



**Facility Emissions Analysis - Potential**

**Sandia Resort and Casino  
30 Rainbow Road NE  
Albuquerque, NM 87113-2156**

Source	Make	Model	Size (hp)	Size (kW)	Fuel	Fuel Use (gph or scfh)	Heat Input (mmBtu/hr)	Emissions (lb/hr)								Hours	Potential Emissions (tpy)																
								NOx	CO	SO2	PM	PM2.5	PM10	VOC	Pb		NOx	CO	SO2	PM	PM2.5	PM10	VOC	Pb	Fluorides	H2SO4	H2S	TRS					
Generator #1	Detroit Diesel	DDC 16V-4000	2935	2190	Diesel	133.2	17.98	44.65	55.00	0.03	2.59	2.59	2.59	6.28	0	8760	195.55	240.90	1.19E-01	11.34	11.34	11.34	27.49	0	0	0	0	0	0	0	0	0	
Generator #2	Detroit Diesel	DDC 16V-4000	2935	2190	Diesel	133.2	17.98	44.65	55.00	0.03	2.59	2.59	2.59	6.28	0	8760	195.55	240.90	1.19E-01	11.34	11.34	11.34	27.49	0	0	0	0	0	0	0	0	0	
Generator #3	Detroit Diesel	MTV 1000	1676	1250	Diesel	100.0	13.50	40.22	9.22	0.02	1.17	1.17	1.17	1.18	0	8760	176.18	40.37	8.96E-02	5.14	5.14	5.14	5.18	0	0	0	0	0	0	0	0	0	
Generator #4 (NEW)	Caterpillar	C175-20	5646	4000	Diesel	274.6	37.07	83.52	7.98	0.06	0.69	0.69	0.69	0.78	0	8760	365.82	34.95	2.46E-01	3.02	3.02	3.02	3.42	0	0	0	0	0	0	0	0	0	
Generator #5 (NEW)	Caterpillar	C175-20	5646	4000	Diesel	274.6	37.07	83.52	7.98	0.06	0.69	0.69	0.69	0.78	0	8760	365.82	34.95	2.46E-01	3.02	3.02	3.02	3.42	0	0	0	0	0	0	0	0	0	
Boiler #1					Natural Gas	2029.4	2.07	0.20	0.17	1.22E-03	1.54E-02	1.54E-02	1.54E-02	1.12E-02	1.01E-06	8760	0.89	0.75	5.33E-03	0.07	0.07	0.07	0.05	4.44E-06	0	0	0	0	0	0	0	0	
Boiler #2					Natural Gas	2029.4	2.07	0.20	0.17	1.22E-03	1.54E-02	1.54E-02	1.54E-02	1.12E-02	1.01E-06	8760	0.89	0.75	5.33E-03	0.07	0.07	0.07	0.05	4.44E-06	0	0	0	0	0	0	0	0	0
Boiler #3					Natural Gas	2029.4	2.07	0.20	0.17	1.22E-03	1.54E-02	1.54E-02	1.54E-02	1.12E-02	1.01E-06	8760	0.89	0.75	5.33E-03	0.07	0.07	0.07	0.05	4.44E-06	0	0	0	0	0	0	0	0	0
Boiler #4					Natural Gas	2029.4	2.07	0.20	0.17	1.22E-03	1.54E-02	1.54E-02	1.54E-02	1.12E-02	1.01E-06	8760	0.89	0.75	5.33E-03	0.07	0.07	0.07	0.05	4.44E-06	0	0	0	0	0	0	0	0	0
Boiler #5					Natural Gas	2029.4	2.07	0.20	0.17	1.22E-03	1.54E-02	1.54E-02	1.54E-02	1.12E-02	1.01E-06	8760	0.89	0.75	5.33E-03	0.07	0.07	0.07	0.05	4.44E-06	0	0	0	0	0	0	0	0	0
Boiler #6					Natural Gas	2029.4	2.07	0.20	0.17	1.22E-03	1.54E-02	1.54E-02	1.54E-02	1.12E-02	1.01E-06	8760	0.89	0.75	5.33E-03	0.07	0.07	0.07	0.05	4.44E-06	0	0	0	0	0	0	0	0	0
Boiler #7					Natural Gas	2029.4	2.07	0.20	0.17	1.22E-03	1.54E-02	1.54E-02	1.54E-02	1.12E-02	1.01E-06	8760	0.89	0.75	5.33E-03	0.07	0.07	0.07	0.05	4.44E-06	0	0	0	0	0	0	0	0	0
Boiler #8					Natural Gas	2029.4	2.07	0.20	0.17	1.22E-03	1.54E-02	1.54E-02	1.54E-02	1.12E-02	1.01E-06	8760	0.89	0.75	5.33E-03	0.07	0.07	0.07	0.05	4.44E-06	0	0	0	0	0	0	0	0	0
Boiler #9					Natural Gas	2029.4	2.07	0.20	0.17	1.22E-03	1.54E-02	1.54E-02	1.54E-02	1.12E-02	1.01E-06	8760	0.89	0.75	5.33E-03	0.07	0.07	0.07	0.05	4.44E-06	0	0	0	0	0	0	0	0	0
Boiler #10					Natural Gas	2029.4	2.07	0.20	0.17	1.22E-03	1.54E-02	1.54E-02	1.54E-02	1.12E-02	1.01E-06	8760	0.89	0.75	5.33E-03	0.07	0.07	0.07	0.05	4.44E-06	0	0	0	0	0	0	0	0	0
Boiler #11					Natural Gas	2029.4	2.07	0.20	0.17	1.22E-03	1.54E-02	1.54E-02	1.54E-02	1.12E-02	1.01E-06	8760	0.89	0.75	5.33E-03	0.07	0.07	0.07	0.05	4.44E-06	0	0	0	0	0	0	0	0	0
Boiler #12					Natural Gas	2029.4	2.07	0.20	0.17	1.22E-03	1.54E-02	1.54E-02	1.54E-02	1.12E-02	1.01E-06	8760	0.89	0.75	5.33E-03	0.07	0.07	0.07	0.05	4.44E-06	0	0	0	0	0	0	0	0	0
Boiler #13					Natural Gas	2029.4	2.07	0.20	0.17	1.22E-03	1.54E-02	1.54E-02	1.54E-02	1.12E-02	1.01E-06	8760	0.89	0.75	5.33E-03	0.07	0.07	0.07	0.05	4.44E-06	0	0	0	0	0	0	0	0	0
Boiler #14					Natural Gas	970.6	0.99	0.10	0.08	5.82E-04	1.54E-02	1.54E-02	1.54E-02	5.34E-03	4.85E-07	8760	0.43	0.36	2.55E-03	0.07	0.07	0.07	0.02	2.13E-06	0	0	0	0	0	0	0	0	
Boiler #15					Natural Gas	970.6	0.99	0.10	0.08	5.82E-04	1.54E-02	1.54E-02	1.54E-02	5.34E-03	4.85E-07	8760	0.43	0.36	2.55E-03	0.07	0.07	0.07	0.02	2.13E-06	0	0	0	0	0	0	0	0	0
Boiler #16					Natural Gas	970.6	0.99	0.10	0.08	5.82E-04	1.54E-02	1.54E-02	1.54E-02	5.34E-03	4.85E-07	8760	0.43	0.36	2.55E-03	0.07	0.07	0.07	0.02	2.13E-06	0	0	0	0	0	0	0	0	0
Boiler #17					Natural Gas	970.6	0.99	0.10	0.08	5.82E-04	1.54E-02	1.54E-02	1.54E-02	5.34E-03	4.85E-07	8760	0.43	0.36	2.55E-03	0.07	0.07	0.07	0.02	2.13E-06	0	0	0	0	0	0	0	0	0
TOTAL																1312.18	603.22	0.90	35.00	35.00	35.00	67.72	6.63E-05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

Notes:  
Fuel Use for Generators #1 and 2 from manufacturer's data sheet. Fuel Use for Generator #3 estimated as 0.08\*kW. Estimated Heat Input = gal/hr \* 135,000 Btu/gal  
Engine rating conservatively assumes 100% load.

Emission Factors:

Emergency Generators	Generators #1-2 Source: Manufacturer Detroit Diesel DDC 16V4000 T1637K36-G80	Generator #3 Source: EPA AP-42, Fifth Edition, October, 1996	Generators #4 and 5 Source: Manufacturer Caterpillar C175-20
	g/hp-hr	Diesel > 600 hp	lb/hp-hr
NOx	6.9		0.024
VOC	0.97		7.05E-04
CO	8.5		5.50E-03
PM, PM2.5, PM10	0.4		0.0007
		lb/mmBtu	
		SOx	0.001515 Assumes 0.0015% sulfur
		Pb	0
		Flourides	0
		H2SO4	0
		H2S	0
		TRS	0

Boilers  
Source: EPA AP-42, Fifth Edition, October, 1996, Tables 1.4-1 and 1.4-2 for Small Boilers (< 100 mmBtu/hr)

	lb/10^6 scf
NOx	100
VOC	5.5
CO	84
PM, PM2.5, PM10	7.6
SOx	0.6
Pb	0.0005
Flourides	0
H2SO4	0
H2S	0
TRS	0

**Hazardous Air Pollutant (HAP) Analysis for One Engine**  
Source: EPA AP-42, Tables 3.4-3 and 3.4-4, Engines > 600 hp

	PTE (8,760 hours)		
	lb/mmBtu	lb/hr	lbs
Benzene	7.76E-04	1.40E-02	122.2
Toluene	2.81E-04	5.05E-03	44.3
Xylenes	1.93E-04	3.47E-03	30.4
Propylene	2.79E-03	5.02E-02	439.5
Formaldehyde	7.89E-05	1.42E-03	12.4
Acetaldehyde	2.52E-05	4.53E-04	4.0
Acrolein	7.88E-06	1.42E-04	1.2
Total PAH	2.12E-04	3.81E-03	33.4

**Facility Emissions Analysis - Greenhouse Gas Emissions**

**Sandia Resort and Casino  
30 Rainbow Road NE  
Albuquerque, NM 87113-2156**

Source	Make	Model	Size (kW)	Size (bhp)	Fuel	Fuel Use (gph or scfh)	Heat Input (mmBtu/hr)	Hours	CO2	CH4	N2O	HFCs PFCs SF6 (metric tons)			CO2e
Generator #1	Detroit Diesel	DDC 16V-4000	2935	2190	Diesel	133.2	17.98	500	679.75	0.03	0.01	0.00	0.00	0.00	682.04
Generator #2	Detroit Diesel	DDC 16V-4000	2935	2190	Diesel	133.2	17.98	500	679.75	0.03	0.01	0.00	0.00	0.00	682.04
Generator #3	Detroit Diesel	MTV 1000	1250	1676	Diesel	134.1	18.10	500	684.24	0.03	0.01	0.00	0.00	0.00	686.55
Generator #4 (NEW)	Caterpillar	C175-20	5646	4000	Diesel	274.6	37.07	500	1401.35	0.06	0.01	0.00	0.00	0.00	1406.07
Generator #5 (NEW)	Caterpillar	C175-20	5646	4000	Diesel	274.6	37.07	500	1401.35	0.06	0.01	0.00	0.00	0.00	1406.07
Boiler #1					Natural Gas	2029.4	2.07	8760	968.96	0.02	0.00	0.00	0.00	0.00	969.91
Boiler #2					Natural Gas	2029.4	2.07	8760	968.96	0.02	0.00	0.00	0.00	0.00	969.91
Boiler #3					Natural Gas	2029.4	2.07	8760	968.96	0.02	0.00	0.00	0.00	0.00	969.91
Boiler #4					Natural Gas	2029.4	2.07	8760	968.96	0.02	0.00	0.00	0.00	0.00	969.91
Boiler #5					Natural Gas	2029.4	2.07	8760	968.96	0.02	0.00	0.00	0.00	0.00	969.91
Boiler #6					Natural Gas	2029.4	2.07	8760	968.96	0.02	0.00	0.00	0.00	0.00	969.91
Boiler #7					Natural Gas	2029.4	2.07	8760	968.96	0.02	0.00	0.00	0.00	0.00	969.91
Boiler #8					Natural Gas	2029.4	2.07	8760	968.96	0.02	0.00	0.00	0.00	0.00	969.91
Boiler #9					Natural Gas	2029.4	2.07	8760	968.96	0.02	0.00	0.00	0.00	0.00	969.91
Boiler #10					Natural Gas	2029.4	2.07	8760	968.96	0.02	0.00	0.00	0.00	0.00	969.91
Boiler #11					Natural Gas	2029.4	2.07	8760	968.96	0.02	0.00	0.00	0.00	0.00	969.91
Boiler #12					Natural Gas	2029.4	2.07	8760	968.96	0.02	0.00	0.00	0.00	0.00	969.91
Boiler #13					Natural Gas	2029.4	2.07	8760	968.96	0.02	0.00	0.00	0.00	0.00	969.91
Boiler #14					Natural Gas	970.6	0.99	8760	463.42	0.01	0.00	0.00	0.00	0.00	463.87
Boiler #15					Natural Gas	970.6	0.99	8760	463.42	0.01	0.00	0.00	0.00	0.00	463.87
Boiler #16					Natural Gas	970.6	0.99	8760	463.42	0.01	0.00	0.00	0.00	0.00	463.87
Boiler #17					Natural Gas	970.6	0.99	8760	463.42	0.01	0.00	0.00	0.00	0.00	463.87
TOTAL									19296.63	0.47	0.07	0.00	0.00	0.00	19327.12

**Operating and Firing Rates**

**Sandia Resort and Casino  
30 Rainbow Road NE  
Albuquerque, NM 87113-2156**

Source	Make	Model	Size (kW)	Size (bhp)	Fuel Type	Fuel %S	Fuel Use (gph or scfh)	Heat Input (mmBtu/hr)	Proposed Operating Schedule			Operating Rates (Hours)			Max Firing Rates (gals or scf)		
									Daily (Hrs)	Hrs/Week	Weeks/Yr	Hourly	Daily	Annual	Hourly	Daily	Annual
Generator #1	Detroit Diesel	DDC 16V-4000	2935	2190	Diesel	0.0015	133.2	17.98	24	168	52	1	24	500	133.2	3,196.8	66,600.0
Generator #2	Detroit Diesel	DDC 16V-4000	2935	2190	Diesel	0.0015	133.2	17.98	24	168	52	1	24	500	133.2	3,196.8	66,600.0
Generator #3	Detroit Diesel	MTV 1000	1676	1250	Diesel	0.0015	100.0	13.50	24	168	52	1	24	500	100.0	2,400.6	50,011.8
Generator #4 (NEW)	Caterpillar	C175-20	5646	4000	Diesel	0.0015	274.6	37.07	24	168	52	1	24	500	274.6	6,590.4	137,300.0
Generator #5 (NEW)	Caterpillar	C175-20	5646	4000	Diesel	0.0015	274.6	37.07	24	168	52	1	24	500	274.6	6,590.4	137,300.0
Boiler #1					Natural Gas		2029.4	2.1	24	168	52	1	24	8760	2,029.4	48,705.9	17,777,647.1
Boiler #2					Natural Gas		2029.4	2.1	24	168	52	1	24	8760	2,029.4	48,705.9	17,777,647.1
Boiler #3					Natural Gas		2029.4	2.1	24	168	52	1	24	8760	2,029.4	48,705.9	17,777,647.1
Boiler #4					Natural Gas		2029.4	2.1	24	168	52	1	24	8760	2,029.4	48,705.9	17,777,647.1
Boiler #5					Natural Gas		2029.4	2.1	24	168	52	1	24	8760	2,029.4	48,705.9	17,777,647.1
Boiler #6					Natural Gas		2029.4	2.1	24	168	52	1	24	8760	2,029.4	48,705.9	17,777,647.1
Boiler #7					Natural Gas		2029.4	2.1	24	168	52	1	24	8760	2,029.4	48,705.9	17,777,647.1
Boiler #8					Natural Gas		2029.4	2.1	24	168	52	1	24	8760	2,029.4	48,705.9	17,777,647.1
Boiler #9					Natural Gas		2029.4	2.1	24	168	52	1	24	8760	2,029.4	48,705.9	17,777,647.1
Boiler #10					Natural Gas		2029.4	2.1	24	168	52	1	24	8760	2,029.4	48,705.9	17,777,647.1
Boiler #11					Natural Gas		2029.4	2.1	24	168	52	1	24	8760	2,029.4	48,705.9	17,777,647.1
Boiler #12					Natural Gas		2029.4	2.1	24	168	52	1	24	8760	2,029.4	48,705.9	17,777,647.1
Boiler #13					Natural Gas		2029.4	2.1	24	168	52	1	24	8760	2,029.4	48,705.9	17,777,647.1
Boiler #14					Natural Gas		970.6	1.0	24	168	52	1	24	8760	970.6	23,294.1	8,502,352.9
Boiler #15					Natural Gas		970.6	1.0	24	168	52	1	24	8760	970.6	23,294.1	8,502,352.9
Boiler #16					Natural Gas		970.6	1.0	24	168	52	1	24	8760	970.6	23,294.1	8,502,352.9
Boiler #17					Natural Gas		970.6	1.0	24	168	52	1	24	8760	970.6	23,294.1	8,502,352.9

Total Diesel (gals) 457,811.8  
Total Natural Gas (scf) 265,118,823.5