,104,854 standard cubic feet (scf) of natural gas per year. With the removal of the annual PTE limit on NO_x and PM₁₀ emissions, the boilers would be permitted to operate at full load throughout the year with no limitation on fuel type. Under these conditions, the boilers are estimated to use up to 6,531,728,155 scf when burning natural gas, or 48,751,304 gallons when burning No. 2 fuel oil (increased from the calculated maximum of 177,993,528 scf when burning natural gas or 1,277,310 gallons when burning No. 2 fuel oil under the existing permitted annual limit on NO_x and PM₁₀ emissions) per year. In order to estimate the maximum PTE for the facility, GHG emissions were calculated for both the maximum natural gas and maximum No. 2 fuel oil (including upstream emissions discussed below) and the higher value was used. In addition, the PLM engines are anticipated to use up to 66,833 gallons of No. 2 fuel oil. To estimate GHG emissions from the facility, these quantities of fuel were multiplied by emission factors of 54.55 grams kilograms CO_{2e} per standard cubic feet of natural gas and 10.27 kilograms CO_{2e} per gallon of diesel fuel (No. 2 fuel oil) taken from EPA Emission Factors for Greenhouse Gas Inventories for stationary combustion.² These emissions correlate to direct fuel combustion under the Energy Sector of the 1990 baseline GHG Inventory.

However, actual GHG emissions are much lower since the combustion turbines are designed to meet the steam demands of Rikers Island under most conditions, and the facility's boilers are only used to provide steam during periods of peak steam demand or when the combustion turbines are undergoing maintenance, and under such conditions are not operated at maximum load. Based on annual fuel consumption records from 2017 through 2019 by equipment and fuel type, the combustion turbines and HRSG consumed a annual maximum of 678,792,593 scf of natural gas per year—approximately 35 percent of the maximum potential annual fuel consumption estimated to represent turbines operating at the proposed 52 tpy NO_x emissions limit. Similarly, the boilers were reported to consumed annual maximums of 748,330,000 scf of natural gas per year and 305,350 gallons of No. 2 fuel oil per year (approximately 11 and 1 percent of the estimated maximum potential annual fuel consumption for natural gas and No. 2 fuel oil, respectively, under the proposed permit modifications). Engines participating in the PLM Program consumed 31,952 gallons of No. 2 fuel oil (approximately 48 percent of the annual fuel consumption under the current NO_x PTE permit conditions).

As discussed above, the operation of the facility's boilers and combustion turbines would be unchanged from current operations and the proposed elimination of the NO_x emission limit for the boilers and increase in the NO_x PTE would not correspond to an increase in actual emissions of GHG. However, while the annual NO_x emissions limit for the PLM engines would remain unchanged, the facility would operate fewer engines and at reduced peak capacities under the proposed permit modifications. Therefore, the actual GHG emissions from the facility's combustion sources were conservatively calculated based on these annual fuel consumption records. Reductions in actual GHG emissions associated with the reduced peak capacities of the PLM engines were estimated by scaling the reported fuel consumption associated with the PLM engines by the decrease in peak generating capacity.

Upstream Emissions

Upstream emissions were projected for the annual fuel consumed on site. Upstream emission factors for natural gas and diesel fuel have been specified by NYSDEC for upstream and out-of-state emission.³ Fuel deliveries may originate from either in-state or out-of-state sources; therefore, portions of the facility's

² EPA. Emission Factors for Greenhouse Gas Inventories. April 1, 2021.

³ NYSDEC. Appendix A of the 2021 Statewide GHG Emission Report. January 2022

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 as out-of-state emissions associated with the production and transport of imported fuel.

GREENHOUSE GAS EMISSIONS

The maximum potential fuel consumption, usage, emission factors, and resulting GHG emissions for the combustion sources under the existing and proposed permit modifications for the Rikers Island facility are presented in **Tables 2** and **3**, respectively. Under the proposed permit modifications, the GHG PTE the Rikers Island facility would increase from approximately 209 to 862 thousand metric tons of CO₂e per year.

Table 2
Current Permitted Annual PTE GHG Emissions from Fuel Consumption

Type	Maximum Potential Annual Usage	Category	Emission Factors			PTE Emissions (metric tons CO ₂ e/year) ⁽¹⁾
			CO ₂	CH ₄	N ₂ O	
Natural Gas	1,922,104,854 scf	Direct ⁽²⁾	53,060 g/MMBtu	1.00 g/MMBtu	0.10 g/MMBtu	104,856
		Upstream ⁽³⁾	12,131 g/MMBtu	357 g/MMBtu	0.140 g/MMBtu	82,649
Natural Gas Total						187,505
Distillate Fuel Oil No. 2	1,556,608 gallons	Direct ⁽²⁾	73,960 g/MMBtu	3.00 g/MMBtu	0.60 g/MMBtu	15,979
		Upstream ⁽³⁾	15,164 g/MMBtu	121 g/MMBtu	0.260 g/MMBtu	4,542
Distillate Fuel Total						21,514
Facility Total						209,019
Notes:						
scf—standard cubic feet						
g—grams						
kg—kilograms						
MWh—megawatt-hour						
MMBtu—million British thermal units						
(1) PTE GHG emissions were calculated assuming the facility's dual-fuel boilers would operate exclusively on Distillate Fuel Oil No. 2.						
(2) Direct emission factors for natural gas and diesel fuel (No. 2 fuel oil) consumption taken from EPA Emission Factors for Greenhouse Gas Inventories for stationary combustion (https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors_apr2021.pdf).						
(3) Upstream emission factors for natural gas and diesel/distillate fuel (No. 2 fuel oil) specified by NYSDEC, <i>Appendix A of the 2021 Statewide GHG Emission Report. January 2022.</i>						

Table 3
Proposed Facility Annual PTE GHG Emissions from Fuel Consumption

Type	Maximum Potential Annual Usage	Category	Emission Factors			PTE Emissions (metric tons CO ₂ e/year) ⁽¹⁾
			CO ₂	CH ₄	N ₂ O	
Natural Gas	1,922,104,854 scf	Direct ⁽²⁾	53,060 g/MMBtu	1.00 g/MMBtu	0.10 g/MMBtu	104,856
		Upstream ⁽³⁾	12,131 g/MMBtu	357 g/MMBtu	0.140 g/MMBtu	82,649
Natural Gas Total						187,505
Distillate Fuel Oil No. 2	48,826,743 gallons	Direct ⁽²⁾	73,960 g/MMBtu	3.00 g/MMBtu	0.60 g/MMBtu	501,234
		Upstream ⁽³⁾	15,164 g/MMBtu	121 g/MMBtu	0.260 g/MMBtu	173,605
Distillate Fuel Total						674,839
Facility Total						862,334
Notes:						
scf—standard cubic feet						

g—grams kg—kilograms MWh—megawatt-hour MMBtu—million British thermal units
(1) PTE GHG emissions were calculated assuming the facility's dual-fuel boilers would operate exclusively on Distillate Fuel Oil No 2.
(2) Direct emission factors for natural gas and diesel fuel (No. 2 fuel oil) consumption taken from EPA Emission Factors for Greenhouse Gas Inventories for stationary combustion (https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors_apr2021.pdf).
(3) Upstream emission factors for natural gas and diesel/distillate fuel (No. 2 fuel oil) specified by NYSDEC, <i>Appendix A of the 2021 Statewide GHG Emission Report. January 2022.</i>

The maximum actual annual fuel consumption, usage, emission factors, and resulting GHG emissions for the combustion sources under the existing and proposed permit modifications for the Rikers Island facility are presented in **Table 4**.

Table 4
Existing & Proposed Facility
Actual Annual GHG Emissions from Fuel Consumption

Type	Annual Usage	Category	Emission Factors			Emissions (metric tons CO ₂ e/year)
			CO ₂	CH ₄	N ₂ O	
Natural Gas	1,427,122,593 scf	Direct ⁽¹⁾	53,060 g/MMBtu	1.00 g/MMBtu	0.10 g/MMBtu	77,854
		Upstream ⁽²⁾	12,131 g/MMBtu	357 g/MMBtu	0.140 g/MMBtu	61,365
Natural Gas Total						139,219
Distillate Fuel Oil No. 2	339,069 gallons	Direct ⁽¹⁾	73,960 g/MMBtu	3.00 g/MMBtu	0.60 g/MMBtu	3,481
		Upstream ⁽²⁾	15,164 g/MMBtu	121 g/MMBtu	0.260 g/MMBtu	1,206
Distillate Fuel Total						4,686
Facility Total						143,905⁽³⁾
Notes:						
scf—standard cubic feet						
g—grams						
kg—kilograms						
MWh—megawatt-hour						
MMBtu—million British thermal units						
(1) Direct emission factors for natural gas and diesel fuel (No. 2 fuel oil) consumption taken from EPA Emission Factors for Greenhouse Gas Inventories for stationary combustion (https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors_apr2021.pdf).						
(2) Upstream emission factors for natural gas and diesel/distillate fuel (No. 2 fuel oil) specified by NYSDEC, <i>Appendix A of the 2021 Statewide GHG Emission Report. January 2022.</i>						
(3) Due to the reduced generating capacity of the diesel-fired internal combustion engines within the PLM Program under the proposed permit modifications, emissions from these engines is expected to be reduced by 276 metric ton CO ₂ e per year.						

As discussed above, the facility would limit the total generation capacity from the diesel-fired internal combustion engines within the PLM Program under the proposed permit modifications. This would reduce the generating capacity from 19,765 kW across the fourteen eligible engines currently being used to a total generating capacity of 5,233 kW for the remaining ten engines—a 73 percent reduction. Therefore, estimated actual GHG emissions associated with operation of the PLM engines at the reduced peak capacities were assumed to be similarly reduced by 73 percent compared to the equipment operating records from 2017 through 2019. This would represent reduction of 276 metric tons per year, and would reduce the annual facility emissions by less than 1 percent.

The facility's electricity consumption would not be affected by the proposed permit modifications; therefore, the facility emissions did not include estimates of emissions the facility's electrical consumption. Electrical demand at the facility is offset by the operation of the cogeneration plant as well as the PLM engines during peak load events. This would minimize demand on the region's electrical power grid and allow for increased reliability across the power grid.

Furthermore, both New York City and New York State have enacted policies to achieve an electric grid that is powered by 100 percent renewable sources. Therefore, emissions associated with the facility's electrical consumption (net of the power generated by the cogeneration plant) would decrease over time as this goal is achieved.

The proposed permit modifications would also increase the facility's PTE for co-pollutants (see **Table 5**). However, as mentioned earlier, the operation of the facility's boilers and combustion turbines would be unchanged from current operations, and modifications to the permit are proposed in order to accurately reflect the current operation of this equipment. The facility's anticipated emissions of co-pollutants based on annual fuel consumption records from 2017 through 2019 by equipment and fuel type are shown in **Table 6**. While the proposed permit modification do not revise the NO_x emission cap associated with the PLM engines, the modifications would lower the peak generating capacity of the engines when used in a PLM program to avoid the potential for air quality impacts to a maximum total of 5,223 kW across ten engines. Subsequently, the emissions of co-pollutants from the PLM engines are anticipated to be reduced by a similar amount (up to 62 percent).

Table 5
Proposed Facility Annual Co-Pollutants PTE (tpy)

Pollutants	Permitted Emission Sources						Facility Total
	U-00001 (Boilers)	U-00002 (Boilers)	U-00003 (Boilers)	U-00009 (Spray Booth)	U-00010 (PLM Engines)	U-00011 (Turbines)	
NO _x	201.8	100.9	100.9	-	22.5	52.0	478.1
CO	137.2	68.6	68.6	-	10.6	59.8	344.7
VOC	9.0	4.5	4.5	2.5	1.2	3.3	25.0
SO ₂	2.6	1.3	1.3	-	3.1	2.6	10.9
PM ₁₀	29.0	14.5	14.5	-	1.3	1.1	60.4
PM _{2.5}	26.0	13.0	13.0	-	1.3	1.1	54.3
Total HAPS	3.07	1.54	1.54	-	0.02	0.31	7.21

Table 6
Proposed Facility Annual Co-Pollutants Actual Emissions (tpy)

Pollutants	Permitted Emission Sources						Facility Total
	U-00001 (Boilers)	U-00002 (Boilers)	U-00003 (Boilers)	U-00009 (Spray Booth)	U-00010 (PLM Engines)	U-00011 (Turbines)	
NO _x	42.9	11.1	9.0	-	6.0	18.5	87.5
CO	28.6	7.2	5.9	-	2.8	21.1	65.7
VOC	1.9	0.5	0.4	2.5	0.3	1.2	6.7
SO ₂	0.2	0.1	<0.1	-	0.8	0.9	2.1
PM ₁₀	2.8	0.8	0.6	-	0.4	0.4	4.9
PM _{2.5}	2.7	0.7	0.6	-	0.4	0.4	4.8
Total HAPS	0.63	0.16	0.13	-	<0.01	0.10	1.02

ALTERNATIVES/MITIGATION

Under the proposed permit modifications, GHG PTE the Rikers Island facility would increase from approximately 209 to 862 thousand metric tons of CO₂e per year. However, the proposed modifications to the Rikers Island Title V would not involve any physical modifications to the existing installed equipment at the facility or the installation of additional equipment. The operation of the facility's boilers and combustion turbines would be unchanged from current operations. Consequently, the increase in the facility's GHG emissions on a PTE basis would not result in increased emissions of GHG on an actual annual basis. Actual conditions under the proposed permit modifications would result in GHG emissions well below the facility's PTE during facility operations. Based on annual fuel consumption reports, the actual CO₂ emissions from the facility are estimated to be approximately 144 thousand metric tons of CO₂e per year—approximately 17 percent of the facility's total PTE, and would be reduced by 276 metric tons per year due the proposed permit modifications for the PLM engines. Similarly, emissions of co-pollutants at the facility would increase on a PTE basis, but would result in reduction of actual emissions due to the proposed permit modifications. In addition, an analysis of co-pollutants emissions was performed and determined there would be no adverse air quality impacts at modeled receptor locations. Nevertheless, potential alternative and mitigation measures were considered to further reduce actual emissions of GHG and co-pollutants from the facility.

Operation of the existing combustion turbines and boilers are necessary in order to provide reliable power supply as well as heating and cooling to the population and buildings on Rikers Island. Due to the isolated nature of the buildings and the physical limitations to power supply infrastructure, the existing combustion turbines and boilers are also critical to provide this power through on-site generation. The combustion turbines and HRSG systems were designed to reduce dependence on both utility power and reduce usage of older boilers at the facility. The system utilizes waste heat for heating and cooling, which allows the facility to operate more efficiently than and reduces the amount of required fuel for steam generation from the facility's boilers. Mitigation measures to reduce GHG emissions associated with these units in the short-term would not be reasonable or practicable to meet the critical heating and power needs of Rikers Island s to construct additional power transmission infrastructure to provide a reliable power supply. However, long-term planning for the Rikers Island facility will likely consider further measures to reduce emissions alongside the City's plan to relocate the Rikers Island population to other DOC facilities.

On-site power generation reduces the electric load that is typically supplied by existing power plants, helping to manage peak electricity usage, particularly during the summer months, where a portion of the power generated during peak periods is from older, more polluting and less efficient fossil fuel power plants. On-site power production also reduces losses that occur when electricity is transmitted and distributed over long distances. Therefore, operation of the combustion turbines and HRSG at the facility ensures reduced reliance on the electrical grid as well the need for additional reliance on steam from the facility's boilers. This results in reduced GHG and co-pollutants emissions compared to the existing electrical grid, and ensures the facility is able to resiliently provide the critical functions that are needed to Rikers Island.

In addition, the facility would reduce peak capacity of the PLM engines under the proposed permit modifications. Under the PLM Program, on-site electrical generation is performed to reduce the peak demand on the electric grid during periods where demand is expected to exceed generation capacity of the electrical grid. The frequency and duration of peak demand events is not dependent on the facility's generation capacity; therefore, the number of hours that the engines would be required to operate under the PLM Program is not anticipated to increase. This is anticipated to result in partial mitigation of GHG emissions and would likely decrease emissions from PLM engines by approximately 73 percent and up to 63 percent of co-pollutant emissions.

The buildings Rikers Island are also subject to the New York City carbon intensity requirements of Local Law 97 (LL97). As City-owned buildings, they are not required to meet the carbon intensity limits by occupancy group, and in place of the carbon intensity limits specified in LL97 the Department of Correction may instead ensure that the specific energy conservation measures (ECMs) are implemented by December 31, 2024, where applicable.

The Department of Correction has already begun implement several of the ECMs at the facility. This includes ensuring that all pipes for heat and hot water services are insulated to prevent heat losses in the system, replacing/repairing all steam traps such that all are in working order, and upgrading lighting fixtures throughout the facility. While work is currently ongoing, approximately 50 percent of all pipes have been insulated, 40 percent of all steam traps have been either replaced or repaired, and 80 percent of inefficient lighting at the facility have been upgraded with LED technology and controls where feasible. Additionally, the facility has upgraded most of their domestic hot water heaters to prevent leakage, and heat loss.

The remaining ECMs specified under LL97 and applicable to the Rikers Island facility requirements under the New York City Building Code and operational constraints includes:

1. Adjusting temperature set points for heat and hot water to reflect appropriate space occupancy and facility requirements;
2. Repairing all heating system leaks;
3. Maintaining the heating system, including but not limited to ensuring that system component parts are clean and in good operating condition;
4. Insulating the steam system condensate tank or water tank;
5. Installing indoor and outdoor heating system sensors and boiler controls to allow for proper set-points;
6. Installing or upgrading steam system master venting at the ends of mains, large horizontal pipes, and tops of risers, vertical pipes branching off a main; and
7. Weatherizing and air sealing where appropriate, including windows and ductwork, with focus on whole-building insulation.

The Department of Correction will continue to implement the ECMs consistent with the requirements under LL97.

CONCLUSIONS

As discussed above, the Rikers Island facility would have a PTE of approximately 862 thousand metric tons of CO₂e per year and estimated actual emissions of approximately 144 thousand metric tons of CO₂e per year. While PTE emissions would increase under the proposed modifications to the existing Title V permit, the actual emissions from the facility would slightly decrease (less than 1 percent) with the inclusion of new limitations on the peak capacity the equipment would be allowed to be run at during operation of the PLM engines.

While there are currently no feasible or practicable measures to further reduce GHG emissions at the Rikers Island facility that would provide reliable heat and power to the Island, the facility has implemented several projects since 1990 in order to reduce GHG emissions and increase energy efficiency. These measures include the elimination of No. 6 fuel oil, installation of an on-site cogeneration plant and improved energy efficiency of the system. Furthermore, by December 31, 2024 the Department of Correction will be required to demonstrate the facility has implemented all applicable ECMs that are specified for City-owned buildings or compliance with New York City's carbon intensity limits for all buildings.

Therefore, the GHG emissions associated with the facility under the proposed permit modifications are consistent with the emission reduction goals of the CLCPA and would not interfere with achieving the Statewide GHG emission limits of the CLCPA.