

# EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

Permit Number 22038

This table lists the maximum allowable emission rates and all sources of air contaminants on the applicant's property covered by this permit. The emission rates shown are those derived from information submitted as part of the application for permit and are the maximum rates allowed for these facilities. Any proposed increase in emission rates may require an application for a modification of the facilities covered by this permit.

## AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates	
			lbs/hour	TPY (4)
CASE I: TURBINE WITH DUCT BURNER FIRED				
CG1	GE Frame 7 Turbine (75 MW) 265-MMBTU/HR Duct burner (6)(7)	NO <sub>x</sub>	89.8	367.0
		CO	85.5	343.8
		SO <sub>2</sub>	7.9	19.5
		PM <sub>10</sub>	12.3	53.9
		VOC	5.2	21.8
		SO <sub>3</sub>	0.3	0.73
CG2	GE Frame 7 Turbine (75 MW) 265-MMBTU/HR Duct burner(6)(7)	NO <sub>x</sub>	89.8	367.0
		CO	85.5	343.8
		SO <sub>2</sub>	7.9	19.5
		PM <sub>10</sub>	12.3	53.9
		VOC	5.2	21.8
		SO <sub>3</sub>	0.3	0.73
FECG	Fugitives (5)	VOC	0.33	1.45

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CASE II: TURBINE ONLY - DUCT BURNER UNFIRED				
CG1	GE frame 7 Turbine (75 MW) 265 MMBTU/HR Duct burner (6)	NO <sub>x</sub>	58.0	227.8
		CO	59.0	227.8
		SO <sub>2</sub>	0.7	2.8
		PM <sub>10</sub>	7.0	30.7
		VOC	2.0	7.9
		SO <sub>3</sub>	0.03	0.1
CG2	GE frame 7 Turbine (75 MW) 265 MMBTU/HR Duct burner (6)	NO <sub>x</sub>	58.0	227.8
		CO	59.0	227.8
		SO <sub>2</sub>	0.7	2.8
		PM <sub>10</sub>	7.0	30.7
		VOC	2.0	7.9
		SO <sub>3</sub>	0.03	0.1
EMISSIONS RELATED TO THE CCU BOILER				
H600	CCU CO Boiler	NO <sub>x</sub>	56.88	124.56
		CO	346.32	1381.92
		SO <sub>2</sub>	593.48	216.62
		PM	66.00	289.08
		VOC	3.20	14.02
		NH <sub>3</sub>	5.25	23.02
FUGCCU	CCU Fugitives (5)	VOC	5.35	23.37
		Benzene	0.02	0.06
		NH <sub>3</sub>	0.01	0.01

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		H <sub>2</sub> S	0.10	0.42
FUGCCUSCR	FCCU SCR Fugitives (5)	NH <sub>3</sub>	0.06	0.25

(1) Emission point identification - either specific equipment designation or emission point number from plot plan.

(2) Specific point source name. For fugitive sources, use area name or fugitive source name.

(3) VOC - volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1

NH<sub>3</sub> - ammonia

NO<sub>x</sub> - total oxides of nitrogen

SO<sub>2</sub> - sulfur dioxide

SO<sub>3</sub> - sulfur trioxide

PM - particulate matter, suspended in the atmosphere, including PM<sub>10</sub>

PM<sub>10</sub> - total particulate matter equal to or less than 10 microns in diameter

CO - carbon monoxide

H<sub>2</sub>S - hydrogen sulfide

(4) Compliance with annual emission limits (tons per year) is based on a 12 month rolling period.

(5) Fugitive emissions are an estimate only and should not be considered as a maximum allowable emission rate.

(6) Maximum hourly emission based on 20°F ambient temperature.

(7) Annual emissions based on 70°F ambient temperature with duct burners in operation.

\* The SO<sub>2</sub> lb/hr emission rates (ERs) are based on 100 percent conversion of .25 grain of hydrogen sulfide (H<sub>2</sub>S) per 100 dscf in the refinery fuel gas to SO<sub>2</sub>. The SO<sub>2</sub> TPY ERs are based on 100 percent conversion of 10 grains of H<sub>2</sub>S per 100 dscf in the refinery fuel gas to SO<sub>2</sub>.

\*\* Emission rates are based on and the facilities are limited by the following maximum operating schedule:

Hrs/day 24 Days/week 7 Weeks/year 52 or Hrs/year 8,760

Date: April 20, 2011