

Summary of Project Emissions - Greenhouse Gas

Construction

	CO2	CH4	N2O	CO2e
	tonne			
Without APM	1823.8	0.2	0.0	1840.7
With APM	1732.7	0.2	0.0	1748.7

Note

Consistent with the BAAQMD CEQA Air Quality Guidelines updated May 2012, the measures associated with minimizing vehicle idling time and maintaining equipment are assumed to reduce emissions 5%.

Operations and Maintenance

	SF ₆	CO ₂ e
	tonne/year	
Without APM	0.0016	36.19
With APM	0.0008	18.10

Helicopter Emissions Calculations - Greenhouse Gas

Activity	Qty.	Equip.	Mode	Days/ Week	Hours/ Day	Duration (weeks)	Power (hp)	Fuel Consumption (gal/hr)	Emission Factors (kg/gallon)			Emissions total (metric tons)			
									CO2	N2O	CH4	CO2	N2O	CH4	CO2e
Pole Installation	2	light duty - Hughes 500	LTO	7	0.68	17	317	5.4	9.57	3E-04	3E-04	8.2	0.0	0.0	8.3
Pole Installation	2	light duty - Hughes 500	Operation	7	9.33	17	317	32.4	9.57	3E-04	3E-04	687.9	0.0	0.0	695.3
Pole Installation	1	heavy duty - Bell 214B	LTO	7	0.68	9	1850	12.9	9.57	3E-04	3E-04	5.3	0.0	0.0	5.3
Pole Installation	1	heavy duty - Bell 214B	Operation	7	9.33	9	1850	91.0	9.57	3E-04	3E-04	511.3	0.0	0.0	516.8
Total												1212.8	0.0	0.0	1225.8

Notes

Density of fuel from *ExxonMobil Aviation World Jet Fuel Specifications, 2005 Edition*

$$775-840 \text{ kg/m}^3 = 6.47 - 7.01 \text{ lb/gallon}$$

Fuel usage data obtained from the *FOCA Guidance on Determination of Helicopter Emissions, Edition 1, March 2009*

Fuel usage for Bell 214B (single engine @ 1,850 shp) was derived from the Bell 412 (twin engines @ 1,800 shp each)

Emission factors obtained from *California Climate Action Registry General Reporting Protocol, Version 3.1, January 2009*

Each day of 10-hour helicopter operations assumes 3 LTOs at 13/5 minutes each. The remaining time is assumed to be operational (no idle time has been assumed).

LTO = Landing and take-off cycle

SF₆-Insulated Breaker Emissions - Greenhouse Gas

Emission Scenario	Qty.	Equipment	SF6 Capacity (lbs/breaker)	Leak Rate	Emissions (metric tons/year)	
					SF6	CO2e
Without APM GHG-2	2	Circuit Breaker	175	1.0%	0.0016	36.2
With APM GHG-2	2	Circuit Breaker	175	0.5%	0.0008	18.1

Notes:

Circuit breakers were conservatively assumed to contain 175 pounds of SF6 consistent with the PG&E: Embarcadero-Potrero 230 KV Transmission Line Project PEA. The Global Warming Potential of SF6 is 22,800 (CFR Title 40 Part 98 Subpart A)