

Pacific Gas and Electric

Missouri Flat-Gold Hill 115 kV Power Line Reconductoring Project

Response to Data Request No.1

Below are responses to Data Request No.1 submitted by the California Public Utilities Commission (“CPUC”) dated December 6, 2013, regarding the Proponent’s Environmental Assessment (“PEA”) prepared for the Missouri Flat-Gold Hill 115 kV Power Line Reconductoring Project (the “project”). Each CPUC data request is organized by PEA Chapter, set forth in italics and followed by PG&E’s response.

This document includes the following attachments, which are described in more detail in the text below under the applicable response.

Attachment A: Revised AQ-GHG Worksheets
Attachment B: Revised PEA Construction Emissions Summary Tables
Attachment C: KMZ and GIS Data for Key Observation Points (Electronic Submittal)

I. Chapter 3: Environmental Setting and Impact Assessment Summary

3.3 Air Quality

- 1. The supporting data does not include sufficient detail necessary to conduct a meaningful review of the off-road equipment emissions estimates. For each construction phase, identify: number of crews, the types and quantity of construction equipment, hp engine rating for each type of construction equipment, and maximum hours of operation per day for each piece of equipment.*

PG&E Response: The assumptions used to estimate construction workers and haul trucks by phase were included in the AQ-GHG worksheets provided as supplemental materials with the PTC application on August 13, 2013, on PDF pages 49 and 50 of 52 for SMAQMD and EDCAQMD, respectively. These assumptions are also included, as they originally appeared, on pages 61 and 62 of Attachment A (Revised AQ-GHG Worksheets).

With regard to the requested construction equipment information (i.e., types and numbers of construction equipment, daily hours of operation, horsepower, and load factor) by construction phase, the applicable data sheets have been revised to show this information. The revisions to the data sheets, at pages 1–3, 20–22, 31–33, and 48–50 in Attachment A, do not change the emissions conclusions included in the PEA.

2. *It appears that the “grading” phase emissions within both SMAQMD and EDCAQMD include no off-road equipment emissions. Clarify what off-road equipment would be required during this phase and revise emissions estimates accordingly.*

PG&E Response: Off-road construction equipment emissions have been added to both SMAQMD and EDCAQMD construction emission estimates. The corrected data sheets are included on pages 61 and 62 in Attachment A. Although this correction results in an increase in construction-related emissions in both SMAQMD and EDCAQMD, the construction emissions anticipated for the project in both jurisdictions would remain less than the applicable thresholds of significance.

Revised PEA Tables 3.3-5 and 3.3-6, which identify construction-related air quality emissions occurring in EDCAQMD and SMAQMD’s jurisdictions, respectively, are provided in Attachment B (Revised Construction Emissions Summary Tables). As indicated above, the increase in construction emissions resulting from the corrections described above would not exceed the applicable thresholds of significance in either SMAQMD or EDCAQMD jurisdictions.¹ Accordingly, the PEA analysis and conclusions are correct and no further changes would be necessary to reflect these revisions to the construction emissions summary tables.

The correction described above also affects greenhouse gas (GHG) emissions identified in PEA Table 3.7-2. The updated GHG emissions table is also included in Attachment B. Similar to air quality, the increase in total construction GHG emissions (i.e., 11%) would not exceed the applicable thresholds of significance. Accordingly, the PEA analysis and conclusions are correct and no changes would be necessary to reflect the slight emissions correction.

3. *Helicopter emission estimates appear to be underestimated. For example, the estimates indicate that maximum helicopter emissions would be 0.003 pounds per day, but the emissions factor table indicates that the helicopter estimates use an emission factor for NOx of 0.74 kg/hr (1.6 lb/hr), which is for helicopters with an average engine rating of 486 hp. Also, confirm that a helicopter with this hp rating (i.e., 486 hp) would be strong enough to lift the steel lattice tower pieces. For the review of a recent project (i.e., Hollister Reconductoring MND), PG&E indicated that such activities would require a helicopter one with a 2,050 hp engine.*

PG&E Response: Helicopter emissions were presented in units of tons per day, but mislabeled as pounds per day. This error has been corrected and the correct emissions calculations are provided on page 61 in Attachment A and in the revised construction emissions summary tables in Attachment B. Although the change in helicopter emissions results in an increase in construction-related air quality emissions in SMAQMD, emissions would remain less than significant.² No other PEA analysis, conclusions, or text changes are required as a result of the revisions to the construction emissions summary tables.

The Hollister 115 kV Power Line Reconductoring Project required much more substantial helicopter-supported construction operations to complete installations of several towers by helicopter. By contrast, helicopter-supported construction operations for the Missouri Flat-Gold Hill 115 kV Power Line Reconductoring Project include only modifications to one tower to avoid impacts to a pond. Consequently, because of the limited nature of the helicopter-aided tower modification work for the project, the actual helicopter to be used is not anticipated to be larger than a Bell L3 (long ranger/486 hp) with a load capacity of approximately 1,200 pounds, as indicated in the PEA at p.2-21.

¹ As Attachment B indicates, this conclusion remains true when these corrections are added to the correction in helicopter calculations described further in Response 3.

² See footnote 1.

4. *What would be the maximum hours of operation for the helicopter, and at what airport would the helicopter be stationed? The emission estimates indicate that the helicopter emissions would occur in Sacramento County, but on the recent site visit for the project, PG&E confirmed that the helicopter landing zone would be located in El Dorado County.*

PG&E Response: The maximum total hours of operation for the helicopter would be 20, as indicated in the PEA. The helicopter likely would be stationed at either Cameron Airpark, a public-use airport located in Cameron Park, El Dorado County, approximately six miles northeast of the proposed tower modification, or at Sacramento Mather Airport, a public-use airport located approximately 12 miles southwest of the proposed tower modification.

As stated in the PEA (see PEA, Chapter 2, Section 2.8.2.1, p. 2-20), the tower that would be modified is located approximately 800 feet northwest of the intersection of Broadstone Parkway and Empire Ranch Road in the City of Folsom in Sacramento County. To accommodate use of a helicopter, two helicopter landing zones have been preliminarily identified—one approximately 560 feet southeast of the intersection of Montridge Way and Wilson Boulevard in an undeveloped area of El Dorado County (approximately 0.7 mile east the proposed tower modification) and one on Buljan Court where the paved road terminates in the City of Folsom in Sacramento County (approximately 0.2 mile north of proposed tower modification).

The PEA assumed a total of 20 hours of helicopter operations (5 days of operation, 4 hours of operation per day, and 2 landings/take offs [LTOs] per day). However, to provide additional information for this data request as well as additional construction flexibility, PG&E has modeled maximum estimates of 25 hours of helicopter operations (5 days of operation, 5 hours of operation per day, and 4 LTOs per day) and 30 hours of helicopter operations (5 days of operation, 6 hours of operation per day, and 4 LTOs per day). As discussed in Attachment B and presented in pages 65–67 in Attachment A, even with these increased operational activities, air quality emissions within EDCAQMD and SMAQMD would remain less than significant. These operational quantities account for trips between the helicopter landing zone and the tower modification work area, and for trips between the work area and the airport where the helicopter would be stationed.

With regard to the location of emissions, PG&E has identified two potential airports where the helicopter could be stationed: Mather Field (Sacramento County) and Cameron Airpark (El Dorado County). The helicopter cannot stay at the LZ near the tower work site overnight, so it must travel from the airport at the beginning of each workday and return to the airport at the end of each workday. The PEA analyzed potential use of the Sacramento County and El Dorado County Airports and concluded that the project would not exceed SMAQMD and EDCAQMD thresholds of significance, respectively. However, in order to account for the worst-case scenario where both the airport and LZ are located in El Dorado County, which is where a large majority of the proposed project's other construction components are occurring, the analysis has been revised to assume all LTOs occur within El Dorado County. This would capture the worst-case construction day scenario in EDCAQMD. As noted in Attachment B, the total emissions from the additional LTOs added to the worst-case construction day activities would not exceed any EDCAQMD thresholds of significance. Conversely, if all LTOs were to occur in Sacramento County instead, daily construction emissions also would not exceed SMAQMD's threshold of significance. Because the tower that requires helicopter operations would be located in Sacramento County, helicopter operational emissions were assumed to occur within Sacramento County. Even if the stationing airport and LZ are located in El Dorado County, only a nominal portion of the helicopters operational time would occur in El Dorado County, while the vast majority would occur in Sacramento County for construction activities.

3.1 Aesthetics

5. *In order to adequately evaluate potential visual impacts to the public, we have identified three KOPs for which we are requesting additional visual simulations: 1) KOP 5-Christa McAuliffe*

Park, 2) KOP 8-Creekside Greens Park, and 3) KOP 17-Kemp Community Park. Provide GIS data for these KOPs.

PG&E Response: As indicated during a conference call between CPUC and PG&E staff on December 19, 2013, the maximum anticipated pole height increase at the three locations identified above would be no more than ten feet. Accordingly, CPUC staff and consultants agreed that only one new visual simulation for KOP 5, *Christa McAuliffe Park* would be necessary to respond to this question. The visual simulation for KOP 5 is in progress and will be prepared and submitted separately later this month.

6. *Regarding the existing visual simulations provided in the PEA, do any of these depict the maximum proposed change in height between existing vs. proposed wood poles? If not, provide simulations depicting the maximum potential pole height proposed.*

PG&E Response: As discussed during a conference call between CPUC and PG&E staff on December 19, 2013, the existing visual simulations provided in the PEA present a conservative estimate of the anticipated structural height increases that would occur with project implementation at each location. Accordingly, the PEA simulations currently provide the maximum anticipated pole height proposed at each location.

7. *Provide GIS data regarding KOPs.*

PG&E Response: KMZ and GIS data for all KOPs shown on PEA Figure 3.1-1: Regional Landscape Context, Landscape Units, and Key Observation Points, are included as Attachment C in the electronic submittal of this Response to Data Request No.1. The data include the location of KOP 5, *Christa McAuliffe Park*, which is the location of the additional requested visual simulation identified under data request 5 above.

tblProjectCharacteristics

ProjectName	LocationScope	EMFAC_ID	WindSpeed	PrecipitationFrequency	ClimateZone	UrbanizationLevel	OperationalYear
MF-GH EDCAPCD (New PD Construction)	AD	EDCAPCD	2.7		70	2 Urban	2015

tblConstructionPhase

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays
1	Dist Undergrd Grading	Grading	2015/01/01	2015/02/05	5	26
2	Distribution Underground	Building Construction	2015/01/01	2015/01/19	5	13
3	Wood Poles at Substation	Building Construction	2015/01/01	2015/01/09	5	7
4	Micropiles	Building Construction	2015/01/01	2015/02/13	5	32
5	Interset Poles	Building Construction	2015/01/01	2015/01/15	5	11

tblOffRoadEquipment

PhaseName	OffRoadEquipmentType	OffRoadEquipmentUnitAmount	UsageHours	HorsePower	LoadFactor
Dist Undergrd Grading	Concrete/Industrial Saws	1	8	81	0.73
Dist Undergrd Grading	Off-Highway Trucks	1	1	381	0.38
Dist Undergrd Grading	Rubber Tired Dozers	1	1	358	0.59
Dist Undergrd Grading	Tractors/Loaders/Backhoes	3	8	75	0.37
Distribution Underground	Concrete/Industrial Saws	2	4	81	0.49
Distribution Underground	Cranes	1	4	208	0.43
Distribution Underground	Forklifts	2	6	149	0.3
Distribution Underground	Other Material Handling Equipment	1	8	196	0.4
Distribution Underground	Tractors/Loaders/Backhoes	2	4	75	0.37
Wood Poles at Substation	Bore/Drill Rigs	1	4	82	0.5
Wood Poles at Substation	Cranes	1	4	208	0.29
Wood Poles at Substation	Forklifts	2	6	149	0.3
Wood Poles at Substation	Other Material Handling Equipment	1	8	196	0.4
Wood Poles at Substation	Tractors/Loaders/Backhoes	2	8	75	0.55
Micropiles	Bore/Drill Rigs	2	4	82	0.5
Micropiles	Cement and Mortar Mixers	2	6	9	0.38
Micropiles	Cranes	1	4	208	0.43
Micropiles	Forklifts	2	6	149	0.3
Micropiles	Tractors/Loaders/Backhoes	1	4	75	0.37
Intersect Poles	Bore/Drill Rigs	1	4	82	0.5
Intersect Poles	Cranes	1	4	208	0.28
Intersect Poles	Forklifts	2	6	149	0.3
Intersect Poles	Other Material Handling Equipment	1	8	196	0.4
Intersect Poles	Tractors/Loaders/Backhoes	2	8	75	0.55

MF-GH EDCAPCD (New PD Construction)
El Dorado County APCD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.7	Utility Company
Climate Zone	2	Precipitation Freq (Days)	70	

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - Interset poles and wood poles duration is based on wood pole replacement; distribution underground duration provided by applicant; micropiles assumes 4 days per micropile and 8 micropiles (conservative assumption)

Off-road Equipment - average construction equipment from PD

Off-road Equipment - assumptions from LDSP

Off-road Equipment - PD information

Off-road Equipment - same assumptions as LDSP

Off-road Equipment - trenching phase of distribution underground

Trips and VMT - all trip emissions modeled using EMFAC2011

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	4.73	39.13	23.27	0.06	0.00	1.87	1.87	0.00	1.87	1.87	0.00	5,650.56	0.00	0.42	0.00	5,659.40
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	4.73	39.13	23.27	0.06	0.00	1.87	1.87	0.00	1.87	1.87	0.00	5,650.56	0.00	0.42	0.00	5,659.40
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.00					0.00	0.00		0.00	0.00						0.00
Total	0.00					0.00	0.00		0.00	0.00						0.00

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.00					0.00	0.00		0.00	0.00						0.00
Total	0.00					0.00	0.00		0.00	0.00						0.00

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Dist Undergrd Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.06	7.18	6.00	0.01		0.51	0.51		0.51	0.51		1,014.88		0.10		1,016.88
Total	1.06	7.18	6.00	0.01		0.51	0.51		0.51	0.51		1,014.88		0.10		1,016.88

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

3.2 Dist Undergrd Grading - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.06	7.18	6.00	0.01		0.51	0.51		0.51	0.51	0.00	1,014.88		0.10		1,016.88
Total	1.06	7.18	6.00	0.01		0.51	0.51		0.51	0.51	0.00	1,014.88		0.10		1,016.88

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

3.3 Distribution Underground - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.38	11.01	6.15	0.02		0.59	0.59		0.59	0.59		1,460.43		0.12		1,463.01
Total	1.38	11.01	6.15	0.02		0.59	0.59		0.59	0.59		1,460.43		0.12		1,463.01

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

3.3 Distribution Underground - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.38	11.01	6.15	0.02		0.59	0.59		0.59	0.59	0.00	1,460.43		0.12		1,463.01
Total	1.38	11.01	6.15	0.02		0.59	0.59		0.59	0.59	0.00	1,460.43		0.12		1,463.01

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

3.4 Wood Poles at Substation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.94	8.81	3.70	0.01		0.30	0.30		0.30	0.30		1,292.39		0.08		1,294.14
Total	0.94	8.81	3.70	0.01		0.30	0.30		0.30	0.30		1,292.39		0.08		1,294.14

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

3.4 Wood Poles at Substation - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.94	8.81	3.70	0.01		0.30	0.30		0.30	0.30	0.00	1,292.39		0.08		1,294.14
Total	0.94	8.81	3.70	0.01		0.30	0.30		0.30	0.30	0.00	1,292.39		0.08		1,294.14

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

3.5 Micropiles - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.41	3.40	3.74	0.01		0.18	0.18		0.18	0.18		600.88		0.04		601.65
Total	0.41	3.40	3.74	0.01		0.18	0.18		0.18	0.18		600.88		0.04		601.65

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

3.5 Micropiles - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.41	3.40	3.74	0.01		0.18	0.18		0.18	0.18	0.00	600.88		0.04		601.65
Total	0.41	3.40	3.74	0.01		0.18	0.18		0.18	0.18	0.00	600.88		0.04		601.65

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

3.6 Intersect Poles - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.93	8.73	3.68	0.01		0.29	0.29		0.29	0.29		1,281.98		0.08		1,283.71
Total	0.93	8.73	3.68	0.01		0.29	0.29		0.29	0.29		1,281.98		0.08		1,283.71

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

3.6 Intersect Poles - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.93	8.73	3.68	0.01		0.29	0.29		0.29	0.29	0.00	1,281.98		0.08		1,283.71
Total	0.93	8.73	3.68	0.01		0.29	0.29		0.29	0.29	0.00	1,281.98		0.08		1,283.71

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Total					

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW

5.0 Energy Detail

5.1 Mitigation Measures Energy

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00					0.00	0.00		0.00	0.00						0.00
Unmitigated	0.00					0.00	0.00		0.00	0.00						0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00						0.00
Total	0.00					0.00	0.00		0.00	0.00						0.00

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00						0.00
Total	0.00					0.00	0.00		0.00	0.00						0.00

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

tblProjectCharacteristics

ProjectName	LocationSc	EMFAC_ID	WindSpeed	PrecipitationFrequency	ClimateZone	UrbanizationLevel	OperationalYear
MF-GH Substation Construction	AD	EDCAPCD	2.7	70	2	Rural	2015

tblConstructionPhase

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays
1	Substation Modifications	Building Construction	2015/01/01	2015/01/28	5	20

tblOffRoadEquipment

PhaseName	OffRoadEquipmentType	OffRoadEquipmentUnitAmount	UsageHours	HorsePower	LoadFactor
Substation Modifications	Forklifts	1	4	149	0.2
Substation Modifications	Tractors/Loaders/Backhoes	1	4	75	0.37

MF-GH Substation Construction
El Dorado County APCD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.7	Utility Company
Climate Zone	2	Precipitation Freq (Days)	70	

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - Assumed to be approximately 20 days of construction

Off-road Equipment - Worst-case assumed that forklift and tractor/loader/backhoe is needed. Likely to use hand work rather than construction equipment

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	0.28	1.95	1.82	0.00	0.00	0.13	0.13	0.00	0.13	0.13	0.00	288.15	0.00	0.03	0.00	288.68
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	0.28	1.95	1.82	0.00	0.00	0.13	0.13	0.00	0.13	0.13	0.00	288.15	0.00	0.03	0.00	288.68
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.00					0.00	0.00		0.00	0.00						0.00
Total	0.00					0.00	0.00		0.00	0.00						0.00

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.00					0.00	0.00		0.00	0.00						0.00
Total	0.00					0.00	0.00		0.00	0.00						0.00

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Substation Modifications - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.28	1.95	1.82	0.00		0.13	0.13		0.13	0.13		288.15		0.03		288.68
Total	0.28	1.95	1.82	0.00		0.13	0.13		0.13	0.13		288.15		0.03		288.68

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

3.2 Substation Modifications - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.28	1.95	1.82	0.00		0.13	0.13		0.13	0.13	0.00	288.15		0.03		288.68
Total	0.28	1.95	1.82	0.00		0.13	0.13		0.13	0.13	0.00	288.15		0.03		288.68

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Total					

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW

5.0 Energy Detail

5.1 Mitigation Measures Energy

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00					0.00	0.00		0.00	0.00						0.00
Unmitigated	0.00					0.00	0.00		0.00	0.00						0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00						0.00
Total	0.00					0.00	0.00		0.00	0.00						0.00

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00						0.00
Total	0.00					0.00	0.00		0.00	0.00						0.00

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

tblProjectCharacteristics

ProjectName	LocationScope	EMFAC_ID	WindSpeed	PrecipitationFrequency	ClimateZone	UrbanizationLevel	OperationalYear
MF-GH EDCAQMD Activities	AD	EDCAPCD	2.7	70	2	Urban	2015

tblConstructionPhase

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays
1	LDSP	Building Construction	2015/01/01	2015/07/01	5	130
2	TSP	Building Construction	2015/01/01	2015/05/14	5	96
3	Reconductoring	Building Construction	2015/01/01	2015/04/01	5	65
4	Grading	Grading	2015/01/05	2015/01/09	5	5

tblOffRoadEquipment

PhaseName	OffRoadEquipmentType	OffRoadEquipmentUnitAmount	UsageHours	HorsePower	LoadFactor
LDSP	Bore/Drill Rigs	1	4	208	0.29
LDSP	Cranes	1	4	149	0.2
LDSP	Other Material Handling Equipment	1	8	75	0.37
TSP	Aerial Lifts	1	6	34	0.31
TSP	Bore/Drill Rigs	1	4	82	0.2
TSP	Concrete/Industrial Saws	1	6	81	0.49
TSP	Cranes	1	4	208	0.29
Reconductoring	Aerial Lifts	2	6	34	0.31
Reconductoring	Other Material Handling Equipment	2	6	149	0.4
Grading	Graders	1	4	162	0.41
Grading	Tractors/Loaders/Backhoes	1	6	75	0.37

MF-GH EDCAQMD Activities
El Dorado County APCD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.7	Utility Company
Climate Zone	2	Precipitation Freq (Days)	70	

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - Reconductoring 9.6 miles, TSP for 96 poles, LDSP for 80 poles, standard grading for each pole

Off-road Equipment - Bore/Drill rig = auger, which overestimates; crane; and other material handling equipment for line truck

Off-road Equipment - Bore/drill rig for auger; crane; lift = worst case assuming cutting existing pole, drilling hole, and placing new pole equipment occurs on the same day

Off-road Equipment - 2 lifts and 2 line trucks for reconductoring

Off-road Equipment - Assumes worst-case for site preparation

Grading - Maximum is 0.4 acres per site, using max of 0.5 assuming some extra disturbance

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	3.53	23.18	17.43	0.03	0.17	1.43	1.60	0.00	1.43	1.43	0.00	3,133.11	0.00	0.31	0.00	3,139.72
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	3.53	23.18	17.43	0.03	0.11	1.43	1.55	0.00	1.43	1.43	0.00	3,133.11	0.00	0.31	0.00	3,139.72
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.00					0.00	0.00		0.00	0.00						0.00
Total	0.00					0.00	0.00		0.00	0.00						0.00

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.00					0.00	0.00		0.00	0.00						0.00
Total	0.00					0.00	0.00		0.00	0.00						0.00

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 LDSP - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.71	4.62	3.39	0.01		0.32	0.32		0.32	0.32		729.11		0.06		730.44
Total	0.71	4.62	3.39	0.01		0.32	0.32		0.32	0.32		729.11		0.06		730.44

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

3.2 LDSP - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.71	4.62	3.39	0.01		0.32	0.32		0.32	0.32	0.00	729.11		0.06		730.44
Total	0.71	4.62	3.39	0.01		0.32	0.32		0.32	0.32	0.00	729.11		0.06		730.44

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

3.3 TSP - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.84	5.82	3.80	0.01		0.34	0.34		0.34	0.34		761.38		0.07		762.95
Total	0.84	5.82	3.80	0.01		0.34	0.34		0.34	0.34		761.38		0.07		762.95

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

3.3 TSP - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.84	5.82	3.80	0.01		0.34	0.34		0.34	0.34	0.00	761.38		0.07		762.95
Total	0.84	5.82	3.80	0.01		0.34	0.34		0.34	0.34	0.00	761.38		0.07		762.95

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

3.4 Reconductoring - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.36	8.59	6.58	0.01		0.51	0.51		0.51	0.51		1,053.56		0.12		1,056.13
Total	1.36	8.59	6.58	0.01		0.51	0.51		0.51	0.51		1,053.56		0.12		1,056.13

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

3.4 Reconductoring - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.36	8.59	6.58	0.01		0.51	0.51		0.51	0.51	0.00	1,053.56		0.12		1,056.13
Total	1.36	8.59	6.58	0.01		0.51	0.51		0.51	0.51	0.00	1,053.56		0.12		1,056.13

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

3.5 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.11	0.00	0.11	0.00	0.00	0.00						0.00
Off-Road	0.58	4.12	3.37	0.01		0.26	0.26		0.26	0.26		540.97		0.05		542.07
Total	0.58	4.12	3.37	0.01	0.11	0.26	0.37	0.00	0.26	0.26		540.97		0.05		542.07

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.04	0.03	0.30	0.00	0.07	0.00	0.07	0.00	0.00	0.00		48.08		0.00		48.14
Total	0.04	0.03	0.30	0.00	0.07	0.00	0.07	0.00	0.00	0.00		48.08		0.00		48.14

3.5 Grading - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.05	0.00	0.05	0.00	0.00	0.00						0.00
Off-Road	0.58	4.12	3.37	0.01		0.26	0.26		0.26	0.26	0.00	540.97		0.05		542.07
Total	0.58	4.12	3.37	0.01	0.05	0.26	0.31	0.00	0.26	0.26	0.00	540.97		0.05		542.07

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.04	0.03	0.30	0.00	0.07	0.00	0.07	0.00	0.00	0.00		48.08		0.00		48.14
Total	0.04	0.03	0.30	0.00	0.07	0.00	0.07	0.00	0.00	0.00		48.08		0.00		48.14

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Total					

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW

5.0 Energy Detail

5.1 Mitigation Measures Energy

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00					0.00	0.00		0.00	0.00						0.00
Unmitigated	0.00					0.00	0.00		0.00	0.00						0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00						0.00
Total	0.00					0.00	0.00		0.00	0.00						0.00

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00						0.00
Total	0.00					0.00	0.00		0.00	0.00						0.00

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

tblProjectCharacteristics

ProjectName	LocationScope	EMFAC_ID	WindSpeed	PrecipitationFrequency	ClimateZone	UrbanizationLevel	OperationalYear
MF-GH Construction - Reconduct (SMAQMD)	C	SAC	3.5	58	6	Rural	2015

tblConstructionPhase

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysWeek	NumDays
1	Reconductoring	Building Construction	2015/01/01	2015/01/27	5	19
2	Steel Lattice Towers	Building Construction	2015/02/02	2015/03/13	5	30

tblOffRoadEquipment

PhaseName	OffRoadEquipmentType	OffRoadEquipmentUnitAmount	UsageHours	HorsePower	LoadFactor
Reconductoring	Aerial Lifts	2	4	208	0.29
Reconductoring	Other Material Handling Equipment	2	6	149	0.2
Steel Lattice Towers	Aerial Lifts	1	1	34	0.31
Steel Lattice Towers	Cranes	1	4	208	0.29
Steel Lattice Towers	Other Material Handling Equipment	2	8	196	0.4

MF-GH Construction - Reconduct (SMAQMD)
Sacramento County, Summer

1.0 Project Characteristics

1.1 Land Usage

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	3.5	Utility Company	Sacramento Municipal Utility District
Climate Zone	6	Precipitation Freq (Days)	58		

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - Reconducting includes 2.9 miles. 10 steel lattice tower modifications (3 days per modification).

Off-road Equipment - two aerial lifts and two "other material handling equipment" to represent line trucks

Off-road Equipment - dfafd

Off-road Equipment - Crane, lift, and other equipment for line trucks

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	1.47	13.51	4.30	0.02	0.00	0.44	0.44	0.00	0.44	0.44	0.00	1,885.39	0.00	0.13	0.00	1,888.12
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	1.47	13.51	4.30	0.02	0.00	0.44	0.44	0.00	0.44	0.44	0.00	1,885.39	0.00	0.13	0.00	1,888.12
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.00					0.00	0.00		0.00	0.00						0.00
Total	0.00					0.00	0.00		0.00	0.00						0.00

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.00					0.00	0.00		0.00	0.00						0.00
Total	0.00					0.00	0.00		0.00	0.00						0.00

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Reconductoring - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.49	3.61	2.64	0.00		0.20	0.20		0.20	0.20		447.62		0.04		448.55
Total	0.49	3.61	2.64	0.00		0.20	0.20		0.20	0.20		447.62		0.04		448.55

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

3.2 Reconductoring - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.49	3.61	2.64	0.00		0.20	0.20		0.20	0.20	0.00	447.62		0.04		448.55
Total	0.49	3.61	2.64	0.00		0.20	0.20		0.20	0.20	0.00	447.62		0.04		448.55

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

3.3 Steel Lattice Towers - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.47	13.51	4.30	0.02		0.44	0.44		0.44	0.44		1,885.39		0.13		1,888.12
Total	1.47	13.51	4.30	0.02		0.44	0.44		0.44	0.44		1,885.39		0.13		1,888.12

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

3.3 Steel Lattice Towers - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.47	13.51	4.30	0.02		0.44	0.44		0.44	0.44	0.00	1,885.39		0.13		1,888.12
Total	1.47	13.51	4.30	0.02		0.44	0.44		0.44	0.44	0.00	1,885.39		0.13		1,888.12

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Total					

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW

5.0 Energy Detail

5.1 Mitigation Measures Energy

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00					0.00	0.00		0.00	0.00						0.00
Unmitigated	0.00					0.00	0.00		0.00	0.00						0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00						0.00
Total	0.00					0.00	0.00		0.00	0.00						0.00

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00						0.00
Total	0.00					0.00	0.00		0.00	0.00						0.00

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Missouri Flats Gold Hill Reconductoring
Construction Emissions (SMAQMD)

CalEEMod Outputs		Pollutants (lbs/day)				MT CO ₂ e (total)	Mitigated MT CO ₂ e (total)
Construction Phase		ROG	NO _x	PM ₁₀	PM _{2.5}		
Reconductoring		0.85	10.38	0.55	0.41	25.44	24.83
	Construction Equipment	0.49	3.61	0.2	0.2	3.86	3.67
	Construction Worker	0.13	0.98	0.17	0.09	8.34	7.92
	Haul Trucks	0.24	5.79	0.18	0.12	13.25	13.25
Steel Lattice Towers		9.87	26.81	0.99	0.85	67.16	65.22
	Construction Equipment	1.47	13.51	0.44	0.44	25.69	24.41
	Helicopter Operations (Operations)	8.04	6.53	0.19	0.19	7.40	7.40
	Construction Worker	0.13	0.98	0.17	0.09	13.16	12.50
	Haul Trucks	0.24	5.79	0.18	0.12	20.92	20.92
Grading		0.72	6.76	0.44	0.34	3.36	3.19
	Construction Equipment	0.58	4.12	0.31	0.26	1.23	1.17
	Construction Worker	0.04	0.33	0.06	0.03	0.73	0.69
	Haul Trucks	0.09	2.32	0.07	0.05	1.39	1.32
Maximum Daily Emissions		11.44	43.95	1.98	1.60	95.96	93.24

				Maximum Daily (lbs/day)				CO ₂ e (total MT)
On-Road Mobile Sources	Average Daily Round Trips	Phase Duration (days)	Trip Length (one-way)	ROG	NO _x	PM ₁₀	PM _{2.5}	
Reconductoring - (2.9 SC, 16.6 EDC)								
	Construction Worker	15	19	40	0.13	0.98	0.17	8.34
	Haul Trucks	5	19	40	0.24	5.79	0.18	13.25
Steel Lattice Towers - (SC)								
	Construction Worker	15	30	40	0.13	0.98	0.17	13.16
	Haul Trucks	5	30	40	0.24	5.79	0.18	20.92
Grading								
	Construction Equipment	5	5	40	0.04	0.33	0.06	0.73
	Haul Trucks	2	5	40	0.09	2.32	0.07	1.39

						Total Emissions (lbs/day)				CO ₂ e (total MT)
Helicopter Emissions	LTOs/day	Hours/Day	Total Days	Total Hours	Total LTOs	ROG	NO _x	PM ₁₀	PM _{2.5}	
Steel Lattice Tower										
Bell 206 (LTO Emissions - El Dorado County)	2	-	5	-	10	1.95	0.41	0.01	0.01	0.63
Bell 206 (Operational Emissions - Sacramento County)	-	4	5	20	-	8.04	6.53	0.19	0.19	7.40
Total	2	4	5	20	10	9.98	6.94	0.21	0.21	8.03

Helicopter Emission Factors (kg/LTO or kg/hr)						
Helicopter Type and Operation	Total Fuel (gal/hr)	ROG	NO _x	PM ₁₀	PM _{2.5}	CO ₂ e
Bell 206						
LTO	6.53	0.44	0.09	0.00	0.00	63
Operation	38.26	0.91	0.74	0.02	0.02	370

ROG/HC	1.2663	ratio
PM ₁₀ /PM _{TOTAL}	0.976	ratio
PM _{2.5} /PM _{TOTAL}	0.967	ratio
Average Fuel Weight	6.75	lbs/gal

Jet Fuel Emission Factors		
CO ₂	9.57	kg/gal
N ₂ O	0.00031	kg/gal
CH ₄	0.00027	kg/gal

Source:
[Switzerland Federal Office of Civil Aviation \(FOCA\) Guidance on the Determination of Helicopter Emissions](http://www.bazl.admin.ch/fachleute/01169/02432/02433/02589/index.html?lang=en)
<http://www.bazl.admin.ch/fachleute/01169/02432/02433/02589/index.html?lang=en>
 ARB Hydrocarbons Conversion (www.arb.ca.gov/msei/onroad/downloads/tsd/HC_Conversions.doc)
 SCAQMD PM2.5 Speciation Appendix A
 EIA Voluntary Reporting of GHG Program - Emission Factors

Missouri Flats Gold Hill Reconductoring
Construction Emissions (EDCAQMD)

CalEEMod Outputs		Pollutants (lbs/day)				MT CO ₂ e (total)	Mitigated MT CO ₂ e (total)
Construction Phase		ROG	NO _x	PM ₁₀	PM _{2.5}		
Tubular Steel Poles (TSP)		1.26	13.13	0.71	0.57	36.99	35.31
Construction Equipment		0.84	5.82	0.34	0.34	33.21	31.55
Construction Worker		0.17	1.07	0.18	0.10	0.49	0.46
Haul Trucks		0.25	6.24	0.20	0.13	3.30	3.30
Reconductoring		1.78	15.90	0.88	0.74	105.35	102.35
Construction Equipment		1.36	8.59	0.51	0.51	31.13	29.57
Construction Worker		0.17	1.07	0.18	0.10	28.87	27.43
Haul Trucks		0.25	6.24	0.20	0.13	45.35	45.35
Previous LDSP - Now Wood		1.13	11.93	0.69	0.55	191.50	186.46
Construction Equipment		0.71	4.62	0.32	0.32	43.06	40.91
Construction Worker		0.17	1.07	0.18	0.10	57.74	54.85
Haul Trucks		0.25	6.24	0.20	0.13	90.70	90.70
Substation		0.66	9.05	0.47	0.34	23.68	23.19
Construction Equipment		0.28	1.95	0.13	0.13	2.62	2.49
Construction Worker		0.14	0.86	0.14	0.08	7.11	6.75
Haul Trucks		0.25	6.24	0.20	0.13	13.95	13.95
Grading		0.74	6.97	0.45	0.35	233.91	222.21
Construction Equipment		0.58	4.12	0.31	0.26	1.23	1.17
Construction Worker		0.06	0.36	0.06	0.03	0.74	0.70
Haul Trucks		0.10	2.50	0.08	0.05	1.40	1.33
Interset Poles		1.35	16.04	0.66	0.52	18.96	18.40
Construction Equipment		0.93	8.73	0.29	0.29	6.40	6.08
Construction Worker		0.17	1.07	0.18	0.10	4.89	4.64
Haul Trucks		0.25	6.24	0.20	0.13	7.67	7.67
Wood Poles (Substations)		1.36	16.12	0.67	0.53	12.10	11.74
Construction Equipment		0.94	8.81	0.30	0.30	4.11	3.90
Construction Worker		0.17	1.07	0.18	0.10	3.11	2.95
Haul Trucks		0.25	6.24	0.20	0.13	4.88	4.88
Distribution Underground		1.56	14.01	0.75	0.69	14.94	14.38
Construction Equipment		1.38	11.01	0.59	0.59	8.62	8.19
Construction Worker		0.08	0.50	0.08	0.05	2.69	2.56
Haul Trucks		0.10	2.50	0.08	0.05	3.63	3.63
DistriUnder - Grading		1.14	7.68	0.59	0.56	17.38	16.51
Construction Equipment		1.06	7.18	0.51	0.51	11.99	11.39
Construction Worker		0.08	0.50	0.08	0.05	5.39	5.12
Micropiles (Single Micropile)		0.61	6.54	0.36	0.29	26.19	25.32
Construction Equipment		0.41	3.40	0.18	0.18	8.73	8.29
Construction Worker		0.10	0.64	0.11	0.06	8.53	8.10
Haul Trucks		0.10	2.50	0.08	0.05	8.93	8.93
Steel Lattice Towers		1.95	0.41	0.01	0.01	0.63	0.63
Helicopter LTOs		1.95	0.41	0.01	0.01	0.63	0.63
Maximum Daily (1 micropile)		7.46	54.89	3.11	2.52	-	-
Maximum Daily (Max Micropile)		9.90	81.04	4.57	3.70	681.63	656.50

		Maximum Daily (lbs/day)						
On-Road Mobile Sources		Average Daily Round Trips	Phase Duration (days)	Trip Length (one-way)	ROG	NO _x	PM ₁₀	PM _{2.5}
Tubular Steel Poles (TSP) - (EDC)								
Construction Worker		15	96	40	0.17	1.07	0.18	0.10
Haul Trucks		5	96	40	0.25	6.24	0.20	0.13
Reconductoring - (2.9 SC, 16.6 EDC)								
Construction Worker		15	65	40	0.17	1.07	0.18	0.10
Haul Trucks		5	65	40	0.25	6.24	0.20	0.13
Light-Duty Steel Poles - (EDC)								
Construction Worker		15	130	40	0.17	1.07	0.18	0.10
Haul Trucks		5	130	40	0.25	6.24	0.20	0.13
Substation								
Construction Worker		12	20	40	0.14	0.86	0.14	0.08
Haul Trucks		5	20	40	0.25	6.24	0.20	0.13
Grading								
Construction Worker		5	5	40	0.06	0.36	0.06	0.03
Haul Trucks		2	5	40	0.10	2.50	0.08	0.05
Interset Poles								
Construction Worker		15	11	40	0.17	1.07	0.18	0.10
Haul Trucks		5	11	40	0.25	6.24	0.20	0.13
Wood Poles								
Construction Worker		15	7	40	0.17	1.07	0.18	0.10
Haul Trucks		5	7	40	0.25	6.24	0.20	0.13
Micropiles								
Construction Worker		9	32	40	0.10	0.64	0.11	0.06
Haul Trucks		2	32	40	0.10	2.50	0.08	0.05
Distribution Underground								
Construction Worker		7	13	40	0.08	0.50	0.08	0.05
Haul Trucks		2	13	40	0.10	2.50	0.08	0.05
Distribution Underground - Grading								
Construction Worker		7	26	40	0.08	0.50	0.08	0.05
Haul Trucks		2	26	40	0.10	2.50	0.08	0.05

Missouri Flats Gold Hill Reconductoring Project
Construction On-Road Emission Factors (EMFAC2011)

El Dorado County Year 2015	Emission Factors (grams/mile)						
Vehicle Type	ROG	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}	CO ₂
Construction Worker	0.065	0.404	1.343	0.004	0.066	0.038	370.114
Haul Truck	0.279	7.078	1.284	0.017	0.223	0.152	1744.183

Sacramento County Year 2015	Emission Factors (grams/mile)						
Vehicle Type	ROG	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}	CO ₂
Construction Worker	0.048	0.369	1.058	0.004	0.064	0.035	365.609
Haul Truck	0.267	6.569	1.215	0.017	0.208	0.138	1742.931

LTO Emissions					One hour emissions									
Aircraft_ ICAO	Aircraft_Name	Engine_Name	Max SHP per engine	Number_of_ Engines	LTO fuel (kg)	LTO NOx (g)	LTO HC (g)	LTO CO (g)	LTO PM non volatile (g)	One hour fuel (kg)	One hour NOx (kg)	One hour HC (kg)	One hour CO (kg)	One hour PM non vol. (kg)
B06	BELL 206B	DDA250-C20	400	1	18.2	75	385	499	3	109	0.61	0.82	1.03	0.019
B06	BELL 206B	DDA250-C20B	420	1	18.6	79	373	484	3	101	0.58	0.72	0.90	0.018
B06	BELL 206B	DDA250-C20J	420	1	18.6	79	373	484	3	101	0.58	0.72	0.90	0.018
B06	BELL 206B	DDA250-C20R	450	1	19.2	85	358	463	3	105	0.63	0.70	0.86	0.019
B06	BELL 206B	DDA250-C20R/4	450	1	19.2	85	358	463	3	105	0.63	0.70	0.86	0.019
B06	BELL 206L	DDA250-C20R	450	1	19.2	85	358	463	3	117	0.70	0.77	0.96	0.022
B06	BELL 206L	DDA250-C30	650	1	23.7	131	291	372	4	149	1.10	0.66	0.82	0.032
B06	BELL 206L	DDA250-C30P	650	1	23.7	131	291	372	4	149	1.10	0.66	0.82	0.032
Bell 205 Average					20.0	94.0	348.5	449.9	3.2	117	0.74	0.72	0.89	0.02

LTO Emissions					One hour emissions									
Aircraft_ ICAO	Aircraft_Name	Engine_Name	Max SHP per engine	Number_of_ Engines	LTO fuel (kg)	LTO NOx (g)	LTO HC (g)	LTO CO (g)	LTO PM non volatile (g)	One hour fuel (kg)	One hour NOx (kg)	One hour HC (kg)	One hour CO (kg)	One hour PM non vol. (kg)
MD52	MD 520N	DDA250-C20	400	1	18.2	75	385	499	3	109	0.61	0.82	1.03	0.019

Missouri Flats Gold Hill Reconductoring
Construction Emissions (SMAQMD) - **Increased Helicopter Operations (25 hours)**

CalEEMod Outputs	Pollutants (lbs/day)					MT CO ₂ e (total)	Mitigated MT CO ₂ e (total)
	ROG	NO _x	PM ₁₀	PM _{2.5}			
Reconductoring	0.85	10.38	0.55	0.41		25.44	24.83
Construction Equipment	0.49	3.61	0.2	0.2		3.86	3.67
Construction Worker	0.13	0.98	0.17	0.09		8.34	7.92
Haul Trucks	0.24	5.79	0.18	0.12		13.25	13.25
Steel Lattice Towers	25.82	37.43	1.31	1.16		79.53	67.07
Construction Equipment	1.47	13.51	0.44	0.44		25.69	24.41
Helicopter Operations (Operations)	10.05	8.16	0.24	0.24		9.25	9.25
Construction Worker	0.13	0.98	0.17	0.09		13.16	12.50
Haul Trucks	0.24	5.79	0.18	0.12		20.92	20.92
Grading	0.72	6.76	0.44	0.34		3.36	3.19
Construction Equipment	0.58	4.12	0.31	0.26		1.23	1.17
Construction Worker	0.04	0.33	0.06	0.03		0.73	0.69
Haul Trucks	0.09	2.32	0.07	0.05		1.39	1.32
Maximum Daily Emissions	27.39	54.57	2.30	1.92		108.32	95.09

				Maximum Daily (lbs/day)				CO ₂ e (total MT)	
On-Road Mobile Sources	Average Daily Round Trips	Phase Duration (days)	Trip Length (one-way)	ROG	NO _x	PM ₁₀	PM _{2.5}		
Reconductoring - (2.9 SC, 16.6 EDC)									
Construction Worker	15	19	40	0.13	0.98	0.17	0.09	8.34	
Haul Trucks	5	19	40	0.24	5.79	0.18	0.12	13.25	
Steel Lattice Towers - (SC)									
Construction Worker	15	30	40	0.13	0.98	0.17	0.09	13.16	
Haul Trucks	5	30	40	0.24	5.79	0.18	0.12	20.92	
Grading									
Construction Equipment	5	5	40	0.04	0.33	0.06	0.03	0.73	
Haul Trucks	2	5	40	0.09	2.32	0.07	0.05	1.39	

						Total Emissions (lbs/day)				CO ₂ e (total MT)	
Helicopter Emissions	LTOs/day	Hours/Day	Total Days	Total Hours	Total LTOs	ROG	NO _x	PM ₁₀	PM _{2.5}		
Steel Lattice Tower											
Bell 206 (LTO Emissions - El Dorado County)	4	-		5	-	20	3.89	0.83	0.03	0.03	1.26
Bell 206 (Operational Emissions - Sacramento County)	-	5	5	5	25	-	10.05	8.16	0.24	0.24	9.25
Total	4	5	5	5	25	20	13.94	8.99	0.27	0.27	10.51

NOTE: Assumes 25 total hours of helicopter operations.

Helicopter Type and Operation	Helicopter Emission Factors (kg/LTO or kg/hr)					
	Total Fuel (gal/hr)	ROG	NO _x	PM ₁₀	PM _{2.5}	CO ₂ e
Bell 206						
LTO	6.53	0.44	0.09	0.00	0.00	63
Operation	38.26	0.91	0.74	0.02	0.02	370

ROG/HC	1.2663	ratio
PM ₁₀ /PM _{TOTAL}	0.976	ratio
PM _{2.5} /PM _{TOTAL}	0.967	ratio
Average Fuel Weight	6.75	lbs/gal

Jet Fuel Emission Factors			
CO ₂	9.57	kg/gal	
N ₂ O	0.00031	kg/gal	
CH ₄	0.00027	kg/gal	

Source:
[Switzerland Federal Office of Civil Aviation \(FOCA\) Guidance on the Determination of Helicopter Emissions \(http://www.bazl.admin.ch/fachleute/01169/02432/02433/02589/index.html?lang=en\)](http://www.bazl.admin.ch/fachleute/01169/02432/02433/02589/index.html?lang=en)
 ARB Hydrocarbons Conversion (www.arb.ca.gov/msei/onroad/downloads/tsd/HC_Conversions.doc)
 SCAQMD PM2.5 Speciation Appendix A
 EIA Voluntary Reporting of GHG Program - Emission Factors

Missouri Flats Gold Hill Reconductoring
Construction Emissions (SMAQMD) - **Increased Helicopter Operations (30 hours)**

CalEEMod Outputs	Pollutants (lbs/day)				MT CO ₂ e (total)	Mitigated MT CO ₂ e (total)
	ROG	NO _x	PM ₁₀	PM _{2.5}		
Reconductoring	0.85	10.38	0.55	0.41	25.44	24.83
Construction Equipment	0.49	3.61	0.2	0.2	3.86	3.67
Construction Worker	0.13	0.98	0.17	0.09	8.34	7.92
Haul Trucks	0.24	5.79	0.18	0.12	13.25	13.25
Steel Lattice Towers	29.84	40.70	1.40	1.26	83.22	68.92
Construction Equipment	1.47	13.51	0.44	0.44	25.69	24.41
Helicopter Operations (Operations)	12.06	9.79	0.29	0.29	11.10	11.10
Construction Worker	0.13	0.98	0.17	0.09	13.16	12.50
Haul Trucks	0.24	5.79	0.18	0.12	20.92	20.92
Grading	0.72	6.76	0.44	0.34	3.36	3.19
Construction Equipment	0.58	4.12	0.31	0.26	1.23	1.17
Construction Worker	0.04	0.33	0.06	0.03	0.73	0.69
Haul Trucks	0.09	2.32	0.07	0.05	1.39	1.32
Maximum Daily Emissions	31.41	57.84	2.39	2.01	112.02	96.94

On-Road Mobile Sources	Average Daily Round Trips	Phase Duration (days)	Trip Length (one-way)	Maximum Daily (lbs/day)				CO ₂ e (total MT)
				ROG	NO _x	PM ₁₀	PM _{2.5}	
Reconductoring - (2.9 SC, 16.6 EDC)								
Construction Worker	15	19	40	0.13	0.98	0.17	0.09	8.34
Haul Trucks	5	19	40	0.24	5.79	0.18	0.12	13.25
Steel Lattice Towers - (SC)								
Construction Worker	15	30	40	0.13	0.98	0.17	0.09	13.16
Haul Trucks	5	30	40	0.24	5.79	0.18	0.12	20.92
Grading								
Construction Equipment	5	5	40	0.04	0.33	0.06	0.03	0.73
Haul Trucks	2	5	40	0.09	2.32	0.07	0.05	1.39

Helicopter Emissions	LTOs/day	Hours/Day	Total Days	Total Hours	Total LTOs	Total Emissions (lbs/day)				CO ₂ e (total MT)
						ROG	NO _x	PM ₁₀	PM _{2.5}	
Steel Lattice Tower										
Bell 206 (LTO Emissions - El Dorado County)	4	-	5	-	20	3.89	0.83	0.03	0.03	1.26
Bell 206 (Operational Emissions - Sacramento County)	-	6	5	30	-	12.06	9.79	0.29	0.29	11.10
Total	4	6	5	30	20	15.95	10.62	0.32	0.32	12.36

NOTE: Assumes 30 total hours of helicopter operations.

Helicopter Type and Operation	Helicopter Emission Factors (kg/LTO or kg/hr)					
	Total Fuel (gal/hr)	ROG	NO _x	PM ₁₀	PM _{2.5}	CO ₂ e
Bell 206						
LTO	6.53	0.44	0.09	0.00	0.00	63
Operation	38.26	0.91	0.74	0.02	0.02	370

ROG/HC	1.2663	ratio
PM ₁₀ /PM _{TOTAL}	0.976	ratio
PM _{2.5} /PM _{TOTAL}	0.967	ratio
Average Fuel Weight	6.75	lbs/gal

Jet Fuel Emission Factors		
CO ₂	9.57	kg/gal
N ₂ O	0.00031	kg/gal
CH ₄	0.00027	kg/gal

Source:

[Switzerland Federal Office of Civil Aviation \(FOCA\) Guidance on the Determination of Helicopter Emissions](http://www.bazl.admin.ch/fachleute/01169/02432/02433/02589/index.html?lang=en)

<http://www.bazl.admin.ch/fachleute/01169/02432/02433/02589/index.html?lang=en>

ARB Hydrocarbons Conversion (www.arb.ca.gov/msei/onroad/downloads/tsd/HC_Conversions.doc)

SCAQMD PM2.5 Speciation Appendix A

EIA Voluntary Reporting of GHG Program - Emission Factors

Missouri Flats Gold Hill Reconductoring
Construction Emissions (EDCAQMD) - Increased Helicopter Operations (4 LTOs Per Day)

CalEEMod Outputs	Pollutants (lbs/day)				MT CO ₂ e (total)	Mitigated MT CO ₂ e (total)
Construction Phase	ROG	NO _x	PM ₁₀	PM _{2.5}		
Tubular Steel Poles (TSP)	1.26	13.13	0.71	0.57	36.99	35.31
Construction Equipment	0.84	5.82	0.34	0.34	33.21	31.55
Construction Worker	0.17	1.07	0.18	0.10	0.49	0.46
Haul Trucks	0.25	6.24	0.20	0.13	3.30	3.30
Reconductoring	1.78	15.90	0.88	0.74	105.35	102.35
Construction Equipment	1.36	8.59	0.51	0.51	31.13	29.57
Construction Worker	0.17	1.07	0.18	0.10	28.87	27.43
Haul Trucks	0.25	6.24	0.20	0.13	45.35	45.35
Previous LDSP - Now Wood	1.13	11.93	0.69	0.55	191.50	186.46
Construction Equipment	0.71	4.62	0.32	0.32	43.06	40.91
Construction Worker	0.17	1.07	0.18	0.10	57.74	54.85
Haul Trucks	0.25	6.24	0.20	0.13	90.70	90.70
Substation	0.66	9.05	0.47	0.34	23.68	23.19
Construction Equipment	0.28	1.95	0.13	0.13	2.62	2.49
Construction Worker	0.14	0.86	0.14	0.08	7.11	6.75
Haul Trucks	0.25	6.24	0.20	0.13	13.95	13.95
Grading	0.74	6.97	0.45	0.35	233.91	222.21
Construction Equipment	0.58	4.12	0.31	0.26	1.23	1.17
Construction Worker	0.06	0.36	0.06	0.03	0.74	0.70
Haul Trucks	0.10	2.50	0.08	0.05	1.40	1.33
Interset Poles	1.35	16.04	0.66	0.52	18.96	18.40
Construction Equipment	0.93	8.73	0.29	0.29	6.40	6.08
Construction Worker	0.17	1.07	0.18	0.10	4.89	4.64
Haul Trucks	0.25	6.24	0.20	0.13	7.67	7.67
Wood Poles (Substations)	1.36	16.12	0.67	0.53	12.10	11.74
Construction Equipment	0.94	8.81	0.30	0.30	4.11	3.90
Construction Worker	0.17	1.07	0.18	0.10	3.11	2.95
Haul Trucks	0.25	6.24	0.20	0.13	4.88	4.88
Distribution Underground	1.56	14.01	0.75	0.69	14.94	14.38
Construction Equipment	1.38	11.01	0.59	0.59	8.62	8.19
Construction Worker	0.08	0.50	0.08	0.05	2.69	2.56
Haul Trucks	0.10	2.50	0.08	0.05	3.63	3.63
DistriUnder - Grading	1.14	7.68	0.59	0.56	17.38	16.51
Construction Equipment	1.06	7.18	0.51	0.51	11.99	11.39
Construction Worker	0.08	0.50	0.08	0.05	5.39	5.12
Micropiles (Single Micropile)	0.61	6.54	0.36	0.29	26.19	25.32
Construction Equipment	0.41	3.40	0.18	0.18	8.73	8.29
Construction Worker	0.10	0.64	0.11	0.06	8.53	8.10
Haul Trucks	0.10	2.50	0.08	0.05	8.93	8.93
Steel Lattice Towers	3.89	0.83	0.03	0.03	1.26	1.26
Helicopter LTOs	3.89	0.83	0.03	0.03	1.26	1.26
Maximum Daily (1 micropile)	9.40	55.30	3.13	2.54	-	-
Maximum Daily (Max Micropile)	11.85	81.45	4.58	3.71	682.26	657.13
NOTE: Assumes 4 LTOs per day and 20 total LTOs.						Number of Micropiles
						4

On-Road Mobile Sources	Average Daily Round Trips	Phase Duration (days)	Trip Length (one-way)	Maximum Daily (lbs/day)				CO ₂ e (MT)
				ROG	NO _x	PM ₁₀	PM _{2.5}	
Tubular Steel Poles (TSP) - (EDC)								
Construction Worker	15	96	40	0.17	1.07	0.18	0.10	0.49
Haul Trucks	5	96	40	0.25	6.24	0.20	0.13	3.30
Reconductoring - (2.9 SC, 16.6 EDC)								
Construction Worker	15	65	40	0.17	1.07	0.18	0.10	28.87
Haul Trucks	5	65	40	0.25	6.24	0.20	0.13	45.35
Light-Duty Steel Poles - (EDC)								
Construction Worker	15	130	40	0.17	1.07	0.18	0.10	57.74
Haul Trucks	5	130	40	0.25	6.24	0.20	0.13	90.70
Substation								
Construction Worker	12	20	40	0.14	0.86	0.14	0.08	7.11
Haul Trucks	5	20	40	0.25	6.24	0.20	0.13	13.95
Grading								
Construction Worker	5	5	40	0.06	0.36	0.06	0.03	0.74
Haul Trucks	2	5	40	0.10	2.50	0.08	0.05	1.40
Interset Poles								
Construction Worker	15	11	40	0.17	1.07	0.18	0.10	4.89
Haul Trucks	5	11	40	0.25	6.24	0.20	0.13	7.67
Wood Poles								
Construction Worker	15	7	40	0.17	1.07	0.18	0.10	3.11
Haul Trucks	5	7	40	0.25	6.24	0.20	0.13	4.88
Micropiles								
Construction Worker	9	32	40	0.10	0.64	0.11	0.06	8.53
Haul Trucks	2	32	40	0.10	2.50	0.08	0.05	8.93
Distribution Underground								
Construction Worker	7	13	40	0.08	0.50	0.08	0.05	2.69
Haul Trucks	2	13	40	0.10	2.50	0.08	0.05	3.63
Distribution Underground - Grading								
Construction Worker	7	26	40	0.08	0.50	0.08	0.05	5.39
Haul Trucks	2	26	40	0.10	2.50	0.08	0.05	7.26

Attachment B: Revised PEA Construction Emissions Summary Tables

Air Quality

Table 3.3-5 below presents the proposed project's El Dorado County Air Quality Management District (EDCAQMD) air quality emissions after incorporating the CPUC comments and corrections to emission calculations. See the green highlighting on page 62 of Attachment A for a more detailed summary of emission corrections. The changes to emission calculations are highlighted in green in Table 3.3-5 and include:

- 1) Incorporation of off-road construction equipment for the Grading phase. (CPUC Comment 2)
- 2) Adding daily helicopter landing and take-offs (LTOs) to the maximum daily emissions. (CPUC Comment 4)
- 3) New maximum daily construction emissions.

Table 3.3-1: Summary of Construction Emissions for Missouri Flat-Gold Hill 115 kV Power Line Reconductoring Project (EDCAQMD Jurisdiction)

Construction Phase	Daily Pollutant Emissions (lbs/day)			
	ROG	NO _x	PM ₁₀	PM _{2.5}
Tubular Steel Pole	1.26	13.13	0.71	0.57
Reconductoring	1.78	15.90	0.88	0.74
Wood Poles	1.13	11.93	0.69	0.55
Grading	0.74	6.97	0.45	0.35
Micropiles ¹	3.06	32.69	1.82	1.47
Helicopter Operations (LTOs) ²	1.95	0.41	0.01	0.01
Maximum Daily Emissions ³	9.90	81.04	4.57	3.70
EDCAQMD Threshold of Significance ⁴	82	82	-	-
Exceeds Thresholds?	No	No	-	-
Notes: kV = kilovolt; EDCAQMD = El Dorado County Air Quality Management District; lbs/day = pounds per day; ROG = reactive organic gases; NO_x = oxides of nitrogen; PM₁₀ = particulate matter with aerodynamic diameter less than 10 microns; PM_{2.5} = particulate matter with aerodynamic diameter less than 2.5 microns. ¹ This analysis assumes a maximum of five micropiles may be constructed per day. ² At the time of this analysis, the location of helicopter stationing site has not yet been determined. Nevertheless, for purposes of a conservative analysis, helicopter landing and take-off (LTO) emissions were assumed to occur within the EDCAQMD's jurisdiction, which would capture the worst-case construction scenario. Helicopter-related construction activities would predominately occur within Sacramento County and are included in Table 3.3-6 with Lattice Steel Towers. ³ Maximum daily emissions assume project construction associated with all construction activities occurring within the EDCAQMD jurisdiction can occur on the same day. In reality, these activities are likely to be phased and only a couple of the activities will occur on a single day. ⁴ Thresholds of significance shown have been developed for short-term construction emissions. Source: Data compiled by AECOM in 2014				

Table 3.3-6 below presents the proposed project's Sacramento Metropolitan Air Quality Management District (SMAQMD) air quality emissions after incorporating CPUC comments and corrections to emission calculations. See the green highlighting on page 61 of Attachment A for a more detailed summary of emission corrections. The changes to emission calculations are highlighted in green in Table 3.3-6 and include:

- 1) Correction of the emissions units for helicopter emissions. (CPUC Comment 3)
- 2) Incorporation of off-road construction equipment for the Grading phase. (CPUC Comment 2)
- 3) Removal of helicopter LTO emissions from SMAQMD emissions. (CPUC Comment 4)
- 4) New maximum daily construction emissions.

Table 3.3-2: Summary of Construction Emissions for Missouri Flat-Gold Hill 115 kV Power Line Reconductoring Project (SMAQMD Jurisdiction)

Construction Phase	Daily Pollutant Emissions (lbs/day)			
	ROG	NO _x	PM ₁₀	PM _{2.5}
Reconductoring	0.85	10.38	0.55	0.41
Lattice Steel Towers ¹	9.87	26.81	0.99	0.85
Grading	0.72	6.76	0.44	0.34
Maximum Daily Emissions ²	11.44	43.95	1.98	1.60
SMAQMD Threshold of Significance	-	85	-	-
Exceeds Thresholds?	-	No	-	-
Notes: kV = kilovolt; SMAQMD = Sacramento Metropolitan Air Quality Management District; lbs/day = pounds per day; ROG = reactive organic gases; NO_x = oxides of nitrogen; PM₁₀ = particulate matter with aerodynamic diameter less than 10 microns; PM_{2.5} = particulate matter with aerodynamic diameter less than 2.5 microns. ¹ Lattice steel tower construction activities include helicopter operations of up to 20 hours per day. ² Maximum daily emissions assume project construction associated with all construction activities occurring within the SMAQMD jurisdiction will occur on the same day. In reality, these activities are likely to be phased and only a couple of the activities will occur on a single day. Source: Data compiled by AECOM in 2014				

As shown in Table 3.3-5 and 3.3-6, following incorporation of the CPUC comments and emission corrections, construction-related air quality emissions in both EDCAQMD and SMAQMD would not to exceed any thresholds of significance. Accordingly, the PEA analysis and conclusions are correct and no changes would be necessary to reflect the slight emissions correction.

In addition, as described in PG&E Response to Air Quality Comment #4, modeling has also been performed for informational purposes assuming 4 LTOs per day and helicopter operations of 25 (i.e., 5 hours per day for 5 days) and 30 (i.e., 6 hours per day for 5 days) total hours. As shown in pages 65 and 66 of Attachment A, increasing total helicopter operations to 25 and 30 total hours in SMAQMD would increase maximum daily NO_x emissions to 54.57 lbs/day and 57.84 lbs/day, respectively, which would still be below the SMAQMD threshold of significance. In addition, as shown in page 67 of Attachment A, increasing daily LTOs to 4 LTOs per day would increase

maximum daily ROG and NO_x emissions in EDCAQMD to 11.85 and 81.45 lbs/day, respectively, which would still be below EDCAQMD thresholds of significance. Therefore, under the increased helicopter operations scenarios, applicable thresholds of significance in EDCAQMD and SMAQMD would not be exceeded.

Greenhouse Gases

The CPUC comments and emission calculations corrections discussed above would also affect the greenhouse gas (GHG) emissions. Table 3.7-2 presents the proposed project's GHG emissions following incorporation of the CPUC comments and emission corrections. Following incorporation of these changes, the proposed project's GHG emissions would not exceed the applicable threshold of significance (i.e., 7,000 metric tons of carbon dioxide equivalent [CO₂e] per year). Accordingly, the PEA analysis and conclusions are correct and no changes would be necessary to reflect the slight emissions correction. The changes to GHG emissions as a result of the emission calculation corrections are highlighted in green in Table 3.7-2.

Table 3.7-3: Construction-Related Greenhouse Gas Emissions

Category	MT CO ₂ e/year ¹
EDCAQMD Jurisdiction Construction ¹	682
SMAQMD Jurisdiction Construction ¹	96
Total Construction Emissions	778
Total Construction Emissions with Implementation of APMs ²	750
Notes: EDCAQMD = El Dorado County Air Quality Management District; MT CO₂e/year = metric tons of carbon dioxide equivalent per year; SMAQMD = Sacramento Metropolitan Air Quality Management District. ¹ Construction activities were assumed to be completed within one calendar year. Thus, the annual emissions shown above also represent the project's total construction emissions. ² Reduction in GHG emissions assumes that implementation of APM GHG-1 will achieve an approximate 5 percent reduction in construction equipment emissions as a result of minimizing idling, maintaining equipment in proper operating condition, and use of low emissions equipment when feasible. Source: Data compiled by AECOM in 2014	

Cory Barringhaus

From: Lambert, Jo L (Law) <JLLm@pge.com>
Sent: Friday, January 24, 2014 2:03 PM
To: 'Jason.Coontz@cpuc.ca.gov'; Michael Manka
Cc: Cory Barringhaus; 'Sher, Nicholas'; Danner, Sam; Blanchard Jillian; Davis, Orbie; 'Smith, Steve'
Subject: PG&E's Missouri Flat-Gold Hill Data Response #1 - additional sim
Attachments: Visual Simulation KOP 5 MF-GH.doc; Visual Simulation KOP 5 MF-GH.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Hi all,

Attached please find the additional simulation referred to in Data Response #1, response 5. As we had indicated previously, the increase in pole heights was a maximum of 10 feet for the Missouri Flat-Gold Hill 115 kV Power Line. Two poles on the adjacent Gold Hill #1 line will be increased approximately 15 feet. As you can see, the changes are barely noticeable even with the benefit of before and after views.

Please let us know if you need anything else.

Thanks,

Jo Lynn

PG&E is committed to protecting our customers' privacy.

To learn more, please visit <http://www.pge.com/about/company/privacy/customer/>

Missouri Flat-Gold Hill 115 kV Power Line Reconductoring Project Visual Simulation for Key Observation Point 5 – Christa McAuliffe Park

Existing View



The existing view from Christa McAuliffe Park (KOP 5)¹ represents a recreationalist's view from within the park looking southeast, and approximates the view of nearby residents, school traffic, and motorists in Cameron Park. Views toward the project alignment from this location are partially obstructed, where several trees along the park boundary provide screening. U.S. 50 is located directly beyond the park boundary; however, due to topography and vegetation, the highway is generally obstructed from view. Two existing TSPs of the Missouri Flat-Gold Hill Line are visible in the middleground where they traverse behind the park in parallel with the northern side of U.S. 50. Two wood poles of the Gold Hill No. 1 Line are also visible, shown crossing U.S. 50 with one pole south of the highway and one pole north. Each existing structure stands partially silhouetted against the sky, where most of the power line features and structural elements are visible.

¹ For KOP location, please refer to PEA Figure 3.1-1: *Regional Landscape Context, Landscape Units, and Key Observation Points*.

Visual Simulation



The visual simulation of the project from Christa McAuliffe Park (KOP 5) shows two replaced TSPs on the left, located approximately 400 and 1,000 feet away. The replacement TSPs will result in a height increase by approximately 5 feet and 10 feet respectively. In addition, two replaced wood poles are shown on the right, with each pole resulting in a height increase of approximately 15 feet. Subtle changes to the project features include the replacement of existing TSPs with non-reflective steel poles and installation of slightly modified overhead equipment. The visual simulation illustrates that the changes would be minor, and the project would not substantially affect landscape views in this area.