

Appendix B – Emissions Calculations

HAP for which PTE is calculated using heat input capacity and fuel use-based emission factor:
 heat input capacity (MMBtu/hr HHV): 154.5

	AP-42 lb/MMBtu	lb/hr (per engine)	tpy (per engine)
1,3-Butadiene	2.67E-04	4.13E-02	1.81E-01
2,2,4-Trimethylpentane	2.50E-04	3.86E-02	1.69E-01
Acetaldehyde	8.36E-03	1.29E+00	5.66E+00
Acrolein	5.14E-03	7.94E-01	3.48E+00
Benzene	4.40E-04	6.80E-02	2.98E-01
Biphenyl	2.12E-04	3.28E-02	1.43E-01
Ethylbenzene	3.97E-05	6.13E-03	2.69E-02
Formaldehyde	5.28E-02	8.16E+00	3.57E+01
Methanol	2.50E-03	3.86E-01	1.69E+00
Dichloromethane (methylene chloride)	2.00E-05	3.09E-03	1.35E-02
n-Hexane	1.11E-03	1.71E-01	7.51E-01
Naphthalene	7.44E-05	1.15E-02	5.03E-02
Phenol	2.40E-05	3.71E-03	1.62E-02
Tetrachloroethane	2.48E-06	3.83E-04	1.68E-03
Toluene	4.08E-04	6.30E-02	2.76E-01
Vinyl Chloride	1.49E-05	2.30E-03	1.01E-02
Xylene	1.84E-04	2.84E-02	1.25E-01
Formaldehyde (considering VOC limit)		4.49E+00	1.97E+01

PSD pollutants for which PTE is calculated using heat input capacity and fuel use-based emission factor:
 heat input capacity (MMBtu/hr HHV): 154.5

	lb/MMBtu	lb/hr (per engine)	tpy (per engine)
SO2	2.1E-03	3.2E-01	1.4E+00
sulfuric acid mist	3.2E-04	5.0E-02	2.2E-01
PM	7.71E-05	1.19E-02	5.22E-02

PSD pollutants for which PTE is calculated using vendor-specified rate during startup periods and BACT limit during non-startup periods:

	30-min startup (lb/event)	non-startup (lb/hr)	max lb/hr (per engine)	tpy (per engine)
PM10/PM2.5	3.0	2.50	4.3	11.4
CO	16.0	4.43	18.2	30.0
VOC	7.9	4.49	10.1	22.8

PSD pollutant for which PTE is calculated using NSPS limit and emission cap:
 mechanical output capacity (hp): 26,820

	NSPS g/hphr	lb/hr (per engine)	tpy (per engine)
NOx	1.0E+00	5.91E+01	1.79E+02

PSD pollutant for which RICE PTE is calculated using heat input capacity, fuel use-based emission factors, and GWP:
 heat input capacity (MMBtu/hr HHV): 154.5

	40 CFR 98 kg/MMBtu	mass lb/hr (per engine)	mass tpy (per engine)
CO2	53.02	1.81E+04	7.91E+04
CH4	1.0E-03	3.41E-01	1.49E+00
N2O	1.0E-04	3.41E-02	1.49E-01
mass total GHG		1.81E+04	7.91E+04

	mass lb/hr (per engine)	40 CFR 98 GWP	CO2e lb/hr (per engine)	CO2e tpy (per engine)
CO2	18,059	1	1.81E+04	7.91E+04
CH4	3.4E-01	25	8.52E+00	3.73E+01
N2O	3.4E-02	298	1.02E+01	4.45E+01
CO2e total GHG			1.81E+04	7.92E+04

GHG from NG piping leaks:

	Components	Protocol kg/hr/component	mass CH4 lb/hr	mass CH4 tpy
valves in gas/vapor service	60	2.68E-02	3.55E+00	1.55E+01
flanges/connectors	150	2.5E-04	8.27E-02	3.62E-01
pressure relief valves	10	1.6E-01	3.53E+00	1.54E+01
mass total GHG			7.16E+00	3.13E+01

	mass CH4 lb/hr	40 CFR 98 GWP	CO2e lb/hr	CO2e tpy
all component types	7.16E+00	25	1.79E+02	7.83E+02
CO2e total GHG			1.79E+02	7.83E+02

GHG from circuit breakers:

	Circuit Breakers	lbs SF6 per circuit breaker	SF6 leak rate (% per year)	mass SF6 tpy
circuit breakers	8	65	0.5%	1.30E-03
mass total GHG				1.30E-03

	mass SF6 tpy	40 CFR 98 GWP		CO2e tpy
circuit breakers	1.30E-03	22,800		2.96E+01
CO2e total GHG				2.96E+01

PSD pollutants total:

	tpy
SO2	14.2
sulfuric acid mist	2.2
PM	0.5
PM10/PM2.5	114.1
CO	299.6
VOC	227.8
NOx	179.0
mass total GHG	791,048
CO2e total GHG	792,631