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050056-0001

January 10, 2013

Mr. Robert Worl
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Re: Hydrogen Energy California Power Plant (08-AFC-8A)

Dear Mr. Worl:

On January 8, 2013, Hydrogen Energy California, LLC ("Applicant") for the abovementioned Project filed certain confidential emissions data with the California Energy Commission ("CEC") regarding Project emissions of criteria pollutants, greenhouse gases, and toxic air contaminants. Subsequently, Applicant made revisions to the emissions data to account for changes related to additional fugitive emissions from rail car transportation and revised methanol emissions from the CO_2 vent. Accordingly, on January 10, 2013, Applicant confidentially filed the updated emissions data with the CEC.

In order to provide the public with an opportunity to review the non-confidential portions of the emissions data, Applicant has docketed with the CEC Docket Division non-confidential information associated with the aforementioned emissions data. The public availability of the non-confidential data in no way affects the confidential nature of the confidential filings made by Applicant with the CEC or any other party related to this data.

Very truly yours,

/s/ Michael J. Carroll

Michael J. Carroll
of LATHAM & WATKINS LLP

Estimated Daily Maximum Construction Emissions of Criteria Pollutants (lbs/day)						
Activity	**PM_{10}**	**$PM_{2.5}$**	**CO**	**ROG**	**NO_x**	**SO_2**
Project Construction Emissions						
On-Site Combustion Emissions						
Construction Equipment - On-road	4.72	4.25	63.46	23.48	131.41	0.13
Construction Equipment - Off-road	13.02	11.98	168.18	52.74	253.50	0.32
Worker Vehicles	0.00	0.00	4.82	0.37	0.39	0.008
Delivery Trucks	1.824	1.654	2.205	1.359	5.138	0.004
On-Site Fugitive Emissions						
Construction Equipment - On-road	9.10	0.91				
Construction Equipment - Off-road	1.35	0.13				
Worker Vehicles	1.09	0.11				
Delivery Trucks	89.19	9.08				
Construction Activity	220.30	62.90				
Subtotal of Project Emissions	**340.6**	**91.0**	**238.7**	**77.9**	**390.4**	**0.5**
Off-Site Construction Emissions						
Off-Site Combustion Emissions						
Worker Vehicles	0.16	0.08	369.57	11.37	44.24	0.437
Delivery Trucks	11.13	9.54	15.40	3.40	78.16	0.07
Off-Site Paved Road Fugitive Dust Emissions						
Worker Vehicles	0.35	0.09				
Delivery Trucks	14.00	3.44				
Subtotal of Off-Site Emissions	**25.65**	**13.15**	**384.96**	**14.77**	**122.41**	**0.51**
Total Maximum Daily Emissions (lbs/day)	**366**	**104**	**624**	**93**	**513**	**1**

Estimated Annual Maximum Construction Emissions of Criteria Pollutants (tons/yr)						
Activity	**PM_{10}**	**$PM_{2.5}$**	**CO**	**ROG**	**NO_x**	**SO_2**
Project Construction Emissions						
On-Site Combustion Emissions						
Construction Equipment - On-road	0.78	0.70	8.32	3.07	17.22	0.02
Construction Equipment - Off-road	1.48	1.37	20.31	6.33	30.15	0.04
Worker Vehicles	0.00	0.00	0.68	0.05	0.05	0.001
Delivery Trucks	0.158	0.143	0.291	0.179	0.678	0.001
Linear Combustion Emissions	0.14	0.13	2.43	0.76	3.90	0.00
Subtotal of Project Combustion Emissions	**2.57**	**2.34**	**32.02**	**10.39**	**52.01**	**0.06**
On-Site Fugitive Emissions						
Construction Equipment - On-road	1.10	0.11				
Construction Equipment - Off-road	0.15	0.01				
Worker Vehicles	0.30	0.03				
Delivery Trucks	6.69	0.68				
Construction Activity	18.90	5.48				
Linear Fugitive Emissions	0.06	0.01				
Subtotal of Project Fugitive Emissions	**27.22**	**6.32**				
Subtotal of On-site Emissions (no linears)	**29.57**	**8.53**	**29.59**	**9.64**	**48.11**	**0.06**
Subtotal of Project Emissions	**29.78**	**8.66**	**32.02**	**10.39**	**52.01**	**0.06**
Off-Site Construction Emissions						
Off-Site Combustion Emissions						
Worker Vehicles	0.07	0.03	52.22	1.61	6.25	0.062
Delivery Trucks	1.01	0.86	2.03	0.45	10.32	0.01
Subtotal of Off-Site Combustion Emissions	**1.07**	**0.90**	**54.25**	**2.06**	**16.57**	**0.07**
Off-Site Paved Road Fugitive Dust Emissions						
Worker Vehicles	0.14	0.04				
Delivery Trucks	1.28	0.31				
Subtotal of Off-Site Fugitive Emissions	**1.42**	**0.35**				
Subtotal of Off-Site Emissions	**2.50**	**1.25**	**54.25**	**2.06**	**16.57**	**0.07**
Total Maximum Annual Emissions (tons/year)	**32**	**9.9**	**86**	**12**	**69**	**0**

Estimated Emissions of GHG Pollutants, Entire Construction Period (tons)				
Activity	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Project Construction Emissions				
On-Site Combustion Emissions				
Construction Equipment - On-road	5,749.3	0.1	0.1	5,781.3
Construction Equipment - Off-road	9,143.5	1.6	0.2	9,243.2
Worker Vehicles	271.9	0.0	0.0	275.4
Delivery Trucks	388.2	0.0	0.0	390.0
Linear Combustion Emissions	2,682.5	0.3	0.0	2,701.6
Subtotal of Project Emissions	**18,235.3**	**2.0**	**0.4**	**18,391.6**
Off-Site On-Road Emissions				
Off-Site Combustion Emissions				
Worker Vehicles	15,381.0	3.6	1.8	16,023.5
Delivery Trucks	5,864.5	0.3	0.2	5,926.7
Subtotal of Off-Site Emissions	**21,245.5**	**3.9**	**2.0**	**21,950.2**
Total Maximum Daily Emissions (tons)	**39,480.9**	**5.9**	**2.4**	**40,341.7**

Estimated Emissions of GHG Pollutants, Entire Construction Period (metric tonnes)				
Activity	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Project Construction Emissions				
On-Site Combustion Emissions				
Construction Equipment - On-road	5,215.7	0.1	0.1	5,244.7
Construction Equipment - Off-road	8,294.8	1.4	0.2	8,385.2
Worker Vehicles	246.6	0.0	0.0	249.9
Delivery Trucks	352.2	0.0	0.0	353.8
Linear Combustion Emissions	2,433.5	0.3	0.0	2,450.9
Subtotal of Project Emissions	**16,542.8**	**1.8**	**0.3**	**16,684.5**
Off-Site On-Road Emissions				
Off-Site Combustion Emissions				
Worker Vehicles	13,953.4	3.3	1.7	14,536.2
Delivery Trucks	5,320.2	0.2	0.2	5,376.6
Subtotal of Off-Site Emissions	**19,273.6**	**3.5**	**1.8**	**19,912.9**
Total Maximum Daily Emissions (tonnes)	**35,816.4**	**5.3**	**2.2**	**36,597.4**

Hydrogen Energy California, Kern County Power Project
Carbon Dioxide (CO2) Emissions by Month
12/2012

CO2

MONTHLY EMISSIONS (lbs/day)

CONSTRUCTION VEHICLES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
ON-SITE																									
On-Road Vehicles																									
18 cy fill mat'l haul truck	0	0	2,861	2,861	5,722	5,722	5,722	5,722	2,861	2,861	2,861	2,861	1,431	1,431	1,431	1,431	1,431	1,431	0	0	0	0	0	0	0
Bus	572	572	572	572	858	858	858	858	858	858	1,431	1,431	1,431	1,431	1,431	1,431	2,003	2,003	2,003	2,861	2,861	2,861	2,861	4,006	4,006
Concrete Pumper Truck	0	0	0	0	0	572	572	572	572	572	572	572	572	858	858	858	572	572	572	572	572	0	0	0	0
Dump Truck	858	1,144	1,144	858	858	858	858	858	858	858	572	572	572	572	572	0	0	0	0	0	0	0	0	0	0
Diesel Tractor (Yard Dog)	0	0	0	0	0	649	649	649	649	649	649	1,298	1,298	1,298	1,298	1,298	2,596	2,596	2,596	2,596	2,596	2,596	2,596	3,245	3,245
Service Truck - 1 ton	572	572	572	1,144	1,144	1,144	1,144	572	572	572	572	572	572	572	572	572	572	572	572	572	572	572	572	572	572
Pile Driver Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck - Fuel/Lube	272	272	272	272	272	272	272	272	272	272	272	272	272	272	272	272	272	272	272	272	272	272	272	272	272
Tractor Truck 5th Wheel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trucks - Pickup 3/4 ton	680	680	680	680	680	816	952	1,088	2,041	2,041	2,041	2,041	3,401	3,401	3,401	3,401	3,401	3,401	3,401	3,401	3,401	3,401	3,401	3,401	3,401
Trucks - 3 ton	286	286	286	286	286	572	572	572	1,144	1,144	1,144	1,144	1,717	1,717	1,717	1,717	1,717	1,717	1,717	1,717	1,717	1,717	1,717	1,717	1,717
Truck - Water	1,431	1,431	1,431	1,431	1,431	1,431	858	858	858	858	858	858	858	858	858	858	858	858	858	858	858	858	858	572	858
Off Road Vehicles																									
Air Compressor 185 CFM	214	214	214	214	320	320	320	320	320	320	320	320	320	641	641	641	854	854	854	1,068	1,068	1,068	1,068	1,282	1,282
Air Compressor 750 CFM	0	0	0	0	225	225	225	225	450	450	450	450	450	450	450	901	901	901	901	901	901	901	901	901	901
Articulating Boom Platform	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bob cat loader	0	0	168	168	168	168	168	672	672	672	672	672	504	504	504	504	504	504	336	336	336	336	336	336	0
Bulldozer D10R	4,584	4,584	4,584	3,056	3,056	3,056	3,056	3,056	3,056	1,528	1,528	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bulldozer D6C	1,164	1,164	1,164	1,164	776	776	776	776	776	776	388	388	388	388	388	0	0	0	0	0	0	0	0	0	0
Concrete Trowel Machine	0	0	0	0	0	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138
Concrete Vibrators	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cranes - Mobile 35 ton	0	0	0	0	0	0	215	215	215	862	862	862	862	1,508	1,508	1,508	1,508	1,508	1,508	1,508	1,508	1,508	1,508	1,508	1,508
Cranes - Mobile 45 ton	0	0	0	0	0	0	0	0	0	0	690	690	690	690	690	690	690	690	1,381	1,381	1,381	1,381	1,381	1,381	1,381
Crane - Mobile 65 ton	0	0	0	0	0	0	0	0	0	0	0	345	345	690	1,381	1,726	1,726	1,726	2,071	2,071	2,071	2,071	2,071	2,071	2,071
Cranes 100 / 150 ton cap	0	0	0	0	0	0	0	0	0	0	482	482	964	964	1,446	1,446	1,927	1,927	1,927	1,927	1,927	1,927	1,927	1,927	1,927
Diesel Powered Welder	0	0	0	507	507	507	507	507	507	507	507	507	507	507	507	761	761	761	1,015	1,015	1,015	1,015	1,015	1,269	1,269
Excavator - Backhoe/loader	481	481	721	961	961	961	961	961	961	961	961	481	481	481	481	481	240	240	240	240	240	240	240	240	0
Excavator - Earth Scraper 637	14,837	14,837	14,837	14,837	8,478	8,478	4,239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - loader	636	636	636	636	636	636	636	636	636	636	636	636	318	318	0	0	0	0	0	0	0	0	0	0	0
Excavator - Motor Grader (CAT140H)	0	431	431	431	1,292	1,292	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - Trencher (CAT320)	0	0	0	0	0	901	901	901	901	901	901	901	901	901	901	901	0	0	0	0	0	0	0	0	0
Fired Heaters (2,000 BTU)	0	0	0	0	327	327	327	327	246	246	409	409	409	409	409	409	409	409	409	409	409	409	409	409	409
Forklift	264	264	264	264	264	264	264	264	264	264	264	264	264	264	264	264	352	352	352	352	352	352	352	352	352
Fusion Welder	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Haul / 600 tn Crane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,302	1,302	1,302	1,302	1,302	1,302	1,302	1,302
Heavy Haul / 1,000 tn Crane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,302	1,302	1,302	1,302	1,302	1,302
Light Plants	82	82	164	327	655	655	655	655	327	327	491	491	655	655	819	819	1,146	1,146	1,146	1,146	1,146	1,146	1,146	1,146	1,146
Man lifts - telescoping	0	0	0	0	0	0	0	0	495	495	495	990	990	990	990	990	990	990	990	1,484	1,484	1,484	1,484	1,979	1,979
Man lift - scissor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Portable Compaction Roller	0	0	1,694	1,694	1,694	1,694	1,694	1,694	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	0
Portable Compaction - Vibratory Plate	0	0	0	0	0	0	0	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	0	0	0
Portable Compaction - Ram	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pumps	246	246	246	491	491	491	491	491	491	491	491	491	491	491	491	491	491	246	246	246	246	246	246	246	246
Portable Power Generators	906	906	906	906	1,358	1,358	1,358	1,358	1,358	2,264	2,264	2,264	2,264	2,264	2,264	3,396	3,396	3,396	3,396	3,396	3,396	3,396	4,528	4,528	4,528
Truck Crane - Greater than 300 ton	0	0	0	0	0	0	0	0	0	0	0	774	774	774	774	774	1,547	1,547	2,321	2,321	3,095	3,095	3,095	3,095	3,095
Truck Crane - Greater than 200 ton	0	0	0	0	0	0	0	0	0	0	0	0	0	0	482	482	482	482	482	964	964	964	1,446	1,446	1,446
Vibratory Roller Ingersol-Rand 20 ton	1,394	1,394	1,394	1,394	1,394	1,394	1,394	1,394	1,394	929	929	929	929	929	465	465	465	465	0	0	0	0	0	0	0
WORKER VEHICLES																									
Personal commuting vehicles	15	25	34	44	65	82	98	131	146	175	218	243	288	338	407	460	502	533	561	594	623	697	749	806	857
DELIVERY TRUCKS																									
Light delivery truck (e.g. Fed-Ex)	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Heavy delivery truck (e.g. flat beds carrying construction eqp)	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424
Import fill trucks	2,035	2,035	2,035	2,035	2,035	2,035	2,035	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ONSITE TOTAL (lbs/day)	**31,956**	**32,684**	**37,738**	**37,663**	**36,386**	**39,086**	**33,350**	**27,289**	**25,261**	**24,850**	**26,290**	**26,569**	**27,276**	**28,924**	**30,028**	**31,302**	**33,671**	**34,758**	**34,786**	**38,170**	**38,973**	**38,475**	**40,030**	**42,556**	**41,639**
OFF-SITE																									
WORKER VEHICLES																									
Personal commuting vehicles	837	1,441	1,934	2,497	3,664	4,629	5,520	7,415	8,245	9,927	12,310	13,762	16,308	19,127	23,026	26,019	28,397	30,137	31,729	33,615	35,250	39,447	42,401	45,600	48,495
DELIVERY TRUCKS																									
Light delivery truck (e.g. Fed-Ex)	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457
Heavy delivery truck (e.g. flat beds carrying construction eqp)	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182
Import fill trucks	22,688	22,688	22,688	22,688	22,688	22,688	22,688	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LINEARS																									
ON ROAD																									
Dump Truck	0	0	0	0	0	0	0	0	0	0	1,144	1,144	1,717	1,717	1,717	1,717	1,717	1,717	1,717	1,717	1,144	1,144	0	0	0
Service Truck (MHD-DSL)	0	0	0	0	0	0	0	0	0	0	572	572	572	572	572	572	858	858	858	858	858	858	0	0	0
Pipe Haul Truck and Trailer (HHDT-DSL)	0	0	0	0	0	0	0	0	0	0	858	858	858	858	858	858	572	572	572	572	572	572	0	0	0
3/4 Ton Pickup (MHD-DSL)	0	0	0	0	0	0	0	0	0	0	1,360	1,360	1,360	1,360	1,360	1,360	2,041	2,041	2,041	2,041	2,041	2,041	0	0	0
Truck - water	0	0	0	0	0	0	0	0	0	0	572	572	1,144	1,144	1,144	1,144	1,144	1,144	1,144	1,144	572	572	0	0	0
OFF ROAD																									
Air Compressor (185 CFM)	0	0	0	0	0	0	0	0	0	0	214	214	427	427	641	641	641	641	427	427	214	214	0	0	0
Bore Machine (Hydraulic)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	233	233	233	233	233	0	0	0	0	0	0
12 Ton Hydra Crane	0	0	0	0	0	0	0	0	0	0	964	1,927	1,927	2,891	2,891	2,891	2,891	2,891	2,891	2,891	1,927	1,927	0	0	0
Backhoe/loader	0	0	0	0	0	0	0	0	0	0	1,442	1,442	2,403	2,403	2,403	2,403	2,403	2,403	2,403	2,403	1,442	1,442	0	0	0
Excavator - Trencher	0	0	0	0	0	0	0	0	0	0	0	427	427	427	427	427	427	427	427	427	427	427	0	0	0
Forklift	0	0	0	0	0	0	0	0	0	0	88	88	176	176	176	176	176	176	176	176	176	88	0	0	0
Welding Generator	0	0	0	0	0	0	0	0	0	0	1,811	1,811	1,811	1,811	1,811	1,811	1,811	1,811	1,811	1,811	1,811	1,811	0	0	0
3 to 5 Ton AC Roller	0	0	0	0	0	0	0	0	0	0	0	299	299	299	299	299	299	299	299	299	299	299	0	0	0
Pipe Bending Machine	0	0	0	0	0	0	0	0	0	0	347	347	694	694	694	694	694	694	694	347	347	0	0	0	0
RAIL																									
AIR COMPRESSOR 185	0	0	0	0	0	0	0	0	0	0	0	0	0	214	214	214	214	0	0	0	0	0	0	0	0
BOOM TRUCK 12 TON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	286	286	286	0	0	0	0	0	0	0	0
CAT 325 BACKHOE	0	0	0	0	0	0	0	0	0	0	0	0	471	471	0	0	0	0	0	0	0	0	0	0	0
CAT 330 BACKHOE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	798	0	0	0	0	0	0	0	0	0	0
CAT DOZER D-6	0	0	0	0	0	0	0	0	0	0	0	0	1,429	1,429	0	0	714	0	0	0	0	0	0	0	0
CAT MODEL 12 MOTOR GRADER	0	0	0	0	0	0	0	0	0	0	0	0	861	861	431	431	431	0	0	0	0	0	0	0	0
CAT ROLLER-COMPACTOR 563	0	0	0	0	0	0	0	0	0	0	0	0	678	678	339	0	0	0	0	0	0	0	0	0	0
CAT RUBBER TIRE LOADER 966	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,608	1,608	1,608	0	0	0	0	0	0	0	0
CAT SCRAPER 615	0	0	0	0	0	0	0	0	0	0	0	0	2,763	1,381	0	0	0	0	0	0	0	0	0	0	0
CRANE-ROUGH TERRAIN 45T	0	0	0	0	0	0	0	0	0	0	0	0	0	345	345	0	0	0	0	0	0	0	0	0	0
GENSET 5KW	0	0	0	0	0	0	0	0	0	0	0	0	0	302	151	0	0	0	0	0	0	0	0	0	0
JOHN DEERE TRACTOR 9400	0	0	0	0	0	0	0	0	0	0	0	0	1,602	0	0	0	0	0	0	0	0	0	0	0	0
PICK-UP CRAFT	0	0	0	0	0	0	0	0	0	0	0	0	4,725	4,725	4,725	4,725	4,725	0	0	0	0	0	0	0	0
PICK-UP OVERHEAD	0	0	0	0	0	0	0	0	0	0	0	0	1,320	3,959	3,959	3,299	3,299	0	0	0	0	0	0	0	0
RAIL BALLAST REGULATOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	660	660	0	0	0	0	0	0	0	0
RAIL CLIP MACHINE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	173	173	0	0	0	0	0	0	0	0
RAIL MOVER-SHUTTLE WAGON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	660	660	660	0	0	0	0	0	0	0	0
RAIL TAMPER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	660	660	0	0	0	0	0	0	0	0
RAIL WELDER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	101	51	0	0	0	0	0	0	0	0
RAMEX WALK BEHIND COMPACTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0
TRI-AXLE DUMP TRUCK	0	0	0	0	0	0	0	0	0	0	0	0	1,144	1,717	572	0	0	0	0	0	0	0	0	0	0
TRUCK FLATBED 14 FOOT	0	0	0	0	0	0	0	0	0	0	0	0	286	286	858	858	858	0	0	0	0	0	0	0	0
TRUCK TRACTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,116	1,116	0	0	0	0	0	0	0	0	0
WATER TRUCK, 4M ON-ROAD	0	0	0	0	0	0	0	0	0	0	0	0	286	286	286	286	286	0	0	0	0	0	0	0	0
WELDING MACHINE 350 AMP	0	0	0	0	0	0	0	0	0	0	0	0	51	51	51	51	51	0	0	0	0	0	0	0	0
LINEARS TOTAL (lbs/day)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9,373**	**11,062**	**29,431**	**31,502**	**31,623**	**30,352**	**30,581**	**15,906**	**15,692**	**15,113**	**11,830**	**11,395**	**0**	**0**	**0**
OFFSITE VEHICLES TOTAL (lbs/day)	**31,164**	**31,769**	**32,261**	**32,824**	**33,991**	**34,956**	**35,847**	**15,054**	**15,884**	**17,567**	**19,949**	**21,401**	**23,947**	**26,766**	**30,665**	**33,658**	**36,036**	**37,776**	**39,368**	**41,255**	**42,889**	**47,086**	**50,040**	**53,240**	**56,134**
TOTAL PROJECT (lbs/day)	63,121	64,452	69,999	70,487	70,377	74,042	69,197	42,343	41,144	42,416	55,611	59,032	80,654	87,192	92,316	95,312	100,288	88,441	89,847	94,538	93,692	96,956	90,069	95,795	97,773

CONSTRUCTION VEHICLES	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
ON-SITE																								
On-Road Vehicles																								
18 cy fill mat'l haul truck	0	0	0	0	0	0	0	0	0	0	858	858	858	858	286	286	286	0	0	0	0	0	0	0
Bus	4,006	4,006	4,006	4,006	4,006	4,006	4,006	4,006	4,006	4,006	3,433	3,433	3,433	2,861	2,861	1,431	1,431	858	858	572	572	572	286	286
Concrete Pumper Truck	0	0	286	286	286	286	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dump Truck	0	0	572	572	572	572	572	572	572	572	572	858	858	858	572	286	286	286	286	286	0	0	0	0
Diesel Tractor (Yard Dog)	3,245	3,245	3,245	3,245	3,245	3,245	3,245	3,245	3,245	3,245	1,298	1,298	1,298	1,298	1,298	1,298	1,298	0	0	0	0	0	0	0
Service Truck - 1 ton	572	572	572	572	572	572	572	572	572	572	572	572	572	572	572	572	572	286	286	286	286	286	286	286
Pile Driver Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck - Fuel/Lube	272	272	272	272	272	272	272	272	272	272	272	272	272	272	136	136	136	136	136	136	136	0	0	0
Tractor Truck 5th Wheel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trucks - Pickup 3/4 ton	3,401	3,401	3,401	3,401	3,401	3,401	3,401	3,401	3,401	3,401	3,401	3,401	3,401	3,401	3,401	3,401	3,401	2,041	2,041	1,360	1,360	1,360	1,360	680
Trucks - 3 ton	1,717	1,717	1,717	1,717	1,717	1,717	1,717	1,717	1,717	1,144	858	858	858	858	572	572	572	286	286	286	286	0	0	0
Truck - Water	572	572	572	572	572	572	572	572	572	572	572	572	572	572	572	572	572	286	286	286	286	286	286	286
Off Road Vehicles																								
Air Compressor 185 CFM	1,282	1,282	1,282	1,282	1,282	1,282	1,282	1,282	1,282	1,282	854	854	854	641	641	641	641	427	427	427	214	214	107	107
Air Compressor 750 CFM	901	901	901	901	450	450	450	450	225	225	225	225	225	225	225	225	225	225	225	225	225	225	225	225
Articulating Boom Platform	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bob cat loader	0	0	0	0	0	0	0	0	0	0	168	168	168	168	168	168	168	0	0	0	0	0	0	0
Bulldozer D10R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bulldozer D6C	0	0	388	388	388	388	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Trowel Machine	138	138	138	0	0	0	0	0	0	0	0	138	138	138	138	138	138	0	0	0	0	0	0	0
Concrete Vibrators	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cranes - Mobile 35 ton	1,508	1,077	1,077	1,077	1,077	1,077	1,077	1,077	1,077	431	431	431	431	431	431	431	431	431	431	431	215	215	215	215
Cranes - Mobile 45 ton	1,381	1,381	1,381	1,381	690	690	690	690	690	690	690	690	690	690	690	345	345	0	0	0	0	0	0	0
Crane - Mobile 65 ton	2,071	2,071	2,071	2,071	2,071	1,726	1,726	1,381	690	690	690	690	690	345	345	345	345	345	345	345	0	0	0	0
Cranes 100 / 150 ton cap	1,927	1,927	1,927	964	964	482	482	482	482	482	482	0	0	0	0	0	0	0	0	0	0	0	0	0
Diesel Powered Welder	1,269	1,269	1,269	1,269	1,269	1,269	1,269	761	761	761	761	761	507	507	507	507	507	254	254	254	254	152	152	101
Excavator - Backhoe/loader	0	0	0	0	0	0	0	0	0	0	481	481	481	481	240	240	240	0	0	0	0	0	0	0
Excavator - Earth Scraper 637	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - loader	0	0	318	318	318	318	0	0	0	0	0	0	318	318	318	0	0	0	0	0	0	0	0	0
Excavator - Motor Grader (CAT140H)	0	0	431	431	431	431	0	0	0	0	861	861	861	861	431	431	431	0	0	0	0	0	0	0
Excavator - Trencher (CAT320)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fired Heaters (2,000 BTU)	409	409	409	409	409	409	409	246	246	246	164	164	164	164	164	164	164	164	164	164	164	82	82	82
Forklift	352	352	264	264	264	264	264	264	264	264	264	264	264	264	264	264	264	88	88	88	88	44	44	44
Fusion Welder	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Haul / 600 tn Crane	1,302	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Haul / 1,000 tn Crane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light Plants	1,146	1,146	1,146	1,146	1,146	1,146	819	819	819	819	819	819	819	819	819	409	409	409	409	409	327	327	164	164
Man lifts - telescoping	1,979	1,979	1,979	1,979	1,979	1,979	1,979	1,979	1,979	1,979	1,484	1,484	1,484	990	990	990	990	495	495	495	495	198	198	198
Man lift - scissor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Portable Compaction Roller	0	0	0	678	678	678	678	678	678	0	0	0	678	678	678	339	339	0	0	0	0	0	0	0
Portable Compaction - Vibratory Plate	0	0	56	56	56	56	0	0	0	0	74	74	74	74	74	37	37	0	0	0	0	0	0	0
Portable Compaction - Ram	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pumps	246	246	246	246	246	246	246	246	246	246	246	246	246	246	246	246	246	164	164	164	164	164	164	164
Portable Power Generators	4,528	4,528	4,528	4,528	4,528	4,528	4,528	4,528	4,528	4,528	3,396	3,396	3,396	3,396	2,264	2,264	2,264	2,264	2,264	2,264	1,132	1,132	1,132	453
Truck Crane - Greater than 300 ton	3,095	3,095	3,095	3,095	2,321	2,321	1,547	1,547	1,547	774	774	774	774	774	0	0	0	0	0	0	0	0	0	0
Truck Crane - Greater than 200 ton	1,446	1,446	1,446	1,446	964	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vibratory Roller Ingersol-Rand 20 ton	0	0	929	929	929	929	0	0	0	0	0	0	465	465	465	465	0	0	0	0	0	0	0	0
WORKER VEHICLES																								
Personal commuting vehicles	867	954	1,021	1,054	1,060	1,071	1,055	1,045	998	945	915	832	805	683	555	440	299	239	238	238	221	187	171	129
DELIVERY TRUCKS																								
Light delivery truck (e.g. Fed-Ex)	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Heavy delivery truck (e.g. flat beds carrying construction eqp)	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424
Import fill trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ONSITE TOTAL (lbs/day)	**40,061**	**38,414**	**41,373**	**40,983**	**38,592**	**36,812**	**33,288**	**32,262**	**31,299**	**28,576**	**26,047**	**25,906**	**27,086**	**25,338**	**21,353**	**18,073**	**17,467**	**10,114**	**10,113**	**9,147**	**6,855**	**5,875**	**5,303**	**3,850**
OFF-SITE																								
WORKER VEHICLES																								
Personal commuting vehicles	49,067	53,947	57,764	59,641	59,975	60,565	59,688	59,142	56,484	53,466	51,785	47,061	45,535	38,644	31,407	24,884	16,929	13,513	13,488	13,488	12,479	10,584	9,698	7,310
DELIVERY TRUCKS																								
Light delivery truck (e.g. Fed-Ex)	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457	457
Heavy delivery truck (e.g. flat beds carrying construction eqp)	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182	7,182
Import fill trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LINEARS																								
ON ROAD																								
Dump Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Service Truck (MHD-DSL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pipe Haul Truck and Trailer (HHDT-DSL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/4 Ton Pickup (MHD-DSL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck - water	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OFF ROAD																								
Air Compressor (185 CFM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bore Machine (Hydraulic)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 Ton Hydra Crane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Backhoe/loader	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - Trencher	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forklift	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Welding Generator	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 to 5 Ton AC Roller	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pipe Bending Machine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL																								
AIR COMPRESSOR 185	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BOOM TRUCK 12 TON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 325 BACKHOE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 330 BACKHOE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT DOZER D-6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT MODEL 12 MOTOR GRADER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT ROLLER-COMPACTOR 563	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT RUBBER TIRE LOADER 966	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT SCRAPER 615	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CRANE-ROUGH TERRAIN 45T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENSET 5KW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JOHN DEERE TRACTOR 9400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PICK-UP CRAFT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PICK-UP OVERHEAD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL BALLAST REGULATOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL CLIP MACHINE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL MOVER-SHUTTLE WAGON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL TAMPER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL WELDER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAMEX WALK BEHIND COMPACTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRI-AXLE DUMP TRUCK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRUCK FLATBED 14 FOOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRUCK TRACTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WATER TRUCK, 4M ON-ROAD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WELDING MACHINE 350 AMP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LINEARS TOTAL (lbs/day)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
OFFSITE VEHICLES TOTAL (lbs/day)	**56,706**	**61,586**	**65,403**	**67,281**	**67,614**	**68,204**	**67,327**	**66,781**	**64,123**	**61,105**	**59,424**	**54,701**	**53,174**	**46,283**	**39,046**	**32,524**	**24,568**	**21,152**	**21,127**	**21,127**	**20,118**	**18,223**	**17,337**	**14,949**
TOTAL PROJECT (lbs/day)	96,767	100,000	106,777	108,263	106,206	105,016	100,615	99,043	95,422	89,681	85,471	80,607	80,260	71,621	60,399	50,596	42,036	31,266	31,241	30,274	26,973	24,098	22,640	18,800

Notes:

1. According to schedules provided by Fluor, Linear construction (except rail) takes place in months 11-22.
2. According to schedules provided by Fluor, Rail construction occurs in months 13-17.

Hydrogen Energy California, Kern County Power Project
Carbon Monoxide (CO) Emissions by Month
12/2012

CO	MONTHLY EMISSIONS (lbs/day)																																															
ON-SITE																																																
CONSTRUCTION VEHICLES	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**
On-Road Vehicles																																																	
18 cy fill mat'l haul truck	0	0	13	13	26	26	26	26	13	13	13	13	7	7	7	7	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	1	1	1	0	0	0	0	0	0	0
Bus	3	3	3	3	4	4	4	4	4	4	7	7	7	7	7	7	9	9	9	13	13	13	13	18	18	18	18	18	18	18	18	18	18	18	18	16	16	16	13	13	7	7	4	4	3	3	3	1	1
Concrete Pumper Truck	0	0	0	0	0	3	3	3	3	3	3	3	3	4	4	4	3	3	3	3	3	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dump Truck	4	5	5	4	4	4	4	4	4	4	3	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	3	3	3	3	3	4	4	4	3	1	1	1	1	1	0	0	0	0
Diesel Tractor (Yard Dog)	0	0	0	0	0	3	3	3	3	3	3	6	6	6	6	6	12	12	12	12	12	12	12	15	15	15	15	15	15	15	15	15	15	15	15	6	6	6	6	6	6	6	0	0	0	0	0	0	0
Service Truck - 1 ton	3	3	3	5	5	5	5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1	1	1	1	1	1
Pile Driver Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck - Fuel/Lube	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
Tractor Truck 5th Wheel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trucks - Pickup 3/4 ton	3	3	3	3	3	4	4	5	10	10	10	10	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	10	10	6	6	6	6	3
Trucks - 3 ton	1	1	1	1	1	3	3	3	5	5	5	5	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	5	4	4	4	4	3	3	3	1	1	1	1	0	0	0
Truck - Water	7	7	7	7	7	7	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1	1	1	1	1	1
Off Road Vehicles																																																	
Air Compressor 185 CFM	3	3	3	3	4	4	4	4	4	4	4	4	4	8	8	8	10	10	10	13	13	13	13	15	15	15	15	15	15	15	15	15	15	15	15	10	10	10	8	8	8	8	5	5	5	3	3	1	1
Air Compressor 750 CFM	0	0	0	0	2	2	2	2	3	3	3	3	3	3	3	6	6	6	6	6	6	6	6	6	6	6	6	6	6	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Articulating Boom Platform	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bob cat loader	0	0	2	2	2	2	2	8	8	8	8	8	6	6	6	6	6	6	4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	0	0	0	0	0	0	0
Bulldozer D10R	17	17	17	11	11	11	11	11	11	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bulldozer D6C	9	9	9	9	6	6	6	6	6	6	3	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Trowel Machine	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0
Concrete Vibrators	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cranes - Mobile 35 ton	0	0	0	0	0	0	2	2	2	6	6	6	6	11	11	11	11	11	11	11	11	11	11	11	11	11	8	8	8	8	8	8	8	8	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2
Cranes - Mobile 45 ton	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4	4	4	4	8	8	8	8	8	8	8	8	8	8	8	4	4	4	4	4	4	4	4	4	4	4	2	2	0	0	0	0	0	0	0
Crane - Mobile 65 ton	0	0	0	0	0	0	0	0	0	0	0	2	2	4	8	10	10	10	12	12	12	12	12	12	12	12	12	12	12	12	10	10	8	4	4	4	4	4	2	2	2	2	2	2	2	0	0	0	0
Cranes 100 / 150 ton cap	0	0	0	0	0	0	0	0	0	0	1	1	3	3	4	4	5	5	5	5	5	5	5	5	5	5	5	5	3	3	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Diesel Powered Welder	0	0	0	3	3	3	3	3	3	3	3	3	3	3	3	4	4	4	5	5	5	5	5	7	7	7	7	7	7	7	7	7	4	4	4	4	4	3	3	3	3	3	1	1	1	1	1	1	1
Excavator - Backhoe/loader	3	3	5	7	7	7	7	7	7	7	7	3	3	3	3	3	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	2	2	2	0	0	0	0	0	0	0
Excavator - Earth Scraper 637	56	56	56	56	32	32	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - loader	4	4	4	4	4	4	4	4	4	4	4	4	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	0	0	0	0	0	0	2	2	2	0	0	0	0	0	0	0	0	0
Excavator - Motor Grader (CAT140H)	0	3	3	3	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	0	0	0	0	6	6	6	6	3	3	3	0	0	0	0	0	0	0
Excavator - Trencher (CAT320)	0	0	0	0	0	7	7	7	7	7	7	7	7	7	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fired Heaters (2,000 BTU)	0	0	0	0	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
Forklift	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1	1	1	1	1	1
Fusion Welder	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Haul / 600 tn Crane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Haul / 1,000 tn Crane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light Plants	0	0	1	1	3	3	3	3	1	1	2	2	3	3	3	3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	3	3	3	3	3	3	3	3	2	2	2	2	2	1	1	1	1
Man lifts - telescoping	0	0	0	0	0	0	0	0	5	5	5	9	9	9	9	9	9	9	9	14	14	14	14	19	19	19	19	19	19	19	19	19	19	19	19	14	14	14	9	9	9	9	5	5	5	5	2	2	2
Man lift - scissor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Portable Compaction Roller	0	0	12	12	12	12	12	12	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	5	5	5	5	5	5	0	0	0	5	5	5	2	2	0	0	0	0	0	0	0
Portable Compaction - Vibratory Plate	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Portable Compaction - Ram	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pumps	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Portable Power Generators	8	8	8	8	12	12	12	12	12	20	20	20	20	20	20	31	31	31	31	31	31	31	41	41	41	41	41	41	41	41	41	41	41	41	41	31	31	31	31	20	20	20	20	20	20	10	10	10	4
Truck Crane - Greater than 300 ton	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	5	5	7	7	9	9	9	9	9	9	9	9	9	7	7	5	5	5	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0
Truck Crane - Greater than 200 ton	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	3	3	3	4	4	4	4	4	4	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vibratory Roller Ingersol-Rand 20 ton	8	8	8	8	8	8	8	8	8	5	5	5	5	5	3	3	3	3	0	0	0	0	0	0	0	0	0	5	5	5	5	0	0	0	0	0	0	3	3	3	3	0	0	0	0	0	0	0	0
WORKER VEHICLES																																																	
Personal commuting vehicles	0	0	0	0	0	0	1	1	1	1	1	1	2	2	2	3	3	3	3	4	4	4	4	5	5	5	6	6	6	6	6	6	6	6	6	5	5	5	4	3	3	2	1	1	1	1	1	1	1
DELIVERY TRUCKS																																																	
Light delivery truck (e.g. Fed-Ex)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy delivery truck (e.g. flat beds carrying construction eqp)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Import fill trucks	10	10	10	10	10	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ONSITE TOTAL (lbs/day)	**146**	**151**	**180**	**181**	**185**	**200**	**175**	**153**	**145**	**150**	**155**	**158**	**159**	**171**	**174**	**185**	**193**	**196**	**195**	**211**	**214**	**212**	**223**	**239**	**230**	**225**	**219**	**236**	**237**	**226**	**220**	**201**	**196**	**190**	**175**	**157**	**158**	**166**	**154**	**130**	**113**	**109**	**65**	**65**	**61**	**43**	**36**	**33**	**23**
OFF-SITE																																																	
WORKER VEHICLES																																																	
Personal commuting vehicles	7	12	16	20	30	38	45	60	67	80	100	112	132	155	187	211	230	244	257	272	286	320	344	370	393	398	437	468	483	486	491	484	479	458	433	420	381	369	313	255	202	137	110	109	109	101	86	79	59
DELIVERY TRUCKS																																																	
Light delivery truck (e.g. Fed-Ex)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Heavy delivery truck (e.g. flat beds carrying construction eqp)	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Import fill trucks	47	47	47	47	47	47	47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LINEARS																																																	
ON ROAD																																																	
Dump Truck	0	0	0	0	0	0	0	0	0	0	5	5	8	8	8	8	8	8	8	8	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Service Truck (MHD-DSL)	0	0	0	0	0	0	0	0	0	0	3	3	3	3	3	3	4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pipe Haul Truck and Trailer (HHDT-DSL)	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4	4	3	3	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/4 Ton Pickup (MHD-DSL)	0	0	0	0	0	0	0	0	0	0	6	6	6	6	6	6	10	10	10	10	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck - water	0	0	0	0	0	0	0	0	0	0	3	3	5	5	5	5	5	5	5	5	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OFF ROAD																																																	
Air Compressor (185 CFM)	0	0	0	0	0	0	0	0	0	0	3	3	5	5	8	8	8	8	5	5	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bore Machine (Hydraulic)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 Ton Hydra Crane	0	0	0	0	0	0	0	0	0	0	3	5	5	8	8	8	8	8	8	8	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Backhoe/loader	0	0	0	0	0	0	0	0	0	0	10	10	16	16	16	16	16	16	16	16	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - Trencher	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	3	3	3	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forklift	0	0	0	0	0	0	0	0	0	0	1	1	2	2	2	2	2	2	2	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Welding Generator	0	0	0	0	0	0	0	0	0	0	16	16	16	16	16	16	16	16	16	16	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 to 5 Ton AC Roller	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	3	3	3	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pipe Bending Machine	0	0	0	0	0	0	0	0	0	0	3	3	7	7	7	7	7	7	7	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL																																																	
AIR COMPRESSOR 185	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BOOM TRUCK 12 TON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 325 BACKHOE	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 330 BACKHOE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT DOZER D-6	0	0	0	0	0	0	0	0	0	0	0	0	9	9	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT MODEL 12 MOTOR GRADER	0	0	0	0	0	0	0	0	0	0	0	0	6	6	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT ROLLER-COMPACTOR 563	0	0	0	0	0	0	0	0	0	0	0	0	5	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT RUBBER TIRE LOADER 966	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT SCRAPER 615	0	0	0	0	0	0	0	0	0	0	0	0	8	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CRANE-ROUGH TERRAIN 45T	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENSET 5KW	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JOHN DEERE TRACTOR 9400	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PICK-UP CRAFT	0	0	0	0	0	0	0	0	0	0	0	0	10	10	10	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PICK-UP OVERHEAD	0	0	0	0	0	0	0	0	0	0	0	0	7	22	22	18	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL BALLAST REGULATOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL CLIP MACHINE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL MOVER-SHUTTLE WAGON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL TAMPER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL WELDER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAMEX WALK BEHIND COMPACTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRI-AXLE DUMP TRUCK	0	0	0	0	0	0	0	0	0	0	0	0	5	8	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRUCK FLATBED 14 FOOT	0	0	0	0	0	0	0	0	0	0	0	0	1	1	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRUCK TRACTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WATER TRUCK, 4M ON-ROAD	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WELDING MACHINE 350 AMP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LINEARS TOTAL (lbs/day)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**56**	**65**	**143**	**162**	**155**	**151**	**155**	**94**	**91**	**86**	**69**	**65**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
OFFSITE VEHICLES TOTAL (lbs/day)	**69**	**74**	**78**	**83**	**92**	**100**	**107**	**75**	**82**	**96**	**115**	**127**	**148**	**170**	**202**	**226**	**246**	**260**	**273**	**288**	**301**	**335**	**359**	**385**	**408**	**413**	**453**	**484**	**499**	**501**	**506**	**499**	**495**	**473**	**449**	**435**	**397**	**384**	**329**	**270**	**217**	**153**	**125**	**125**	**125**	**117**	**101**	**94**	**75**
TOTAL PROJECT (lbs/day)	216	225	258	264	277	300	282	229	227	245	327	350	449	503	530	562	594	550	559	586	584	612	582	624	638	638	671	719	735	727	726	700	690	663	624	593	555	551	482	400	330	262	190	190	186	159	138	127	98

Notes:

1. According to schedules provided by Fluor, Linear construction (except rail) takes place in months 11-22.
2. According to schedules provided by Fluor, Rail construction occurs in months 13-17.

Hydrogen Energy California, Kern County Power Project
Methane (CH4) Emissions by Month
12/2012

CH4

MONTHLY EMISSIONS (lbs/day)

CONSTRUCTION VEHICLES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
ON-SITE																																																	
On-Road Vehicles																																																	
18 cy fill mat'l haul truck	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Concrete Pumper Truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dump Truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diesel Tractor (Yard Dog)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Service Truck - 1 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pile Driver Truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck - Fuel/Lube	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tractor Truck 5th Wheel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trucks - Pickup 3/4 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trucks - 3 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck - Water	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Off Road Vehicles																																																	
Air Compressor 185 CFM	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.0	0.0
Air Compressor 750 CFM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Articulating Boom Platform	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bob cat loader	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulldozer D10R	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulldozer D6C	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Concrete Trowel Machine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Concrete Vibrators	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranes - Mobile 35 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
Cranes - Mobile 45 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crane - Mobile 65 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranes 100 / 150 ton cap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diesel Powered Welder	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Backhoe/loader	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Earth Scraper 637	1.3	1.3	1.3	1.3	0.8	0.8	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - loader	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Motor Grader (CAT140H)	0.0	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Trencher (CAT320)	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fired Heaters (2,000 BTU)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Forklift	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fusion Welder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy Haul / 600 tn Crane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy Haul / 1,000 tn Crane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Light Plants	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Man lifts - telescoping	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Man lift - scissor	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction Roller	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction - Vibratory Plate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction - Ram	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumps	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Power Generators	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.6	0.6	0.6	0.6	0.6	0.6	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.0	1.0	1.0	1.0	0.6	0.6	0.6	0.6	0.6	0.6	0.3	0.3	0.3	0.1
Truck Crane - Greater than 300 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck Crane - Greater than 200 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vibratory Roller Ingersol-Rand 20 ton	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WORKER VEHICLES																																																	
Personal commuting vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DELIVERY TRUCKS																																																	
Light delivery truck (e.g. Fed-Ex)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy delivery truck (e.g. flat beds carrying construction eqp)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Import fill trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ONSITE TOTAL (lbs/day)	**2.8**	**2.9**	**3.3**	**3.3**	**3.2**	**3.4**	**2.9**	**2.6**	**2.6**	**2.8**	**2.9**	**2.9**	**2.9**	**3.2**	**3.2**	**3.7**	**3.7**	**3.8**	**3.9**	**4.3**	**4.4**	**4.4**	**4.7**	**5.0**	**4.8**	**4.7**	**4.5**	**4.8**	**4.8**	**4.5**	**4.4**	**4.0**	**3.8**	**3.7**	**3.4**	**3.0**	**3.0**	**3.1**	**2.8**	**2.3**	**2.1**	**2.1**	**1.4**	**1.4**	**1.3**	**0.8**	**0.7**	**0.6**	**0.4**
OFF-SITE																																																	
WORKER VEHICLES																																																	
Personal commuting vehicles	0.2	0.3	0.5	0.6	0.9	1.1	1.3	1.7	1.9	2.3	2.9	3.2	3.8	4.5	5.4	6.1	6.7	7.1	7.5	7.9	8.3	9.3	10.0	10.7	11.4	11.6	12.7	13.6	14.1	14.1	14.3	14.1	13.9	13.3	12.6	12.2	11.1	10.7	9.1	7.4	5.9	4.0	3.2	3.2	3.2	2.9	2.5	2.3	1.7
DELIVERY TRUCKS																																																	
Light delivery truck (e.g. Fed-Ex)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy delivery truck (e.g. flat beds carrying construction eqp)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Import fill trucks	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS																																																	
ON ROAD																																																	
Dump Truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Service Truck (MHD-DSL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pipe Haul Truck and Trailer (HHDT-DSL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3/4 Ton Pickup (MHD-DSL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck - water	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OFF ROAD																																																	
Air Compressor (185 CFM)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bore Machine (Hydraulic)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 Ton Hydra Crane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Backhoe/loader	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Trencher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Forklift	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Welding Generator	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 to 5 Ton AC Roller	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pipe Bending Machine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL																																																	
AIR COMPRESSOR 185	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BOOM TRUCK 12 TON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT 325 BACKHOE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT 330 BACKHOE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT DOZER D-6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT MODEL 12 MOTOR GRADER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT ROLLER-COMPACTOR 563	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT RUBBER TIRE LOADER 966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT SCRAPER 615	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRANE-ROUGH TERRAIN 45T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GENSET 5KW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JOHN DEERE TRACTOR 9400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PICK-UP CRAFT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PICK-UP OVERHEAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL BALLAST REGULATOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL CLIP MACHINE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL MOVER-SHUTTLE WAGON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL TAMPER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL WELDER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAMEX WALK BEHIND COMPACTOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRI-AXLE DUMP TRUCK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRUCK FLATBED 14 FOOT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRUCK TRACTOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WATER TRUCK, 4M ON-ROAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WELDING MACHINE 350 AMP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS TOTAL (lbs/day)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.1**	**1.4**	**2.9**	**3.2**	**3.1**	**3.0**	**3.1**	**1.9**	**1.8**	**1.7**	**1.4**	**1.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
OFFSITE VEHICLES TOTAL (lbs/day)	**1.6**	**1.8**	**1.9**	**2.0**	**2.3**	**2.5**	**2.7**	**2.1**	**2.3**	**2.7**	**3.3**	**3.6**	**4.2**	**4.9**	**5.8**	**6.5**	**7.0**	**7.5**	**7.8**	**8.3**	**8.7**	**9.7**	**10.3**	**11.1**	**11.8**	**11.9**	**13.1**	**14.0**	**14.4**	**14.5**	**14.6**	**14.4**	**14.3**	**13.7**	**13.0**	**12.6**	**11.4**	**11.1**	**9.5**	**7.8**	**6.2**	**4.3**	**3.5**	**3.5**	**3.5**	**3.3**	**2.8**	**2.6**	**2.1**
TOTAL PROJECT (lbs/day)	4.5	4.7	5.2	5.4	5.5	5.9	5.6	4.7	4.9	5.4	7.2	7.9	10.0	11.2	12.1	13.2	13.8	13.2	13.6	14.3	14.5	15.3	15.1	16.1	16.6	16.6	17.6	18.8	19.2	19.0	19.0	18.4	18.1	17.4	16.4	15.6	14.4	14.2	12.3	10.1	8.3	6.4	4.9	4.9	4.9	4.1	3.5	3.3	2.5

Notes:

1. According to schedules provided by Fluor, Linear construction (except rail) takes place in months 11-22.
2. According to schedules provided by Fluor, Rail construction occurs in months 13-17.

Hydrogen Energy California, Kern County Power Project
Nitrous Oxide (N2O) Emissions by Month
12/2012

N2O

MONTHLY EMISSIONS (lbs/day)

	CONSTRUCTION VEHICLES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
ON-SITE	**On-Road Vehicles**																																																	
	18 cy fill mat'l haul truck	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Bus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Concrete Pumper Truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Dump Truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Diesel Tractor (Yard Dog)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Service Truck - 1 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Pile Driver Truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Truck - Fuel/Lube	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Tractor Truck 5th Wheel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Trucks - Pickup 3/4 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Trucks - 3 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Truck - Water	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Off Road Vehicles																																																	
	Air Compressor 185 CFM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Air Compressor 750 CFM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Articulating Boom Platform	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Bob cat loader	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Bulldozer D10R	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Bulldozer D6C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Concrete Trowel Machine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Concrete Vibrators	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Cranes - Mobile 35 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Cranes - Mobile 45 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Crane - Mobile 65 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Cranes 100 / 150 ton cap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Diesel Powered Welder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Excavator - Backhoe/loader	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Excavator - Earth Scraper 637	0.3	0.3	0.3	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Excavator - loader	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Excavator - Motor Grader (CAT140H)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Excavator - Trencher (CAT320)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Fired Heaters (2,000 BTU)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Forklift	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Fusion Welder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Heavy Haul / 600 tn Crane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Heavy Haul / 1,000 tn Crane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Light Plants	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Man lifts - telescoping	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Man lift - scissor	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Portable Compaction Roller	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Portable Compaction - Vibratory Plate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Portable Compaction - Ram	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Pumps	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Portable Power Generators	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Truck Crane - Greater than 300 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Truck Crane - Greater than 200 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Vibratory Roller Ingersol-Rand 20 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	WORKER VEHICLES																																																	
	Personal commuting vehicles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00
	DELIVERY TRUCKS																																																	
	Light delivery truck (e.g. Fed-Ex)	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	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	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Heavy delivery truck (e.g. flat beds carrying construction eqp)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Import fill trucks	0.03	0.03	0.03	0.03	0.03	0.03	0.03	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	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	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	0.00	0.00	0.00
	ONSITE TOTAL (lbs/day)	**0.6**	**0.6**	**0.7**	**0.7**	**0.7**	**0.7**	**0.6**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.6**	**0.6**	**0.6**	**0.7**	**0.7**	**0.8**	**0.8**	**0.9**	**0.9**	**0.9**	**0.9**	**1.0**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.8**	**0.8**	**0.7**	**0.7**	**0.7**	**0.6**	**0.5**	**0.5**	**0.6**	**0.5**	**0.4**	**0.4**	**0.4**	**0.2**	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**
OFF-SITE	**WORKER VEHICLES**																																																	
	Personal commuting vehicles	0.10	0.17	0.23	0.30	0.44	0.55	0.66	0.88	0.98	1.18	1.46	1.63	1.94	2.27	2.73	3.09	3.37	3.58	3.77	3.99	4.19	4.68	5.04	5.42	5.76	5.83	6.41	6.86	7.08	7.12	7.19	7.09	7.02	6.71	6.35	6.15	5.59	5.41	4.59	3.73	2.96	2.01	1.60	1.60	1.60	1.48	1.26	1.15	0.87
	DELIVERY TRUCKS																																																	
	Light delivery truck (e.g. Fed-Ex)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
	Heavy delivery truck (e.g. flat beds carrying construction eqp)	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
	Import fill trucks	0.68	0.68	0.68	0.68	0.68	0.68	0.68	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	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	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	0.00	0.00	0.00
	LINEARS																																																	
	ON ROAD																																																	
	Dump Truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Service Truck (MHD-DSL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Pipe Haul Truck and Trailer (HHDT-DSL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	3/4 Ton Pickup (MHD-DSL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Truck - water	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	OFF ROAD																																																	
	Air Compressor (185 CFM)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Bore Machine (Hydraulic)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	12 Ton Hydra Crane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Backhoe/loader	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Excavator - Trencher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Forklift	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Welding Generator	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	3 to 5 Ton AC Roller	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Pipe Bending Machine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	RAIL																																																	
	AIR COMPRESSOR 185	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	BOOM TRUCK 12 TON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CAT 325 BACKHOE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CAT 330 BACKHOE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CAT DOZER D-6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CAT MODEL 12 MOTOR GRADER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CAT ROLLER-COMPACTOR 563	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CAT RUBBER TIRE LOADER 966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CAT SCRAPER 615	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CRANE-ROUGH TERRAIN 45T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	GENSET 5KW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	JOHN DEERE TRACTOR 9400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PICK-UP CRAFT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	PICK-UP OVERHEAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	RAIL BALLAST REGULATOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	RAIL CLIP MACHINE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	RAIL MOVER-SHUTTLE WAGON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	RAIL TAMPER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	RAIL WELDER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	RAMEX WALK BEHIND COMPACTOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	TRI-AXLE DUMP TRUCK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	TRUCK FLATBED 14 FOOT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	TRUCK TRACTOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	WATER TRUCK, 4M ON-ROAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	WELDING MACHINE 350 AMP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LINEARS TOTAL (lbs/day)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.2**	**0.3**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.3**	**0.3**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
	OFFSITE VEHICLES TOTAL (lbs/day)	**1.0**	**1.1**	**1.1**	**1.2**	**1.4**	**1.5**	**1.6**	**1.1**	**1.2**	**1.4**	**1.7**	**1.9**	**2.2**	**2.5**	**3.0**	**3.3**	**3.6**	**3.8**	**4.0**	**4.2**	**4.4**	**4.9**	**5.3**	**5.7**	**6.0**	**6.1**	**6.6**	**7.1**	**7.3**	**7.4**	**7.4**	**7.3**	**7.3**	**6.9**	**6.6**	**6.4**	**5.8**	**5.6**	**4.8**	**4.0**	**3.2**	**2.3**	**1.8**	**1.8**	**1.8**	**1.7**	**1.5**	**1.4**	**1.1**
	TOTAL PROJECT (lbs/day)	1.6	1.7	1.8	1.9	2.0	2.2	2.2	1.7	1.7	1.9	2.4	2.7	3.1	3.5	4.0	4.4	4.7	4.9	5.1	5.4	5.6	6.1	6.2	6.6	6.9	7.0	7.5	8.0	8.2	8.2	8.2	8.0	8.0	7.6	7.2	6.9	6.4	6.2	5.4	4.4	3.6	2.6	2.1	2.1	2.0	1.9	1.6	1.5	1.2

Notes:

1. According to schedules provided by Fluor, Linear construction (except rail) takes place in months 11-22.
2. According to schedules provided by Fluor, Rail construction occurs in months 13-17.

Hydrogen Energy California, Kern County Power Project
Nitrogen Oxides (NOx) Emissions by Month
12/2012

NOx — MONTHLY EMISSIONS (lbs/day)

CONSTRUCTION VEHICLES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
ON-SITE																																																	
On-Road Vehicles																																																	
18 cy fill mat'l haul truck	0	0	28	28	57	57	57	57	28	28	28	28	14	14	14	14	14	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	9	9	9	3	3	3	0	0	0	0	0	0	0
Bus	6	6	6	6	9	9	9	9	9	9	14	14	14	14	14	14	20	20	20	28	28	28	28	40	40	40	40	40	40	40	40	40	40	40	40	34	34	34	28	28	14	14	9	9	6	6	6	3	3
Concrete Pumper Truck	0	0	0	0	0	6	6	6	6	6	6	6	6	9	9	9	6	6	6	6	6	0	0	0	0	0	0	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dump Truck	9	11	11	9	9	9	9	9	9	9	6	6	6	6	6	0	0	0	0	0	0	0	0	0	0	0	0	6	6	6	6	6	6	6	6	6	9	9	9	6	3	3	3	3	3	0	0	0	0
Diesel Tractor (Yard Dog)	0	0	0	0	0	6	6	6	6	6	6	13	13	13	13	13	26	26	26	26	26	26	26	32	32	32	32	32	32	32	32	32	32	32	32	13	13	13	13	13	13	13	0	0	0	0	0	0	0
Service Truck - 1 ton	6	6	6	11	11	11	11	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	3	3	3	3	3	3	3
Pile Driver Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck - Fuel/Lube	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	0	0	0
Tractor Truck 5th Wheel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trucks - Pickup 3/4 ton	6	6	6	6	6	7	8	9	17	17	17	17	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	17	17	11	11	11	11	6
Trucks - 3 ton	3	3	3	3	3	6	6	6	11	11	11	11	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	11	9	9	9	9	6	6	6	3	3	3	3	0	0	0
Truck - Water	14	14	14	14	14	14	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	6	9	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	3	3	3	3	3	3	3
Off Road Vehicles																																																	
Air Compressor 185 CFM	2	2	2	2	3	3	3	3	3	3	3	3	3	7	7	7	9	9	9	11	11	11	11	13	13	13	13	13	13	13	13	13	13	13	13	9	9	9	7	7	7	7	4	4	4	2	2	1	1
Air Compressor 750 CFM	0	0	0	0	3	3	3	3	5	5	5	5	5	5	5	10	10	10	10	10	10	10	10	10	10	10	10	10	10	5	5	5	5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Articulating Boom Platform	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bob cat loader	0	0	2	2	2	2	2	7	7	7	7	7	5	5	5	5	5	5	3	3	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	0	0	0	0	0	0	0
Bulldozer D10R	40	40	40	26	26	26	26	26	26	13	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bulldozer D6C	14	14	14	14	9	9	9	9	9	9	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Trowel Machine	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0
Concrete Vibrators	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cranes - Mobile 35 ton	0	0	0	0	0	0	2	2	2	9	9	9	9	17	17	17	17	17	17	17	17	17	17	17	17	17	12	12	12	12	12	12	12	12	5	5	5	5	5	5	5	5	5	5	5	2	2	2	2
Cranes - Mobile 45 ton	0	0	0	0	0	0	0	0	0	0	7	7	7	7	7	7	7	7	13	13	13	13	13	13	13	13	13	13	13	7	7	7	7	7	7	7	7	7	7	7	3	3	0	0	0	0	0	0	0
Crane - Mobile 65 ton	0	0	0	0	0	0	0	0	0	0	0	3	3	7	13	17	17	17	20	20	20	20	20	20	20	20	20	20	20	20	17	17	13	7	7	7	7	7	3	3	3	3	3	3	3	0	0	0	0
Cranes 100 / 150 ton cap	0	0	0	0	0	0	0	0	0	0	4	4	9	9	13	13	17	17	17	17	17	17	17	17	17	17	17	17	9	9	4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0
Diesel Powered Welder	0	0	0	5	5	5	5	5	5	5	5	5	5	5	5	7	7	7	9	9	9	9	9	12	12	12	12	12	12	12	12	12	7	7	7	7	7	5	5	5	5	5	2	2	2	2	1	1	1
Excavator - Backhoe/loader	4	4	6	8	8	8	8	8	8	8	8	4	4	4	4	4	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	2	2	2	0	0	0	0	0	0	0
Excavator - Earth Scraper 637	131	131	131	131	75	75	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - loader	6	6	6	6	6	6	6	6	6	6	6	6	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	0	0	0	0	0	0	3	3	3	0	0	0	0	0	0	0	0	0
Excavator - Motor Grader (CAT140H)	0	4	4	4	13	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	0	0	0	0	9	9	9	9	4	4	4	0	0	0	0	0	0	0
Excavator - Trencher (CAT320)	0	0	0	0	0	11	11	11	11	11	11	11	11	11	11	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fired Heaters (2,000 BTU)	0	0	0	0	3	3	3	3	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Forklift	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1	1	1	0	0	0
Fusion Welder	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Haul / 600 tn Crane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	11	11	11	11	11	11	11	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Haul / 1,000 tn Crane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	11	11	11	11	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light Plants	1	1	1	3	5	5	5	5	3	3	4	4	5	5	6	6	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	6	6	6	6	6	6	6	6	6	3	3	3	3	3	3	3	1	1
Man lifts - telescoping	0	0	0	0	0	0	0	0	5	5	5	9	9	9	9	9	9	9	9	14	14	14	14	19	19	19	19	19	19	19	19	19	19	19	19	14	14	14	9	9	9	9	5	5	5	5	2	2	2
Man lift - scissor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Portable Compaction Roller	0	0	18	18	18	18	18	18	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	0	0	0	0	7	7	7	7	7	7	0	0	0	7	7	7	4	4	0	0	0	0	0	0	0
Portable Compaction - Vibratory Plate	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0
Portable Compaction - Ram	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pumps	2	2	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1
Portable Power Generators	9	9	9	9	13	13	13	13	13	22	22	22	22	22	22	32	32	32	32	32	32	32	43	43	43	43	43	43	43	43	43	43	43	43	43	32	32	32	32	22	22	22	22	22	22	11	11	11	4
Truck Crane - Greater than 300 ton	0	0	0	0	0	0	0	0	0	0	0	6	6	6	6	6	12	12	18	18	24	24	24	24	24	24	24	24	24	18	18	12	12	12	6	6	6	6	6	0	0	0	0	0	0	0	0	0	0
Truck Crane - Greater than 200 ton	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4	9	9	9	13	13	13	13	13	13	13	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vibratory Roller Ingersol-Rand 20 ton	13	13	13	13	13	13	13	13	13	9	9	9	9	9	4	4	4	4	0	0	0	0	0	0	0	0	0	9	9	9	9	0	0	0	0	0	0	4	4	4	4	0	0	0	0	0	0	0	0
WORKER VEHICLES																																																	
Personal commuting vehicles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
DELIVERY TRUCKS																																																	
Light delivery truck (e.g. Fed-Ex)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Heavy delivery truck (e.g. flat beds carrying construction eqp)	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
Import fill trucks	24.2	24.2	24.2	24.2	24.2	24.2	24.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONSITE TOTAL (lbs/day)	**298**	**305**	**356**	**355**	**348**	**376**	**324**	**263**	**242**	**240**	**252**	**255**	**259**	**275**	**284**	**296**	**314**	**323**	**321**	**351**	**358**	**352**	**366**	**390**	**381**	**367**	**352**	**381**	**378**	**356**	**340**	**307**	**298**	**289**	**263**	**238**	**238**	**250**	**234**	**198**	**168**	**163**	**94**	**94**	**85**	**63**	**54**	**49**	**36**
OFF-SITE																																																	
WORKER VEHICLES																																																	
Personal commuting vehicles	0.8	1.4	1.9	2.4	3.6	4.5	5.4	7.2	8.0	9.6	11.9	13.4	15.8	18.6	22.3	25.2	27.6	29.2	30.8	32.6	34.2	38.3	41.1	44.2	47.1	47.6	52.3	56.0	57.9	58.2	58.8	57.9	57.4	54.8	51.9	50.2	45.7	44.2	37.5	30.5	24.1	16.4	13.1	13.1	13.1	12.1	10.3	9.4	7.1
DELIVERY TRUCKS																																																	
Light delivery truck (e.g. Fed-Ex)	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
Heavy delivery truck (e.g. flat beds carrying construction eqp)	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6	73.6
Import fill trucks	232.4	232.4	232.4	232.4	232.4	232.4	232.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS																																																	
ON ROAD																																																	
Dump Truck	0	0	0	0	0	0	0	0	0	0	11	11	17	17	17	17	17	17	17	17	11	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Service Truck (MHD-DSL)	0	0	0	0	0	0	0	0	0	0	6	6	6	6	6	6	9	9	9	9	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pipe Haul Truck and Trailer (HHDT-DSL)	0	0	0	0	0	0	0	0	0	0	9	9	9	9	9	9	6	6	6	6	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/4 Ton Pickup (MHD-DSL)	0	0	0	0	0	0	0	0	0	0	11	11	11	11	11	11	17	17	17	17	17	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck - water	0	0	0	0	0	0	0	0	0	0	6	6	11	11	11	11	11	11	11	11	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OFF ROAD																																																	
Air Compressor (185 CFM)	0	0	0	0	0	0	0	0	0	0	2	2	4	4	7	7	7	7	4	4	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bore Machine (Hydraulic)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 Ton Hydra Crane	0	0	0	0	0	0	0	0	0	0	9	17	17	26	26	26	26	26	26	26	17	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Backhoe/loader	0	0	0	0	0	0	0	0	0	0	13	13	21	21	21	21	21	21	21	21	13	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - Trencher	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4	4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forklift	0	0	0	0	0	0	0	0	0	0	1	1	2	2	2	2	2	2	2	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Welding Generator	0	0	0	0	0	0	0	0	0	0	17	17	17	17	17	17	17	17	17	17	17	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 to 5 Ton AC Roller	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	3	3	3	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pipe Bending Machine	0	0	0	0	0	0	0	0	0	0	3	3	6	6	6	6	6	6	6	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL																																																	
AIR COMPRESSOR 185	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BOOM TRUCK 12 TON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 325 BACKHOE	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 330 BACKHOE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT DOZER D-6	0	0	0	0	0	0	0	0	0	0	0	0	15	15	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT MODEL 12 MOTOR GRADER	0	0	0	0	0	0	0	0	0	0	0	0	9	9	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT ROLLER-COMPACTOR 563	0	0	0	0	0	0	0	0	0	0	0	0	7	7	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT RUBBER TIRE LOADER 966	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	13	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT SCRAPER 615	0	0	0	0	0	0	0	0	0	0	0	0	27	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CRANE-ROUGH TERRAIN 45T	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENSET 5KW	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JOHN DEERE TRACTOR 9400	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PICK-UP CRAFT	0	0	0	0	0	0	0	0	0	0	0	0	28	28	28	28	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PICK-UP OVERHEAD	0	0	0	0	0	0	0	0	0	0	0	0	10	30	30	25	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL BALLAST REGULATOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL CLIP MACHINE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL MOVER-SHUTTLE WAGON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL TAMPER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL WELDER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAMEX WALK BEHIND COMPACTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRI-AXLE DUMP TRUCK	0	0	0	0	0	0	0	0	0	0	0	0	11	17	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRUCK FLATBED 14 FOOT	0	0	0	0	0	0	0	0	0	0	0	0	3	3	9	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRUCK TRACTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WATER TRUCK, 4M ON-ROAD	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WELDING MACHINE 350 AMP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LINEARS TOTAL (lbs/day)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**87**	**103**	**256**	**275**	**266**	**254**	**259**	**147**	**145**	**140**	**109**	**105**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
OFFSITE VEHICLES TOTAL (lbs/day)	**311**	**312**	**312**	**313**	**314**	**315**	**316**	**85**	**86**	**88**	**90**	**92**	**94**	**97**	**101**	**103**	**106**	**107**	**109**	**111**	**112**	**116**	**119**	**122**	**125**	**126**	**131**	**134**	**136**	**136**	**137**	**136**	**136**	**133**	**130**	**128**	**124**	**122**	**116**	**109**	**102**	**95**	**91**	**91**	**91**	**90**	**88**	**88**	**85**
TOTAL PROJECT (lbs/day)	609	617	668	668	662	691	640	349	328	328	430	450	608	647	651	653	679	578	575	602	579	574	485	513	506	493	483	515	514	493	477	443	434	422	393	367	362	373	350	307	270	258	185	185	176	153	142	136	121

Notes:

1. According to schedules provided by Fluor, Linear construction (except rail) takes place in months 11-22.
2. According to schedules provided by Fluor, Rail construction occurs in months 13-17.

PM10 - Combustion

MONTHLY EMISSIONS (lbs/day)

CONSTRUCTION VEHICLES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
ON-SITE																
On-Road Vehicles																
18 cy fill mat'l haul truck	0.00	0.00	1.77	1.77	3.53	3.53	3.53	3.53	1.77	1.77	1.77	1.77	0.88	0.88	0.88	0.88
Bus	0.35	0.35	0.35	0.35	0.53	0.53	0.53	0.53	0.53	0.53	0.88	0.88	0.88	0.88	0.88	0.88
Concrete Pumper Truck	0.00	0.00	0.00	0.00	0.00	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.53	0.53	0.53
Dump Truck	0.53	0.71	0.71	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.35	0.35	0.35	0.35	0.35	0.00
Diesel Tractor (Yard Dog)	0.00	0.00	0.00	0.00	0.00	0.40	0.40	0.40	0.40	0.40	0.40	0.80	0.80	0.80	0.80	0.80
Service Truck - 1 ton	0.35	0.35	0.35	0.71	0.71	0.71	0.71	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Pile Driver Truck	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	0.00	0.00	0.00
Truck - Fuel/Lube	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Tractor Truck 5th Wheel	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	0.00	0.00	0.00
Trucks - Pickup 3/4 ton	0.34	0.34	0.34	0.34	0.34	0.41	0.48	0.55	1.03	1.03	1.03	1.03	1.72	1.72	1.72	1.72
Trucks - 3 ton	0.18	0.18	0.18	0.18	0.18	0.35	0.35	0.35	0.71	0.71	0.71	0.71	1.06	1.06	1.06	1.06
Truck - Water	0.88	0.88	0.88	0.88	0.88	0.88	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53
Off Road Vehicles																
Air Compressor 185 CFM	0.23	0.23	0.23	0.23	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.69	0.69	0.69
Air Compressor 750 CFM	0.00	0.00	0.00	0.00	0.24	0.24	0.24	0.24	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.95
Articulating Boom Platform	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	0.00	0.00	0.00
Bob cat loader	0.00	0.00	0.16	0.16	0.16	0.16	0.16	0.63	0.63	0.63	0.63	0.63	0.47	0.47	0.47	0.47
Bulldozer D10R	1.54	1.54	1.54	1.02	1.02	1.02	1.02	1.02	1.02	0.51	0.51	0.00	0.00	0.00	0.00	0.00
Bulldozer D6C	1.19	1.19	1.19	1.19	0.80	0.80	0.80	0.80	0.80	0.80	0.40	0.40	0.40	0.40	0.40	0.00
Concrete Trowel Machine	0.00	0.00	0.00	0.00	0.00	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Concrete Vibrators	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	0.00	0.00	0.00
Cranes - Mobile 35 ton	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.21	0.21	0.85	0.85	0.85	0.85	1.48	1.48	1.48
Cranes - Mobile 45 ton	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.38	0.38	0.38	0.38	0.38
Crane - Mobile 65 ton	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.19	0.38	0.76	0.95
Cranes 100 / 150 ton cap	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.15	0.30	0.30	0.45	0.45
Diesel Powered Welder	0.00	0.00	0.00	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.45
Excavator - Backhoe/loader	0.35	0.35	0.53	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.35	0.35	0.35	0.35	0.35
Excavator - Earth Scraper 637	5.08	5.08	5.08	5.08	2.90	2.90	1.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavator - loader	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.28	0.28	0.00	0.00
Excavator - Motor Grader (CAT140H)	0.00	0.39	0.39	0.39	1.16	1.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavator - Trencher (CAT320)	0.00	0.00	0.00	0.00	0.00	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Fired Heaters (2,000 BTU)	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.08	0.08	0.13	0.13	0.13	0.13	0.13	0.13
Forklift	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
Fusion Welder	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	0.00	0.00	0.00
Heavy Haul / 600 tn Crane	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	0.00	0.00	0.00
Heavy Haul / 1,000 tn Crane	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	0.00	0.00	0.00
Light Plants	0.03	0.03	0.05	0.10	0.20	0.20	0.20	0.20	0.10	0.10	0.15	0.15	0.20	0.20	0.25	0.25
Man lifts - telescoping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.42	0.42	0.85	0.85	0.85	0.85	0.85
Man lift - scissor	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	0.00	0.00	0.00
Portable Compaction Roller	0.00	0.00	1.53	1.53	1.53	1.53	1.53	1.53	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
Portable Compaction - Vibratory Plate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Portable Compaction - Ram	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	0.00	0.00	0.00
Pumps	0.08	0.08	0.08	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Portable Power Generators	0.75	0.75	0.75	0.75	1.12	1.12	1.12	1.12	1.12	1.87	1.87	1.87	1.87	1.87	1.87	2.80
Truck Crane - Greater than 300 ton	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.22	0.22	0.22	0.22
Truck Crane - Greater than 200 ton	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	0.00	0.15	0.15
Vibratory Roller Ingersol-Rand 20 ton	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.47	0.47	0.47	0.47	0.47	0.24	0.24
WORKER VEHICLES																
Personal commuting vehicles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DELIVERY TRUCKS																
Light delivery truck (e.g. Fed-Ex)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy delivery truck (e.g. flat beds carrying construction eqp)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Import fill trucks	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONSITE TOTAL (lbs/day)	**15.35**	**15.91**	**19.57**	**19.83**	**20.91**	**22.95**	**20.26**	**17.53**	**16.22**	**16.85**	**17.27**	**17.64**	**17.56**	**18.91**	**19.13**	**20.13**
OFF-SITE																
WORKER VEHICLES																
Personal commuting vehicles	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1.0	1.2	1.4	1.6	1.9	2.2
DELIVERY TRUCKS																
Light delivery truck (e.g. Fed-Ex)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy delivery truck (e.g. flat beds carrying construction eqp)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Import fill trucks	8.4	8.4	8.4	8.4	8.4	8.4	8.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS																
ON ROAD																
Dump Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.71	0.71	1.06	1.06	1.06	1.06
Service Truck (MHD-DSL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.35	0.35	0.35	0.35	0.35
Pipe Haul Truck and Trailer (HHDT-DSL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.53	0.53	0.53	0.53	0.53	0.53
3/4 Ton Pickup (MHD-DSL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.69	0.69	0.69	0.69	0.69	0.69
Truck - water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.35	0.71	0.71	0.71	0.71
OFF ROAD																
Air Compressor (185 CFM)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.23	0.46	0.46	0.69	0.69
Bore Machine (Hydraulic)	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	0.00	0.09	0.09
12 Ton Hydra Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.60	0.60	0.90	0.90	0.90
Backhoe/loader	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.06	1.06	1.77	1.77	1.77	1.77
Excavator - Trencher	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.34	0.34	0.34	0.34
Forklift	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.15	0.15	0.15	0.15
Welding Generator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	1.50	1.50	1.50	1.50	1.50
3 to 5 Ton AC Roller	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.28	0.28	0.28	0.28
Pipe Bending Machine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.25	0.51	0.51	0.51	0.51
RAIL																
AIR COMPRESSOR 185	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	0.23	0.23	0.23
BOOM TRUCK 12 TON	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	0.00	0.18	0.18
CAT 325 BACKHOE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.00	0.00
CAT 330 BACKHOE	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	0.00	0.17	0.00
CAT DOZER D-6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84	0.84	0.00	0.00
CAT MODEL 12 MOTOR GRADER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77	0.77	0.39	0.39
CAT ROLLER-COMPACTOR 563	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.61	0.31	0.00
CAT RUBBER TIRE LOADER 966	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	0.00	0.45	0.45
CAT SCRAPER 615	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.04	0.52	0.00	0.00
CRANE-ROUGH TERRAIN 45T	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	0.19	0.19	0.00
GENSET 5KW	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	0.18	0.09	0.00
JOHN DEERE TRACTOR 9400	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00
PICK-UP CRAFT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.91	0.91	0.91	0.91
PICK-UP OVERHEAD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52	1.56	1.56	1.30
RAIL BALLAST REGULATOR	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	0.00	0.00	0.26
RAIL CLIP MACHINE	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	0.00	0.00	0.13
RAIL MOVER-SHUTTLE WAGON	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	0.00	0.26	0.26
RAIL TAMPER	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	0.00	0.00	0.26
RAIL WELDER	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	0.00	0.00	0.06
RAMEX WALK BEHIND COMPACTOR	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	0.01	0.00	0.00
TRI-AXLE DUMP TRUCK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.71	1.06	0.35	0.00
TRUCK FLATBED 14 FOOT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.18	0.53	0.53
TRUCK TRACTOR	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	0.00	0.26	0.26
WATER TRUCK, 4M ON-ROAD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.18	0.18	0.18
WELDING MACHINE 350 AMP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03
LINEARS TOTAL (lbs/day)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**6.05**	**6.97**	**15.26**	**16.71**	**15.65**	**14.98**
OFFSITE VEHICLES TOTAL (lbs/day)	**11.20**	**11.25**	**11.30**	**11.34**	**11.44**	**11.52**	**11.60**	**3.33**	**3.40**	**3.54**	**3.74**	**3.86**	**4.08**	**4.31**	**4.64**	**4.89**
TOTAL PROJECT (lbs/day)	26.55	27.17	30.86	31.18	32.35	34.47	31.86	20.86	19.62	20.40	27.06	28.47	36.90	39.93	39.41	40.00

CONSTRUCTION VEHICLES	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
ON-SITE																	
On-Road Vehicles																	
18 cy fill mat'l haul truck	0.88	0.88	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	0.00	0.00
Bus	1.24	1.24	1.24	1.77	1.77	1.77	1.77	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.47
Concrete Pumper Truck	0.35	0.35	0.35	0.35	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.18	0.18	0.18	0.00	0.00
Dump Truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.35	0.35	0.35	0.35	0.35
Diesel Tractor (Yard Dog)	1.60	1.60	1.60	1.60	1.60	1.60	1.60	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Service Truck - 1 ton	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Pile Driver Truck	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	0.00	0.00	0.00	0.00
Truck - Fuel/Lube	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Tractor Truck 5th Wheel	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	0.00	0.00	0.00	0.00
Trucks - Pickup 3/4 ton	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72
Trucks - 3 ton	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Truck - Water	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.35	0.53	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Off Road Vehicles																	
Air Compressor 185 CFM	0.92	0.92	0.92	1.15	1.15	1.15	1.15	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37
Air Compressor 750 CFM	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.48	0.48	0.48	0.48
Articulating Boom Platform	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	0.00	0.00	0.00	0.00
Bob cat loader	0.47	0.47	0.31	0.31	0.31	0.31	0.31	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bulldozer D10R	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	0.00	0.00	0.00	0.00
Bulldozer D6C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.40	0.40	0.40	0.00	0.00
Concrete Trowel Machine	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.00	0.00	0.00	0.00	0.00
Concrete Vibrators	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	0.00	0.00	0.00	0.00
Cranes - Mobile 35 ton	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Cranes - Mobile 45 ton	0.38	0.38	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.38	0.38	0.38	0.38
Crane - Mobile 65 ton	0.95	0.95	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	0.95	0.95	0.76
Cranes 100 / 150 ton cap	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.30	0.30	0.15	0.15	0.15
Diesel Powered Welder	0.45	0.45	0.60	0.60	0.60	0.60	0.60	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.45
Excavator - Backhoe/loader	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavator - Earth Scraper 637	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	0.00	0.00	0.00	0.00
Excavator - loader	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.28	0.28	0.28	0.00	0.00
Excavator - Motor Grader (CAT140H)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.39	0.39	0.39	0.00	0.00
Excavator - Trencher (CAT320)	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	0.00	0.00	0.00	0.00
Fired Heaters (2,000 BTU)	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.08
Forklift	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.23	0.23	0.23	0.23	0.23	0.23
Fusion Welder	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	0.00	0.00	0.00	0.00
Heavy Haul / 600 tn Crane	0.00	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Haul / 1,000 tn Crane	0.00	0.00	0.00	0.38	0.38	0.38	0.38	0.38	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Light Plants	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.25	0.25
Man lifts - telescoping	0.85	0.85	0.85	1.27	1.27	1.27	1.27	1.69	1.69	1.69	1.69	1.69	1.69	1.69	1.69	1.69	1.69
Man lift - scissor	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	0.00	0.00	0.00	0.00
Portable Compaction Roller	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.00	0.00	0.00	0.00	0.61	0.61	0.61	0.61	0.61
Portable Compaction - Vibratory Plate	0.03	0.03	0.03	0.03	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.00	0.00
Portable Compaction - Ram	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	0.00	0.00	0.00	0.00
Pumps	0.15	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Portable Power Generators	2.80	2.80	2.80	2.80	2.80	2.80	3.74	3.74	3.74	3.74	3.74	3.74	3.74	3.74	3.74	3.74	3.74
Truck Crane - Greater than 300 ton	0.45	0.45	0.67	0.67	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.67	0.67	0.45	0.45
Truck Crane - Greater than 200 ton	0.15	0.15	0.15	0.30	0.30	0.30	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.30	0.00	0.00	0.00
Vibratory Roller Ingersol-Rand 20 ton	0.24	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.47	0.00	0.00
WORKER VEHICLES																	
Personal commuting vehicles	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
DELIVERY TRUCKS																	
Light delivery truck (e.g. Fed-Ex)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy delivery truck (e.g. flat beds carrying construction eqp)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Import fill trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONSITE TOTAL (lbs/day)	**20.79**	**21.10**	**20.77**	**22.48**	**22.71**	**22.36**	**23.42**	**25.15**	**24.23**	**23.67**	**22.88**	**24.89**	**25.09**	**23.86**	**23.21**	**21.16**	**20.62**
OFF-SITE																	
WORKER VEHICLES																	
Personal commuting vehicles	2.4	2.5	2.7	2.8	2.9	3.3	3.5	3.8	4.1	4.1	4.5	4.8	5.0	5.0	5.1	5.0	4.9
DELIVERY TRUCKS																	
Light delivery truck (e.g. Fed-Ex)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy delivery truck (e.g. flat beds carrying construction eqp)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Import fill trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS																	
ON ROAD																	
Dump Truck	1.06	1.06	1.06	1.06	0.71	0.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Service Truck (MHD-DSL)	0.53	0.53	0.53	0.53	0.53	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe Haul Truck and Trailer (HHDT-DSL)	0.35	0.35	0.35	0.35	0.35	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/4 Ton Pickup (MHD-DSL)	1.03	1.03	1.03	1.03	1.03	1.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck - water	0.71	0.71	0.71	0.71	0.35	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OFF ROAD																	
Air Compressor (185 CFM)	0.69	0.69	0.46	0.46	0.23	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bore Machine (Hydraulic)	0.09	0.09	0.09	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	0.00
12 Ton Hydra Crane	0.90	0.90	0.90	0.90	0.60	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe/loader	1.77	1.77	1.77	1.77	1.06	1.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavator - Trencher	0.34	0.34	0.34	0.34	0.34	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forklift	0.15	0.15	0.15	0.15	0.15	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Welding Generator	1.50	1.50	1.50	1.50	1.50	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 to 5 Ton AC Roller	0.28	0.28	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe Bending Machine	0.51	0.51	0.51	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RAIL																	
AIR COMPRESSOR 185	0.23	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	0.00	0.00	0.00
BOOM TRUCK 12 TON	0.18	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	0.00	0.00	0.00
CAT 325 BACKHOE	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	0.00	0.00	0.00	0.00
CAT 330 BACKHOE	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	0.00	0.00	0.00	0.00
CAT DOZER D-6	0.42	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	0.00	0.00	0.00
CAT MODEL 12 MOTOR GRADER	0.39	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	0.00	0.00	0.00
CAT ROLLER-COMPACTOR 563	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	0.00	0.00	0.00	0.00
CAT RUBBER TIRE LOADER 966	0.45	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	0.00	0.00	0.00
CAT SCRAPER 615	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	0.00	0.00	0.00	0.00
CRANE-ROUGH TERRAIN 45T	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	0.00	0.00	0.00	0.00
GENSET 5KW	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	0.00	0.00	0.00	0.00
JOHN DEERE TRACTOR 9400	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	0.00	0.00	0.00	0.00
PICK-UP CRAFT	0.91	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	0.00	0.00	0.00
PICK-UP OVERHEAD	1.30	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	0.00	0.00	0.00
RAIL BALLAST REGULATOR	0.26	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	0.00	0.00	0.00
RAIL CLIP MACHINE	0.13	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	0.00	0.00	0.00
RAIL MOVER-SHUTTLE WAGON	0.26	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	0.00	0.00	0.00
RAIL TAMPER	0.26	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	0.00	0.00	0.00
RAIL WELDER	0.03	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	0.00	0.00	0.00
RAMEX WALK BEHIND COMPACTOR	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	0.00	0.00	0.00	0.00
TRI-AXLE DUMP TRUCK	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	0.00	0.00	0.00	0.00
TRUCK FLATBED 14 FOOT	0.53	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	0.00	0.00	0.00
TRUCK TRACTOR	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	0.00	0.00	0.00	0.00
WATER TRUCK, 4M ON-ROAD	0.18	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	0.00	0.00	0.00
WELDING MACHINE 350 AMP	0.03	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	0.00	0.00	0.00
LINEARS TOTAL (lbs/day)	**15.45**	**9.91**	**9.68**	**9.34**	**7.39**	**7.06**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
OFFSITE VEHICLES TOTAL (lbs/day)	**5.09**	**5.23**	**5.37**	**5.52**	**5.66**	**6.01**	**6.26**	**6.53**	**6.77**	**6.82**	**7.22**	**7.54**	**7.70**	**7.73**	**7.78**	**7.70**	**7.66**
TOTAL PROJECT (lbs/day)	41.33	36.24	35.82	37.35	35.76	35.44	29.68	31.68	31.00	30.49	30.10	32.43	32.79	31.58	30.99	28.86	28.28

CONSTRUCTION VEHICLES	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
ON-SITE																
On-Road Vehicles																
18 cy fill mat'l haul truck	0.00	0.00	0.53	0.53	0.53	0.53	0.18	0.18	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bus	2.47	2.47	2.12	2.12	2.12	1.77	1.77	0.88	0.88	0.53	0.53	0.35	0.35	0.35	0.18	0.18
Concrete Pumper Truck	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	0.00	0.00	0.00
Dump Truck	0.35	0.35	0.35	0.53	0.53	0.53	0.35	0.18	0.18	0.18	0.18	0.18	0.00	0.00	0.00	0.00
Diesel Tractor (Yard Dog)	2.00	2.00	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Service Truck - 1 ton	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Pile Driver Truck	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	0.00	0.00	0.00
Truck - Fuel/Lube	0.14	0.14	0.14	0.14	0.14	0.14	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.00	0.00	0.00
Tractor Truck 5th Wheel	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	0.00	0.00	0.00
Trucks - Pickup 3/4 ton	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.03	1.03	0.69	0.69	0.69	0.69	0.34
Trucks - 3 ton	1.06	0.71	0.53	0.53	0.53	0.53	0.35	0.35	0.35	0.18	0.18	0.18	0.18	0.00	0.00	0.00
Truck - Water	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Off Road Vehicles																
Air Compressor 185 CFM	1.37	1.37	0.92	0.92	0.92	0.69	0.69	0.69	0.69	0.46	0.46	0.46	0.23	0.23	0.11	0.11
Air Compressor 750 CFM	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Articulating Boom Platform	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	0.00	0.00	0.00
Bob cat loader	0.00	0.00	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bulldozer D10R	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	0.00	0.00	0.00
Bulldozer D6C	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	0.00	0.00	0.00
Concrete Trowel Machine	0.00	0.00	0.00	0.12	0.12	0.12	0.12	0.12	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Vibrators	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	0.00	0.00	0.00
Cranes - Mobile 35 ton	1.06	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.21	0.21	0.21	0.21
Cranes - Mobile 45 ton	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.19	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane - Mobile 65 ton	0.38	0.38	0.38	0.38	0.38	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.00	0.00	0.00	0.00
Cranes 100 / 150 ton cap	0.15	0.15	0.15	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
Diesel Powered Welder	0.45	0.45	0.45	0.45	0.30	0.30	0.30	0.30	0.30	0.15	0.15	0.15	0.15	0.09	0.09	0.06
Excavator - Backhoe/loader	0.00	0.00	0.35	0.35	0.35	0.35	0.18	0.18	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavator - Earth Scraper 637	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	0.00	0.00	0.00
Excavator - loader	0.00	0.00	0.00	0.00	0.28	0.28	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavator - Motor Grader (CAT140H)	0.00	0.00	0.77	0.77	0.77	0.77	0.39	0.39	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavator - Trencher (CAT320)	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	0.00	0.00	0.00
Fired Heaters (2,000 BTU)	0.08	0.08	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.03	0.03	0.03
Forklift	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.08	0.08	0.08	0.08	0.04	0.04	0.04
Fusion Welder	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	0.00	0.00	0.00
Heavy Haul / 600 tn Crane	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	0.00	0.00	0.00
Heavy Haul / 1,000 tn Crane	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	0.00	0.00	0.00
Light Plants	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.13	0.13	0.13	0.13	0.13	0.10	0.10	0.05	0.05
Man lifts - telescoping	1.69	1.69	1.27	1.27	1.27	0.85	0.85	0.85	0.85	0.42	0.42	0.42	0.42	0.17	0.17	0.17
Man lift - scissor	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	0.00	0.00	0.00
Portable Compaction Roller	0.61	0.00	0.00	0.00	0.61	0.61	0.61	0.31	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portable Compaction - Vibratory Plate	0.00	0.00	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portable Compaction - Ram	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	0.00	0.00	0.00
Pumps	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Portable Power Generators	3.74	3.74	2.80	2.80	2.80	2.80	1.87	1.87	1.87	1.87	1.87	1.87	0.93	0.93	0.93	0.37
Truck Crane - Greater than 300 ton	0.45	0.22	0.22	0.22	0.22	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Crane - Greater than 200 ton	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	0.00	0.00	0.00
Vibratory Roller Ingersol-Rand 20 ton	0.00	0.00	0.00	0.00	0.24	0.24	0.24	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WORKER VEHICLES																
Personal commuting vehicles	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DELIVERY TRUCKS																
Light delivery truck (e.g. Fed-Ex)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy delivery truck (e.g. flat beds carrying construction eqp)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Import fill trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONSITE TOTAL (lbs/day)	**19.99**	**18.17**	**16.43**	**16.57**	**17.55**	**16.34**	**13.83**	**11.85**	**11.61**	**6.73**	**6.73**	**6.21**	**4.44**	**3.81**	**3.47**	**2.53**
OFF-SITE																
WORKER VEHICLES																
Personal commuting vehicles	4.7	4.5	4.3	3.9	3.8	3.2	2.6	2.1	1.4	1.1	1.1	1.1	1.0	0.9	0.8	0.6
DELIVERY TRUCKS																
Light delivery truck (e.g. Fed-Ex)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy delivery truck (e.g. flat beds carrying construction eqp)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Import fill trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS																
ON ROAD																
Dump Truck	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	0.00	0.00	0.00
Service Truck (MHD-DSL)	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	0.00	0.00	0.00
Pipe Haul Truck and Trailer (HHDT-DSL)	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	0.00	0.00	0.00
3/4 Ton Pickup (MHD-DSL)	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	0.00	0.00	0.00
Truck - water	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	0.00	0.00	0.00
OFF ROAD																
Air Compressor (185 CFM)	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	0.00	0.00	0.00
Bore Machine (Hydraulic)	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	0.00	0.00	0.00
12 Ton Hydra Crane	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	0.00	0.00	0.00
Backhoe/loader	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	0.00	0.00	0.00
Excavator - Trencher	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	0.00	0.00	0.00
Forklift	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	0.00	0.00	0.00
Welding Generator	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	0.00	0.00	0.00
3 to 5 Ton AC Roller	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	0.00	0.00	0.00
Pipe Bending Machine	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	0.00	0.00	0.00
RAIL																
AIR COMPRESSOR 185	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	0.00	0.00	0.00
BOOM TRUCK 12 TON	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	0.00	0.00	0.00
CAT 325 BACKHOE	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	0.00	0.00	0.00
CAT 330 BACKHOE	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	0.00	0.00	0.00
CAT DOZER D-6	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	0.00	0.00	0.00
CAT MODEL 12 MOTOR GRADER	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	0.00	0.00	0.00
CAT ROLLER-COMPACTOR 563	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	0.00	0.00	0.00
CAT RUBBER TIRE LOADER 966	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	0.00	0.00	0.00
CAT SCRAPER 615	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	0.00	0.00	0.00
CRANE-ROUGH TERRAIN 45T	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	0.00	0.00	0.00
GENSET 5KW	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	0.00	0.00	0.00
JOHN DEERE TRACTOR 9400	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	0.00	0.00	0.00
PICK-UP CRAFT	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	0.00	0.00	0.00
PICK-UP OVERHEAD	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	0.00	0.00	0.00
RAIL BALLAST REGULATOR	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	0.00	0.00	0.00
RAIL CLIP MACHINE	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	0.00	0.00	0.00
RAIL MOVER-SHUTTLE WAGON	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	0.00	0.00	0.00
RAIL TAMPER	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	0.00	0.00	0.00
RAIL WELDER	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	0.00	0.00	0.00
RAMEX WALK BEHIND COMPACTOR	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	0.00	0.00	0.00
TRI-AXLE DUMP TRUCK	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	0.00	0.00	0.00
TRUCK FLATBED 14 FOOT	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	0.00	0.00	0.00
TRUCK TRACTOR	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	0.00	0.00	0.00
WATER TRUCK, 4M ON-ROAD	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	0.00	0.00	0.00
WELDING MACHINE 350 AMP	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	0.00	0.00	0.00
LINEARS TOTAL (lbs/day)	**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**	**0.00**	**0.00**	**0.00**
OFFSITE VEHICLES TOTAL (lbs/day)	**7.44**	**7.18**	**7.04**	**6.65**	**6.52**	**5.94**	**5.34**	**4.79**	**4.13**	**3.84**	**3.84**	**3.84**	**3.76**	**3.60**	**3.52**	**3.33**
TOTAL PROJECT (lbs/day)	27.43	25.35	23.47	23.22	24.07	22.29	19.17	16.65	15.73	10.57	10.57	10.05	8.19	7.41	6.99	5.86

Notes:

1. According to schedules provided by Fluor, Linear construction (except rail) takes place in months 11-22.
2. According to schedules provided by Fluor, Rail construction occurs in months 13-17.

Hydrogen Energy California, Kern County Power Project
PM2.5 Emissions by Month - from Combustion Sources
12/2012

PM2.5 - Combustion

MONTHLY EMISSIONS (lbs/day)

CONSTRUCTION VEHICLES	1	2	3	4	5	6	7	8	9	10	11	12	13
ON-SITE													
On-Road Vehicles													
18 cy fill mat'l haul truck	0.0	0.0	1.6	1.6	3.2	3.2	3.2	3.2	1.6	1.6	1.6	1.6	0.8
Bus	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.8	0.8	0.8
Concrete Pumper Truck	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Dump Truck	0.5	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.3	0.3	0.3
Diesel Tractor (Yard Dog)	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.4	0.7	0.7
Service Truck - 1 ton	0.3	0.3	0.3	0.6	0.6	0.6	0.6	0.3	0.3	0.3	0.3	0.3	0.3
Pile Driver Truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck - Fuel/Lube	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Tractor Truck 5th Wheel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trucks - Pickup 3/4 ton	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.9	0.9	0.9	0.9	1.6
Trucks - 3 ton	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.6	0.6	0.6	0.6	1.0
Truck - Water	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Off Road Vehicles													
Air Compressor 185 CFM	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Air Compressor 750 CFM	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.4	0.4	0.4	0.4	0.4
Articulating Boom Platform	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bob cat loader	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.6	0.6	0.6	0.6	0.6	0.4
Bulldozer D10R	1.4	1.4	1.4	0.9	0.9	0.9	0.9	0.9	0.9	0.5	0.5	0.0	0.0
Bulldozer D6C	1.1	1.1	1.1	1.1	0.7	0.7	0.7	0.7	0.7	0.7	0.4	0.4	0.4
Concrete Trowel Machine	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Concrete Vibrators	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranes - Mobile 35 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.8	0.8	0.8	0.8
Cranes - Mobile 45 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4
Crane - Mobile 65 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2
Cranes 100 / 150 ton cap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3
Diesel Powered Welder	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Excavator - Backhoe/loader	0.3	0.3	0.5	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.3	0.3
Excavator - Earth Scraper 637	4.7	4.7	4.7	4.7	2.7	2.7	1.3	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - loader	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.3
Excavator - Motor Grader (CAT140H)	0.0	0.4	0.4	0.4	1.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Trencher (CAT320)	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Fired Heaters (2,000 BTU)	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Forklift	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Fusion Welder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy Haul / 600 tn Crane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy Haul / 1,000 tn Crane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Light Plants	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2
Man lifts - telescoping	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.8	0.8
Man lift - scissor	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction Roller	0.0	0.0	1.4	1.4	1.4	1.4	1.4	1.4	0.6	0.6	0.6	0.6	0.6
Portable Compaction - Vibratory Plate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction - Ram	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumps	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Portable Power Generators	0.7	0.7	0.7	0.7	1.0	1.0	1.0	1.0	1.0	1.7	1.7	1.7	1.7
Truck Crane - Greater than 300 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2
Truck Crane - Greater than 200 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vibratory Roller Ingersol-Rand 20 ton	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.4	0.4	0.4	0.4
WORKER VEHICLES													
Personal commuting vehicles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DELIVERY TRUCKS													
Light delivery truck (e.g. Fed-Ex)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy delivery truck (e.g. flat beds carrying construction eqp)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Import fill trucks	1.4	1.4	1.4	1.4	1.4	1.4	1.4	0.0	0.0	0.0	0.0	0.0	0.0
ONSITE TOTAL (lbs/day)	**14.0**	**14.6**	**17.9**	**18.1**	**19.1**	**20.9**	**18.5**	**16.0**	**14.8**	**15.4**	**15.8**	**16.1**	**16.0**
OFF-SITE													
WORKER VEHICLES													
Personal commuting vehicles	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.4	0.4	0.5	0.6	0.7
DELIVERY TRUCKS													
Light delivery truck (e.g. Fed-Ex)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy delivery truck (e.g. flat beds carrying construction eqp)	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Import fill trucks	7.2	7.2	7.2	7.2	7.2	7.2	7.2	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS													
ON ROAD													
Dump Truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	1.0
Service Truck (MHD-DSL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3
Pipe Haul Truck and Trailer (HHDT-DSL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5
3/4 Ton Pickup (MHD-DSL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6
Truck - water	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.6
OFF ROAD													
Air Compressor (185 CFM)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.4
Bore Machine (Hydraulic)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 Ton Hydra Crane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.6	0.6
Backhoe/loader	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.6
Excavator - Trencher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3
Forklift	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Welding Generator	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.4
3 to 5 Ton AC Roller	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3
Pipe Bending Machine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.5
RAIL													
AIR COMPRESSOR 185	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BOOM TRUCK 12 TON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT 325 BACKHOE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
CAT 330 BACKHOE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT DOZER D-6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
CAT MODEL 12 MOTOR GRADER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
CAT ROLLER-COMPACTOR 563	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
CAT RUBBER TIRE LOADER 966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT SCRAPER 615	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
CRANE-ROUGH TERRAIN 45T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GENSET 5KW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JOHN DEERE TRACTOR 9400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
PICK-UP CRAFT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
PICK-UP OVERHEAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
RAIL BALLAST REGULATOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL CLIP MACHINE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL MOVER-SHUTTLE WAGON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL TAMPER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL WELDER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAMEX WALK BEHIND COMPACTOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRI-AXLE DUMP TRUCK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
TRUCK FLATBED 14 FOOT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
TRUCK TRACTOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WATER TRUCK, 4M ON-ROAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
WELDING MACHINE 350 AMP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS TOTAL (lbs/day)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**5.5**	**6.4**	**14.0**
OFFSITE VEHICLES TOTAL (lbs/day)	**9.6**	**9.6**	**9.6**	**9.7**	**9.7**	**9.7**	**9.8**	**2.6**	**2.7**	**2.8**	**2.9**	**2.9**	**3.0**
TOTAL PROJECT (lbs/day)	23.6	24.2	27.5	27.8	28.8	30.7	28.3	18.6	17.5	18.1	24.1	25.4	33.0

CONSTRUCTION VEHICLES	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
ON-SITE																					
On-Road Vehicles																					
18 cy fill mat'l haul truck	0.8	0.8	0.8	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bus	0.8	0.8	0.8	1.1	1.1	1.1	1.6	1.6	1.6	1.6	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
Concrete Pumper Truck	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.0	0.0	0.0
Dump Truck	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Diesel Tractor (Yard Dog)	0.7	0.7	0.7	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Service Truck - 1 ton	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Pile Driver Truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck - Fuel/Lube	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Tractor Truck 5th Wheel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trucks - Pickup 3/4 ton	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Trucks - 3 ton	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Truck - Water	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.3	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Off Road Vehicles																					
Air Compressor 185 CFM	0.6	0.6	0.6	0.8	0.8	0.8	1.1	1.1	1.1	1.1	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Air Compressor 750 CFM	0.4	0.4	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.4	0.4	0.4	0.4	0.2
Articulating Boom Platform	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bob cat loader	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulldozer D10R	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulldozer D6C	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.0	0.0	0.0
Concrete Trowel Machine	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Concrete Vibrators	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranes - Mobile 35 ton	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Cranes - Mobile 45 ton	0.4	0.4	0.4	0.4	0.4	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.4	0.4	0.4	0.4
Crane - Mobile 65 ton	0.4	0.7	0.9	0.9	0.9	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.9	0.9	0.7	0.4
Cranes 100 / 150 ton cap	0.3	0.4	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.3	0.3	0.1	0.1	0.1	0.1
Diesel Powered Welder	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.4	0.4
Excavator - Backhoe/loader	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Earth Scraper 637	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - loader	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.0	0.0	0.0
Excavator - Motor Grader (CAT140H)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.0	0.0	0.0
Excavator - Trencher (CAT320)	0.9	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fired Heaters (2,000 BTU)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Forklift	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Fusion Welder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy Haul / 600 tn Crane	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy Haul / 1,000 tn Crane	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Light Plants	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2
Man lifts - telescoping	0.8	0.8	0.8	0.8	0.8	0.8	1.2	1.2	1.2	1.2	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Man lift - scissor	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction Roller	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.6	0.6	0.6
Portable Compaction - Vibratory Plate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction - Ram	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumps	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Portable Power Generators	1.7	1.7	2.6	2.6	2.6	2.6	2.6	2.6	2.6	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Truck Crane - Greater than 300 ton	0.2	0.2	0.2	0.4	0.4	0.6	0.6	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.6	0.6	0.4	0.4	0.4
Truck Crane - Greater than 200 ton	0.0	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.0	0.0	0.0	0.0
Vibratory Roller Ingersol-Rand 20 ton	0.4	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.0	0.0	0.0
WORKER VEHICLES																					
Personal commuting vehicles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
DELIVERY TRUCKS																					
Light delivery truck (e.g. Fed-Ex)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy delivery truck (e.g. flat beds carrying construction eqp)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Import fill trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONSITE TOTAL (lbs/day)	**17.2**	**17.5**	**18.4**	**19.0**	**19.2**	**19.0**	**20.5**	**20.7**	**20.4**	**21.4**	**23.0**	**22.1**	**21.6**	**20.9**	**22.7**	**22.9**	**21.8**	**21.2**	**19.3**	**18.8**	**18.2**
OFF-SITE																					
WORKER VEHICLES																					
Personal commuting vehicles	0.8	1.0	1.1	1.2	1.3	1.4	1.5	1.5	1.7	1.9	2.0	2.1	2.2	2.4	2.5	2.6	2.6	2.7	2.6	2.6	2.5
DELIVERY TRUCKS																					
Light delivery truck (e.g. Fed-Ex)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy delivery truck (e.g. flat beds carrying construction eqp)	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Import fill trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS																					
ON ROAD																					
Dump Truck	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Service Truck (MHD-DSL)	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pipe Haul Truck and Trailer (HHDT-DSL)	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3/4 Ton Pickup (MHD-DSL)	0.6	0.6	0.6	0.9	0.9	0.9	0.9	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck - water	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OFF ROAD																					
Air Compressor (185 CFM)	0.4	0.6	0.6	0.6	0.6	0.4	0.4	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bore Machine (Hydraulic)	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 Ton Hydra Crane	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Backhoe/loader	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Trencher	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Forklift	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Welding Generator	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 to 5 Ton AC Roller	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pipe Bending Machine	0.5	0.5	0.5	0.5	0.5	0.5	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL																					
AIR COMPRESSOR 185	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BOOM TRUCK 12 TON	0.0	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT 325 BACKHOE	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT 330 BACKHOE	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT DOZER D-6	0.8	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT MODEL 12 MOTOR GRADER	0.7	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT ROLLER-COMPACTOR 563	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT RUBBER TIRE LOADER 966	0.0	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT SCRAPER 615	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRANE-ROUGH TERRAIN 45T	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GENSET 5KW	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JOHN DEERE TRACTOR 9400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PICK-UP CRAFT	0.8	0.8	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PICK-UP OVERHEAD	1.4	1.4	1.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL BALLAST REGULATOR	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL CLIP MACHINE	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL MOVER-SHUTTLE WAGON	0.0	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL TAMPER	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL WELDER	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAMEX WALK BEHIND COMPACTOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRI-AXLE DUMP TRUCK	1.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRUCK FLATBED 14 FOOT	0.2	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRUCK TRACTOR	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WATER TRUCK, 4M ON-ROAD	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WELDING MACHINE 350 AMP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS TOTAL (lbs/day)	**15.3**	**14.3**	**13.7**	**14.1**	**9.0**	**8.8**	**8.5**	**6.7**	**6.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
OFFSITE VEHICLES TOTAL (lbs/day)	**3.2**	**3.3**	**3.5**	**3.6**	**3.6**	**3.7**	**3.8**	**3.9**	**4.0**	**4.2**	**4.3**	**4.4**	**4.5**	**4.7**	**4.9**	**4.9**	**4.9**	**5.0**	**4.9**	**4.9**	**4.8**
TOTAL PROJECT (lbs/day)	35.7	35.1	35.5	36.7	31.9	31.5	32.8	31.3	30.9	25.6	27.3	26.6	26.1	25.6	27.6	27.8	26.7	26.1	24.2	23.7	23.0

CONSTRUCTION VEHICLES	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
ON-SITE															
On-Road Vehicles															
18 cy fill mat'l haul truck	0.0	0.5	0.5	0.5	0.5	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bus	2.2	1.9	1.9	1.9	1.6	1.6	0.8	0.8	0.5	0.5	0.3	0.3	0.3	0.2	0.2
Concrete Pumper Truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dump Truck	0.3	0.3	0.5	0.5	0.5	0.3	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0
Diesel Tractor (Yard Dog)	1.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Service Truck - 1 ton	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Pile Driver Truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck - Fuel/Lube	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
Tractor Truck 5th Wheel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trucks - Pickup 3/4 ton	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	0.9	0.9	0.6	0.6	0.6	0.6	0.3
Trucks - 3 ton	0.6	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.0	0.0	0.0
Truck - Water	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Off Road Vehicles															
Air Compressor 185 CFM	1.3	0.8	0.8	0.8	0.6	0.6	0.6	0.6	0.4	0.4	0.4	0.2	0.2	0.1	0.1
Air Compressor 750 CFM	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Articulating Boom Platform	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bob cat loader	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulldozer D10R	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulldozer D6C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Concrete Trowel Machine	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Concrete Vibrators	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranes - Mobile 35 ton	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.2	0.2
Cranes - Mobile 45 ton	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crane - Mobile 65 ton	0.4	0.4	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0
Cranes 100 / 150 ton cap	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diesel Powered Welder	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Excavator - Backhoe/loader	0.0	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Earth Scraper 637	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - loader	0.0	0.0	0.0	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Motor Grader (CAT140H)	0.0	0.7	0.7	0.7	0.7	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Trencher (CAT320)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fired Heaters (2,000 BTU)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Forklift	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0
Fusion Welder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy Haul / 600 tn Crane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy Haul / 1,000 tn Crane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Light Plants	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
Man lifts - telescoping	1.6	1.2	1.2	1.2	0.8	0.8	0.8	0.8	0.4	0.4	0.4	0.4	0.2	0.2	0.2
Man lift - scissor	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction Roller	0.0	0.0	0.0	0.6	0.6	0.6	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction - Vibratory Plate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction - Ram	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumps	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Power Generators	3.4	2.6	2.6	2.6	2.6	1.7	1.7	1.7	1.7	1.7	1.7	0.9	0.9	0.9	0.3
Truck Crane - Greater than 300 ton	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck Crane - Greater than 200 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vibratory Roller Ingersol-Rand 20 ton	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WORKER VEHICLES															
Personal commuting vehicles	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DELIVERY TRUCKS															
Light delivery truck (e.g. Fed-Ex)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy delivery truck (e.g. flat beds carrying construction eqp)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Import fill trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONSITE TOTAL (lbs/day)	**16.5**	**15.0**	**15.1**	**16.0**	**14.9**	**12.6**	**10.8**	**10.6**	**6.1**	**6.1**	**5.7**	**4.0**	**3.5**	**3.2**	**2.3**
OFF-SITE															
WORKER VEHICLES															
Personal commuting vehicles	2.3	2.3	2.1	2.0	1.7	1.4	1.1	0.7	0.6	0.6	0.6	0.5	0.5	0.4	0.3
DELIVERY TRUCKS															
Light delivery truck (e.g. Fed-Ex)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy delivery truck (e.g. flat beds carrying construction eqp)	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Import fill trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS															
ON ROAD															
Dump Truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Service Truck (MHD-DSL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pipe Haul Truck and Trailer (HHDT-DSL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3/4 Ton Pickup (MHD-DSL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck - water	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OFF ROAD															
Air Compressor (185 CFM)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bore Machine (Hydraulic)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 Ton Hydra Crane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Backhoe/loader	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Trencher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Forklift	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Welding Generator	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 to 5 Ton AC Roller	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pipe Bending Machine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL															
AIR COMPRESSOR 185	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BOOM TRUCK 12 TON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT 325 BACKHOE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT 330 BACKHOE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT DOZER D-6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT MODEL 12 MOTOR GRADER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT ROLLER-COMPACTOR 563	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT RUBBER TIRE LOADER 966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT SCRAPER 615	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRANE-ROUGH TERRAIN 45T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GENSET 5KW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JOHN DEERE TRACTOR 9400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PICK-UP CRAFT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PICK-UP OVERHEAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL BALLAST REGULATOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL CLIP MACHINE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL MOVER-SHUTTLE WAGON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL TAMPER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL WELDER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAMEX WALK BEHIND COMPACTOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRI-AXLE DUMP TRUCK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRUCK FLATBED 14 FOOT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRUCK TRACTOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WATER TRUCK, 4M ON-ROAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WELDING MACHINE 350 AMP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS TOTAL (lbs/day)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
OFFSITE VEHICLES TOTAL (lbs/day)	**4.7**	**4.6**	**4.4**	**4.3**	**4.0**	**3.7**	**3.4**	**3.1**	**2.9**	**2.9**	**2.9**	**2.9**	**2.8**	**2.7**	**2.6**
TOTAL PROJECT (lbs/day)	21.2	19.6	19.5	20.3	18.9	16.3	14.2	13.6	9.0	9.0	8.6	6.9	6.3	5.9	4.9

Notes:

1. According to schedules provided by Fluor, Linear construction (except rail) takes place in months 11-22.
2. According to schedules provided by Fluor, Rail construction occurs in months 13-17.

Hydrogen Energy California, Kern County Power Project
Sulfur Dioxide (SO2) Emissions by Month
12/2012

SO2	MONTHLY EMISSIONS (lbs/day)																																																
CONSTRUCTION VEHICLES	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**
ON-SITE																																																	
On-Road Vehicles																																																	
18 cy fill mat'l haul truck	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Concrete Pumper Truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dump Truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diesel Tractor (Yard Dog)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Service Truck - 1 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pile Driver Truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck - Fuel/Lube	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tractor Truck 5th Wheel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trucks - Pickup 3/4 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trucks - 3 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck - Water	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Off Road Vehicles																																																	
Air Compressor 185 CFM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Air Compressor 750 CFM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Articulating Boom Platform	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bob cat loader	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulldozer D10R	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulldozer D6C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Concrete Trowel Machine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Concrete Vibrators	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranes - Mobile 35 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranes - Mobile 45 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crane - Mobile 65 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranes 100 / 150 ton cap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diesel Powered Welder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Backhoe/loader	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Earth Scraper 637	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - loader	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Motor Grader (CAT140H)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Trencher (CAT320)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fired Heaters (2,000 BTU)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Forklift	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fusion Welder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy Haul / 600 tn Crane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy Haul / 1,000 tn Crane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Light Plants	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Man lifts - telescoping	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Man lift - scissor	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction Roller	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction - Vibratory Plate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction - Ram	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumps	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Power Generators	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck Crane - Greater than 300 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck Crane - Greater than 200 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vibratory Roller Ingersol-Rand 20 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WORKER VEHICLES																																																	
Personal commuting vehicles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DELIVERY TRUCKS																																																	
Light delivery truck (e.g. Fed-Ex)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy delivery truck (e.g. flat beds carrying construction eqp)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Import fill trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONSITE TOTAL (lbs/day)	**0.3**	**0.3**	**0.4**	**0.4**	**0.4**	**0.4**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.5**	**0.5**	**0.4**	**0.4**	**0.5**	**0.4**	**0.4**	**0.4**	**0.4**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.2**	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.0**
OFF-SITE																																																	
WORKER VEHICLES																																																	
Personal commuting vehicles	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
DELIVERY TRUCKS																																																	
Light delivery truck (e.g. Fed-Ex)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy delivery truck (e.g. flat beds carrying construction eqp)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Import fill trucks	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS																																																	
ON ROAD																																																	
Dump Truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Service Truck (MHD-DSL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pipe Haul Truck and Trailer (HHDT-DSL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3/4 Ton Pickup (MHD-DSL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck - water	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OFF ROAD																																																	
Air Compressor (185 CFM)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bore Machine (Hydraulic)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 Ton Hydra Crane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Backhoe/loader	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Trencher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Forklift	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Welding Generator	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 to 5 Ton AC Roller	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pipe Bending Machine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL																																																	
AIR COMPRESSOR 185	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BOOM TRUCK 12 TON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT 325 BACKHOE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT 330 BACKHOE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT DOZER D-6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT MODEL 12 MOTOR GRADER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT ROLLER-COMPACTOR 563	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT RUBBER TIRE LOADER 966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT SCRAPER 615	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRANE-ROUGH TERRAIN 45T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GENSET 5KW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JOHN DEERE TRACTOR 9400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PICK-UP CRAFT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PICK-UP OVERHEAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL BALLAST REGULATOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL CLIP MACHINE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL MOVER-SHUTTLE WAGON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL TAMPER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL WELDER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAMEX WALK BEHIND COMPACTOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRI-AXLE DUMP TRUCK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRUCK FLATBED 14 FOOT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRUCK TRACTOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WATER TRUCK, 4M ON-ROAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WELDING MACHINE 350 AMP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS TOTAL (lbs/day)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.2**	**0.2**	**0.2**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
OFFSITE VEHICLES TOTAL (lbs/day)	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.4**	**0.4**	**0.4**	**0.4**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.6**	**0.6**	**0.6**	**0.6**	**0.7**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**	**0.5**	**0.5**	**0.4**	**0.4**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.1**
TOTAL PROJECT (lbs/day)	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.4	0.4	0.4	0.6	0.6	0.8	0.9	1.0	1.0	1.0	0.9	0.9	1.0	1.0	1.0	0.9	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.8	0.8	0.7	0.6	0.5	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2

Notes:

1. According to schedules provided by Fluor, Linear construction (except rail) takes place in months 11-22.
2. According to schedules provided by Fluor, Rail construction occurs in months 13-17.

Hydrogen Energy California, Kern County Power Project
Reactive Organic Gases (ROG) Emissions by Month
12/2012

MONTHLY EMISSIONS (lbs/day)

ROG	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
ON-SITE																																																	
CONSTRUCTION VEHICLES																																																	
On-Road Vehicles																																																	
18 cy fill mat'l haul truck	0.0	0.0	6.2	6.2	12.4	12.4	12.4	12.4	6.2	6.2	6.2	6.2	3.1	3.1	3.1	3.1	3.1	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	1.9	1.9	1.9	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bus	1.2	1.2	1.2	1.2	1.9	1.9	1.9	1.9	1.9	1.9	3.1	3.1	3.1	3.1	3.1	3.1	4.3	4.3	4.3	6.2	6.2	6.2	6.2	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	7.4	7.4	7.4	6.2	6.2	3.1	3.1	1.9	1.9	1.2	1.2	1.2	0.6	0.6
Concrete Pumper Truck	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.9	1.9	1.9	1.2	1.2	1.2	1.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dump Truck	1.9	2.5	2.5	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.2	1.2	1.2	1.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.9	1.9	1.9	1.2	0.6	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.0
Diesel Tractor (Yard Dog)	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4	1.4	2.8	2.8	2.8	2.8	2.8	5.6	5.6	5.6	5.6	5.6	5.6	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.8	2.8	2.8	2.8	2.8	2.8	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Service Truck - 1 ton	1.2	1.2	1.2	2.5	2.5	2.5	2.5	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Pile Driver Truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck - Fuel/Lube	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
Tractor Truck 5th Wheel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trucks - Pickup 3/4 ton	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.9	0.9	0.9	0.9	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0.9	0.9	0.6	0.6	0.6	0.6	0.3
Trucks - 3 ton	0.6	0.6	0.6	0.6	0.6	1.2	1.2	1.2	2.5	2.5	2.5	2.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	2.5	1.9	1.9	1.9	1.9	1.2	1.2	1.2	0.6	0.6	0.6	0.6	0.0	0.0	0.0
Truck - Water	3.1	3.1	3.1	3.1	3.1	3.1	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.2	1.9	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Off Road Vehicles																																																	
Air Compressor 185 CFM	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	2.9	2.9	2.9	3.9	3.9	3.9	4.9	4.9	4.9	4.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	3.9	3.9	3.9	2.9	2.9	2.9	2.9	2.0	2.0	2.0	1.0	1.0	0.5	0.5
Air Compressor 750 CFM	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	0.9	0.9	0.9	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Articulating Boom Platform	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bob cat loader	0.0	0.0	0.6	0.6	0.6	0.6	0.6	2.6	2.6	2.6	2.6	2.6	1.9	1.9	1.9	1.9	1.9	1.9	1.3	1.3	1.3	1.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulldozer D10R	4.5	4.5	4.5	3.0	3.0	3.0	3.0	3.0	3.0	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulldozer D6C	2.3	2.3	2.3	2.3	1.5	1.5	1.5	1.5	1.5	1.5	0.8	0.8	0.8	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Concrete Trowel Machine	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Concrete Vibrators	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranes - Mobile 35 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	1.6	1.6	1.6	1.6	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.4	0.4	0.4	0.4
Cranes - Mobile 45 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crane - Mobile 65 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.9	1.8	2.2	2.2	2.2	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.2	2.2	1.8	0.9	0.9	0.9	0.9	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.0
Cranes 100 / 150 ton cap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.9	0.9	1.3	1.3	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.9	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diesel Powered Welder	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	1.5	1.5	1.5	1.5	1.5	1.0	1.0	1.0	1.0	1.0	0.5	0.5	0.5	0.5	0.3	0.3	0.2
Excavator - Backhoe/loader	0.6	0.6	1.0	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.6	0.6	0.6	0.6	0.6	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.6	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Earth Scraper 637	14.7	14.7	14.7	14.7	8.4	8.4	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - loader	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Motor Grader (CAT140H)	0.0	0.7	0.7	0.7	2.2	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7	0.7	0.7	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	0.7	0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Trencher (CAT320)	0.0	0.0	0.0	0.0	0.0	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fired Heaters (2,000 BTU)	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1
Forklift	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.3	0.3	0.3	0.3	0.1	0.1	0.1
Fusion Welder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy Haul / 600 tn Crane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy Haul / 1,000 tn Crane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Light Plants	0.1	0.1	0.2	0.4	0.8	0.8	0.8	0.8	0.4	0.4	0.6	0.6	0.8	0.8	1.0	1.0	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.2	0.2
Man lifts - telescoping	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.6	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	4.9	4.9	4.9	4.9	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	4.9	4.9	4.9	3.3	3.3	3.3	3.3	1.6	1.6	1.6	1.6	0.7	0.7	0.7
Man lift - scissor	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction Roller	0.0	0.0	2.8	2.8	2.8	2.8	2.8	2.8	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	1.1	0.0	0.0	0.0	1.1	1.1	1.1	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction - Vibratory Plate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction - Ram	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumps	0.3	0.3	0.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Portable Power Generators	2.9	2.9	2.9	2.9	4.3	4.3	4.3	4.3	4.3	7.2	7.2	7.2	7.2	7.2	7.2	10.7	10.7	10.7	10.7	10.7	10.7	10.7	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	10.7	10.7	10.7	10.7	7.2	7.2	7.2	7.2	7.2	7.2	3.6	3.6	3.6	1.4
Truck Crane - Greater than 300 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7	0.7	0.7	0.7	1.3	1.3	2.0	2.0	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.0	2.0	1.3	1.3	1.3	0.7	0.7	0.7	0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck Crane - Greater than 200 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.9	0.9	0.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vibratory Roller Ingersol-Rand 20 ton	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.1	1.1	1.1	1.1	1.1	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WORKER VEHICLES																																																	
Personal commuting vehicles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
DELIVERY TRUCKS																																																	
Light delivery truck (e.g. Fed-Ex)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy delivery truck (e.g. flat beds carrying construction eqp)	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Import fill trucks	6.5	6.5	6.5	6.5	6.5	6.5	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONSITE TOTAL (lbs/day)	**46.2**	**47.6**	**57.7**	**58.6**	**62.9**	**68.5**	**61.3**	**51.5**	**46.9**	**48.9**	**50.5**	**52.6**	**50.8**	**54.5**	**55.5**	**58.9**	**63.0**	**63.8**	**62.1**	**68.1**	**68.8**	**67.6**	**71.5**	**77.9**	**75.8**	**74.1**	**72.2**	**77.0**	**76.7**	**73.9**	**72.1**	**67.3**	**65.7**	**64.3**	**60.1**	**51.4**	**52.0**	**53.7**	**49.3**	**41.4**	**35.6**	**35.0**	**20.8**	**20.8**	**19.9**	**13.8**	**11.7**	**10.4**	**7.8**
OFF-SITE																																																	
WORKER VEHICLES																																																	
Personal commuting vehicles	0.2	0.4	0.5	0.6	0.9	1.2	1.4	1.8	2.1	2.5	3.1	3.4	4.1	4.8	5.7	6.5	7.1	7.5	7.9	8.4	8.8	9.8	10.6	11.4	12.1	12.2	13.5	14.4	14.9	15.0	15.1	14.9	14.8	14.1	13.3	12.9	11.7	11.4	9.6	7.8	6.2	4.2	3.4	3.4	3.4	3.1	2.6	2.4	1.8
DELIVERY TRUCKS																																																	
Light delivery truck (e.g. Fed-Ex)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Heavy delivery truck (e.g. flat beds carrying construction eqp)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Import fill trucks	10.4	10.4	10.4	10.4	10.4	10.4	10.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS																																																	
ON ROAD																																																	
Dump Truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	2.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Service Truck (MHD-DSL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	1.2	1.9	1.9	1.9	1.9	1.9	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pipe Haul Truck and Trailer (HHDT-DSL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	1.9	1.9	1.9	1.9	1.9	1.2	1.2	1.2	1.2	1.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3/4 Ton Pickup (MHD-DSL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.6	0.6	0.6	0.9	0.9	0.9	0.9	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck - water	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	1.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OFF ROAD																																																	
Air Compressor (185 CFM)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	2.0	2.0	2.9	2.9	2.9	2.9	2.0	2.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bore Machine (Hydraulic)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 Ton Hydra Crane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.8	1.8	2.7	2.7	2.7	2.7	2.7	2.7	2.7	1.8	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Backhoe/loader	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	1.9	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	1.9	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Trencher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Forklift	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Welding Generator	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 to 5 Ton AC Roller	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pipe Bending Machine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL																																																	
AIR COMPRESSOR 185	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BOOM TRUCK 12 TON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT 325 BACKHOE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT 330 BACKHOE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT DOZER D-6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT MODEL 12 MOTOR GRADER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	0.7	0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT ROLLER-COMPACTOR 563	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT RUBBER TIRE LOADER 966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT SCRAPER 615	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRANE-ROUGH TERRAIN 45T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GENSET 5KW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JOHN DEERE TRACTOR 9400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PICK-UP CRAFT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	2.7	2.7	2.7	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PICK-UP OVERHEAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	3.5	3.5	2.9	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL BALLAST REGULATOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL CLIP MACHINE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL MOVER-SHUTTLE WAGON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL TAMPER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL WELDER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAMEX WALK BEHIND COMPACTOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRI-AXLE DUMP TRUCK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	3.7	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRUCK FLATBED 14 FOOT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	1.9	1.9	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRUCK TRACTOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WATER TRUCK, 4M ON-ROAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WELDING MACHINE 350 AMP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS TOTAL (lbs/day)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**18.1**	**20.8**	**43.5**	**47.3**	**45.8**	**44.0**	**44.3**	**29.2**	**28.2**	**27.1**	**21.4**	**20.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
OFFSITE VEHICLES TOTAL (lbs/day)	**14.0**	**14.1**	**14.3**	**14.4**	**14.7**	**14.9**	**15.2**	**5.2**	**5.5**	**5.9**	**6.5**	**6.8**	**7.5**	**8.2**	**9.1**	**9.9**	**10.5**	**10.9**	**11.3**	**11.8**	**12.2**	**13.2**	**14.0**	**14.8**	**15.5**	**15.6**	**16.9**	**17.8**	**18.3**	**18.4**	**18.5**	**18.3**	**18.1**	**17.5**	**16.7**	**16.3**	**15.1**	**14.8**	**13.0**	**11.2**	**9.6**	**7.6**	**6.8**	**6.8**	**6.8**	**6.5**	**6.0**	**5.8**	**5.2**
TOTAL PROJECT (lbs/day)	60.2	61.7	71.9	73.0	77.6	83.4	76.5	56.8	52.4	54.8	75.1	80.2	101.8	110.0	110.4	112.8	117.8	104.0	101.6	107.0	102.4	101.1	85.5	92.7	91.3	89.7	89.1	94.8	95.0	92.2	90.6	85.6	83.8	81.8	76.8	67.7	67.1	68.4	62.3	52.6	45.2	42.6	27.6	27.6	26.7	20.3	17.7	16.2	13.0

Notes:

1. According to schedules provided by Fluor, Linear construction (except rail) takes place in months 11-22.
2. According to schedules provided by Fluor, Rail construction occurs in months 13-17.

Hydrogen Energy California, Kern County Power Project
Carbon Dioxide Equivalents (CO2e) Emissions by Month
12/2012

CO2e

MONTHLY EMISSIONS (lbs/day)

CONSTRUCTION VEHICLES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
ON-SITE																	
On-Road Vehicles																	
18 cy fill mat'l haul truck	0	0	2,876	2,876	5,753	5,753	5,753	5,753	2,876	2,876	2,876	2,876	1,438	1,438	1,438	1,438	1,438
Bus	575	575	575	575	863	863	863	863	863	863	1,438	1,438	1,438	1,438	1,438	1,438	2,013
Concrete Pumper Truck	0	0	0	0	0	575	575	575	575	575	575	575	575	863	863	863	575
Dump Truck	863	1,151	1,151	863	863	863	863	863	863	863	575	575	575	575	575	0	0
Diesel Tractor (Yard Dog)	0	0	0	0	0	652	652	652	652	652	652	1,305	1,305	1,305	1,305	1,305	2,610
Service Truck - 1 ton	575	575	575	1,151	1,151	1,151	1,151	575	575	575	575	575	575	575	575	575	575
Pile Driver Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck - Fuel/Lube	274	274	274	274	274	274	274	274	274	274	274	274	274	274	274	274	274
Tractor Truck 5th Wheel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trucks - Pickup 3/4 ton	684	684	684	684	684	821	958	1,095	2,053	2,053	2,053	2,053	3,422	3,422	3,422	3,422	3,422
Trucks - 3 ton	288	288	288	288	288	575	575	575	1,151	1,151	1,151	1,151	1,726	1,726	1,726	1,726	1,726
Truck - Water	1,438	1,438	1,438	1,438	1,438	1,438	863	863	863	863	863	863	863	863	863	863	863
Off Road Vehicles																	
Air Compressor 185 CFM	217	217	217	217	326	326	326	326	326	326	326	326	326	651	651	651	869
Air Compressor 750 CFM	0	0	0	0	228	228	228	228	456	456	456	456	456	456	456	912	912
Articulating Boom Platform	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bob cat loader	0	0	170	170	170	170	170	681	681	681	681	681	511	511	511	511	511
Bulldozer D10R	4,624	4,624	4,624	3,082	3,082	3,082	3,082	3,082	3,082	1,541	1,541	0	0	0	0	0	0
Bulldozer D6C	1,176	1,176	1,176	1,176	784	784	784	784	784	784	392	392	392	392	392	0	0
Concrete Trowel Machine	0	0	0	0	0	141	141	141	141	141	141	141	141	141	141	141	141
Concrete Vibrators	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cranes - Mobile 35 ton	0	0	0	0	0	0	218	218	218	872	872	872	872	1,526	1,526	1,526	1,526
Cranes - Mobile 45 ton	0	0	0	0	0	0	0	0	0	0	697	697	697	697	697	697	697
Crane - Mobile 65 ton	0	0	0	0	0	0	0	0	0	0	0	349	349	697	1,395	1,743	1,743
Cranes 100 / 150 ton cap	0	0	0	0	0	0	0	0	0	0	486	486	973	973	1,459	1,459	1,946
Diesel Powered Welder	0	0	0	513	513	513	513	513	513	513	513	513	513	513	513	770	770
Excavator - Backhoe/loader	486	486	729	972	972	972	972	972	972	972	972	486	486	486	486	486	243
Excavator - Earth Scraper 637	14,945	14,945	14,945	14,945	8,540	8,540	4,270	0	0	0	0	0	0	0	0	0	0
Excavator - loader	642	642	642	642	642	642	642	642	642	642	642	642	321	321	0	0	0
Excavator - Motor Grader (CAT140H)	0	434	434	434	1,303	1,303	0	0	0	0	0	0	0	0	0	0	0
Excavator - Trencher (CAT320)	0	0	0	0	0	910	910	910	910	910	910	910	910	910	910	910	0
Fired Heaters (2,000 BTU)	0	0	0	0	330	330	330	330	248	248	413	413	413	413	413	413	413
Forklift	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	358
Fusion Welder	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Haul / 600 tn Crane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Haul / 1,000 tn Crane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light Plants	83	83	165	330	661	661	661	661	330	330	496	496	661	661	826	826	1,156
Man lifts - telescoping	0	0	0	0	0	0	0	0	502	502	502	1,005	1,005	1,005	1,005	1,005	1,005
Man lift - scissor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Portable Compaction Roller	0	0	1,712	1,712	1,712	1,712	1,712	1,712	685	685	685	685	685	685	685	685	685
Portable Compaction - Vibratory Plate	0	0	0	0	0	0	0	113	113	113	113	113	113	113	113	113	113
Portable Compaction - Ram	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pumps	248	248	248	496	496	496	496	496	496	496	496	496	496	496	496	496	496
Portable Power Generators	916	916	916	916	1,374	1,374	1,374	1,374	1,374	2,291	2,291	2,291	2,291	2,291	2,291	3,436	3,436
Truck Crane - Greater than 300 ton	0	0	0	0	0	0	0	0	0	0	0	783	783	783	783	783	1,565
Truck Crane - Greater than 200 ton	0	0	0	0	0	0	0	0	0	0	0	0	0	0	486	486	486
Vibratory Roller Ingersol-Rand 20 ton	1,405	1,405	1,405	1,405	1,405	1,405	1,405	1,405	1,405	937	937	937	937	937	468	468	468
WORKER VEHICLES																	
Personal commuting vehicles	15.0	25.8	34.6	44.7	65.6	82.9	98.8	132.8	147.6	177.8	220.4	246.4	292.0	342.5	412.3	465.9	508.5
DELIVERY TRUCKS																	
Light delivery truck (e.g. Fed-Ex)	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
Heavy delivery truck (e.g. flat beds carrying construction eqp)	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8
Import fill trucks	2,043.7	2,043.7	2,043.7	2,043.7	2,043.7	2,043.7	2,043.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONSITE TOTAL (lbs/day)	**32,197**	**32,930**	**38,023**	**37,949**	**36,661**	**39,382**	**33,604**	**27,509**	**25,471**	**25,062**	**26,515**	**26,800**	**27,512**	**29,178**	**30,294**	**31,587**	**33,975**
OFF-SITE																	
WORKER VEHICLES																	
Personal commuting vehicles	871.8	1,501.4	2,014.3	2,600.8	3,816.8	4,822.4	5,750.7	7,724.7	8,589.0	10,342.0	12,823.9	14,336.7	16,988.8	19,925.9	23,987.2	27,105.6	29,582.9
DELIVERY TRUCKS																	
Light delivery truck (e.g. Fed-Ex)	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2
Heavy delivery truck (e.g. flat beds carrying construction eqp)	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0
Import fill trucks	22,921.5	22,921.5	22,921.5	22,921.5	22,921.5	22,921.5	22,921.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS																	
ON ROAD																	
Dump Truck	0	0	0	0	0	0	0	0	0	0	1,151	1,151	1,726	1,726	1,726	1,726	1,726
Service Truck (MHD-DSL)	0	0	0	0	0	0	0	0	0	0	575	575	575	575	575	575	863
Pipe Haul Truck and Trailer (HHDT-DSL)	0	0	0	0	0	0	0	0	0	0	863	863	863	863	863	863	575
3/4 Ton Pickup (MHD-DSL)	0	0	0	0	0	0	0	0	0	0	1,376	1,376	1,376	1,376	1,376	1,376	2,064
Truck - water	0	0	0	0	0	0	0	0	0	0	575	575	1,151	1,151	1,151	1,151	1,151
OFF ROAD																	
Air Compressor (185 CFM)	0	0	0	0	0	0	0	0	0	0	217	217	434	434	651	651	651
Bore Machine (Hydraulic)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	234	234	234
12 Ton Hydra Crane	0	0	0	0	0	0	0	0	0	0	973	1,946	1,946	2,919	2,919	2,919	2,919
Backhoe/loader	0	0	0	0	0	0	0	0	0	0	1,457	1,457	2,429	2,429	2,429	2,429	2,429
Excavator - Trencher	0	0	0	0	0	0	0	0	0	0	0	430	430	430	430	430	430
Forklift	0	0	0	0	0	0	0	0	0	0	90	90	179	179	179	179	179
Welding Generator	0	0	0	0	0	0	0	0	0	0	1,832	1,832	1,832	1,832	1,832	1,832	1,832
3 to 5 Ton AC Roller	0	0	0	0	0	0	0	0	0	0	0	303	303	303	303	303	303
Pipe Bending Machine	0	0	0	0	0	0	0	0	0	0	351	351	701	701	701	701	701
RAIL																	
AIR COMPRESSOR 185	0	0	0	0	0	0	0	0	0	0	0	0	0	217	217	217	217
BOOM TRUCK 12 TON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	288	288	288
CAT 325 BACKHOE	0	0	0	0	0	0	0	0	0	0	0	0	472	472	0	0	0
CAT 330 BACKHOE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	799	0	0
CAT DOZER D-6	0	0	0	0	0	0	0	0	0	0	0	0	1,432	1,432	0	0	716
CAT MODEL 12 MOTOR GRADER	0	0	0	0	0	0	0	0	0	0	0	0	864	864	432	432	432
CAT ROLLER-COMPACTOR 563	0	0	0	0	0	0	0	0	0	0	0	0	680	680	340	0	0
CAT RUBBER TIRE LOADER 966	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,610	1,610	1,610
CAT SCRAPER 615	0	0	0	0	0	0	0	0	0	0	0	0	2,768	1,384	0	0	0
CRANE-ROUGH TERRAIN 45T	0	0	0	0	0	0	0	0	0	0	0	0	0	346	346	0	0
GENSET 5KW	0	0	0	0	0	0	0	0	0	0	0	0	0	303	151	0	0
JOHN DEERE TRACTOR 9400	0	0	0	0	0	0	0	0	0	0	0	0	1,604	0	0	0	0
PICK-UP CRAFT	0	0	0	0	0	0	0	0	0	0	0	0	4,730	4,730	4,730	4,730	4,730
PICK-UP OVERHEAD	0	0	0	0	0	0	0	0	0	0	0	0	1,322	3,965	3,965	3,304	3,304
RAIL BALLAST REGULATOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	661	661
RAIL CLIP MACHINE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	174	174
RAIL MOVER-SHUTTLE WAGON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	661	661	661
RAIL TAMPER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	661	661
RAIL WELDER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	102	51
RAMEX WALK BEHIND COMPACTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	19	0	0	0
TRI-AXLE DUMP TRUCK	0	0	0	0	0	0	0	0	0	0	0	0	1,151	1,726	575	0	0
TRUCK FLATBED 14 FOOT	0	0	0	0	0	0	0	0	0	0	0	0	288	288	863	863	863
TRUCK TRACTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,117	1,117	0
WATER TRUCK, 4M ON-ROAD	0	0	0	0	0	0	0	0	0	0	0	0	288	288	288	288	288
WELDING MACHINE 350 AMP	0	0	0	0	0	0	0	0	0	0	0	0	51	51	51	51	51
LINEARS TOTAL (lbs/day)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9,460**	**11,166**	**29,595**	**31,683**	**31,804**	**30,529**	**30,765**
OFFSITE VEHICLES TOTAL (lbs/day)	**31,515**	**32,144**	**32,657**	**33,244**	**34,460**	**35,465**	**36,393**	**15,446**	**16,310**	**18,063**	**20,545**	**22,058**	**24,710**	**27,647**	**31,708**	**34,827**	**37,304**
TOTAL PROJECT (lbs/day)	63,712	65,075	70,680	71,192	71,120	74,847	69,997	42,955	41,782	43,125	56,520	60,024	81,817	88,508	93,806	96,943	102,044

CONSTRUCTION VEHICLES	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
ON-SITE																	
On-Road Vehicles																	
18 cy fill mat'l haul truck	1,438	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bus	2,013	2,013	2,876	2,876	2,876	2,876	4,027	4,027	4,027	4,027	4,027	4,027	4,027	4,027	4,027	4,027	4,027
Concrete Pumper Truck	575	575	575	575	0	0	0	0	0	0	288	288	288	288	0	0	0
Dump Truck	0	0	0	0	0	0	0	0	0	0	575	575	575	575	575	575	575
Diesel Tractor (Yard Dog)	2,610	2,610	2,610	2,610	2,610	2,610	3,262	3,262	3,262	3,262	3,262	3,262	3,262	3,262	3,262	3,262	3,262
Service Truck - 1 ton	575	575	575	575	575	575	575	575	575	575	575	575	575	575	575	575	575
Pile Driver Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck - Fuel/Lube	274	274	274	274	274	274	274	274	274	274	274	274	274	274	274	274	274
Tractor Truck 5th Wheel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trucks - Pickup 3/4 ton	3,422	3,422	3,422	3,422	3,422	3,422	3,422	3,422	3,422	3,422	3,422	3,422	3,422	3,422	3,422	3,422	3,422
Trucks - 3 ton	1,726	1,726	1,726	1,726	1,726	1,726	1,726	1,726	1,726	1,726	1,726	1,726	1,726	1,726	1,726	1,726	1,726
Truck - Water	863	863	863	863	863	863	575	863	575	575	575	575	575	575	575	575	575
Off Road Vehicles																	
Air Compressor 185 CFM	869	869	1,086	1,086	1,086	1,086	1,303	1,303	1,303	1,303	1,303	1,303	1,303	1,303	1,303	1,303	1,303
Air Compressor 750 CFM	912	912	912	912	912	912	912	912	912	912	912	912	456	456	456	456	228
Articulating Boom Platform	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bob cat loader	511	340	340	340	340	340	340	0	0	0	0	0	0	0	0	0	0
Bulldozer D10R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bulldozer D6C	0	0	0	0	0	0	0	0	0	0	392	392	392	392	0	0	0
Concrete Trowel Machine	141	141	141	141	141	141	141	141	141	141	141	0	0	0	0	0	0
Concrete Vibrators	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cranes - Mobile 35 ton	1,526	1,526	1,526	1,526	1,526	1,526	1,526	1,526	1,526	1,090	1,090	1,090	1,090	1,090	1,090	1,090	1,090
Cranes - Mobile 45 ton	697	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	697	697	697	697	697
Crane - Mobile 65 ton	1,743	2,092	2,092	2,092	2,092	2,092	2,092	2,092	2,092	2,092	2,092	2,092	2,092	1,743	1,743	1,395	697
Cranes 100 / 150 ton cap	1,946	1,946	1,946	1,946	1,946	1,946	1,946	1,946	1,946	1,946	1,946	973	973	486	486	486	486
Diesel Powered Welder	770	1,026	1,026	1,026	1,026	1,026	1,283	1,283	1,283	1,283	1,283	1,283	1,283	1,283	1,283	770	770
Excavator - Backhoe/loader	243	243	243	243	243	243	243	0	0	0	0	0	0	0	0	0	0
Excavator - Earth Scraper 637	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - loader	0	0	0	0	0	0	0	0	0	0	321	321	321	321	0	0	0
Excavator - Motor Grader (CAT140H)	0	0	0	0	0	0	0	0	0	0	434	434	434	434	0	0	0
Excavator - Trencher (CAT320)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fired Heaters (2,000 BTU)	413	413	413	413	413	413	413	413	413	413	413	413	413	413	413	248	248
Forklift	358	358	358	358	358	358	358	358	358	358	269	269	269	269	269	269	269
Fusion Welder	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Haul / 600 tn Crane	1,315	1,315	1,315	1,315	1,315	1,315	1,315	1,315	1,315	0	0	0	0	0	0	0	0
Heavy Haul / 1,000 tn Crane	0	0	1,315	1,315	1,315	1,315	1,315	1,315	0	0	0	0	0	0	0	0	0
Light Plants	1,156	1,156	1,156	1,156	1,156	1,156	1,156	1,156	1,156	1,156	1,156	1,156	1,156	1,156	826	826	826
Man lifts - telescoping	1,005	1,005	1,507	1,507	1,507	1,507	2,009	2,009	2,009	2,009	2,009	2,009	2,009	2,009	2,009	2,009	2,009
Man lift - scissor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Portable Compaction Roller	685	685	685	685	685	685	685	0	0	0	0	685	685	685	685	685	685
Portable Compaction - Vibratory Plate	113	113	113	113	113	0	0	0	0	0	56	56	56	56	0	0	0
Portable Compaction - Ram	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pumps	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248
Portable Power Generators	3,436	3,436	3,436	3,436	3,436	4,581	4,581	4,581	4,581	4,581	4,581	4,581	4,581	4,581	4,581	4,581	4,581
Truck Crane - Greater than 300 ton	1,565	2,348	2,348	3,130	3,130	3,130	3,130	3,130	3,130	3,130	3,130	3,130	2,348	2,348	1,565	1,565	1,565
Truck Crane - Greater than 200 ton	486	486	973	973	973	1,459	1,459	1,459	1,459	1,459	1,459	1,459	973	0	0	0	0
Vibratory Roller Ingersol-Rand 20 ton	468	0	0	0	0	0	0	0	0	0	937	937	937	937	0	0	0
WORKER VEHICLES																	
Personal commuting vehicles	539.7	568.2	601.9	631.2	706.4	759.3	816.5	868.4	878.6	966.0	1,034.4	1,068.0	1,073.9	1,084.5	1,068.8	1,059.0	1,011.4
DELIVERY TRUCKS																	
Light delivery truck (e.g. Fed-Ex)	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
Heavy delivery truck (e.g. flat beds carrying construction eqp)	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8
Import fill trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONSITE TOTAL (lbs/day)	**35,073**	**35,110**	**38,528**	**39,340**	**38,840**	**40,412**	**42,960**	**42,032**	**40,439**	**38,775**	**41,757**	**41,362**	**38,946**	**37,148**	**33,592**	**32,555**	**31,582**
OFF-SITE																	
WORKER VEHICLES																	
Personal commuting vehicles	31,395.7	33,054.5	35,019.5	36,722.1	41,094.6	44,171.6	47,505.0	50,520.9	51,116.5	56,199.9	60,176.9	62,132.5	62,479.6	63,095.0	62,181.3	61,612.0	58,842.7
DELIVERY TRUCKS																	
Light delivery truck (e.g. Fed-Ex)	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2
Heavy delivery truck (e.g. flat beds carrying construction eqp)	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0
Import fill trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS																	
ON ROAD																	
Dump Truck	1,726	1,726	1,726	1,151	1,151	0	0	0	0	0	0	0	0	0	0	0	0
Service Truck (MHD-DSL)	863	863	863	863	863	0	0	0	0	0	0	0	0	0	0	0	0
Pipe Haul Truck and Trailer (HHDT-DSL)	575	575	575	575	575	0	0	0	0	0	0	0	0	0	0	0	0
3/4 Ton Pickup (MHD-DSL)	2,064	2,064	2,064	2,064	2,064	0	0	0	0	0	0	0	0	0	0	0	0
Truck - water	1,151	1,151	1,151	575	575	0	0	0	0	0	0	0	0	0	0	0	0
OFF ROAD																	
Air Compressor (185 CFM)	651	434	434	217	217	0	0	0	0	0	0	0	0	0	0	0	0
Bore Machine (Hydraulic)	234	234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 Ton Hydra Crane	2,919	2,919	2,919	1,946	1,946	0	0	0	0	0	0	0	0	0	0	0	0
Backhoe/loader	2,429	2,429	2,429	1,457	1,457	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - Trencher	430	430	430	430	430	0	0	0	0	0	0	0	0	0	0	0	0
Forklift	179	179	179	179	90	0	0	0	0	0	0	0	0	0	0	0	0
Welding Generator	1,832	1,832	1,832	1,832	1,832	0	0	0	0	0	0	0	0	0	0	0	0
3 to 5 Ton AC Roller	303	303	303	303	303	0	0	0	0	0	0	0	0	0	0	0	0
Pipe Bending Machine	701	701	351	351	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL																	
AIR COMPRESSOR 185	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BOOM TRUCK 12 TON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 325 BACKHOE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 330 BACKHOE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT DOZER D-6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT MODEL 12 MOTOR GRADER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT ROLLER-COMPACTOR 563	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT RUBBER TIRE LOADER 966	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT SCRAPER 615	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CRANE-ROUGH TERRAIN 45T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENSET 5KW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JOHN DEERE TRACTOR 9400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PICK-UP CRAFT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PICK-UP OVERHEAD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL BALLAST REGULATOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL CLIP MACHINE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL MOVER-SHUTTLE WAGON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL TAMPER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL WELDER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAMEX WALK BEHIND COMPACTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRI-AXLE DUMP TRUCK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRUCK FLATBED 14 FOOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRUCK TRACTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WATER TRUCK, 4M ON-ROAD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WELDING MACHINE 350 AMP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LINEARS TOTAL (lbs/day)	**16,058**	**15,841**	**15,256**	**11,944**	**11,503**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
OFFSITE VEHICLES TOTAL (lbs/day)	**39,117**	**40,776**	**42,741**	**44,443**	**48,816**	**51,893**	**55,226**	**58,242**	**58,838**	**63,921**	**67,898**	**69,854**	**70,201**	**70,816**	**69,903**	**69,333**	**66,564**
TOTAL PROJECT (lbs/day)	90,249	91,727	96,525	95,727	99,159	92,305	98,187	100,274	99,277	102,696	109,655	111,216	109,147	107,965	103,494	101,888	98,146

CONSTRUCTION VEHICLES	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
ON-SITE															
On-Road Vehicles															
18 cy fill mat'l haul truck	0	863	863	863	863	288	288	288	0	0	0	0	0	0	0
Bus	4,027	3,452	3,452	3,452	2,876	2,876	1,438	1,438	863	863	575	575	575	288	288
Concrete Pumper Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dump Truck	575	575	863	863	863	575	288	288	288	288	288	0	0	0	0
Diesel Tractor (Yard Dog)	3,262	1,305	1,305	1,305	1,305	1,305	1,305	1,305	0	0	0	0	0	0	0
Service Truck - 1 ton	575	575	575	575	575	575	575	575	288	288	288	288	288	288	288
Pile Driver Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck - Fuel/Lube	274	274	274	274	274	137	137	137	137	137	137	137	0	0	0
Tractor Truck 5th Wheel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trucks - Pickup 3/4 ton	3,422	3,422	3,422	3,422	3,422	3,422	3,422	3,422	2,053	2,053	1,369	1,369	1,369	1,369	684
Trucks - 3 ton	1,151	863	863	863	863	575	575	575	288	288	288	288	0	0	0
Truck - Water	575	575	575	575	575	575	575	575	288	288	288	288	288	288	288
Off Road Vehicles															
Air Compressor 185 CFM	1,303	869	869	869	651	651	651	651	434	434	434	217	217	109	109
Air Compressor 750 CFM	228	228	228	228	228	228	228	228	228	228	228	228	228	228	228
Articulating Boom Platform	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bob cat loader	0	170	170	170	170	170	170	170	0	0	0	0	0	0	0
Bulldozer D10R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bulldozer D6C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Trowel Machine	0	0	141	141	141	141	141	141	0	0	0	0	0	0	0
Concrete Vibrators	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cranes - Mobile 35 ton	436	436	436	436	436	436	436	436	436	436	436	218	218	218	218
Cranes - Mobile 45 ton	697	697	697	697	697	697	349	349	0	0	0	0	0	0	0
Crane - Mobile 65 ton	697	697	697	697	349	349	349	349	349	349	349	0	0	0	0
Cranes 100 / 150 ton cap	486	486	0	0	0	0	0	0	0	0	0	0	0	0	0
Diesel Powered Welder	770	770	770	513	513	513	513	513	257	257	257	257	154	154	103
Excavator - Backhoe/loader	0	486	486	486	486	243	243	243	0	0	0	0	0	0	0
Excavator - Earth Scraper 637	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - loader	0	0	0	321	321	321	0	0	0	0	0	0	0	0	0
Excavator - Motor Grader (CAT140H)	0	869	869	869	869	434	434	434	0	0	0	0	0	0	0
Excavator - Trencher (CAT320)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fired Heaters (2,000 BTU)	248	165	165	165	165	165	165	165	165	165	165	165	83	83	83
Forklift	269	269	269	269	269	269	269	269	90	90	90	90	45	45	45
Fusion Welder	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Haul / 600 tn Crane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Haul / 1,000 tn Crane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light Plants	826	826	826	826	826	826	413	413	413	413	413	330	330	165	165
Man lifts - telescoping	2,009	1,507	1,507	1,507	1,005	1,005	1,005	1,005	502	502	502	502	201	201	201
Man lift - scissor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Portable Compaction Roller	0	0	0	685	685	685	342	342	0	0	0	0	0	0	0
Portable Compaction - Vibratory Plate	0	75	75	75	75	75	38	38	0	0	0	0	0	0	0
Portable Compaction - Ram	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pumps	248	248	248	248	248	248	248	248	165	165	165	165	165	165	165
Portable Power Generators	4,581	3,436	3,436	3,436	3,436	2,291	2,291	2,291	2,291	2,291	2,291	1,145	1,145	1,145	458
Truck Crane - Greater than 300 ton	783	783	783	783	783	0	0	0	0	0	0	0	0	0	0
Truck Crane - Greater than 200 ton	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vibratory Roller Ingersol-Rand 20 ton	0	0	0	468	468	468	468	0	0	0	0	0	0	0	0
WORKER VEHICLES															
Personal commuting vehicles	957.4	927.3	842.7	815.4	692.0	562.4	445.6	303.1	242.0	241.5	241.5	223.5	189.5	173.7	130.9
DELIVERY TRUCKS															
Light delivery truck (e.g. Fed-Ex)	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
Heavy delivery truck (e.g. flat beds carrying construction eqp)	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8	425.8
Import fill trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONSITE TOTAL (lbs/day)	**28,832**	**26,280**	**26,137**	**27,327**	**25,560**	**21,538**	**18,233**	**17,622**	**10,207**	**10,206**	**9,234**	**6,917**	**5,927**	**5,350**	**3,884**
OFF-SITE															
WORKER VEHICLES															
Personal commuting vehicles	55,699.0	53,947.7	49,027.0	47,437.2	40,257.6	32,718.9	25,923.8	17,636.4	14,077.3	14,051.7	14,051.7	13,000.4	11,026.0	10,102.9	7,615.6
DELIVERY TRUCKS															
Light delivery truck (e.g. Fed-Ex)	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2	465.2
Heavy delivery truck (e.g. flat beds carrying construction eqp)	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0	7,256.0
Import fill trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS															
ON ROAD															
Dump Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Service Truck (MHD-DSL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pipe Haul Truck and Trailer (HHDT-DSL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3/4 Ton Pickup (MHD-DSL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck - water	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OFF ROAD															
Air Compressor (185 CFM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bore Machine (Hydraulic)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 Ton Hydra Crane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Backhoe/loader	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - Trencher	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forklift	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Welding Generator	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 to 5 Ton AC Roller	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pipe Bending Machine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL															
AIR COMPRESSOR 185	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BOOM TRUCK 12 TON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 325 BACKHOE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 330 BACKHOE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT DOZER D-6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT MODEL 12 MOTOR GRADER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT ROLLER-COMPACTOR 563	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT RUBBER TIRE LOADER 966	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT SCRAPER 615	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CRANE-ROUGH TERRAIN 45T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENSET 5KW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JOHN DEERE TRACTOR 9400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PICK-UP CRAFT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PICK-UP OVERHEAD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL BALLAST REGULATOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL CLIP MACHINE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL MOVER-SHUTTLE WAGON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL TAMPER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL WELDER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAMEX WALK BEHIND COMPACTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRI-AXLE DUMP TRUCK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRUCK FLATBED 14 FOOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRUCK TRACTOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WATER TRUCK, 4M ON-ROAD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WELDING MACHINE 350 AMP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LINEARS TOTAL (lbs/day)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
OFFSITE VEHICLES TOTAL (lbs/day)	**63,420**	**61,669**	**56,748**	**55,158**	**47,979**	**40,440**	**33,645**	**25,358**	**21,799**	**21,773**	**21,773**	**20,722**	**18,747**	**17,824**	**15,337**
TOTAL PROJECT (lbs/day)	92,252	87,949	82,885	82,486	73,539	61,978	51,878	42,980	32,005	31,979	31,007	27,638	24,674	23,174	19,221

Notes:

1. According to schedules provided by Fluor, Linear construction (except rail) takes place in months 11-22.
2. According to schedules provided by Fluor, Rail construction occurs in months 13-17.

Hydrogen Energy California, Kern County Power Project
PM10 Emissions by Month - from Fugitive Sources
12/2012

PM10 - Fugitives

MONTHLY EMISSIONS (lbs/day)

CONSTRUCTION VEHICLES	Round Trips per day per unit	Round Trip Distance (miles/vehicle/ day)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
ON-SITE																				
On-Road Vehicles																				
18 cy fill mat'l haul truck	1	1.8	0.0	0.0	1.5	1.4	2.7	2.7	2.6	1.9	0.9	0.9	0.8	0.8	0.4	0.4	0.4	0.4	0.4	0.4
Bus	1	0.75	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Concrete Pumper Truck	2	0.75	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1
Dump Truck	8	0.75	1.5	2.0	2.0	1.4	1.4	1.3	1.3	0.9	0.9	0.9	0.6	0.6	0.5	0.5	0.5	0.0	0.0	0.0
Diesel Tractor (Yard Dog)	2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Service Truck - 1 ton	10	0.5	0.9	0.8	0.8	1.6	1.5	1.5	1.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4
Pile Driver Truck	2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck - Fuel/Lube	8	0.75	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5
Tractor Truck 5th Wheel	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trucks - Pickup 3/4 ton	10	0.5	2.1	2.1	2.0	2.0	1.9	2.2	2.5	2.1	3.7	3.5	3.5	3.5	5.5	5.4	5.4	5.2	5.2	5.2
Trucks - 3 ton	2	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2
Truck - Water	4	1	1.7	1.7	1.6	1.6	1.5	1.5	0.9	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5
Off Road Vehicles																				
Air Compressor 185 CFM	1	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Air Compressor 750 CFM	1	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Articulating Boom Platform	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bob cat loader	0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulldozer D10R	0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulldozer D6C	0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Concrete Trowel Machine	1	0.25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Concrete Vibrators	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranes - Mobile 35 ton	1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranes - Mobile 45 ton	1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crane - Mobile 65 ton	1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranes 100 / 150 ton cap	1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diesel Powered Welder	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Backhoe/loader	0	0.25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Earth Scraper 637	0	0.909	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - loader	0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Motor Grader (CAT140H)	0	1.439	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Trencher (CAT320)	0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fired Heaters (2,000 BTU)	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Forklift	5	0.5	1.3	1.2	1.2	1.2	1.1	1.1	1.1	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.8	0.8
Fusion Welder	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy Haul / 600 tn Crane	1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy Haul / 1,000 tn Crane	1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Light Plants	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Man lifts - telescoping	1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Man lift - scissor	1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction Roller	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction - Vibratory Plate	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction - Ram	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumps	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Power Generators	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck Crane - Greater than 300 ton	1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck Crane - Greater than 200 ton	1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vibratory Roller Ingersol-Rand 20 ton	2	0.25	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WORKER VEHICLES																				
Personal commuting vehicles			0.5	0.8	1.1	1.4	1.9	2.4	2.8	2.6	2.8	3.2	3.9	4.4	4.9	5.7	6.8	7.5	8.1	8.6
DELIVERY TRUCKS																				
Light delivery truck (e.g. Fed-Ex)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy delivery truck (e.g. flat beds carrying construction eqp)			2.1	2.1	2.1	2.0	1.9	1.9	1.8	1.3	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0
Import fill trucks			91.0	88.7	87.1	84.0	81.1	79.0	77.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CONSTRUCTION ACTIVITY																				
Dirt Piling - Bob cat loader			0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3
Dirt Piling - Trencher (CAT320)			0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
Dirt Piling - Backhoe/loader			0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Dirt Piling - loader			0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
Grading - Earth Scraper 637			54.7	54.7	54.7	54.7	47.4	47.4	42.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grading - Motor Grader (CAT140H)			0.0	9.9	9.9	9.9	29.8	29.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulldozing - Bulldozer D10R			77.4	77.4	77.4	51.6	51.6	51.6	51.6	51.6	51.6	25.8	25.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulldozing - Bulldozer D6C			77.4	77.4	77.4	77.4	51.6	51.6	51.6	51.6	51.6	51.6	25.8	25.8	25.8	25.8	25.8	0.0	0.0	0.0
Covered Storage Piles			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5										
ONSITE TOTAL (lbs/day)			**312.9**	**321.1**	**321.0**	**292.2**	**277.6**	**276.4**	**240.2**	**116.0**	**116.0**	**90.4**	**64.9**	**39.6**	**41.7**	**42.4**	**43.3**	**17.5**	**18.3**	**18.8**
OFF-SITE																				
WORKER VEHICLES																				
Personal commuting vehicles			0.2	0.3	0.4	0.5	0.7	0.8	1.0	1.4	1.5	1.8	2.2	2.5	3.0	3.5	4.2	4.8	5.2	5.5
DELIVERY TRUCKS																				
Light delivery truck (e.g. Fed-Ex)			0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Heavy delivery truck (e.g. flat beds carrying construction eqp)			3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Import fill trucks			10.4	10.4	10.4	10.4	10.4	10.4	10.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS																				
ON ROAD																				
Dump Truck			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	1.2	1.2	1.2	1.2	1.2	1.2
Service Truck (MHD-DSL)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pipe Haul Truck and Trailer (HHDT-DSL)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3/4 Ton Pickup (MHD-DSL)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4
Truck - water			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
OFF ROAD																				
Air Compressor (185 CFM)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bore Machine (Hydraulic)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 Ton Hydra Crane			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3
Backhoe/loader			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Trencher			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Forklift			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.6	0.6	0.6	0.6	0.6	0.6
Welding Generator			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 to 5 Ton AC Roller			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Pipe Bending Machine			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CONSTRUCTION ACTIVITY																				
Dirt piling - Backhoe			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.4	0.3	0.3	0.3	0.4	0.3	0.4
Dirt piling - Excavator			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Dirt piling - CAT 325 BACKHOE			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dirt piling - CAT 330 BACKHOE			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dirt piling - CAT DOZER D-6			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
Dirt piling - CAT RUBBER TIRE LOADER 966			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0
Grading - CAT MODEL 12 MOTOR GRADER			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.9	19.9	9.9	9.9	9.9	0.0
Grading - CAT SCRAPER 615			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	120.7	60.3	0.0	0.0	0.0	0.0
Storage Piles													0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
RAIL																				
AIR COMPRESSOR 185			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BOOM TRUCK 12 TON			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.0
CAT 325 BACKHOE			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT 330 BACKHOE			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT DOZER D-6			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT MODEL 12 MOTOR GRADER			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT ROLLER-COMPACTOR 563			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.0	0.0	0.0
CAT RUBBER TIRE LOADER 966			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT SCRAPER 615			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRANE-ROUGH TERRAIN 45T			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0
GENSET 5KW			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JOHN DEERE TRACTOR 9400			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
PICK-UP CRAFT			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.5	0.0
PICK-UP OVERHEAD			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.0	1.0	0.8	0.8	0.0
RAIL BALLAST REGULATOR			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
RAIL CLIP MACHINE			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL MOVER-SHUTTLE WAGON			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.0
RAIL TAMPER			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0
RAIL WELDER			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAMEX WALK BEHIND COMPACTOR			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRI-AXLE DUMP TRUCK			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.2	0.4	0.0	0.0	0.0
TRUCK FLATBED 14 FOOT			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.5	0.5	0.5	0.0
TRUCK TRACTOR			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0
WATER TRUCK, 4M ON-ROAD			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.0
WELDING MACHINE 350 AMP			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS TOTAL (lbs/day)			**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.7**	**3.2**	**147.4**	**88.3**	**18.0**	**17.4**	**17.4**	**4.7**
OFFSITE VEHICLES TOTAL (lbs/day)			**14.2**	**14.3**	**14.4**	**14.5**	**14.7**	**14.8**	**15.0**	**5.0**	**5.1**	**5.4**	**5.9**	**6.1**	**6.6**	**7.1**	**7.8**	**8.4**	**8.8**	**9.1**
TOTAL PROJECT (lbs/day)			327.1	335.3	335.4	306.7	292.3	291.2	255.2	120.9	121.2	95.8	73.4	48.9	195.6	137.8	69.2	43.2	44.5	32.6

CONSTRUCTION VEHICLES	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
ON-SITE																															
On-Road Vehicles																															
18 cy fill mat'l haul truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bus	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0
Concrete Pumper Truck	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dump Truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.6	0.7	0.7	0.5	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0
Diesel Tractor (Yard Dog)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Service Truck - 1 ton	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Pile Driver Truck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck - Fuel/Lube	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.0	0.0	0.0
Tractor Truck 5th Wheel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trucks - Pickup 3/4 ton	5.1	5.2	5.1	5.0	5.0	4.9	4.9	4.8	4.7	4.7	4.6	4.5	4.5	4.4	4.4	4.4	4.4	4.4	4.5	4.5	4.6	4.7	4.8	5.2	3.1	3.1	2.1	2.1	2.1	2.2	1.2
Trucks - 3 ton	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck - Water	0.5	0.5	0.5	0.5	0.5	0.3	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Off Road Vehicles																															
Air Compressor 185 CFM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Air Compressor 750 CFM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Articulating Boom Platform	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bob cat loader	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulldozer D10R	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulldozer D6C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Concrete Trowel Machine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Concrete Vibrators	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranes - Mobile 35 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranes - Mobile 45 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crane - Mobile 65 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranes 100 / 150 ton cap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diesel Powered Welder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Backhoe/loader	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Earth Scraper 637	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - loader	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Motor Grader (CAT140H)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Trencher (CAT320)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fired Heaters (2,000 BTU)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Forklift	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.2	0.2	0.2	0.2	0.1	0.1	0.1
Fusion Welder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy Haul / 600 tn Crane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy Haul / 1,000 tn Crane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Light Plants	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Man lifts - telescoping	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Man lift - scissor	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction Roller	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction - Vibratory Plate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction - Ram	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumps	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Power Generators	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck Crane - Greater than 300 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck Crane - Greater than 200 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vibratory Roller Ingersol-Rand 20 ton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WORKER VEHICLES																															
Personal commuting vehicles	9.0	9.6	10.0	10.9	11.6	12.3	13.0	13.0	14.0	14.8	15.1	15.0	14.9	14.6	14.4	13.8	13.0	12.6	11.6	11.3	9.8	8.1	6.6	4.8	3.9	3.9	3.9	3.6	3.1	2.9	2.3
DELIVERY TRUCKS																															
Light delivery truck (e.g. Fed-Ex)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy delivery truck (e.g. flat beds carrying construction eqp)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.2
Import fill trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CONSTRUCTION ACTIVITY																															
Dirt Piling - Bob cat loader	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dirt Piling - Trencher (CAT320)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dirt Piling - Backhoe/loader	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dirt Piling - loader	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grading - Earth Scraper 637	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grading - Motor Grader (CAT140H)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.9	9.9	9.9	9.9	0.0	0.0	0.0	0.0	19.9	19.9	19.9	19.9	9.9	9.9	9.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulldozing - Bulldozer D10R	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulldozing - Bulldozer D6C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.8	25.8	25.8	25.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Covered Storage Piles																															
ONSITE TOTAL (lbs/day)	**18.7**	**19.5**	**19.9**	**20.4**	**21.0**	**21.7**	**22.0**	**21.8**	**22.5**	**59.8**	**59.9**	**59.7**	**59.4**	**22.8**	**22.7**	**22.0**	**21.1**	**41.1**	**40.4**	**40.2**	**38.7**	**26.6**	**25.0**	**23.7**	**9.3**	**9.3**	**8.2**	**7.7**	**6.9**	**6.8**	**5.3**
OFF-SITE																															
WORKER VEHICLES																															
Personal commuting vehicles	5.8	6.1	6.4	7.2	7.7	8.3	8.9	9.0	9.8	10.5	10.9	11.0	11.1	10.9	10.8	10.3	9.8	9.5	8.6	8.3	7.1	5.7	4.5	3.1	2.5	2.5	2.5	2.3	1.9	1.8	1.3
DELIVERY TRUCKS																															
Light delivery truck (e.g. Fed-Ex)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Heavy delivery truck (e.g. flat beds carrying construction eqp)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Import fill trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS																															
ON ROAD																															
Dump Truck	1.2	1.2	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Service Truck (MHD-DSL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pipe Haul Truck and Trailer (HHDT-DSL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3/4 Ton Pickup (MHD-DSL)	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck - water	1.0	1.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OFF ROAD																															
Air Compressor (185 CFM)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bore Machine (Hydraulic)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 Ton Hydra Crane	0.3	0.3	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Backhoe/loader	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Trencher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Forklift	0.6	0.6	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Welding Generator	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 to 5 Ton AC Roller	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pipe Bending Machine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CONSTRUCTION ACTIVITY																															
Dirt piling - Backhoe	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dirt piling - Excavator	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dirt piling - CAT 325 BACKHOE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dirt piling - CAT 330 BACKHOE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dirt piling - CAT DOZER D-6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dirt piling - CAT RUBBER TIRE LOADER 966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grading - CAT MODEL 12 MOTOR GRADER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grading - CAT SCRAPER 615	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Storage Piles	0.2	0.2	0.2	0.2																											
RAIL																															
AIR COMPRESSOR 185	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BOOM TRUCK 12 TON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT 325 BACKHOE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT 330 BACKHOE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT DOZER D-6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT MODEL 12 MOTOR GRADER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT ROLLER-COMPACTOR 563	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT RUBBER TIRE LOADER 966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT SCRAPER 615	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRANE-ROUGH TERRAIN 45T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GENSET 5KW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JOHN DEERE TRACTOR 9400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PICK-UP CRAFT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PICK-UP OVERHEAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL BALLAST REGULATOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL CLIP MACHINE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL MOVER-SHUTTLE WAGON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL TAMPER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL WELDER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAMEX WALK BEHIND COMPACTOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRI-AXLE DUMP TRUCK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRUCK FLATBED 14 FOOT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRUCK TRACTOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WATER TRUCK, 4M ON-ROAD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WELDING MACHINE 350 AMP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS TOTAL (lbs/day)	**4.7**	**4.7**	**3.7**	**3.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
OFFSITE VEHICLES TOTAL (lbs/day)	**9.4**	**9.8**	**10.1**	**10.8**	**11.4**	**11.9**	**12.5**	**12.6**	**13.5**	**14.2**	**14.5**	**14.6**	**14.7**	**14.5**	**14.4**	**13.9**	**13.4**	**13.1**	**12.2**	**11.9**	**10.7**	**9.4**	**8.2**	**6.7**	**6.1**	**6.1**	**6.1**	**5.9**	**5.6**	**5.4**	**5.0**
TOTAL PROJECT (lbs/day)	32.8	33.9	33.6	34.6	32.4	33.6	34.5	34.3	35.9	74.0	74.4	74.2	74.1	37.3	37.1	35.9	34.5	54.2	52.6	52.1	49.4	36.0	33.1	30.4	15.4	15.4	14.3	13.6	12.5	12.2	10.2

Notes:

1. According to schedules provided by Fluor, Linear construction (except rail) takes place in months 11-22.
2. According to schedules provided by Fluor, Rail construction occurs in months 13-17.
3. According to schedule on "onsite equipment" tab, site prep/pilling occurs in months 1-8. Assume onsite covered storage piles are only present during these months.
4. Assume linear covered storage piles are present during entire 12 months of linear construction, months 11-22.

Hydrogen Energy California, Kern County Power Project
PM2.5 Emissions by Month - from Fugitive Sources
12/2012

PM2.5 - Fugitives

MONTHLY EMISSIONS (lbs/day)

CONSTRUCTION VEHICLES	Round Trips per day per unit	Round Trip Distance (miles/vehicle/day)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
ON-SITE																																																			
On-Road Vehicles																																																			
18 cy fill mat'l haul truck	1	1.8	0.0	0.0	0.1	0.1	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bus	1	0.75	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Concrete Pumper Truck	2	0.75	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dump Truck	8	0.75	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diesel Tractor (Yard Dog)	2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Service Truck - 1 ton	10	0.5	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pile Driver Truck	2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck - Fuel/Lube	8	0.75	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tractor Truck 5th Wheel	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trucks - Pickup 3/4 ton	10	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.4	0.4	0.3	0.3	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.3	0.3	0.2	0.2	0.2	0.2	0.1
Trucks - 3 ton	2	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck - Water	4	1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Off Road Vehicles																																																			
Air Compressor 185 CFM	1	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Air Compressor 750 CFM	1	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Articulating Boom Platform	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bob cat loader	0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulldozer D10R	0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulldozer D6C	0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Concrete Trowel Machine	1	0.25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Concrete Vibrators	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranes - Mobile 35 ton	1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranes - Mobile 45 ton	1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crane - Mobile 65 ton	1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cranes 100 / 150 ton cap	1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diesel Powered Welder	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Backhoe/loader	0	0.25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Earth Scraper 637	0	0.909	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - loader	0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Motor Grader (CAT140H)	0	1.439	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Trencher (CAT320)	0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fired Heaters (2,000 BTU)	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Forklift	5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fusion Welder	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy Haul / 600 tn Crane	1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy Haul / 1,000 tn Crane	1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Light Plants	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Man lifts - telescoping	1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Man lift - scissor	1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction Roller	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction - Vibratory Plate	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Compaction - Ram	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumps	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portable Power Generators	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck Crane - Greater than 300 ton	1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck Crane - Greater than 200 ton	1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vibratory Roller Ingersol-Rand 20 ton	2	0.25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WORKER VEHICLES																																																			
Personal commuting vehicles			0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.7	0.7	0.8	0.9	0.9	1.0	1.0	1.1	1.2	1.2	1.3	1.3	1.4	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.1	1.0	0.8	0.7	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.2
DELIVERY TRUCKS																																																			
Light delivery truck (e.g. Fed-Ex)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy delivery truck (e.g. flat beds carrying construction eqp)			0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Import fill trucks			9.2	9.0	8.8	8.5	8.2	8.0	7.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CONSTRUCTION ACTIVITY																																																			
Dirt Piling - Bob cat loader			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dirt Piling - Trencher (CAT320)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dirt Piling - Backhoe/loader			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dirt Piling - loader			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grading - Earth Scraper 637			10.5	10.5	10.5	10.5	9.4	9.4	8.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grading - Motor Grader (CAT140H)			0.0	0.9	0.9	0.9	2.8	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.0	0.0	0.0	0.0	1.9	1.9	1.9	1.9	0.9	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulldozing - Bulldozer D10R			25.6	25.6	25.6	17.1	17.1	17.1	17.1	17.1	17.1	8.5	8.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulldozing - Bulldozer D6C			25.6	25.6	25.6	25.6	17.1	17.1	17.1	17.1	17.1	17.1	8.5	8.5	8.5	8.5	8.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.5	8.5	8.5	8.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Covered Storage Piles			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1																																									
ONSITE TOTAL (lbs/day)			**72.4**	**73.1**	**73.1**	**64.3**	**56.3**	**56.2**	**52.4**	**35.5**	**35.5**	**27.0**	**18.5**	**10.0**	**10.2**	**10.2**	**10.3**	**1.8**	**1.9**	**1.9**	**1.9**	**2.0**	**2.0**	**2.1**	**2.1**	**2.2**	**2.2**	**2.2**	**2.3**	**11.9**	**11.9**	**11.9**	**11.9**	**2.3**	**2.3**	**2.2**	**2.1**	**4.0**	**4.0**	**4.0**	**3.8**	**2.6**	**2.5**	**2.4**	**0.9**	**0.9**	**0.8**	**0.8**	**0.7**	**0.7**	**0.5**
OFF-SITE																																																			
WORKER VEHICLES																																																			
Personal commuting vehicles			0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.4	0.4	0.6	0.6	0.7	0.9	1.0	1.2	1.3	1.4	1.4	1.5	1.6	1.8	1.9	2.0	2.2	2.2	2.4	2.6	2.7	2.7	2.7	2.7	2.7	2.5	2.4	2.3	2.1	2.0	1.7	1.4	1.1	0.8	0.6	0.6	0.6	0.6	0.5	0.4	0.3
DELIVERY TRUCKS																																																			
Light delivery truck (e.g. Fed-Ex)			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Heavy delivery truck (e.g. flat beds carrying construction eqp)			0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Import fill trucks			2.5	2.5	2.5	2.5	2.5	2.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS																																																			
ON ROAD																																																			
Dump Truck			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Service Truck (MHD-DSL)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pipe Haul Truck and Trailer (HHDT-DSL)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3/4 Ton Pickup (MHD-DSL)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Truck - water			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OFF ROAD																																																			
Air Compressor (185 CFM)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bore Machine (Hydraulic)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 Ton Hydra Crane			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Backhoe/loader			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator - Trencher			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Forklift			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Welding Generator			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3 to 5 Ton AC Roller			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pipe Bending Machine			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CONSTRUCTION																																																			
Dirt piling - Backhoe			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dirt piling - Excavator			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dirt piling - CAT 325 BACKHOE			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dirt piling - CAT 330 BACKHOE			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dirt piling - CAT DOZER D-6			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dirt piling - CAT RUBBER TIRE LOADER 966			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grading - CAT MODEL 12 MOTOR GRADER			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	1.9	0.9	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grading - CAT SCRAPER 615			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.2	12.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Storage Piles													0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0																											
RAIL																																																			
AIR COMPRESSOR 185			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BOOM TRUCK 12 TON			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT 325 BACKHOE			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT 330 BACKHOE			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT DOZER D-6			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT MODEL 12 MOTOR GRADER			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT ROLLER-COMPACTOR 563			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT RUBBER TIRE LOADER 966			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT SCRAPER 615			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CRANE-ROUGH TERRAIN 45T			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GENSET 5KW			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JOHN DEERE TRACTOR 9400			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PICK-UP CRAFT			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PICK-UP OVERHEAD			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL BALLAST REGULATOR			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL CLIP MACHINE			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL MOVER-SHUTTLE WAGON			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL TAMPER			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAIL WELDER			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAMEX WALK BEHIND COMPACTOR			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRI-AXLE DUMP TRUCK			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRUCK FLATBED 14 FOOT			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRUCK TRACTOR			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WATER TRUCK, 4M ON-ROAD			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WELDING MACHINE 350 AMP			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LINEARS TOTAL (lbs/day)			**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.3**	**0.4**	**27.8**	**15.3**	**1.8**	**1.7**	**1.7**	**0.5**	**0.5**	**0.5**	**0.4**	**0.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
OFFSITE VEHICLES TOTAL (lbs/day)			**3.5**	**3.5**	**3.5**	**3.5**	**3.6**	**3.6**	**3.7**	**1.2**	**1.3**	**1.3**	**1.4**	**1.5**	**1.6**	**1.7**	**1.9**	**2.1**	**2.2**	**2.2**	**2.3**	**2.4**	**2.5**	**2.7**	**2.8**	**2.9**	**3.1**	**3.1**	**3.3**	**3.5**	**3.6**	**3.6**	**3.6**	**3.6**	**3.5**	**3.4**	**3.3**	**3.2**	**3.0**	**2.9**	**2.6**	**2.3**	**2.0**	**1.6**	**1.5**	**1.5**	**1.5**	**1.4**	**1.4**	**1.3**	**1.2**
TOTAL PROJECT (lbs/day)			75.9	76.6	76.7	67.8	59.9	59.8	56.1	36.8	36.8	28.3	20.2	11.8	39.6	27.3	14.0	5.6	5.8	4.7	4.7	4.9	4.9	5.1	4.9	5.1	5.3	5.3	5.6	15.4	15.5	15.5	15.5	5.8	5.8	5.6	5.4	7.3	7.0	6.9	6.4	4.9	4.5	4.0	2.4	2.4	2.3	2.2	2.1	2.0	1.8

Notes:

1. According to schedules provided by Fluor, Linear construction (except rail) takes place in months 11-22.
2. According to schedules provided by Fluor, Rail construction occurs in months 13-17.
3. According to schedule on "onsite equipment" tab, site prep/pilling occurs in months 1-8. Assume covered storage piles are only present during these months.
4. Assume linear covered storage piles are present during entire 12 months of linear construction, months 11-22.

Hydrogen Energy California, Kern County Power Project

Calculation of maximum short-term (daily) and annual emissions
1/7/2013

Highlighting indicates month or 12-month period of maximum emissions.

PROJECT MONTHLY EMISSIONS (lbs/month)

PROJECT EMISSIONS (on-site + linears)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
CO	3,222	3,320	3,952	3,991	4,067	4,408	3,847	3,371	3,186	3,290	4,650	4,916	6,641	7,324	7,225	7,394	7,670	6,382	6,299	6,551	6,233	6,091	4,903	5,250	5,061	4,949
CO2	703,040	719,044	830,245	828,597	800,494	859,890	733,697	600,356	555,736	546,695	784,578	827,886	1,247,557	1,329,371	1,356,321	1,356,399	1,413,544	1,114,617	1,110,530	1,172,230	1,117,660	1,097,139	880,652	936,225	916,053	881,339
CH4	62	64	73	73	70	75	63	58	57	61	87	94	127	139	139	147	150	127	127	133	128	125	104	111	106	103
N2O	13	13	15	15	15	16	14	12	11	11	16	17	20	21	22	23	24	25	25	27	25	25	20	21	21	20
NOx	6,550	6,711	7,829	7,819	7,657	8,282	7,121	5,796	5,326	5,286	7,469	7,879	11,316	12,114	12,101	12,084	12,612	10,347	10,259	10,813	10,275	10,061	8,056	8,590	8,374	8,080
PM10 - comb + fug	7,221.8	7,413.3	7,493.2	6,865.3	6,567.6	6,585.6	5,730.2	2,936.5	2,909.3	2,359.4	1,999.4	1,483.1	4,881.1	3,659.0	2,114.3	1,538.6	1,582.8	1,198.5	1,183.4	1,230.8	1,179.8	1,169.4	977.7	1,030.5	1,016.7	999.7
PM2.5 - comb + fug	1,901.6	1,929.5	2,002.5	1,813.0	1,658.9	1,696.9	1,560.1	1,133.5	1,106.3	931.6	880.7	721.0	1,494.2	1,278.1	965.4	783.0	807.2	675.8	664.6	693.9	658.0	644.9	517.7	553.8	535.2	523.5
SO2	7	7	8	8	8	9	8	6	6	6	9	9	14	14	15	15	15	12	12	13	12	12	10	10	10	10
ROG	1,017	1,046	1,268	1,289	1,384	1,507	1,350	1,134	1,032	1,076	1,511	1,615	2,074	2,240	2,228	2,264	2,361	2,047	1,986	2,095	1,985	1,932	1,574	1,715	1,669	1,630
CO2e	708,343	724,467	836,506	834,869	806,541	866,396	739,285	605,201	560,370	551,369	791,452	835,251	1,256,345	1,338,945	1,366,145	1,366,549	1,424,275	1,124,895	1,120,929	1,183,254	1,128,243	1,107,556	889,059	945,130	924,702	889,662

12-month Rolling Emissions (tons/yr)

PROJECT EMISSIONS (on-site + linears)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
CO	-	-	-	-	-	-	-	-	-	-	-	23	25	27	28	30	32	33	34	36	37	39	39	38.98	38.19	37.00
CO2	-	-	-	-	-	-	-	-	-	-	-	4395	4667	4973	5236	5499	5806	5933	6122	6408	6689	6964	7012	7066	6900	6676
CH4	-	-	-	-	-	-	-	-	-	-	-	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
N2O	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOx	-	-	-	-	-	-	-	-	-	-	-	42	44	47	49	51	54	55	56	59	61	64	64	64	63	61
PM10 - comb + fug	-	-	-	-	-	-	-	-	-	-	-	29.8	28.6	26.7	24.0	21.4	18.9	16.2	13.9	13.1	12.2	11.6	11.1	10.9	8.9	7.6
PM2.5 - comb + fug	-	-	-	-	-	-	-	-	-	-	-	8.7	8.5	8.1	7.6	7.1	6.7	6.2	5.7	5.5	5.3	5.1	5.0	4.9	4.4	4.0
SO2	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ROG	-	-	-	-	-	-	-	-	-	-	-	8	8	9	9	10	10	10	11	11	12	12	12.20	12.25	12.05	11.74
CO2e	-	-	-	-	-	-	-	-	-	-	-	4430	4704	5011	5276	5542	5851	5980	6171	6460	6744	7022	7071	7126	6960	6735

Construction days per month: 22

ONSITE MONTHLY EMISSIONS (lbs/month)

ONSITE EMISSIONS (no linears)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
CO	3,222	3,320	3,952	3,991	4,067	4,408	3,847	3,371	3,186	3,290	3,411	3,481	3,491	3,759	3,822	4,078	4,251	4,317	4,291	4,653	4,706	4,659	4,903	5,250	5,061	4,949
CO2	703,040	719,044	830,245	828,597	800,494	859,890	733,697	600,356	555,736	546,695	578,374	584,527	600,074	636,327	660,620	688,647	740,771	764,687	765,299	839,744	857,402	846,445	880,652	936,225	916,053	881,339
CH4	62	64	73	73	70	75	63	58	57	61	63	64	63	69	71	80	82	84	86	95	96	96	104	111	106	103
N2O	13	13	15	15	15	16	14	12	11	11	12	12	12	13	14	15	16	17	17	19	20	19	20	21	21	20
NOx	6,550	6,711	7,829	7,819	7,657	8,282	7,121	5,796	5,326	5,286	5,545	5,616	5,694	6,058	6,254	6,503	6,914	7,105	7,066	7,732	7,867	7,742	8,056	8,590	8,374	8,080
PM10 - comb + fug	7,221.8	7,413.3	7,493.2	6,865.3	6,567.6	6,585.6	5,730.2	2,936.5	2,909.3	2,359.4	1,807.6	1,259.4	1,303.6	1,349.1	1,373.9	826.9	860.7	878.0	867.9	922.9	936.3	940.3	977.7	1,030.5	1,016.7	999.7
PM2.5 - comb + fug	1,901.6	1,929.5	2,002.5	1,813.0	1,658.9	1,696.9	1,560.1	1,133.5	1,106.3	931.6	752.5	573.0	576.0	604.8	611.2	443.5	458.3	465.6	459.0	495.2	500.6	494.8	517.7	553.8	535.2	523.5
SO2	7	7	8	8	8	9	8	6	6	6	6	6	6	7	7	8	8	8	8	9	9	9	10	10	10	10
ROG	1,017	1,046	1,268	1,289	1,384	1,507	1,350	1,134	1,032	1,076	1,112	1,156	1,117	1,200	1,220	1,295	1,386	1,405	1,365	1,499	1,514	1,488	1,574	1,715	1,669	1,630
CO2e	708,343	724,467	836,506	834,869	806,541	866,396	739,285	605,201	560,370	551,369	583,325	589,594	605,257	641,919	666,468	694,913	747,446	771,617	772,428	847,622	865,481	854,479	889,059	945,130	924,702	889,662

12-month Rolling Emissions (tons/yr)

ONSITE EMISSIONS (no linears)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
CO	-	-	-	-	-	-	-	-	-	-	-	22	22	22	22	22	22	22	22	23	24	24	25	26.09	26.88	27.47
CO2	-	-	-	-	-	-	-	-	-	-	-	4170	4119	4078	3993	3923	3893	3845	3861	3981	4132	4281	4433	4608	4766	4889
CH4	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
N2O	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOx	-	-	-	-	-	-	-	-	-	-	-	40	39	39	38	38	37	37	37	38	39	40	41	43	44	45
PM10 - comb + fug	-	-	-	-	-	-	-	-	-	-	-	29.6	26.6	23.6	20.5	17.5	14.7	11.8	9.4	8.4	7.4	6.7	6.2	6.1	6.0	5.8
PM2.5 - comb + fug	-	-	-	-	-	-	-	-	-	-	-	8.5	7.9	7.2	6.5	5.8	5.2	4.6	4.1	3.7	3.4	3.2	3.1	3.1	3.1	3.0
SO2	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ROG	-	-	-	-	-	-	-	-	-	-	-	7	7	7	7	7	7	7	7	7	8	8	8.11	8.39	8.66	8.88
CO2e	-	-	-	-	-	-	-	-	-	-	-	4203	4152	4110	4025	3955	3926	3878	3895	4016	4169	4320	4473	4651	4811	4935

Construction days per month: 22

TOTAL MONTHLY EMISSIONS (lbs/month)

TOTAL EMISSIONS (onsite + linears + offsite)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
CO	4,744	4,949	5,670	5,809	6,092	6,606	6,204	5,032	4,995	5,399	7,183	7,708	9,887	11,073	11,669	12,372	13,072	12,094	12,295	12,883	12,857	13,463	12,802	13,720	14,046	14,036
CO2	1,388,652	1,417,953	1,539,984	1,550,723	1,548,297	1,628,932	1,522,341	931,547	905,178	933,158	1,223,453	1,298,709	1,774,386	1,918,227	2,030,943	2,096,875	2,206,334	1,945,691	1,976,634	2,079,830	2,061,216	2,133,033	1,981,527	2,107,495	2,151,011	2,128,874
CH4	98	103	114	118	120	131	123	104	107	120	159	173	220	246	266	289	305	291	299	315	318	338	332	355	365	366
N2O	35	37	41	42	45	48	48	36	38	42	54	59	68	77	88	96	104	109	113	120	123	133	136	146	153	153
NOx	13,400	13,573	14,702	14,705	14,568	15,213	14,070	7,674	7,222	7,217	9,451	9,892	13,384	14,242	14,312	14,359	14,937	12,709	12,656	13,250	12,747	12,623	10,680	11,282	11,129	10,847
PM10 - comb + fug	7,779.7	7,974.8	8,057.5	7,433.0	7,142.1	7,165.7	6,315.5	3,119.4	3,097.0	2,556.9	2,210.9	1,703.1	5,116.0	3,910.4	2,388.6	1,830.4	1,888.5	1,514.4	1,508.6	1,567.0	1,525.7	1,539.8	1,365.5	1,437.0	1,440.1	1,426.4
PM2.5 - comb + fug	2,188.8	2,217.9	2,291.9	2,103.4	1,951.6	1,991.5	1,856.4	1,218.5	1,193.0	1,021.5	975.3	818.4	1,596.5	1,386.0	1,080.9	904.3	933.2	805.2	797.1	830.0	797.3	792.4	670.9	713.4	700.3	689.8
SO2	14	14	15	15	15	16	15	10	9	10	13	14	19	20	21	22	23	20	20	21	21	22	20	21	22	22
ROG	1,325	1,358	1,582	1,606	1,708	1,835	1,683	1,250	1,152	1,206	1,653	1,765	2,239	2,420	2,429	2,481	2,591	2,287	2,235	2,354	2,254	2,223	1,881	2,040	2,009	1,974
CO2e	1,401,665	1,431,640	1,554,962	1,566,229	1,564,651	1,646,631	1,539,941	945,013	919,195	948,761	1,243,445	1,320,527	1,799,966	1,947,183	2,063,732	2,132,741	2,244,965	1,985,469	2,017,996	2,123,550	2,105,997	2,181,504	2,030,702	2,160,109	2,206,028	2,184,092

12-month Rolling Emissions (tons/yr)

TOTAL EMISSIONS (onsite + linears + offsite)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
CO	-	-	-	-	-	-	-	-	-	-	-	35	38	41	44	47	51	53	56	60	64	68	71	74.09	76.17	77.65
CO2	-	-	-	-	-	-	-	-	-	-	-	7944	8137	8387	8633	8906	9235	9393	9621	10195	10773	11373	11752	12156	12344	12450
CH4	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2
N2O	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
NOx	-	-	-	-	-	-	-	-	-	-	-	71	71	71	71	71	71	70	69	72	75	77	78	79	77	76
PM10 - comb + fug	-	-	-	-	-	-	-	-	-	-	-	32.3	30.9	28.9	26.1	23.3	20.7	17.8	15.4	14.6	13.9	13.4	12.9	12.8	11.0	9.7
PM2.5 - comb + fug	-	-	-	-	-	-	-	-	-	-	-	9.9	9.6	9.2	8.6	8.0	7.5	6.9	6.4	6.2	6.0	5.9	5.7	5.7	5.2	4.9
SO2	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ROG	-	-	-	-	-	-	-	-	-	-	-	9	10	10	10	11	11	12	12	12	13	13	13.58	13.72	13.60	13.38
CO2e	-	-	-	-	-	-	-	-	-	-	-	8041	8240	8498	8753	9036	9376	9545	9784	10374	10967	11584	11977	12397	12600	12718

Hydrogen Energy California, Kern County Power Project

Calculation of maximum short-term (daily) and annual emissions
1/7/2013

		27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
PROJECT EMISSIONS (on-site + linears)	CO	4,808	5,185	5,206	4,968	4,840	4,426	4,305	4,173	3,853	3,464	3,485	3,662	3,384	2,860	2,484	2,407	1,437	1,437	1,338	939	800	726	510
	CO2	845,114	910,216	901,616	849,028	809,862	732,331	709,759	688,585	628,670	573,042	569,938	595,888	557,441	469,766	397,598	384,283	222,503	222,493	201,234	150,808	129,251	116,660	84,708
	CH4	100	106	105	100	96	88	85	82	76	66	66	69	63	51	46	45	30	30	30	18	15	14	9
	N2O	19	20	20	18	17	16	15	15	13	12	12	12	12	10	8	8	5	5	4	3	3	2	2
	NOx	7,745	8,382	8,324	7,837	7,482	6,761	6,557	6,354	5,780	5,241	5,238	5,511	5,159	4,367	3,691	3,595	2,058	2,058	1,870	1,383	1,188	1,074	795
	PM10 - comb + fug	997.4	1,863.4	1,870.2	1,837.6	1,817.2	966.8	952.0	923.6	863.8	1,265.2	1,253.6	1,270.4	1,210.6	890.0	810.1	776.6	353.1	353.0	317.6	267.4	236.4	225.0	172.0
	PM2.5 - comb + fug	508.9	762.2	766.4	740.9	727.3	474.6	463.4	449.3	410.5	418.2	419.5	438.8	411.3	335.5	292.2	284.4	155.7	155.7	143.0	106.1	91.9	84.7	62.6
	SO2	9	10	10	9	9	8	8	7	7	6	6	6	6	5	4	4	2	2	2	2	1	1	1
	ROG	1,589	1,693	1,688	1,625	1,586	1,480	1,444	1,415	1,322	1,130	1,143	1,181	1,084	911	783	770	458	458	438	304	257	228	172
	CO2e	853,056	918,660	909,963	856,806	817,263	739,019	716,209	694,806	634,294	578,153	575,014	601,197	562,328	473,842	401,124	387,689	224,549	224,539	203,152	152,170	130,393	117,693	85,447

		27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
PROJECT EMISSIONS (on-site + linears)	CO	36	35	33	33	32	31	30	29	29	28	27	26	25	24	23	22	20	18	17	15	14	12	11
	CO2	6421	6198	5942	5809	5659	5439	5235	5030	4904	4723	4550	4407	4263	4043	3791	3559	3265	3010	2756	2487	2237	2009	1766
	CH4	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
	N2O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NOx	59	57	55	53	52	50	48	46	45	43	42	41	39	37	35	33	30	28	25	23	21	19	16
	PM10 - comb + fug	7.1	7.2	7.4	7.7	8.0	7.9	7.7	7.6	7.6	7.7	7.8	7.9	8.0	7.6	7.0	6.5	5.8	5.5	5.1	4.8	4.5	4.0	3.4
	PM2.5 - comb + fug	3.8	3.8	3.8	3.8	3.8	3.7	3.6	3.5	3.5	3.4	3.3	3.3	3.2	3.0	2.8	2.6	2.3	2.1	2.0	1.8	1.6	1.5	1.3
	SO2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ROG	11.42	11.14	10.80	10.59	10.39	10.08	10	10	9	9	9	9	8	8	8	7	7	6	6	5	4	4	4
	CO2e	6479	6255	5998	5864	5712	5490	5284	5077	4950	4766	4591	4447	4302	4079	3825	3590	3294	3037	2780	2509	2257	2027	1782

Construction days per month:

		27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
ONSITE EMISSIONS (no linears)	CO	4,808	5,185	5,206	4,968	4,840	4,426	4,305	4,173	3,853	3,464	3,485	3,662	3,384	2,860	2,484	2,407	1,437	1,437	1,338	939	800	726	510
	CO2	845,114	910,216	901,616	849,028	809,862	732,331	709,759	688,585	628,670	573,042	569,938	595,888	557,441	469,766	397,598	384,283	222,503	222,493	201,234	150,808	129,251	116,660	84,708
	CH4	100	106	105	100	96	88	85	82	76	66	66	69	63	51	46	45	30	30	30	18	15	14	9
	N2O	19	20	20	18	17	16	15	15	13	12	12	12	12	10	8	8	5	5	4	3	3	2	2
	NOx	7,745	8,382	8,324	7,837	7,482	6,761	6,557	6,354	5,780	5,241	5,238	5,511	5,159	4,367	3,691	3,595	2,058	2,058	1,870	1,383	1,188	1,074	795
	PM10 - comb + fug	997.4	1,863.4	1,870.2	1,837.6	1,817.2	966.8	952.0	923.6	863.8	1,265.2	1,253.6	1,270.4	1,210.6	890.0	810.1	776.6	353.1	353.0	317.6	267.4	236.4	225.0	172.0
	PM2.5 - comb + fug	508.9	762.2	766.4	740.9	727.3	474.6	463.4	449.3	410.5	418.2	419.5	438.8	411.3	335.5	292.2	284.4	155.7	155.7	143.0	106.1	91.9	84.7	62.6
	SO2	9	10	10	9	9	8	8	7	7	6	6	6	6	5	4	4	2	2	2	2	1	1	1
	ROG	1,589	1,693	1,688	1,625	1,586	1,480	1,444	1,415	1,322	1,130	1,143	1,181	1,084	911	783	770	458	458	438	304	257	228	172
	CO2e	853,056	918,660	909,963	856,806	817,263	739,019	716,209	694,806	634,294	578,153	575,014	601,197	562,328	473,842	401,124	387,689	224,549	224,539	203,152	152,170	130,393	117,693	85,447

		27	28	29	29	29	30	29	29	29	29	28	27	26	25	24	23	22	20	18	17	15	14	12	11
ONSITE EMISSIONS (no linears)	CO	4981	5092	5172	5215	5237	5183	5109	5030	4904	4723	4550	4407	4263	4043	3791	3559	3265	3010	2756	2487	2237	2009	1766
	CO2	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
	CH4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	N2O	46	47	48	48	48	48	47	46	45	43	42	41	39	37	35	33	30	28	25	23	21	19	16
	NOx	5.6	6.1	6.7	7.1	7.6	7.6	7.6	7.6	7.6	7.7	7.8	7.9	8.0	7.6	7.0	6.5	5.8	5.5	5.1	4.8	4.5	4.0	3.4
	PM10 - comb + fug	3.0	3.1	3.3	3.4	3.6	3.6	3.5	3.5	3.5	3.4	3.3	3.3	3.2	3.0	2.8	2.6	2.3	2.1	2.0	1.8	1.6	1.5	1.3
	PM2.5 - comb + fug	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SO2	9.06	9.26	9.41	9.52	9.64	9.63	10	10	9	9	9	9	8	8	8	7	7	6	6	5	4	4	4
	ROG	5028	5140	5221	5264	5286	5232	5157	5077	4950	4766	4591	4447	4302	4079	3825	3590	3294	3037	2780	2509	2257	2027	1782
	CO2e																							

Construction days per month:

		27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
TOTAL EMISSIONS (onsite + linears + offsite)	CO	14,765	15,823	16,179	16,000	15,978	15,407	15,188	14,582	13,724	13,036	12,214	12,120	10,613	8,799	7,259	5,764	4,185	4,181	4,082	3,503	3,026	2,794	2,152
	CO2	2,200,002	2,349,090	2,381,788	2,336,529	2,310,359	2,213,533	2,178,940	2,099,283	1,972,980	1,880,368	1,773,350	1,765,726	1,575,658	1,328,783	1,113,117	924,789	687,847	687,296	666,038	593,410	530,157	498,072	413,595
	CH4	387	413	422	418	418	405	399	382	361	342	318	313	271	222	183	141	108	107	107	91	78	72	55
	N2O	165	176	181	180	181	177	175	167	158	153	140	137	118	97	79	57	45	45	45	41	36	33	26
	NOx	10,616	11,335	11,316	10,837	10,494	9,755	9,539	9,280	8,641	8,066	7,962	8,202	7,703	6,757	5,942	5,675	4,066	4,066	3,877	3,369	3,134	3,001	2,671
	PM10 - comb + fug	1,452.8	2,341.1	2,358.9	2,328.2	2,311.3	1,455.7	1,437.8	1,393.8	1,316.4	1,707.9	1,668.6	1,676.5	1,576.3	1,213.4	1,095.3	1,015.1	571.7	571.5	536.1	479.9	437.8	421.2	354.3
	PM2.5 - comb + fug	684.7	945.5	953.3	928.5	916.0	661.8	649.3	630.0	585.4	589.8	581.8	598.2	557.2	467.3	411.3	388.0	252.7	252.6	239.9	201.1	183.1	174.2	147.5
	SO2	22	24	24	24	23	22	22	21	20	19	18	18	16	13	11	9	7	7	7	6	5	5	4
	ROG	1,960	2,085	2,090	2,029	1,993	1,882	1,844	1,800	1,690	1,489	1,476	1,505	1,371	1,158	994	937	607	607	587	447	390	356	287
	CO2e	2,259,321	2,412,420	2,446,746	2,401,224	2,375,220	2,276,874	2,241,540	2,159,212	2,029,540	1,934,869	1,823,476	1,814,684	1,617,862	1,363,524	1,141,316	945,557	704,117	703,543	682,157	608,046	542,832	509,823	422,858

		27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
TOTAL EMISSIONS (onsite + linears + offsite)	CO	79	81	82	84	86	88	89	89	90	89	88	88	85	82	77	72	66	61	55	50	44	39	34
	CO2	12534	12660	12748	12944	13110	13177	13236	13219	13215	13101	12913	12731	12419	11909	11274	10568	9757	8994	8238	7485	6763	6072	5392
	CH4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1
	N2O	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
	NOx	74	72	71	70	69	67	65	64	63	61	59	58	57	54	52	49	46	43	40	37	34	32	29
	PM10 - comb + fug	9.2	9.5	9.7	10.1	10.5	10.5	10.4	10.4	10.3	10.5	10.6	10.7	10.8	10.2	9.6	8.9	8.1	7.6	7.2	6.7	6.3	5.6	5.0
	PM2.5 - comb + fug	4.7	4.7	4.7	4.8	4.8	4.7	4.7	4.6	4.5	4.5	4.4	4.4	4.3	4.1	3.8	3.5	3.2	3.0	2.8	2.6	2.4	2.2	1.9
	SO2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ROG	13.14	12.95	12.70	12.57	12.45	12.21	12	12	12	11	11	11	11	10	10	9	8	8	7	6	6	5	5
	CO2e	12816	12956	13057	13265	13443	13520	13588	13577	13576	13464	13272	13088	12767	12242	11590	10862	10026	9240	8460	7684	6941	6228	5528

Hydrogen Energy California, Kern County Power Project
Emission Factors for Onroad Vehicles
1/7/2013

ONSITE - 5 MPH			Distance Traveled (miles)				EF (lbs/mile)									
Onroad Vehicle	Fuel Type	Vehicle Type	Total	Dirt	Gravel	Paved	TOC	CO	NOx	PM_{10}	SO_2	$PM_{2.5}$	CO_2	N_2O	CH_4	CO_2e
Personal Commuting Vehicles	G/D	LDA/ LDT	0.22	0	0.22	0	0.0012	0.0154	0.0012	0.0002	2.43E-05	0.0001	2.57E+00	9.55E-05	1.90E-04	2.604
Light delivery truck (e.g. Fed-Ex)	D	LHDT	0.5	0	0	0.5	0.0011	0.0073	0.0174	0.0003	1.10E-05	0.0003	1.16E+00	6.61E-05	2.20E-05	1.178
Heavy delivery truck (e.g. flat beds carrying construction eqp)	D	HHDT	1	0	0.5	0.5	0.0271	0.0434	0.1010	0.0063	8.16E-05	0.0057	8.48E+00	1.10E-04	1.76E-04	8.515
Import Fill Trucks	D	HHDT	1.5	0.25	0.75	0.5	0.0271	0.0434	0.1010	0.0063	0.0001	0.0057	8.4774	0.0001	0.0002	8.5153

OFFSITE - 50 MPH			Distance Traveled (miles)				EF (lbs/mile)									
Onroad Vehicle	Fuel Type	Vehicle Type	Total	Dirt	Gravel	Paved	TOC	CO	NOx	PM_{10}	SO_2	$PM_{2.5}$	CO_2	N_2O	CH_4	CO_2e
Personal Commuting Vehicles	G/D	LDA/ LDT	39.8	-	-	39.8	0.0002	0.0065	0.0008	0.0001	7.72E-06	0.0000	8.04E-01	9.55E-05	1.90E-04	0.838
Light delivery truck (e.g. Fed-Ex)	D	LHDT	39.5	-	-	39.5	0.0003	0.0013	0.0116	0.0001	1.10E-05	0.0001	1.16E+00	6.61E-05	2.20E-05	1.178
Heavy delivery truck (e.g. flat beds carrying construction eqp)	D	HHDT	39	-	-	39	0.0017	0.0076	0.0377	0.0014	3.53E-05	0.0012	3.68E+00	1.10E-04	1.76E-04	3.721
Import Fill Trucks	D	HHDT	38.5	-	-	38.5	0.0017	0.0076	0.0377	0.0014	0.0000	0.0012	3.6832	0.0001	0.0002	3.7210

Onsite distance for worker vehicles based on parking areas of 100m x 250 m. Assume average one way trip is 175m, round trip of 350 m, or 0.22 miles.
Emission factors from EMFAC2007 (version 2.3) for year 2010
Emission factors for personal commuting vehicles are based on the assumption 50% LDA and 50% LDT
CH_4 and N_2O emission factor for personal commuting vehicles is based on the average factor for gasoline and diesel passenger vehicles from CCAR, GRP Version 3.0, Table C.5
CH_4 and N_2O emission factor for light delivery trucks is based on the factor for diesel light duty trucks from CCAR, GRP Version 3.0, Table C.5
CH_4 and N_2O emission factor for heavy duty tucks is based on the factor for diesel heavy duty trucks from CCAR, GRP Version 3.0, Table C.5

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Number of Worker/ Day	34	59	79	101	149	188	224	301	335	403	500	559	663	777	935	1057
Avg Daily Vehicles/ Day	26	45	60	78	114	145	173	232	258	310	385	430	510	598	720	813
Light delivery trucks	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Heavy delivery trucks	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Import fill trucks	160	160	160	160	160	160	160	0	0	0	0	0	0	0	0	0

Month	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Number of Worker/ Day	1154	1224	1289	1366	1432	1603	1723	1853	1970	1993	2192	2347	2423	2437	2461	2425
Avg Daily Vehicles/ Day	887	942	992	1051	1102	1233	1325	1425	1516	1533	1686	1805	1864	1874	1893	1865
Light delivery trucks	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Heavy delivery trucks	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Import fill trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Month	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
Number of Worker/ Day	2403	2295	2172	2104	1912	1850	1570	1276	1011	688	549	548	548	507	430	394	297
Avg Daily Vehicles/ Day	1848	1765	1671	1618	1471	1423	1208	982	778	529	422	422	422	390	331	303	228
Light delivery trucks	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Heavy delivery trucks	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Import fill trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Number of workers per commuter vehicle = 1.3
Actual worker schedule data updated 4/3/12 with data from Table 2-28 HECA Manpower R5 04 02 12.xls
Vehicle occupancy rate is based on information from Section 2.0 Project Description.

Assumptions:
Assumed average distance traveled off site for all employees commuting will be 20 miles
times 2 for return trip = 40 miles
22 days per month of construction, average

CO_2 GWP (SAR, 1996) = 1
CH_4 GWP (SAR, 1996) = 21
N_2O GWP (SAR, 1996) = 310

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ASSUMPTIONS:

1	month of dirt moving	
22	construction days per month	
10	construction hours per day	
19	M, moisture content of surface material (%)	(average of soil borings taken onsite at 5 ft)
50	s, silt content of surface material (%)	(from soil boring B-4)

Dirt Piling or Material Handling

$E = k * 0.0032 * (U/5)^{1.3} / (M/2)^{1.4}$ USEPA AP42 Chapter 13.2.4 (Aggregate Handling And Storage Piles)

0.35	k for PM_{10}
0.053	k for $PM_{2.5}$
6.25	U = Mean Wind speed (mph) average for Bakersfield Airport 2000-2004
19	M = Moisture content of surface material (%)
0.00006	lb of PM_{10}/ ton of material
0.00001	lb of $PM_{2.5}$/ ton of material

MATERIAL HANDLED (tons/day)	Mitigation Efficiency[1]	MONTH:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		# pieces of equip:	4	4	6	7	7	9	9	12	12	12	12	10	8	8	7	7
Bob cat loader			0	0	1,207	1,034	1,034	805	805	2,414	2,414	2,414	2,414	2,896	2,715	2,715	3,103	3,103
Excavator - Trencher (CAT320)		tons/day material handled:	0	0	0	0	0	1,609	1,609	1,207	1,207	1,207	1,207	1,448	1,810	1,810	2,069	2,069
Excavator - Backhoe/loader			3,620	3,620	3,620	4,138	4,138	3,218	3,218	2,414	2,414	2,414	2,414	1,448	1,810	1,810	2,069	2,069
Excavator - loader			3,620	3,620	2,414	2,069	2,069	1,609	1,609	1,207	1,207	1,207	1,207	1,448	905	905	0	0
TOTAL material handled			7,241	7,241	7,241	7,241	7,241	7,241	7,241	7,241	7,241	7,241	7,241	7,241	7,241	7,241	7,241	7,241

MATERIAL HANDLED (tons/day)	Mitigation Efficiency[1]	MONTH:	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
		# pieces of equip:	4	4	3	3	3	3	3	3	0	0	0	1	1	1	1	0
Bob cat loader			5,431	5,431	4,827	4,827	4,827	4,827	4,827	4,827	0	0	0	0	0	0	0	0
Excavator - Trencher (CAT320)		tons/day material handled:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - Backhoe/loader			1,810	1,810	2,414	2,414	2,414	2,414	2,414	2,414	0	0	0	0	0	0	0	0
Excavator - loader			0	0	0	0	0	0	0	0	0	0	0	7,241	7,241	7,241	7,241	0
TOTAL material handled			7,241	7,241	7,241	7,241	7,241	7,241	7,241	7,241	0	0	0	7,241	7,241	7,241	7,241	0

MATERIAL HANDLED (tons/day)	Mitigation Efficiency[1]	MONTH:	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
		# pieces of equip:	0	0	0	3	3	4	4	3	2	2	0	0	0	0	0	0	0
Bob cat loader			0	0	0	2,414	2,414	1,810	1,810	2,414	3,620	3,620	0	0	0	0	0	0	0
Excavator - Trencher (CAT320)		tons/day material handled:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - Backhoe/loader			0	0	0	4,827	4,827	3,620	3,620	2,414	3,620	3,620	0	0	0	0	0	0	0
Excavator - loader			0	0	0	0	0	1,810	1,810	2,414	0	0	0	0	0	0	0	0	0
TOTAL material handled			0	0	0	7,241	7,241	7,241	7,241	7,241	7,241	7,241	0	0	0	0	0	0	0

Do not include capacity factor because emissions are based on material handled.

6,136	yd^3/day	7,241 ton/day	2,360 density of soil (lb/yd^3)
135,000	yd^3	159,300 tons	(USDA NRCS Physical Soil Properties from Kern County for Lockern-Buttonwillow clay)
	Excavation	850,000 Cubic yds	
	Imported Fill	500,000 Cubic yds	(assume 10% of entire site in any given month; with equipment present over 35 months, this is a conservative estimate of the max amount of material handled)

Scraping Emissions Factor - Topsoil Removal by Scraper

E =	0.058	lb TSP/ton material handled	USEPA AP42 Chapter 11.9 (Western Surface Coal Mining), Table 11.9-4
Material	850,000	cubic yards, total excavation	
	0.31	fraction of total excavation handled by scrapers	0.31 <-- fraction of all earth moving equipment in months 1-7 that are scrapers
	1705	cubic yards per day, for all scrapers, based on 7 months of scrapers	
	2012	tons/day	
TSP	116.7	lb TSP/day	
fraction of TSP that is PM10	0.489	from CEIDARS database for construction fugitives	
fraction of TSP that is PM2.5	0.102	from CEIDARS database for construction fugitives	
PM10	57.1	lb/day	
PM2.5	11.9	lb/day	
Mitigation for watering	61%	(the emission factor does not account for soil moisture)	
Mitigated PM10	**22.3**	**lb/day**	
Mitigated PM2.5	**4.6**	**lb/day**	

Scrapers in Travel **AP42 Table 11.9-1 (from Table 13.2.3-1)**

$E = 0.051(S)^{2.0}$ for particles ≤ 15 um USEPA AP42 Chapter 13.2.3 (Heavy Construction Operations), Table 13.2.3-1 - refers to

$E = 0.040(S)^{2.5}$ for TSP ≤ 30 um USEPA AP42 Chapter 11.9 (Western Surface Coal Mining), Table 11.9-1

multiply by 0.60 for PM_{10}

multiply TSP equation by 0.031 for $PM_{2.5}$

S = mean vehicle speed (mph)

S =	15.0	mph	COC will limit vehicles to 15 mph onsite
	34.86	lb ≤ 30 µm/VMT	
	11.48	lb ≤ 15 µm/VMT	
PM_{10} =	6.89	lb PM_{10}/VMT	
$PM_{2.5}$ =	1.08	lb $PM_{2.5}$/VMT	
Mitigated PM_{10} =	2.69	lb PM_{10}/VMT	
Mitigated $PM_{2.5}$ =	0.42	lb $PM_{2.5}$/VMT	

Equipment	Daily VMT	Mitigation Efficiency[1]	PM10 Emissions (lb/day)	PM2.5 Emissions (lb/day)
Excavator - Earth Scraper 637	0.9	61%	2.4	0.38

Formula based on lbs per VMT, not hours, so no capacity factor included.

Scrapers Unloading

AP42 Table 11.9-4

	0.04	lb TSP / ton material
	2012	tons material handled per day
	80.5	lb TSP /day
fraction of TSP that is PM10	0.489	from CEIDARS database for construction fugitives
fraction of TSP that is PM2.5	0.102	from CEIDARS database for construction fugitives
PM10	39.4	lb PM10/day
PM2.5	8.2	lb PM2.5/day
Mitigation	61%	
Mitigated PM10	15.3	lb PM10/day
Mitigated PM2.5	3.2	lb PM2.5/day

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Grading Emissions Factor — **To be used for all grading activities**

$E = 0.051(S)^{2.0}$ for particles ≤ 15 um — USEPA AP42 Chapter 13.2.3 (Heavy Construction Operations), Table 13.2.3-1 - refers to
$E = 0.040(S)^{2.5}$ for TSP ≤ 30 um — USEPA AP42 Chapter 11.9 (Western Surface Coal Mining), Table 11.9-1

multiply PM15 equation by 0.60 for PM_{10}
multiply TSP equation by 0.031 for $PM_{2.5}$
S = mean vehicle speed (mph)

S = 5.5 mph — the Cat Motor Grader Application Guide states typical operation speed is 4-7 mph; take midpoint of 5.5 mph
2.84 lb ≤ 30 µm/VMT
1.54 lb ≤ 15 µm/VMT
PM_{10} = 0.93 lb PM_{10}/VMT — percent of day operational: 0.5
$PM_{2.5}$ = 0.09 lb $PM_{2.5}$/VMT — VMT: 27.5
Mitigated PM_{10} = 0.36 lb PM_{10}/VMT
Mitigated $PM_{2.5}$ = 0.03 lb $PM_{2.5}$/VMT

Equipment	Daily VMT	Mitigation Efficiency[1]	PM10 Emissions (lb/day)	PM2.5 Emissions (lb/day)
Excavator - Motor Grader (CAT140H)	27.500	61%	9.928	0.943
		Total	**9.93**	**0.94**

Formula based on lbs per VMT, not hours, so no capacity factor included.

Bulldozing/Earth clearing

$E = 1.0(s)^{1.5}/(M)^{1.4}$ for particles ≤ 15 um — USEPA AP42 Chapter 13.2.3 (Heavy Construction Operations), Table 13.2.3-1 - refers to
$E = 5.7(s)^{1.2}/(M)^{1.3}$ for TSP ≤ 30 um — USEPA AP42 Chapter 11.9 (Western Surface Coal Mining), Table 11.9-1, 11.9-3

multiply PM15 equation by 0.75 for PM_{10}
multiply TSP equation by 0.105 for $PM_{2.5}$
50 s = Silt content (%)
19 M = Moisture content of surface material (%)
4.30 lb/hr of PM_{10}
1.42 lb/hr of $PM_{2.5}$
4.30 lb/hr of PM_{10} (mitigated)
1.42 lb/hr of $PM_{2.5}$ (mitigated)

Equipment	Hours per day	Activity Factor	Mitigation Efficiency[1]	PM10 Emissions (lb/hr)	PM10 Emissions (lb/day)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (lb/day)
Bulldozer D10R	6	100.0%		4.30	25.79	1.42	8.54
Bulldozer D6C	6	100.0%		4.30	25.79	1.42	8.54
			Total	**8.60**	**51.58**	**2.85**	**17.09**

Covered Storage Piles

SCAQMD Table A9-9-E
E = 1.7 * G/1.5 * (365-H)/235 * I/15 * J
PM10 Emission factor from wind erosion of storage piles per day per acre
50 G = Silt content (%)
37 H = Mean number of days per year with at least 0.01 inches of precipitation (from WRCC for Bakersfield Airport Station)
I = Percentage of time that the unobstructed wind speed exceeds 12 mph at mean pile height (wind speed percentage and average
0.3 based on 2000-04 (5 yrs) of wind speed data as recorded at Bakersfield Airport station)
0.5 J = Fraction of TSP that is PM_{10} = 0.5
0.791 lb PM_{10}/acre/day
0.08 Mitigated lb PM_{10}/acre/day

Source	Quantity	Size of Pile (acre)	Hours/Day	Mitigation Efficiency[1]	PM10 Emissions (lb/hr)	PM10 Emissions (lb/day)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (lb/day)
Cover Storage Pile	25	0.25	24	90%	0.02	0.49	0.004	0.103

Pile size and number are assumed
Assume PM2.5 is 20.8% of PM10

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Travel onsite - paved and unpaved roads

USEPA AP42 Chapter 13.2.2 (Unpaved Roads)

E = k * (s/12)^a * (W/3)^b

Size specific emission factor for vehicle travel on unpaved roads at industrial sites (eqn 1a; lb/VMT)

Constants:	PM2.5	PM10	TSP
k (lb/VMT)	0.15	1.5	4.9
a	0.9	0.9	0.7
b	0.45	0.45	0.45

4 s = Surface material silt content (%) (value for gravel road)
50 s = Surface material silt content (%) (value for dirt surfaces)
value listed in table W = Mean vehicle weight (ton) * weighted mean based on monthly equipment schedule in "onsite equipment" tab

AP 42 13.2.1 Paved Roads, updated January 2011

For a daily basis,

E = [k (sL)^0.91 x (W)^1.02](1-P/4N) equation (2)

P = number of "wet" days with at least 0.254 mm (0.01 in) of precipitation during the averaging period
W = average weight (tons) of vehicles traveling the road
k = particle size multiplier for particle size range and units of interest
sL = road surface silt loading (g/m^2)
N = number of days in the averaging period

SOURCE
Days/year Buttonwillow Station 1940-2011, WRCC
"Avg vehicle weight" tab
Values from Table 13.2.1-1, PARTICLE SIZE MULTIPLIERS FOR PAVED ROAD EQUATION
Default value from URBEMIS 9.2 for Kern County

	P	k	sL	N
	#	lb/VMT	g/m2	#
PM2.5	36	0.00054	0.031	365
PM10	36	0.0022	0.031	365

UNMITIGATED EMISSION FACTORS FOR VEHICLES, BY MONTH

Month	Mitigation Efficiency[1]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Weighted Mean Vehicle Weight (tons)		17.68	16.69	16.05	14.79	13.67	12.91	12.39	5.79	5.10	4.76	4.53	4.50	4.08	3.96	3.83	3.61
PM10 EF (lbs/VMT) - Paved	0%	0.0004	0.0004	0.0004	0.0003	0.0003	0.0003	0.0003	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
PM2.5 EF (lbs/VMT) - Paved		0.0017	0.0016	0.0015	0.0014	0.0013	0.0012	0.0012	0.0005	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0003
PM10 EF (lbs/VMT) - Gravel	93%	1.24	1.21	1.19	1.14	1.10	1.08	1.06	0.75	0.71	0.69	0.67	0.67	0.64	0.63	0.62	0.61
PM2.5 EF (lbs/VMT) - Gravel		0.12	0.12	0.12	0.11	0.11	0.11	0.11	0.08	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06
PM10 EF (lbs/VMT) - DIRT	83%	12.04	11.73	11.52	11.11	10.72	10.45	10.26	7.29	6.88	6.67	6.53	6.51	6.22	6.14	6.05	5.89
PM2.5 EF (lbs/VMT) - DIRT		1.20	1.17	1.15	1.11	1.07	1.05	1.03	0.73	0.69	0.67	0.65	0.65	0.62	0.61	0.60	0.59

Month	Mitigation Efficiency[1]	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Weighted Mean Vehicle Weight (tons)		3.59	3.58	3.49	3.53	3.50	3.30	3.24	3.16	3.11	3.04	2.87	2.82	2.74	2.65	2.55	2.52
PM10 EF (lbs/VMT) - Paved	0%	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
PM2.5 EF (lbs/VMT) - Paved		0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002
PM10 EF (lbs/VMT) - Gravel	93%	0.60	0.60	0.60	0.60	0.60	0.58	0.58	0.57	0.57	0.56	0.55	0.54	0.54	0.53	0.52	0.52
PM2.5 EF (lbs/VMT) - Gravel		0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.05
PM10 EF (lbs/VMT) - DIRT	83%	5.87	5.87	5.80	5.83	5.81	5.66	5.61	5.55	5.50	5.45	5.31	5.27	5.20	5.13	5.04	5.01
PM2.5 EF (lbs/VMT) - DIRT		0.59	0.59	0.58	0.58	0.58	0.57	0.56	0.56	0.55	0.55	0.53	0.53	0.52	0.51	0.50	0.50

Month	Mitigation Efficiency[1]	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
Weighted Mean Vehicle Weight (tons)		2.52	2.52	2.50	2.52	2.59	2.63	2.73	2.85	3.03	3.51	3.59	3.59	3.58	3.61	3.84	3.99	4.62
PM10 EF (lbs/VMT) - Paved	0%	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
PM2.5 EF (lbs/VMT) - Paved		0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0004	0.0004	0.0004
PM10 EF (lbs/VMT) - Gravel	93%	0.52	0.52	0.51	0.52	0.52	0.53	0.53	0.55	0.56	0.60	0.60	0.61	0.60	0.61	0.62	0.63	0.68
PM2.5 EF (lbs/VMT) - Gravel		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.07
PM10 EF (lbs/VMT) - DIRT	83%	5.01	5.01	5.00	5.01	5.07	5.11	5.19	5.29	5.44	5.82	5.87	5.88	5.86	5.89	6.05	6.16	6.58
PM2.5 EF (lbs/VMT) - DIRT		0.50	0.50	0.50	0.50	0.51	0.51	0.52	0.53	0.54	0.58	0.59	0.59	0.59	0.59	0.61	0.62	0.66

Mitigation Measure[1]	Control Efficiency
Apply water every three hours to disturbed surfaces[3]	61%
Traffic speeds on all unpaved roads to be reduced to 15 mph or less	57%
Apply chemical dust suppressant annually to unpaved parking areas/disturbed areas	84%
Combined Mitigation Efficiency - reduced speed + suppressants	**93%**
Combined Mitigation Efficiency - reduced speed + watering	**83%**
Water the storage pile by hand or apply cover when wind events are declared.	90%

*CEC stated in the background to DR A132 that they will be requiring the use of soil binders on all onsite unpaved roads, including gravel

Notes:

1. Mitigation efficiencies from SCAQMD Table XI-A and Table XI-E (South Coast Air Quality Management District, Air Quality Analysis Handbook (under development), accessed at http://www.aqmd.gov/ceqa/handbook/mitigation/fugitive/MM_fugitive.html).
2. Equipment weight from SCAQMD Table A9-9-D-3 and various websites.
3. Water trucks operate at least 4 times per day.

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Calculation of Mean Vehicle Weight by Month
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VEHICLE INVENTORY BY MONTH	Vehicle Weight	MONTHLY VEHICLE COUNT (#)																												
Vehicle Type	(tons)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Avg Daily Worker Vehicles	1.6	26	45	60	78	114	145	173	232	258	310	385	430	510	598	720	813	887	942	992	1051	1102	1233	1325	1425	1516	1533	1686	1805
Light delivery trucks	9	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Heavy delivery trucks	17.5	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Import fill trucks	25	160	160	160	160	160	160	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 cy fill mat'l haul truck	30			10	10	20	20	20	20	10	10	10	10	5	5	5	5	5	5										
Bus	15	2	2	2	2	3	3	3	3	3	3	5	5	5	5	5	5	7	7	7	10	10	10	10	14	14	14	14	14
Concrete Pumper Truck	30						2	2	2	2	2	2	2	2	3	3	3	2	2	2	2	2							1
Dump Truck	15	3	4	4	3	3	3	3	3	3	3	2	2	2	2	2													2
Diesel Tractor (Yard Dog)	11						2	2	2	2	2	2	4	4	4	4	4	8	8	8	8	8	8	8	10	10	10	10	10
Service Truck - 1 ton	15	2	2	2	4	4	4	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Pile Driver Truck	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck - Fuel/Lube	15	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Tractor Truck 5th Wheel	0																												
Trucks - Pickup 3/4 ton	3	5	5	5	5	5	6	7	8	15	15	15	15	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Trucks - 3 ton	11	1	1	1	1	1	2	2	2	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Truck - Water	25	5	5	5	5	5	5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	2	2	2
Air Compressor 185 CFM	0.5	2	2	2	2	3	3	3	3	3	3	3	3	3	6	6	6	8	8	8	10	10	10	10	12	12	12	12	12
Air Compressor 750 CFM	0.5					1	1	1	1	2	2	2	2	2	2	2	4	4	4	4	4	4	4	4	4	4	4	4	4
Articulating Boom Platform	0																												
Bob cat loader	0			1	1	1	1	1	4	4	4	4	4	3	3	3	3	3	3	2	2	2	2	2	2				
Bulldozer D10R	0	3	3	3	2	2	2	2	2	2	1	1																	
Bulldozer D6C	0	3	3	3	3	2	2	2	2	2	2	1	1	1	1	1													1
Concrete Trowel Machine	15						2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Concrete Vibrators	0	4	4	4	4	4	4	4	4	4	8	8	8	8	8	8	8	8	4	4	4	2	2	2	2	2	2	2	2
Cranes - Mobile 35 ton	25							1	1	1	4	4	4	4	7	7	7	7	7	7	7	7	7	7	7	7	7	5	5
Cranes - Mobile 45 ton	35											2	2	2	2	2	2	2	2	4	4	4	4	4	4	4	4	4	4
Crane - Mobile 65 ton	45												1	1	2	4	5	5	5	6	6	6	6	6	6	6	6	6	6
Cranes 100 / 150 ton cap	50											1	1	2	2	3	3	4	4	4	4	4	4	4	4	4	4	4	4
Diesel Powered Welder	0				10	10	10	10	10	10	10	10	10	10	10	10	15	15	15	20	20	20	20	20	25	25	25	25	25
Excavator - Backhoe/loader	0	2	2	3	4	4	4	4	4	4	4	4	2	2	2	2	2	1	1	1	1	1	1	1	1				
Excavator - Earth Scraper 637	0	7	7	7	7	4	4	2																					
Excavator - loader	0	2	2	2	2	2	2	2	2	2	2	2	2	1	1														1
Excavator - Motor Grader (CAT140H)	0		1	1	1	3	3																						1
Excavator - Trencher (CAT320)	0						2	2	2	2	2	2	2	2	2	2	2												
Fired Heaters (2,000 BTU)	0					4	4	4	4	3	3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Forklift	10	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	8	8	8	8	8	8	8	8	8	8	8	6
Fusion Welder	0					2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Heavy Haul / 600 tn Crane	75																		1	1	1	1	1	1	1	1	1		
Heavy Haul / 1,000 tn Crane	75																				1	1	1	1	1	1			
Light Plants	0	1	1	2	4	8	8	8	8	4	4	6	6	8	8	10	10	14	14	14	14	14	14	14	14	14	14	14	14
Man lifts - telescoping	7									5	5	5	10	10	10	10	10	10	10	10	15	15	15	15	20	20	20	20	20
Man lift - scissor	2.5								5	5	5	5	10	10	10	10	10	10	10	10	15	15	15	15	20	20	20	20	20
Portable Compaction Roller	0			5	5	5	5	5	5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2				
Portable Compaction - Vibratory Plate	0								6	6	6	6	6	6	6	6	6	6	6	6	6	6	6						3
Portable Compaction - Ram	0																												
Pumps	0	3	3	3	6	6	6	6	6	6	6	6	6	6	6	6	6	6	3	3	3	3	3	3	3	3	3	3	3
Portable Power Generators	0	4	4	4	4	6	6	6	6	6	10	10	10	10	10	10	15	15	15	15	15	15	15	20	20	20	20	20	20
Truck Crane - Greater than 200 ton	50												1	1	1	1	1	2	2	3	3	4	4	4	4	4	4	4	4
Truck Crane - Greater than 300 ton	60															1	1	1	1	1	2	2	2	3	3	3	3	3	3
Vibratory Roller Ingersol-Rand 20 ton	20	3	3	3	3	3	3	3	3	3	2	2	2	2	2	1	1	1	1										2
TOTAL VEHICLES		306	327	360	394	453	494	517	428	451	512	594	650	738	834	960	1063	1149	1198	1250	1326	1376	1505	1597	1719	1806	1821	1971	2099

Hydrogen Energy California, Kern County Power Proj
Calculation of Mean Vehicle Weight by Month
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VEHICLE INVENTORY BY MONTH	Vehicle Weight																					
Vehicle Type	(tons)	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
Avg Daily Worker Vehicles	1.6	1864	1874	1893	1865	1848	1765	1671	1618	1471	1423	1208	982	778	529	422	422	422	390	331	303	228
Light delivery trucks	9	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Heavy delivery trucks	17.5	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Import fill trucks	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 cy fill mat'l haul truck	30								3	3	3	3	1	1	1							
Bus	15	14	14	14	14	14	14	14	12	12	12	10	10	5	5	3	3	2	2	2	1	1
Concrete Pumper Truck	30	1	1	1																		
Dump Truck	15	2	2	2	2	2	2	2	2	3	3	3	2	1	1	1	1	1				
Diesel Tractor (Yard Dog)	11	10	10	10	10	10	10	10	4	4	4	4	4	4	4							
Service Truck - 1 ton	15	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1
Pile Driver Truck	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck - Fuel/Lube	15	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1			
Tractor Truck 5th Wheel	0																					
Trucks - Pickup 3/4 ton	3	25	25	25	25	25	25	25	25	25	25	25	25	25	25	15	15	10	10	10	10	5
Trucks - 3 ton	11	6	6	6	6	6	6	4	3	3	3	3	2	2	2	1	1	1	1			
Truck - Water	25	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1
Air Compressor 185 CFM	0.5	12	12	12	12	12	12	12	8	8	8	6	6	6	6	4	4	4	2	2	1	1
Air Compressor 750 CFM	0.5	4	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Articulating Boom Platform	0																					
Bob cat loader	0								1	1	1	1	1	1	1							
Bulldozer D10R	0																					
Bulldozer D6C	0	1	1	1																		
Concrete Trowel Machine	15									2	2	2	2	2	2							
Concrete Vibrators	0	2	2	2	2	2	2															
Cranes - Mobile 35 ton	25	5	5	5	5	5	5	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1
Cranes - Mobile 45 ton	35	4	2	2	2	2	2	2	2	2	2	2	2	1	1							
Crane - Mobile 65 ton	45	6	6	5	5	4	2	2	2	2	2	1	1	1	1	1	1	1				
Cranes 100 / 150 ton cap	50	2	2	1	1	1	1	1	1													
Diesel Powered Welder	0	25	25	25	25	15	15	15	15	15	10	10	10	10	10	5	5	5	5	3	3	2
Excavator - Backhoe/loader	0								2	2	2	2	1	1	1							
Excavator - Earth Scraper 637	0																					
Excavator - loader	0	1	1	1							1	1	1									
Excavator - Motor Grader (CAT140H)	0	1	1	1					2	2	2	2	1	1	1							
Excavator - Trencher (CAT320)	0																					
Fired Heaters (2,000 BTU)	0	5	5	5	5	3	3	3	2	2	2	2	2	2	2	2	2	2	2	1	1	1
Forklift	10	6	6	6	6	6	6	6	6	6	6	6	6	6	6	2	2	2	2	1	1	1
Fusion Welder	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1							
Heavy Haul / 600 tn Crane	75																					
Heavy Haul / 1,000 tn Crane	75																					
Light Plants	0	14	14	14	10	10	10	10	10	10	10	10	10	5	5	5	5	5	4	4	2	2
Man lifts - telescoping	7	20	20	20	20	20	20	20	15	15	15	10	10	10	10	5	5	5	5	2	2	2
Man lift - scissor	2.5	20	20	20	20	20	20	20	15	15	15	10	10	10	10	10	10	10	10	5	5	5
Portable Compaction Roller	0	2	2	2	2	2	2				2	2	2	1	1							
Portable Compaction - Vibratory Plate	0	3	3	3					4	4	4	4	4	2	2							
Portable Compaction - Ram	0																					
Pumps	0	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
Portable Power Generators	0	20	20	20	20	20	20	20	15	15	15	15	10	10	10	10	10	10	5	5	5	2
Truck Crane - Greater than 200 ton	50	4	3	3	2	2	2	1	1	1	1	1										
Truck Crane - Greater than 300 ton	60	3	2																			
Vibratory Roller Ingersol-Rand 20 ton	20	2	2	2							1	1	1	1								
TOTAL VEHICLES		**2154**	**2158**	**2173**	**2131**	**2101**	**2015**	**1911**	**1841**	**1696**	**1647**	**1417**	**1178**	**958**	**708**	**554**	**554**	**548**	**505**	**432**	**400**	**316**

Hydrogen Energy California, Kern County Power Project
Calculation of Mean Vehicle Weight by Month
1/7/2013

CALCULATION OF WEIGHTED MEAN VEHICLE WEIGHT		MONTHLY VEHICLE GROSS WEIGHT (tons)																										
Vehicle Type		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**
Avg Daily Worker Vehicles		42	72	97	125	183	231	276	371	412	496	616	688	815	956	1151	1301	1420	1507	1587	1681	1763	1972	2120	2280	2425	2454	2698	2888
Light delivery trucks		90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Heavy delivery trucks		875	875	875	875	875	875	875	875	875	875	875	875	875	875	875	875	875	875	875	875	875	875	875	875	875	875	875	875
Import fill trucks		4000	4000	4000	4000	4000	4000	4000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 cy fill mat'l haul truck		0	0	300	300	600	600	600	600	300	300	300	300	150	150	150	150	150	150	0	0	0	0	0	0	0	0	0	0
Bus		30	30	30	30	45	45	45	45	45	45	75	75	75	75	75	75	105	105	105	150	150	150	150	210	210	210	210	210
Concrete Pumper Truck		0	0	0	0	0	60	60	60	60	60	60	60	60	90	90	90	60	60	60	60	60	0	0	0	0	0	0	30
Dump Truck		45	60	60	45	45	45	45	45	45	45	30	30	30	30	30	0	0	0	0	0	0	0	0	0	0	0	0	30
Diesel Tractor (Yard Dog)		0	0	0	0	0	22	22	22	22	22	22	44	44	44	44	44	88	88	88	88	88	88	88	110	110	110	110	110
Service Truck - 1 ton		30	30	30	60	60	60	60	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Pile Driver Truck		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck - Fuel/Lube		30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Tractor Truck 5th Wheel		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trucks - Pickup 3/4 ton		15	15	15	15	15	18	21	24	45	45	45	45	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
Trucks - 3 ton		11	11	11	11	11	22	22	22	44	44	44	44	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66
Truck - Water		125	125	125	125	125	125	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	50	75	50	50	50
Air Compressor 185 CFM		1	1	1	1	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	3	3	3	4	4	4	5	5	5	5	6	6	6	6	6
Air Compressor 750 CFM		0	0	0	0	0.5	0.5	0.5	0.5	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2
Articulating Boom Platform		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bob cat loader		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bulldozer D10R		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bulldozer D6C		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Trowel Machine		0	0	0	0	0	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Concrete Vibrators		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cranes - Mobile 35 ton		0	0	0	0	0	0	25	25	25	100	100	100	100	175	175	175	175	175	175	175	175	175	175	175	175	175	125	125
Cranes - Mobile 45 ton		0	0	0	0	0	0	0	0	0	0	70	70	70	70	70	70	70	70	140	140	140	140	140	140	140	140	140	140
Crane - Mobile 65 ton		0	0	0	0	0	0	0	0	0	0	0	45	45	90	180	225	225	225	270	270	270	270	270	270	270	270	270	270
Cranes 100 / 150 ton cap		0	0	0	0	0	0	0	0	0	0	50	50	100	100	150	150	200	200	200	200	200	200	200	200	200	200	200	200
Diesel Powered Welder		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - Backhoe/loader		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - Earth Scraper 637		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - loader		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - Motor Grader (CAT140H)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - Trencher (CAT320)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fired Heaters (2,000 BTU)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forklift		60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	80	80	80	80	80	80	80	80	80	80	80	60
Fusion Welder		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Haul / 600 tn Crane		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	75	75	75	75	75	75	75	75	75	75	0
Heavy Haul / 1,000 tn Crane		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	75	75	75	75	75	75	0	0	0
Light Plants		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Man lifts - telescoping		0	0	0	0	0	0	0	0	35	35	35	70	70	70	70	70	70	70	70	105	105	105	105	140	140	140	140	140
Man lift - scissor		0	0	0	0	0	0	0	12.5	12.5	12.5	12.5	25	25	25	25	25	25	25	25	37.5	37.5	37.5	37.5	50	50	50	50	50
Portable Compaction Roller		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Portable Compaction - Vibratory Plate		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Portable Compaction - Ram		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pumps		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Portable Power Generators		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Crane - Greater than 200 ton		0	0	0	0	0	0	0	0	0	0	0	50	50	50	50	50	100	100	150	150	200	200	200	200	200	200	200	200
Truck Crane - Greater than 300 ton		0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	60	60	60	60	120	120	120	180	180	180	180	180	180
Vibratory Roller Ingersol-Rand 20 ton		60	60	60	60	60	60	60	60	60	40	40	40	40	40	20	20	20	20	0	0	0	0	0	0	0	0	0	40
Weighted Mean Vehicle Weight (tons)		**17.7**	**16.7**	**16.0**	**14.8**	**13.7**	**12.9**	**12.4**	**5.8**	**5.1**	**4.8**	**4.5**	**4.5**	**4.1**	**4.0**	**3.8**	**3.6**	**3.6**	**3.6**	**3.5**	**3.5**	**3.5**	**3.3**	**3.2**	**3.2**	**3.1**	**3.0**	**2.9**	**2.8**

Hydrogen Energy California, Kern County Power Proj
Calculation of Mean Vehicle Weight by Month
1/7/2013

CALCULATION OF WEIGHTED MEAN VEHICLE WEIGHT																						
Vehicle Type		**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**
Avg Daily Worker Vehicles		2982	2999	3028	2985	2957	2824	2673	2589	2353	2277	1932	1570	1244	847	676	674	674	624	529	485	366
Light delivery trucks		90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Heavy delivery trucks		875	875	875	875	875	875	875	875	875	875	875	875	875	875	875	875	875	875	875	875	875
Import fill trucks		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 cy fill mat'l haul truck		0	0	0	0	0	0	0	90	90	90	90	30	30	30	0	0	0	0	0	0	0
Bus		210	210	210	210	210	210	210	180	180	180	150	150	75	75	45	45	30	30	30	15	15
Concrete Pumper Truck		30	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dump Truck		30	30	30	30	30	30	30	30	45	45	45	30	15	15	15	15	15	0	0	0	0
Diesel Tractor (Yard Dog)		110	110	110	110	110	110	110	44	44	44	44	44	44	44	0	0	0	0	0	0	0
Service Truck - 1 ton		30	30	30	30	30	30	30	30	30	30	30	30	30	30	15	15	15	15	15	15	15
Pile Driver Truck		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck - Fuel/Lube		30	30	30	30	30	30	30	30	30	30	30	15	15	15	15	15	15	15	0	0	0
Tractor Truck 5th Wheel		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trucks - Pickup 3/4 ton		75	75	75	75	75	75	75	75	75	75	75	75	75	75	45	45	30	30	30	30	15
Trucks - 3 ton		66	66	66	66	66	66	44	33	33	33	33	22	22	22	11	11	11	11	0	0	0
Truck - Water		50	50	50	50	50	50	50	50	50	50	50	50	50	50	25	25	25	25	25	25	25
Air Compressor 185 CFM		6	6	6	6	6	6	6	4	4	4	3	3	3	3	2	2	2	1	1	0.5	0.5
Air Compressor 750 CFM		2	1	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Articulating Boom Platform		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bob cat loader		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bulldozer D10R		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bulldozer D6C		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Trowel Machine		0	0	0	0	0	0	0	0	30	30	30	30	30	30	0	0	0	0	0	0	0
Concrete Vibrators		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cranes - Mobile 35 ton		125	125	125	125	125	125	50	50	50	50	50	50	50	50	50	50	50	25	25	25	25
Cranes - Mobile 45 ton		140	70	70	70	70	70	70	70	70	70	70	70	35	35	0	0	0	0	0	0	0
Crane - Mobile 65 ton		270	270	225	225	180	90	90	90	90	90	45	45	45	45	45	45	45	0	0	0	0
Cranes 100 / 150 ton cap		100	100	50	50	50	50	50	50	0	0	0	0	0	0	0	0	0	0	0	0	0
Diesel Powered Welder		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - Backhoe/loader		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - Earth Scraper 637		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - loader		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - Motor Grader (CAT140H)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator - Trencher (CAT320)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fired Heaters (2,000 BTU)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forklift		60	60	60	60	60	60	60	60	60	60	60	60	60	60	20	20	20	20	10	10	10
Fusion Welder		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Haul / 600 tn Crane		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Haul / 1,000 tn Crane		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light Plants		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Man lifts - telescoping		140	140	140	140	140	140	140	105	105	105	70	70	70	70	35	35	35	35	14	14	14
Man lift - scissor		50	50	50	50	50	50	50	37.5	37.5	37.5	25	25	25	25	25	25	25	25	12.5	12.5	12.5
Portable Compaction Roller		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Portable Compaction - Vibratory Plate		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Portable Compaction - Ram		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pumps		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Portable Power Generators		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Crane - Greater than 200 ton		200	150	150	100	100	100	50	50	50	50	50	0	0	0	0	0	0	0	0	0	0
Truck Crane - Greater than 300 ton		180	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vibratory Roller Ingersol-Rand 20 ton		40	40	40	0	0	0	0	0	0	20	20	20	20	0	0	0	0	0	0	0	0
Weighted Mean Vehicle Weight (tons)		**2.7**	**2.7**	**2.6**	**2.5**	**2.5**	**2.5**	**2.5**	**2.5**	**2.6**	**2.6**	**2.7**	**2.8**	**3.0**	**3.5**	**3.6**	**3.6**	**3.6**	**3.6**	**3.8**	**4.0**	**4.6**

Hydrogen Energy California, Kern County Power Project
Off-Site Linears Fugitive Dust Emissions
1/7/2013

ASSUMPTIONS:
12 months of soil disturbance
10 total construction hours per work day
22 construction days per month

Dirt Piling or Material Handling

$E = k * (0.0032) * (U/5)^{1.3} / (M/2)^{1.4}$ PM Emissions from Dirt Piling or Material Handling (lb/ton) from USEPA AP42, Chapter 13.2.4 (Aggregate Handling and Storage Piles)

0.053 k for PM2.5
0.35 k for PM10
6.25 U = Mean Wind speed (mph) average for Bakersfield Airport 2000-2004
15 M = Moisture content of surface material (%) (from SCAQMD Table A9-9-G-1 for moist dirt)
0.00001 lb of $PM_{2.5}$/ ton of material
0.00009 lb of PM_{10}/ ton of material

MATERIAL HANDLED (tons/day)	Mitigation Efficiency[1]	MONTH:	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		# pieces of equip:	0	0	0	0	0	0	0	0	0	0	6	7	14	14
Backhoe			0	0	0	0	0	0	0	0	0	0	5454	4675	3896	3896
Excavator			0	0	0	0	0	0	0	0	0	0	0	779	390	390
CAT 325 BACKHOE		tons/day material handled:	0	0	0	0	0	0	0	0	0	0	0	0	390	390
CAT 330 BACKHOE			0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT DOZER D-6			0	0	0	0	0	0	0	0	0	0	0	0	779	779
CAT RUBBER TIRE LOADER 966			0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL material handled			0	0	0	0	0	0	0	0	0	0	5454	5454	5454	5454

MATERIAL HANDLED (tons/day)	Mitigation Efficiency[1]	MONTH:	15	16	17	18	19	20	21	22	23	24	25	26	27	28
		# pieces of equip:	14	13	14	11	11	11	7	7	0	0	0	0	0	0
Backhoe			3896	4195	3896	4958	4958	4958	4675	4675	0	0	0	0	0	0
Excavator			390	420	390	496	496	496	779	779	0	0	0	0	0	0
CAT 325 BACKHOE		tons/day material handled:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 330 BACKHOE			390	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT DOZER D-6			0	0	390	0	0	0	0	0	0	0	0	0	0	0
CAT RUBBER TIRE LOADER 966			779	839	779	0	0	0	0	0	0	0	0	0	0	0
TOTAL material handled			5454	5454	5454	5454	5454	5454	5454	5454	0	0	0	0	0	0

MATERIAL HANDLED (tons/day)	Mitigation Efficiency[1]	MONTH:	29	30	31	32	33	34	35	36	37	38	39	40	41	42
		# pieces of equip:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Backhoe			0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excavator			0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 325 BACKHOE		tons/day material handled:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 330 BACKHOE			0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT DOZER D-6			0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT RUBBER TIRE LOADER 966			0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL material handled			0	0	0	0	0	0	0	0	0	0	0	0	0	0

MATERIAL HANDLED (tons/day)	Mitigation Efficiency[1]	MONTH:	43	44	45	46	47	48	49
		# pieces of equip:	0	0	0	0	0	0	0
Backhoe			0	0	0	0	0	0	0
Excavator			0	0	0	0	0	0	0
CAT 325 BACKHOE		tons/day material handled:	0	0	0	0	0	0	0
CAT 330 BACKHOE			0	0	0	0	0	0	0
CAT DOZER D-6			0	0	0	0	0	0	0
CAT RUBBER TIRE LOADER 966			0	0	0	0	0	0	0
TOTAL material handled			0	0	0	0	0	0	0

Disturbed Acreage	Length (miles)	ROW width (ft)	Area (ft2)	Area (acres)
Electrical transmission line	2.1	100	1108800	25.45
Natural gas linear	13	50	3432000	78.78
Process water pipeline	14.4	50	3801600	87.27
CO_2 pipeline	3.4	50	897600	20.61
Potable water pipeline	1.2	10	63360	1.45
Railway	5.3	60	1679040	38.54
		TOTAL:		**252.11**

Assume tons/day of material is evenly split among the number of pieces of equipment operating in a given month.
Do not include capacity factor because emissions are based on material handled, not hours of operation.

4622 yd^3/day 5454 ton/day
1,220,222 yd^3 1,439,862 tons 2360 density of soil (lb/yd^3)
(USDA NRCS Physical Soil Properties from Kern County Lockern-Buttonwillow clay soil)
252.11 acres = 1,220,222 cubic yds, assume depth of soils moved is 1 yd

Scraping Emissions Factor

E = 0.058 lb/ton material handled USEPA AP42 Chapter 11.9 (Western Surface Coal Mining), Table 11.9-4
Material 1,220,222 cubic yards, total excavation
0.17 fraction of total excavation handled by scrapers 0.17 <-- fraction of all earth moving equipment in months 11-22 that are scrapers
4622 cubic yards per day, for all scrapers, based on two months of scrapers in use
5454 tons/day

TSP 316.3 lb TSP/day
fraction of TSP that is PM10 0.489 from CEIDARS database for construction fugitives
fraction of TSP that is PM2.5 0.102 from CEIDARS database for construction fugitives
PM10 154.7 lb/day
PM2.5 32.3 lb/day
Mitigation for watering 61% (the emission factor does not account for soil moisture)
Mitigated PM10 60.3 lb/day
Mitigated PM2.5 12.6 lb/day

Grading Emissions Factor To be used for all scraping and grading activities

$E = 0.051(S)^{2.0}$ for particles ≤ 15 um USEPA AP42 Chapter 13.2.3 (Heavy Construction Operations), Table 13.2.3-1 - refers to
$E = 0.040(S)^{2.5}$ for TSP ≤ 30 um USEPA AP42 Chapter 11.9 (Western Surface Coal Mining), Table 11.9-1

multiply by 0.60 for PM_{10}
multiply TSP equation by 0.031 for $PM_{2.5}$
S = mean vehicle speed (mph)

S = 5.5 mph the Cat Motor Grader Application Guide states typical operation speed is 4-7 mph; take midpoint of 5.5 mph
2.84 lb ≤ 30 µm/VMT
1.54 lb ≤ 15 µm/VMT
PM_{10} = 0.93 lb PM_{10}/VMT
$PM_{2.5}$ = 0.09 lb $PM_{2.5}$/VMT

Equipment	Daily VMT	Mitigation Efficiency[1]	PM10 Emissions (lb/day)	PM2.5 Emissions (lb/day)
CAT MODEL 12 MOTOR GRADER	27.5	61%	9.928	0.943
		Total	**9.93**	**0.94**

Formula based on lbs per VMT, not hours, so no capacity factor included.

Off-Site Linears Fugitive Dust Emissions
1/7/2013

Storage Piles

SCAQMD Table A9-9-E
E = 1.7 * G/1.5 * (365-H)/235 * I/15 * J
PM10 Emission factor from wind erosion of storage piles per day per acre

50 G = Silt content (%) (from Geotechnical Investigaion, AFC Appendix P)
37 H = Mean number of days per year with at least 0.01 inches of precipitation (from WRCC for Bakersfield Airport Station)
0.3 I = Percentage of time that the unobstructed wind speed exceeds 12 mph at mean pile height (based on 2000-04 (5 yrs) of wind speed data as recorded at Bakersfield Airport station)
0.5 J = Fraction of TSP that is PM_{10} = 0.5
0.791 lb/acre/day

Source	Quantity	Size of Pile (acre)	Mitigation Efficiency[1]	PM_{10} Emissions (lbs/day)	$PM_{2.5}$ Emissions (lbs/day)
Storage Piles	8	0.25	90%	0.16	0.033

Pile size and number are assumed
Days per year accounts for weekend days also, not just work days
Assume PM2.5 is 20.8% of PM10

Travel on unpaved roads

E = k * (s/12)^a * (W/3)^b USEPA AP42 Chapter 13.2.2 (Unpaved Roads)
Size specific emission factor for vehicle travel on unpaved roads at industrial sites (eqn 1a; lb/VMT)

Constants:	PM2.5	PM10	TSP
k (lb/VMT)	0.15	1.5	4.9
a	0.9	0.9	0.7
b	0.45	0.45	0.45

4 s = Surface material silt content (%) (value for gravel road)
value listed in tableW = Mean vehicle weight (ton)

Vehicle Type	Round Trips /Day/ Unit	Round Trip Distance on Dirt Surface (mile)	Mean Vehicle Weight (tons)[2]	PM2.5 EF[5] (lbs/VMT)	PM_{10} EF (lbs/VMT)	Mitigation Efficiency[1]	If weight = 0, where is source included
ON ROAD							
Dump Truck	4	0.25	17	0.12	1.22	83%	
Service Truck (MHD-DSL)	1	0.125	4	0.06	0.64	83%	
Pipe Haul Truck and Trailer (HHDT-DSL)			15	0.12	1.15	83%	
Truck (Pickup 3/4 Ton) - MHD-DSL	2	0.25	1	0.03	0.34	83%	
Truck - water	4	0.25	25	0.14	1.45	83%	
OFF ROAD							
Air Compressor	0			0.00	0.00	83%	
Bore Machine (Hydraulic)	0			0.00	0.00	83%	
Crane	1	0.25	12	0.10	1.04	83%	
Backhoe	0		0	0.00	0.00	83%	Dirt piling
Excavator	1	0.25	0	0.00	0.00	83%	Dirt piling
Forklift	4	0.25	10	0.10	0.96	83%	
Welding Generator	0			0.00	0.00	83%	
Roller	4	0.25	20	0.13	1.31	83%	
Pipe Bending Machine	0			0.00	0.00	83%	
RAIL							
AIR COMPRESSOR 185	0	0	1	0.03	0.34	83%	
BOOM TRUCK 12 TON	4	0.25	12	0.10	1.04	83%	
CAT 325 BACKHOE	4	0.25	0	0.00	0.00	83%	Dirt piling
CAT 330 BACKHOE	4	0.25	0	0.00	0.00	83%	Dirt piling
CAT DOZER D-6	4	0.25	0	0.00	0.00	83%	Dirt piling
CAT MODEL 12 MOTOR GRADER	4	0.25	0	0.00	0.00	83%	Grading
CAT ROLLER-COMPACTOR 563	4	0.25	3	0.06	0.56	83%	
CAT RUBBER TIRE LOADER 966	4	0.25	0	0.00	0.00	83%	Dirt piling
CAT SCRAPER 615	4	0.25	0	0.00	0.00	83%	Grading
CRANE-ROUGH TERRAIN 45T	4	0.25	45	0.19	1.89	83%	
GENSET 5KW	0	0	0.5	0.02	0.25	83%	
JOHN DEERE TRACTOR 9400	4	0.25	20	0.13	1.31	83%	
PICK-UP CRAFT	4	0.25	10	0.10	0.96	83%	
PICK-UP OVERHEAD	4	0.25	10	0.10	0.96	83%	
RAIL BALLAST REGULATOR	4	0.25	1	0.03	0.34	83%	
RAIL CLIP MACHINE	4	0.25	0.3	0.02	0.20	83%	
RAIL MOVER-SHUTTLE WAGON	4	0.25	27.5	0.15	1.51	83%	
RAIL TAMPER	4	0.25	27	0.15	1.50	83%	
RAIL WELDER	0	0	0.5	0.02	0.25	83%	
RAMEX WALK BEHIND COMPACTOR	4	0.25	0.1	0.01	0.12	83%	
TRI-AXLE DUMP TRUCK	4	0.25	17	0.12	1.22	83%	
TRUCK FLATBED 14 FOOT	4	0.25	10	0.10	0.96	83%	
TRUCK TRACTOR	4	0.25	10	0.10	0.96	83%	
WATER TRUCK, 4M ON-ROAD	4	0.25	25	0.14	1.45	83%	
WELDING MACHINE 350 AMP	0	0	0.5	0.02	0.25	83%	

Mitigation Measure[1]	Unpaved Roads
Apply water every three hours to disturbed surfaces[3]	61%
Traffic speeds on all unpaved roads to be reduced to 15 mph or less	57%
Combined Mitigation Efficiency	**83%**
Water the storage pile by hand or apply cover when wind events are declared.	90%

Notes:

1. Mitigation efficiencies from SCAQMD Table XI-A and Table XI-E (South Coast Air Quality Management District, Air Quality Analysis Handbook (under development), accessed at http://www.aqmd.gov/ceqa/handbook/mitigation/fugitive/MM_fugitive.html).
2. Equipment weight from SCAQMD Table A9-9-D-3 and various websites.
3. Water trucks operate at least 4 times per day.
4. Assumed maximum travel speed is 5 mph.
5. An emission factor based on mean vehicle weight could not be calculated for the linear equipment since the equipment will be scattered over various linears at different locations. Therefore, emissions remain calculated based on the weight of each piece of equipment; this is a more conservative estimate.

Hydrogen Energy California, Kern County Power Project
Fugitive Dust on Paved Roads
1/7/2013

AP 42 13.2.1 Paved Roads, updated January 2011

For a daily basis,
E = [k (sL)^0.91 x (W)^1.02](1-P/4N) equation (2)

P = number of "wet" days with at least 0.254 mm (0.01 in) of precipitation during the averaging period
W = average weight (tons) of vehicles treaveling the road
k = particle size multiplier for particle size range and units of interest
sL = road surface silt loading (g/m^2)
N = number of days in the averaging period

	k
	lb/VMT
PM2.5	0.00054
PM10	0.0022

Table 13.2.1-1
PARTICLE SIZE MULTIPLIERS FOR PAVED ROAD EQUATION

Heavy Duty Trucks

			Empty	Full	
W=	17.5	tons, average	5	30	tons
sL=	0.031	g/m2	Default value from URBEMIS 9.2 for Kern County		
P=	36	days/year	Buttonwillow Station 1940-2011, WRCC		

E=
0.00041 lb/VMT PM2.5 large delivery trucks
0.00169 lb/VMT PM10 large delivery trucks

Light Duty (Delivery) Trucks

W=	9	tons, average	
sL=	0.031	g/m2	Default value from URBEMIS 9.2 for Kern County
P=	36	days/year	Buttonwillow Station 1940-2011, WRCC

E=
0.00021 lb/VMT PM2.5 large delivery trucks
0.00086 lb/VMT PM10 large delivery trucks

Worker Vehicles

W=	1.6	tons	
sL=	0.031	g/m2	Default value from URBEMIS 9.2 for Kern County
P=	36	days/year	Buttonwillow Station 1940-2011, WRCC

E=
0.00004 lb/VMT PM2.5 O&M vehicles
0.00015 lb/VMT PM10 O&M vehicles

Hydrogen Energy California, Kern County Power Project
Emission Factors for Onsite Equipment
1/7/2013

Equipment Description	EMFAC designation	Horsepower	Source	Capacity Factor[1]	Emission Factors (lbs/hr) CO	CO_2	CH_4	N_2O	NO_x	PM_{10}	$PM_{2.5}$	SO_x	ROG[2]	CO_2e
On-Road Vehicles														
18 cy fill mat'l haul truck	HHD-DSL		EMFAC	41.0%	0.320	69.786	0.0013	0.001	0.694	0.043	0.039	0.001	0.151	70.16
Bus	HHD-DSL		EMFAC	41.0%	0.320	69.786	0.0013	0.001	0.694	0.043	0.039	0.001	0.151	70.16
Concrete Pumper Truck	HHD-DSL		EMFAC	41.0%	0.320	69.786	0.0013	0.001	0.694	0.043	0.039	0.001	0.151	70.16
Dump Truck	HHD-DSL		EMFAC	41.0%	0.320	69.786	0.0013	0.001	0.694	0.043	0.039	0.001	0.151	70.16
Diesel Tractor (Yard Dog)	HHD-DSL		EMFAC	46.5%	0.320	69.786	0.0013	0.001	0.694	0.043	0.039	0.001	0.151	70.16
Service Truck - 1 ton	HHD-DSL		EMFAC	41.0%	0.320	69.786	0.0013	0.001	0.694	0.043	0.039	0.001	0.151	70.16
Pile Driver Truck	HHD-DSL		EMFAC	41.0%	0.320	69.786	0.0013	0.001	0.694	0.043	0.039	0.001	0.151	70.16
Truck - Fuel/Lube	MHD-DSL		EMFAC	41.0%	0.155	33.180	0.0002	0.001	0.279	0.017	0.015	3.09E-04	0.014	33.39
Tractor Truck 5th Wheel	HHD-DSL		EMFAC	41.0%	0.320	69.786	0.0013	0.001	0.694	0.043	0.039	0.001	0.151	70.16
Trucks - Pickup 3/4 ton	MHD-DSL		EMFAC	41.0%	0.155	33.180	0.0002	0.001	0.279	0.017	0.015	3.09E-04	0.014	33.39
Trucks - 3 ton	HHD-DSL		EMFAC	41.0%	0.320	69.786	0.0013	0.001	0.694	0.043	0.039	0.001	0.151	70.16
Truck - Water	HHD-DSL		EMFAC	41.0%	0.320	69.786	0.0013	0.001	0.694	0.043	0.039	0.001	0.151	70.16
Off Road Vehicles	**Fuel Type**													
Air Compressor 185 CFM	D	50	OFFROAD - Air Compressors	48.0%	0.269	22.251	0.009	0.001	0.227	0.024	0.022	0.000	0.102	22.619
Air Compressor 750 CFM	D	120	OFFROAD - Air Compressors	48.0%	0.331	46.908	0.008	0.001	0.529	0.050	0.046	0.001	0.090	47.498
Articulating Boom Platform	D	50	OFFROAD - Aerial Lifts	50.5%	0.246	38.038	0.006	0.001	0.396	0.032	0.030	0.000	0.061	38.328
Bobcat Loader	D	50	OFFROAD - Rubber Tired Loaders	54.0%	0.363	31.122	0.011	0.001	0.311	0.029	0.027	0.000	0.120	31.523
Bulldozer D10R	D	500	OFFROAD - Crawler Tractors	59.0%	0.951	258.997	0.023	0.006	2.236	0.087	0.080	0.003	0.254	261.224
Bulldozer D6.C	D	120	OFFROAD - Crawler Tractors	59.0%	0.485	65.751	0.012	0.001	0.767	0.067	0.062	0.001	0.129	66.415
Concrete Trowel Machine	D	50	OFFROAD - Surfacing Equipment	49.0%	0.140	14.095	0.004	0.001	0.136	0.012	0.011	0.000	0.048	14.360
Concrete Vibrators	Electric	50	N/A	43.0%										
Cranes - Mobile 35 ton	D	120	OFFROAD - Cranes	43.0%	0.361	50.103	0.008	0.001	0.550	0.049	0.045	0.001	0.092	50.696
Cranes - Mobile 45 ton	D	175	OFFROAD - Cranes	43.0%	0.482	80.272	0.009	0.002	0.775	0.044	0.041	0.001	0.103	81.078
Crane - Mobile 65 ton	D	175	OFFROAD - Cranes	43.0%	0.482	80.272	0.009	0.002	0.775	0.044	0.041	0.001	0.103	81.078
Cranes 100 / 150 ton cap	D	250	OFFROAD - Cranes	43.0%	0.295	112.058	0.009	0.003	0.993	0.035	0.032	0.001	0.104	113.128
Diesel Powered Welder	D	25	OFFROAD - Welders	45.0%	0.060	11.276	0.002	0.000	0.104	0.007	0.006	0.000	0.022	11.404
Backhoe/loader	D	120	OFFROAD - Tractors/Loaders/Backhoes	46.5%	0.352	51.682	0.006	0.001	0.455	0.038	0.035	0.001	0.069	52.232
Earth Scraper	D	500	OFFROAD - Scrapers	66.0%	1.212	321.140	0.029	0.006	2.826	0.110	0.101	0.003	0.319	323.489
Loader	D	120	OFFROAD - Rubber Tired Loaders	54.0%	0.415	58.861	0.009	0.001	0.600	0.052	0.048	0.001	0.097	59.463
Motor Grader	D	120	OFFROAD - Graders	57.5%	0.530	74.898	0.011	0.001	0.771	0.067	0.062	0.001	0.125	75.553
Excavator - Trencher	D	120	OFFROAD - Trenchers	69.5%	0.468	64.837	0.012	0.001	0.785	0.067	0.061	0.001	0.128	65.498
Fired Heaters	D	25	OFFROAD - Other Construction Equipment	62.0%	0.054	13.205	0.001	0.000	0.101	0.004	0.004	0.000	0.016	13.323
Forklift	D	50	OFFROAD - Forklifts	30.0%	0.167	14.659	0.004	0.001	0.145	0.013	0.012	0.000	0.048	14.925
Fusion Welder	Electric	50	N/A	45.0%										
Heavy Haul / Cranes	D	750	OFFROAD - Cranes	43.0%	0.891	302.773	0.024	0.008	2.451	0.088	0.081	0.003	0.262	305.888
Heavy Haul / Cranes	D	750	OFFROAD - Cranes	43.0%	0.891	302.773	0.024	0.008	2.451	0.088	0.081	0.003	0.262	305.888
Light Plants	D	25	OFFROAD - Other Construction Equipment	62.0%	0.054	13.205	0.001	0.000	0.101	0.004	0.004	0.000	0.016	13.323
Man lifts - telescoping	D	50	OFFROAD - Aerial Lifts	50.5%	0.184	19.595	0.006	0.001	0.188	0.017	0.015	0.000	0.065	19.893
Man lift - scissor	Electric		N/A	50.5%										
Portable Compaction Roller	D	120	OFFROAD - Rollers	57.5%	0.406	58.936	0.009	0.001	0.624	0.053	0.049	0.001	0.098	59.541
Portable Compaction - Vibratory Plate	D	15	OFFROAD - Plate Compactors	43.0%	0.026	4.310	0.000	0.000	0.031	0.001	0.001	0.000	0.005	4.372
Portable Compaction - Vibratory Ram	D	50	OFFROAD - Surfacing Equipment	49.0%	0.140	14.095	0.004	0.001	0.136	0.012	0.011	0.000	0.048	14.360
Pumps	D	25	OFFROAD - Other Construction Equipment	62.0%	0.054	13.205	0.001	0.000	0.101	0.004	0.004	0.000	0.016	13.323
Portable Power Generators	D	50	OFFROAD - Generator Sets	74.0%	0.276	30.595	0.009	0.001	0.291	0.025	0.023	0.000	0.097	30.953
Truck Crane - Greater than 300 ton	D	500	OFFROAD - Cranes	43.0%	0.529	179.940	0.014	0.006	1.421	0.052	0.048	0.002	0.155	181.979
Truck Crane - Greater than 200 ton	D	250	OFFROAD - Cranes	43.0%	0.295	112.058	0.009	0.003	0.993	0.035	0.032	0.001	0.104	113.128
Vibratory Roller 20 ton	D	175	OFFROAD - Rollers	43.0%	0.619	108.049	0.011	0.002	1.009	0.055	0.050	0.001	0.124	108.896

Notes:

[1] Capacity factors from SCAQMD Table A9-8-D

[2] Assuming ROGs are equivalent to VOCs

- Emission factors for on-road vehicles are based on results from Emfac Emissions Model 2007 Version 2.3 (HHDT-DSL=heavy heavy-duty trucks-diesel; MHD-DSL=medium heavy duty-diesel). EMFAC scenario year was 2010 and the selected area was Kern County. PM_{10} values include break wear and tire wear.

- Emission factors for off-road vehicles are based on output from Offroad 2007, calendar year 2013 for Kern County.
  On-Road Vehicles:
  - $PM_{2.5}$ Fraction of PM_{10}, Diesel: 0.920
  Off-Road Vehicles:
  - PM2.5 Fraction of PM10, Diesel: 0.920

- CH_4 and N_2O factors are derived from California Climate Action Registry General Reporting Protocol Version 3.0 (April 2008), Table C.5 for LDT, MHD, and HHD diesel fueled trucks in the San Joaquin Valley Air Basin (MHD =HHD). These emissions are in g/mile. On-road vehicles are limited to 10 mph, which is used to convert to lb/hr. (See GHG Reference Info tab)

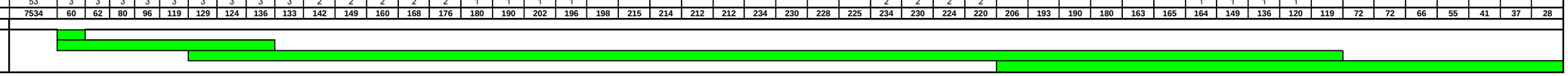
- N_2O factors for off-road vehicles are derived from California Climate Action Registry General Reporting Protocol Version 3.0 (April 2008), Table C.5 (distillate fuel factors for the industrial sector) using the following to convert from kg/gallon to lb/hp-hour, and then multiplying by the rated horsepower rating: 1 gallon/137,000 Btu, 7,000 Btu/hp-hour, and 2.2046 lb/kg. CH_4 factors are from the SCAQMD data.

CO_2 GWP (SAR, 1996) =	1
CH_4 GWP (SAR, 1996) =	21
N_2O GWP (SAR, 1996) =	310

Hydrogen Energy California, Kern County Power Project
Construction Equipment Usage Schedule (on site)
1/7/2013

		Month																																										
EQUIPMENT	***# of units***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***	***22***	***23***	***24***	***25***	***26***	***27***	***28***	***29***	***30***	***31***	***32***	***33***	***34***	***35***	***36***	***37***	***38***	***39***	***40***	***41***	***42***	***43***	***44***	***45***	***46***	***47***	***48***	***49***
On Road Vehicles																																																
18 cy fill mat'l haul truck	185			10	10	20	20	20	20	10	10	10	10	5	5	5	5	5	5																		3	3	3	3	1	1	1							
Bus	365	2	2	2	2	3	3	3	3	3	3	5	5	5	5	5	5	7	7	7	10	10	10	14	14	14	14	14	14	14	14	14	14	14	14	12	12	12	10	10	5	5	3	3	2	2	2	1	1
Concrete Pumper Truck	39						2	2	2	2	2	2	2	2	3	3	3	2	2	2	2	2							1	1	1	1																	
Dump Truck	76	3	4	4	3	3	3	3	3	3	3	2	2	2	2	2													2	2	2	2	2	2	2	2	2	3	3	3	2	1	1	1	1	1	1				
Diesel Tractor (Yard Dog)	236						2	2	2	2	2	2	4	4	4	4	4	8	8	8	8	8	8	8	10	10	10	10	10	10	10	10	10	10	10	4	4	4	4	4	4	4							
Service Truck - 1 ton	99	2	2	2	4	4	4	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1
Pile Driver Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck - Fuel/Lube	85	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1			
Tractor Truck 5th Wheel	0																																															
Trucks - Pickup 3/4 ton	931	5	5	5	5	5	6	7	8	15	15	15	15	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	15	15	10	10	10	10	5
Trucks - 3 ton	185	1	1	1	1	1	2	2	2	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	4	3	3	3	3	2	2	2	1	1	1	1			
Truck - Water	127	5	5	5	5	5	5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1
Off Road Vehicles																																																
Air Compressor 185 CFM	327	2	2	2	2	3	3	3	3	3	3	3	3	3	6	6	6	8	8	8	10	10	10	10	12	12	12	12	12	12	12	12	12	12	12	8	8	8	6	6	6	6	4	4	4	2	2	1	1
Air Compressor 750 CFM	98					1	1	1	1	2	2	2	2	2	2	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Articulating Boom Platform	0																																															
Bob cat loader	62			1	1	1	1	1	4	4	4	4	4	3	3	3	3	3	3	2	2	2	2	2	2												1	1	1	1	1	1	1							
Bulldozer D10R	23	3	3	3	2	2	2	2	2	2	1	1																																					
Bulldozer D6C	33	3	3	3	3	2	2	2	2	2	2	1	1	1	1	1													1	1	1	1																	
Concrete Trowel Machine	58						2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2								2	2	2	2	2	2							
Concrete Vibrators	140	4	4	4	4	4	4	4	4	4	8	8	8	8	8	8	8	8	4	4	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2															
Cranes - Mobile 35 ton	176							1	1	1	4	4	4	4	7	7	7	7	7	7	7	7	7	7	7	7	5	5	5	5	5	5	5	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1
Cranes - Mobile 45 ton	84											2	2	2	2	2	2	2	2	4	4	4	4	4	4	4	4	4	4	4	2	2	2	2	2	2	2	2	2	2	2	1	1					
Crane - Mobile 65 ton	126												1	1	2	4	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	5	5	4	2	2	2	2	1	1	1	1	1	1	1				
Cranes 100 / 150 ton cap	70											1	1	2	2	3	3	4	4	4	4	4	4	4	4	4	4	4	4	2	2	1	1	1	1	1	1											
Diesel Powered Welder	643				10	10	10	10	10	10	10	10	10	10	10	10	10	15	15	15	20	20	20	20	20	25	25	25	25	25	25	25	25	15	15	15	15	10	10	10	10	5	5	5	5	3	3	2
Excavator - Backhoe/loader	68	2	2	3	4	4	4	4	4	4	4	4	2	2	2	2	2	1	1	1	1	1	1	1	1	1											2	2	2	2	1	1	1							
Excavator - Earth Scraper 637	38	7	7	7	7	4	4	2																																									
Excavator - loader	33	2	2	2	2	2	2	2	2	2	2	2	2	1	1														1	1	1	1						1	1	1									
Excavator - Motor Grader (CAT140H)	24		1	1	1	3	3																						1	1	1	1				2	2	2	2	1	1	1							
Excavator - Trencher (CAT320)	22						2	2	2	2	2	2	2	2	2	2	2																																	
Fired Heaters (2,000 BTU)	166				4	4	4	4	4	3	3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	3	3	2	2	2	2	2	2	2	2	2	2	1	1	1
Forklift	285	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	8	8	8	8	8	8	8	8	8	8	8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	2	2	2	2	1	1	1
Fusion Welder	83				2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
Heavy Haul / 600 tn Crane	9																		1	1	1	1	1	1	1	1	1																						
Heavy Haul / 1,000 tn Crane	6																				1	1	1	1	1																									
Light Plants	433	1	1	2	4	8	8	8	8	4	4	6	6	8	8	10	10	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	10	10	10	10	10	10	10	10	5	5	5	5	5	4	4	2	2
Man lifts - telescoping	506									5	5	5	10	10	10	10	10	10	10	10	15	15	15	15	20	20	20	20	20	20	20	20	20	20	15	15	15	10	10	10	10	5	5	5	5	2	2	2
Man lift - scissor	540								5	5	5	5	10	10	10	10	10	10	10	10	15	15	15	15	20	20	20	20	20	20	20	20	20	20	15	15	15	10	10	10	10	10	10	10	10	5	5	5	
Portable Compaction Roller	82			5	5	5	5	5	5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2						2	2	2	2	2	2	1	1										
Portable Compaction - Vibratory Plate	126								6	6	6	6	6	6	6	6	6	6	6	6	6	6	6						3	3	3	3				4	4	4	4	4	2	2							
Portable Compaction - Ram	0																																															
Pumps	182	3	3	3	6	6	6	6	6	6	6	6	6	6	6	6	6	6	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
Portable Power Generators	608	4	4	4	4	6	6	6	6	6	10	10	10	10	10	10	10	15	15	15	15	15	15	15	20	20	20	20	20	20	20	20	20	20	15	15	15	15	15	10	10	10	10	10	10	5	5	5	2
Truck Crane - Greater than 200 ton	68												1	1	1	1	1	2	2	3	3	4	4	4	4	4	4	4	4	4	3	3	2	2	2	1	1	1	1	1									
Truck Crane - Greater than 300 ton	34															1	1	1	1	1	2	2	2	3	3	3	3	3	3	3	2																			
Vibratory Roller Ingersol-Rand 20 ton	53	3	3	3	3	3	3	3	3	3	2	2	2	2	2	1	1	1	1										2	2	2	2						1	1	1	1								
Onsite Total	**7534**	**60**	**62**	**80**	**96**	**119**	**129**	**124**	**136**	**133**	**142**	**149**	**160**	**168**	**176**	**180**	**190**	**202**	**196**	**198**	**215**	**214**	**212**	**212**	**234**	**230**	**228**	**225**	**234**	**230**	**224**	**220**	**206**	**193**	**190**	**180**	**163**	**165**	**164**	**149**	**136**	**120**	**119**	**72**	**72**	**66**	**55**	**41**	**37**	**28**

Schedule



Notes: Preliminary and Confidential
1 These are approximate values

Hydrogen Energy California, Kern County Power Project
Emission Factors for Offsite Linears Equipment
1/7/2013

Equipment Description	EMFAC designation	Horsepower	Source	Capacity Factor[1]	Emission Factors (lbs/hr) CO	CO_2	CH_4	N_2O	NO_x	PM_{10}	$PM_{2.5}$	SO_x	ROG[2]	CO_2e
On-Road Vehicles				EMFAC										
Dump Truck	HHD-DSL		EMFAC	41.0%	0.320	69.786	0.0018	0.001	0.694	0.043	0.039	0.001	0.151	70.165
Service Truck	HHD-DSL		EMFAC	41.0%	0.320	69.786	0.0018	0.001	0.694	0.043	0.039	0.001	0.151	70.165
Pipe Haul Truck and Trailer (HHDT-DSL)	HHD-DSL		EMFAC	41.0%	0.320	69.786	0.0018	0.001	0.694	0.043	0.039	0.001	0.151	70.165
Trucks - Pickup 3/4 ton	MHD-DSL		EMFAC	41.0%	0.155	33.180	0.0018	0.001	0.279	0.017	0.015	0.000	0.014	33.558
Truck - Water	HHD-DSL		EMFAC	41.0%	0.320	69.786	0.0018	0.001	0.694	0.043	0.039	0.001	0.151	70.165
Off Road Vehicles	**Fuel Type**													
Air Compressor	D	50	OFFROAD - Air Compressors	48.0%	0.269	22.251	0.009	0.001	0.227	0.024	0.022	0.000	0.102	22.619
Bore Machine (Hydraulic)	D	50	OFFROAD - Bore/Drill Rigs	75.0%	0.228	31.009	0.003	0.001	0.257	0.012	0.011	0.000	0.029	31.238
Crane	D	250	OFFROAD - Cranes	43.0%	0.295	112.058	0.009	0.003	0.993	0.035	0.032	0.001	0.104	113.128
Backhoe	D	120	OFFROAD - Tractors/Loaders/Backhoes	46.5%	0.352	51.682	0.006	0.001	0.455	0.038	0.035	0.001	0.069	52.232
Excavator	D	120	OFFROAD - Excavators	58.0%	0.517	73.557	0.010	0.001	0.678	0.058	0.054	0.001	0.108	74.181
Forklift	D	50	OFFROAD - Forklifts	30.0%	0.167	14.659	0.004	0.001	0.145	0.013	0.012	0.000	0.048	14.925
Generator (Welding)	D	50	OFFROAD - Generator Sets	74.0%	0.276	30.595	0.009	0.001	0.291	0.025	0.023	0.000	0.097	30.953
Roller	D	50	OFFROAD - Rollers	57.5%	0.291	25.960	0.009	0.001	0.258	0.024	0.022	0.000	0.102	26.328
Pipe Bending Machine	D	50	OFFROAD - Other Construction Equipment	62.0%	0.265	27.964	0.007	0.001	0.258	0.020	0.019	0.000	0.075	28.281
RAIL														
AIR COMPRESSOR 185	D	49	OFFROAD - Air Compressors	48.0%	0.269	22.251	0.009	0.001	0.227	0.024	0.022	0.000	0.102	22.616
BOOM TRUCK 12 TON	D	300	EMFAC	41.0%	0.320	69.786	0.002	0.001	0.694	0.043	0.039	0.001	0.151	70.165
CAT 325 BACKHOE	D	168	OFFROAD - Tractors/Loaders/Backhoes	46.5%	0.585	101.296	0.009	0.000	0.768	0.043	0.039	0.001	0.098	101.482
CAT 330 BACKHOE	D	222	OFFROAD - Tractors/Loaders/Backhoes	46.5%	0.366	171.583	0.011	0.000	1.163	0.037	0.034	0.002	0.120	171.811
CAT DOZER D-6	D	185	OFFROAD - Crawler Tractors	59.0%	0.744	121.079	0.015	0.000	1.250	0.071	0.065	0.001	0.167	121.395
CAT MODEL 12 MOTOR GRADER	D	140	OFFROAD - Graders	57.5%	0.530	74.898	0.011	0.000	0.771	0.067	0.062	0.001	0.125	75.134
CAT ROLLER-COMPACTOR 563	D	145	OFFROAD - Rollers	57.5%	0.406	58.936	0.009	0.000	0.624	0.053	0.049	0.001	0.098	59.122
CAT RUBBER TIRE LOADER 966	D	253	OFFROAD - Rubber Tired Loaders	54.0%	0.368	148.843	0.011	0.000	1.210	0.042	0.038	0.002	0.126	149.081
CAT SCRAPER 615	D	265	OFFROAD - Scrapers	66.0%	0.641	209.282	0.020	0.000	2.044	0.079	0.073	0.002	0.225	209.709
CRANE-ROUGH TERRAIN 45T	D	173	OFFROAD - Cranes	43.0%	0.482	80.272	0.009	0.000	0.775	0.044	0.041	0.001	0.103	80.467
GENSET 5KW	D	5	OFFROAD - Generator Sets	74.0%	0.069	10.198	0.001	0.000	0.105	0.006	0.006	0.000	0.015	10.228
JOHN DEERE TRACTOR 9400	D	410	OFFROAD - Tractors/Loaders/Backhoes	46.5%	0.744	344.544	0.021	0.000	2.062	0.070	0.064	0.004	0.229	344.977
PICK-UP CRAFT	D	385	OFFROAD - Other Construction Equipment	62.0%	0.523	254.010	0.013	0.000	1.516	0.049	0.045	0.002	0.145	254.285
PICK-UP OVERHEAD	D	260	OFFROAD - Other Construction Equipment	62.0%	0.587	106.420	0.008	0.000	0.799	0.042	0.038	0.001	0.093	106.597
RAIL BALLAST REGULATOR	D	240	OFFROAD - Other Construction Equipment	62.0%	0.587	106.420	0.008	0.000	0.799	0.042	0.038	0.001	0.093	106.597
RAIL CLIP MACHINE	D	80	OFFROAD - Other Construction Equipment	62.0%	0.265	27.964	0.007	0.000	0.258	0.020	0.019	0.000	0.075	28.107
RAIL MOVER-SHUTTLE WAGON	D	250	OFFROAD - Other Construction Equipment	62.0%	0.587	106.420	0.008	0.000	0.799	0.042	0.038	0.001	0.093	106.597
RAIL TAMPER	D	260	OFFROAD - Other Construction Equipment	62.0%	0.587	106.420	0.008	0.000	0.799	0.042	0.038	0.001	0.093	106.597
RAIL WELDER	D	58	OFFROAD - Welders	45.0%	0.060	11.276	0.002	0.000	0.104	0.007	0.006	0.000	0.022	11.317
RAMEX WALK BEHIND COMPACTOR	D	10	OFFROAD - Plate Compactors	43.0%	0.026	4.310	0.000	0.000	0.031	0.001	0.001	0.000	0.005	4.319
TRI-AXLE DUMP TRUCK	D	450	EMFAC	41.0%	0.320	69.786	0.002	0.001	0.694	0.043	0.039	0.001	0.151	70.165
TRUCK FLATBED 14 FOOT	D	362	EMFAC	41.0%	0.320	69.786	0.002	0.001	0.694	0.043	0.039	0.001	0.151	70.165
TRUCK TRACTOR	D	450	OFFROAD - Off-Highway Trucks	41.0%	0.636	272.089	0.020	0.000	1.783	0.063	0.058	0.003	0.217	272.500
WATER TRUCK, 4M ON-ROAD	D	300	EMFAC	41.0%	0.320	69.786	0.002	0.001	0.694	0.043	0.039	0.001	0.151	70.165
WELDING MACHINE 350 AMP	D	25	OFFROAD - Welders	45.0%	0.060	11.276	0.002	0.000	0.104	0.007	0.006	0.000	0.022	11.317

Notes:

[1] Capacity factors from SCAQMD Table A9-8-D

[2] Assuming ROGs are equivalent to VOCs

- Emission factors for on-road vehicles are based on results from Emfac Emissions Model 2010 Version 2.3 (LDT-DSL=light duty class II trucks-diesel; HHDT-DSL=heavy heavy-duty trucks-diesel; MHD-DSL=medium heavy duty-diesel). EMFAC scenario year was 2010.

- Emission factors for off-road vehicles are based on output from Offroad 2007, calendar year 2013 for Kern County.
  On-Road Vehicles:
  - $PM_{2.5}$ Fraction of PM_{10}, Diesel: 0.920
  Off-Road Vehicles:
  - PM2.5 Fraction of PM10, Diesel: 0.920

- CH_4 and N_2O factors are derived from California Climate Action Registry General Reporting Protocol Version 3.0 (April 2008), Table C.5 for LDT, MHD, and HHD diesel fueled trucks in the San Joaquin Valley Air Basin (MHD =HHD). These emissions are in g/mile. On-road vehicles are limited to 10 mph, which is used to convert to lb/hr. (See GHG Reference Info tab)

- N_2O factors for off-road vehicles are derived from California Climate Action Registry General Reporting Protocol Version 3.0 (April 2008), Table C.5 (distillate fuel factors for the industrial sector) using the following to convert from kg/gallon to lb/hp-hour, and then multiplying by the rated horsepower rating: 1 gallon/137,000 Btu, 7,000 Btu/hp-hour, and 2.2046 lb/kg. CH_4 factors are from the SCAQMD data.

CO_2 GWP (SAR, 1996) =	1
CH_4 GWP (SAR, 1996) =	21
N_2O GWP (SAR, 1996) =	310

Hydrogen Energy California, Kern County Power Project
Construction Equipment Usage Schedule (off site linears)
1/7/2013

EQUIPMENT	Month / # of units	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
ON ROAD																																																		
Dump Truck	64											4	4	6	6	6	6	6	6	6	6	4	4																											
Service Truck (MHD-DSL)	30											2	2	2	2	2	2	3	3	3	3	3	3																											
Pipe Haul Truck and Trailer (HHDT-DSL	30											3	3	3	3	3	3	2	2	2	2	2	2																											
Truck (Pickup 3/4 Ton) - MHD-DSL	150											10	10	10	10	10	10	15	15	15	15	15	15																											
Truck - water	40											2	2	4	4	4	4	4	4	4	4	2	2																											
OFF ROAD																																																	
Air Compressor	48											2	2	4	4	6	6	6	6	4	4	2	2																											
Bore Machine (Hydraulic)	5															1	1	1	1	1																													
Crane	60											2	4	4	6	6	6	6	6	6	6	4	4																											
Backhoe	104											6	6	10	10	10	10	10	10	10	10	6	6																											
Excavator	11												1	1	1	1	1	1	1	1	1	1	1																											
Forklift	42											2	2	4	4	4	4	4	4	4	4	4	2																											
Welding Generator	96											8	8	8	8	8	8	8	8	8	8	8	8																											
Roller	22												2	2	2	2	2	2	2	2	2	2	2																											
Pipe Bending Machine	36											2	2	4	4	4	4	4	4	4	2	2																											
RAIL																																																	
AIR COMPRESSOR 185	8													0	2	2	2	2																																
BOOM TRUCK 12 TON	3													0	0	1	1	1																																
CAT 325 BACKHOE	2													1	1	0	0	0																																
CAT 330 BACKHOE	1													0	0	1	0	0																																
CAT DOZER D-6	5													2	2	0	0	1																																
CAT MODEL 12 MOTOR GRADER	7													2	2	1	1	1																																
CAT ROLLER-COMPACTOR 563	5													2	2	1	0	0																																
CAT RUBBER TIRE LOADER 966	6													0	0	2	2	2																																
CAT SCRAPER 615	3													2	1	0	0	0																																
CRANE-ROUGH TERRAIN 45T	2													0	1	1	0	0																																
GENSET 5KW	6													0	4	2	0	0																																
JOHN DEERE TRACTOR 9400	1													1	0	0	0	0																																
PICK-UP CRAFT	15													3	3	3	3	3																																
PICK-UP OVERHEAD	24													2	6	6	5	5																																
RAIL BALLAST REGULATOR	2													0	0	0	1	1																																
RAIL CLIP MACHINE	2													0	0	0	1	1																																
RAIL MOVER-SHUTTLE WAGON	3													0	0	1	1	1																																
RAIL TAMPER	2													0	0	0	1	1																																
RAIL WELDER	3													0	0	0	2	1																																
RAMEX WALK BEHIND COMPACTOR	1													0	1	0	0	0																																
TRI-AXLE DUMP TRUCK	12													4	6	2	0	0																																
TRUCK FLATBED 14 FOOT	11													1	1	3	3	3																																
TRUCK TRACTOR	2													0	0	1	1	0																																
WATER TRUCK, 4M ON-ROAD	5													1	1	1	1	1																																
WELDING MACHINE 350 AMP	5													1	1	1	1	1																																
TOTAL	**874**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**43**	**48**	**84**	**98**	**96**	**93**	**97**	**72**	**70**	**67**	**55**	**51**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Notes: Preliminary and Confidential
1 These are approximate values
2 Construction Equipment Assumptions - Natural Gas line work begins in month 11 and ends in month 20. Process water line work begins in month 11 and ends in month 17 Potable Water line work begins in month 17 and ends in month 20. CO2 line work begins in month 17 and ends in month 22. Transmission line work begins in month 17 and ends in month 22. Rail spur line work begins in month 13 and ends in month 17

HECA Total Combined Annual Criteria Pollutant Emissions

Pollutant / Equipment	NO_X	CO	VOC	SO_2	PM_{10}	$PM_{2.5}$
	tons/year					
HRSG/CTG (1)	106.5	89.0	15.1	17.1	54.0	54.0
Coal Dryer(1)	17.0	12.7	2.4	2.8	5.6	5.6
Auxiliary Boiler	1.4	8.6	0.9	0.5	1.2	1.2
Tail Gas Thermal Oxidizer	13.4	11.2	0.3	8.3	0.4	0.4
CO_2 Vent		124.1	2.8			
Gasification Flare	2.5	18.5	0.01	0.02	0.03	0.03
Rectisol Flare	0.7	0.8	0.01	0.3	0.03	0.03
SRU Flare	0.1	0.2	0.003	0.4	0.006	0.006
Cooling Towers (2)					25.5	15.3
Emergency Generators(3)	0.2	0.8	0.1	0.001	0.02	0.02
Fire Water Pump	0.09	0.2	0.01	0.0003	0.001	0.001
Nitric Acid Unit	17					
Urea Pastillation Unit					0.2	0.2
Ammonium Nitrate Unit					0.8	0.8
Ammonia Startup Heater	0.04	0.14	0.02	0.01	0.02	0.02
Material Handling (4)					2.3	2.3
Fugitives	0.005	6.0	16.7	0.1		
Total Annual	**158.8**	**272.1**	**38.4**	**29.5**	**90.1**	**79.9**

Source: HECA Project

Notes:

(1) Total annual HRSG and Coal Dryer emissions represent the maximum annual emissions during normal operations plus startup and shutdown emissions

(2) Includes contributions from all three cooling towers

(3) Includes contributions from both emergency generators

(4) Material handling emissions are shown as the contribution of all dust collection points.

CO = carbon monoxide

HRSG=Heat Recovery Steam Generator

CTG = combustion turbine generator

NO_X = nitrogen oxides

PM_{10}= particulate matter less than 10 microns in diameter

$PM_{2.5}$ =particulate matter less than 2.5 microns in diameter

SO_2 = sulfur dioxide

VOCs = volatile organic compounds

Basis: MHI GT - Model: M501GAC

With PSA Off-gas and H2-rich Gas Duct Firing

Maximum Emissions based on Case 1 - On-peak with duct-firing at 97F ambient

CGT Max Fuel Input =	2583	x 10^6 Btu/hr (HHV) of syngas
Duct Firing Max Fuel Input =	278	x 10^6 Btu/hr (HHV) of PSA Off-gas and H2-rich syngas
HRSG stack gas =	255,463	lbmol/hr, dry, corrected to 15% O2

Total HRSG Flue Gas Emission Rates with Duct Firing of PSA Off-gas and H2-rich syngas

	Emission Factors lb/10^6 Btu (HHV)	Basis
NOx	0.011	2.5 ppmc
CO	0.008	3 ppmc
VOC	0.0015	1 ppmc
$PM_{10}/PM_{2.5}$	0.008	filterable (front-half) + condensible (back half)
SO2**	0.0002	2 ppmv total sulfur in syngas, 10 ppmv sulfur in PSA Off-gas
NH3		5 ppmc ammonia slip

Notes: Emission Factors are based on the maximum emissions from all of the cases examined (On-peak and Off-peak)
ppmc denotes ppm by volume, dry, corrected to 15% O2
** Maximum SO2 emission occurs for OFF-peak, 97 deg F (Case 2)

Maximum short-term emissions from HRSG stack, normal operations on peak

HRSG Emissions		
	lb/hr	Basis
NOx	25.0	Case 1 (ON Peak, 97 deg Ambient)
CO	18.3	Case 1 (ON Peak, 97 deg Ambient)
VOC	3.5	Case 1 (ON Peak, 97 deg Ambient)
$PM_{10}/PM_{2.5}$	12.9	Case 3 (ON Peak, 39 deg Ambient)
SO2**	4.1	Case 2 (OFF Peak, 97 deg Ambient)
NH3	18.5	Case 1 (ON Peak, 97 deg Ambient)

	Exhaust gas (lbmol/hr)	Exit velocity (m/s)	Exhaust flow (ft3/sec)	Exit velocity (ft/sec)
min HRSG fluegas to HRSG stack during ON peak (Case 1) =	167,092	16.40	22,356.58	53.81
Min HRSG fluegas to HRSG stack during OFF Peak (Case 2) =	126,704	12.44	16,952.70	40.80
HRSG fluegas to HRSG stack during ON Peak (Case 3) =	176,804	17.35	23,655.98	56.94

Annual average emissions from HRSG Stack

Basis: Case 5 (ON Peak, Avg. Ambient)

HRSG Emissions	
	lb/hr
NOx	24.9
CO	18.2
VOC	3.5
$PM_{10}/PM_{2.5}$	12.8
SO2*	4.1
NH3	18.4

	Exhaust gas (lbmol/hr)	Exit velocity (m/s)
HRSG fluegas to HRSG stack (Case 5) =	171,498	16.83

Maximum short-term emissions from coal dryer stack

Coal Dryer Emissions		
	lb/hr	Basis
NOx	4.4	Case 1 (ON Peak, 97 deg Ambient)
CO	3.2	Case 1 (ON Peak, 97 deg Ambient)
VOC	0.6	Case 1 (ON Peak, 97 deg Ambient)
$PM_{10}/PM_{2.5}$	1.4	Case 3 (ON Peak, 39 deg Ambient)
SO2	0.9	Case 2 (OFF Peak, 97 deg Ambient)
NH3	3.2	Case 1 (ON Peak, 97 deg Ambient)

*Baghouse PM control to 0.001 gr/dscf

	Exhaust gas (lbmol/hr)	Exit velocity (m/s)
Min HRSG fluegas to coal dryer (Case 4) =	28,788	5.84

Note: Coal dryer emission rates are relatively constant for both On- and OFF-peak operation.

Annual average emissions from coal dryer stack

Basis: Case 5 (ON Peak, Avg. Ambient)

Coal Dryer Emissions	
	lb/hr
NOx	4.2
CO	3.1
VOC	0.6
$PM_{10}/PM_{2.5}$	1.4
SO2	0.7
NH3	3.1

*Baghouse PM control to 0.001 gr/dscf

	Exhaust gas (lbmol/hr)	Exit velocity (m/s)
HRSG fluegas to coal dryer (Case 5) =	29,102	5.90

Startup/Shutdown - HRSG Stack & Coal Drying Stack

Information provided by MHI

Expected Emissions vs. CTG Load (Natural Gas)				
	CTG load			
	80%	40%	20%	units
NOx	42	25	18	ppmc
CO	130	2900	5000	ppmc
VOC	1.1	9	50	ppmc
$PM_{10}/PM_{2.5}$	15	15	15	lb/hr
SOx*	0.4	0.4	0.4	ppmc

* 0.4 ppmc SO2 in fluegas corresponds to about 12.6 ppmv total sulfur in natural gas fuel.

Expected Emissions vs. CTG Load (Syngas)		
	CTG load	
	40%	units
NOx	19	ppmc
CO	39	ppmc
VOC	2	ppmc
$PM_{10}/PM_{2.5}$	13	lb/hr
SOx	2	ppmvw

Compound	lb/lbmol
NO2	46.01
CO	28.01
VOC	16.04
SO2	64.06
NH3	17.03

HRSG/Coal Drying Total Exhaust Flow Basis								
Load/Fuel	80% on NG		40% on NG		20% on NG		40% on Syngas	
O2 mol% (wet)	11.41%		14.15%		15.22%		11.74%	
H2O mol% (wet)	14.10%		10.63%		9.28%		10.50%	
MW	27.79	lb/lbmol	28.05	lb/lbmol	28.16	lb/lbmol	27.66	lb/lbmol
HRSG flue gas*	167,600	lbmol/hr	138,400	lbmol/hr	127,400	lbmol/hr	140,200	lbmol/hr
NOx Stack Conc (assumed)	4	ppmc	25	ppmc	18	ppmc	10	ppmc
CO Stack Conc (assumed)	5	ppmc	400	ppmc	1000	ppmc	20	ppmc
VOC Stack Conc (assumed)	2	ppmc	9	ppmc	50	ppmc	2	ppmc
NH3 slip	5	ppmc	0		0		5	ppmc
Turbine Fuel Flow							14,218	lbmol/hr
HRSG flue gas (wet)	4,657,604	lb/hr	3,882,120	lb/hr	3,587,584	lb/hr	3,877,932	lb/hr
HRSG flue gas (dry, corrected to 15% O2)	185,516	lbmol/hr	106,371	lbmol/hr	81,062	lbmol/hr	165,183	lbmol/hr
Duct Burner Gas HHV							85	MMBtu/hr
Coal Drying Flow (wet)			480,180	lb/hr			480,180	lb/hr

*Includes gas routed to coal dryer.

HRSG Startup													
Step	Duration (hrs)		SO2	NOx	CO	$PM_{10}/PM_{2.5}$	VOC	NH3	Description	Flow (lbmol/hr)	Exhaust flow (ft3/sec)	Exit velocity (ft/sec)	Exit velocity (m/s)
1. 20% on NG	0.5	lb/hr	2.1	67.1	2270	15.0	65	0	CTG ignition and synchronization	127,400	17,045.88	41.03	12.51
		lb	1.0	33.6	1135	7.5	32.4	0.0					
2. 40% on NG	2	lb/hr	2.4	107.2	1044	13.1	13	0	HRSG/STG Warm-up, Ramp CTG to 40%	121,300	16,229.71	39.06	11.91
		lb	4.8	214	2088	26.3	26.8	0.0					
3. 40% on Syngas	2	lb/hr	2.4	66.6	81	13	4.6	12.3	CTG fuel change over, Start up PSA/Ammonia/Urea Plant	123,100	16,470.54	39.64	12.08
		lb	5	133	162	26	9	24.6					
Tons/Startup			**0.01**	**0.19**	**1.69**	**0.03**	**0.03**	**0.01**					

*Coal drying starts at step 2 above.

Coal Drying Startup													
Step	Duration (hrs)		SO2	NOx	CO	$PM_{10}/PM_{2.5}$	VOC	NH3	Description	Flow (lbmol/hr)	Exhaust flow (ft3/sec)	Exit velocity (ft/sec)	Exit velocity (m/s)
2. 40% on NG	2	lb/hr	0.3	15.1	147.4	0.9	1.9	0.0	Gasifier fuel changeover	17,100	2,287.95	11.38	3.47
		lb	0.7	30.3	294.7	1.9	3.8	0.0					
3. 40% on Syngas	2	lb/hr	0.3	9.4	11.5	0.9	0.7	1.7	GTG fuel change over, Start up PSA/Ammonia/Urea Plant	17,400	2,328.09	11.58	3.53
		lb	0.7	19	23	2	1	3.5					
Tons/Startup			**0.00**	**0.02**	**0.16**	**0.00**	**0.00**	**0.00**					

*PM emission rate based on 0.001 grain/dscf

HRSG Shutdown													
Step	Duration (hrs)		SO2	NOx	CO	$PM_{10}/PM_{2.5}$	VOC	NH3	Description	Flow (lbmol/hr)	Exhaust flow (ft3/sec)	Exit velocity (ft/sec)	Exit velocity (m/s)
1. 40% on Syngas	4	lb/hr	2.4	66.6	81.0	13	4.6	12.3	PSA, Ammonia and Urea plant shutdown, Gasifier to 60%, CTG to 40%	123,100	16,470.54	39.64	12.08
		lb	9.6	266	324	52.6	18.5	49.2					
2. 40% on NG	3	lb/hr	2.7	122	1191	15.0	15.3	0.0	CTG fuel change over, Gasifier depressurization	138,400	18,517.65	44.57	13.58
		lb	8.2	367	3574	45.0	45.9	0.0					
3. 20% on NG	2	lb/hr	2.1	67.1	2270	15.0	64.8	0.0	Minimum plant load on NG	127,400	17,045.88	41.03	12.51
		lb	4.2	134	4539	30.0	129.7	0.0					
Tons/Shutdown			**0.01**	**0.38**	**4.22**	**0.06**	**0.10**	**0.02**					

Coal Drying Shutdown													
Step	Duration (hrs)		SO2	NOx	CO	$PM_{10}/PM_{2.5}$	VOC	NH3	Description	Flow (lbmol/hr)	Exhaust flow (ft3/sec)	Exit velocity (ft/sec)	Exit velocity (m/s)
1. 40% on Syngas	4	lb/hr	0.3	9.4	11.5	0.9	0.7	1.7	PSA, Ammonia and Urea plant shutdown, Gasifier to 60%, CTG to 40%	17,400	2,328.09	11.58	3.53
		lb	1.4	37.6	45.8	3.8	2.6	7.0					
Tons/Startup			**0.00**	**0.02**	**0.02**	**0.00**	**0.00**	**0.00**					

*PM emission rate based on 0.001 grain/dscf

CTG steady state operation at 80% load on natural gas for 2 weeks per year

HRSG Emissions - Natural Gas Operations													
Step	Duration (hrs)		SO2	NOx (4 ppmc)	CO (5 ppmc)	$PM_{10}/PM_{2.5}$	VOC (2 ppmc)	NH3 (5 ppmc)	Description	Flow (lbmol/hr)	Exhaust flow (ft3/sec)	Exit velocity (ft/sec)	Exit velocity (m/s)
1. 80% on NG	336	lb/hr	4.7	34.1	26.0	15.0	5.9	15.8	CTG operation at 80% load on NG	150,700	20,163.37	48.53	14.79
		lb	1596	11469	8727	5040	1995	5298					
Tons/yr			**0.80**	**5.73**	**4.36**	**2.52**	**1.00**	**2.65**					
Natural gas heat input (HHV)	2400	Emission Factors lb/MMBtu (HHV)	0.002	0.015	0.011	0.007	0.003	0.007					

Heat Input = 2167x10^6 Btu/hr, LHV (approx 2400x10^6 btu/hr, HHV)

HRSG & Coal Dryer Maximum Annual Operation Emissions

	HRSG, ton/yr				Gasifier Coal Dryer, ton/yr		
	SU & SD	**Normal Op**	**Nat Gas BU**	**Total**	**SU & SD**	**Normal Op**	**Total**
NOx	1.15	99.6	5.73	106.5	0.09	16.9	17.0
CO	11.8	72.8	4.36	89.0	0.36	12.4	12.7
VOC	0.26	13.9	1.00	15.1	0.01	2.4	2.4
$PM_{10}/PM_{2.5}$	0.19	51.3	2.52	54.0	0.01	5.6	5.6
SO2*	0.032	16.3	0.80	17.1	0.00	2.8	2.8
NH3	0.07	73.6	2.65	76.4	0.01	12.5	12.5

Maximum Annual Operation:

SU & SD	2	per year
Normal op	8000	hr/yr
Nat gas op	336	hr/yr

Annualized Startup/Shut down Emission rate for NO2 1-hr NAAQS				
Source	**HRSG**		**Coal Dryer**	
Emission Scenario	Startup, Shutdown, Natural Gas	Normal On-peak (Case 1)	Startup, Shutdown	Normal On-peak (Case 1)
Emission rate (lb/hr)	1.57	25.01	0.02	4.4

Normal operations are higher, therefore normal operating emissions used in NAAQS modeling

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CALCULATIONS FOR COMBINED CYCLE EMISSIONS

Basis: MHI Data for 501GAC, 1 on 1 with O2 Blown Gasifier (Lee Ranch Coal 75cal%/ Carson High Sulfur Coke 25cal%)

	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Ambient temp, deg F	97	97	39	39	65	65
ON Peak/OFF Peak	ON	OFF	ON	OFF	ON	OFF
HRSG Flue Gas Split to Coal Dryer						
Flue gas to coal dryer, lbmol/hr (wet)	29,208	28,996	28,996	28,788	29,102	28,996
Flue gas to HRSG stack, lbmol/hr (w)	167,092	126,704	176,804	142,412	171,498	135,904
Coal Dryer Stack Emissions						
NOx, lb/hr	4.4	4.3	4.1	3.8	4.2	4.0
CO, lb/hr	3.2	3.1	3.0	2.8	3.1	2.9
VOC, lb/hr	0.61	0.59	0.57	0.52	0.59	0.55
Particulate, lb/hr (3)	1.4	1.4	1.4	1.4	1.4	1.4
SO2, lb/hr	0.7	0.9	0.7	0.8	0.7	0.8
NH3, lb/hr	3.23	3.16	3.0	2.8	3.1	2.9
HRSG Stack Emissions						
NOx, lb/hr	25.01	18.7	24.96	18.7	24.9	18.6
CO, lb/hr	18.3	13.6	18.2	13.6	18.2	13.6
VOC, lb/hr	3.48	2.60	3.47	2.59	3.47	2.59
Particulate, lb/hr	12.77	12.21	12.89	12.48	12.82	12.36
SO2, lb/hr	4.06	4.09	4.09	4.03	4.07	3.98
NH3, lb/hr	18.5	13.8	18.4	13.8	18.4	13.8

Notes:

(1) "ppmc" denotes parts per million by volume, dry, corrected to 15% O2

(2) Sulfur in the PSA Off-gas is based on the total sulfur quantity in the feed to the PSA

(3) PM emission from coal dryer based on stack baghouse outlet dust loading of 0.001 grain/dscf.

AUXILIARY BOILER — Emissions Summary

11/13/2012

Description

Mainly used for startups, could be used for other purposes, primarily during power block outages.

Maximum steam generation 150,000 lb/hr
Maximum heat release 213 10^6 Btu/hr, HHV
Natural gas fuel, only

Emission factors		
	lb/10^6 Btu, HHV	**Basis**
SO2	0.00204	12.65 ppmv total sulfur in pipeline natural gas (max short-term)
NOx	0.006	Low NOx burner and SCR, 5 ppmvd (3% O2)
CO	0.037	50 ppmvd (3% O2)
$PM_{10}/PM_{2.5}$	0.005	Similar equipment from previous project
VOC	0.004	Similar equipment from previous project
NH3	0.0022	5 ppmvd (3% O2) NH3 slip

Emissions		
	Max short-term lb/hr (1)	**Annual average ton/yr (2)**
SO2	0.4	0.48
NOx	1.3	1.4
CO	7.9	8.6
$PM_{10}/PM_{2.5}$	1.07	1.17
VOC	0.85	0.93
NH3	0.47	0.51

Notes:

(1) Maximum 1-hr, 3-hr, 8-hr, and 24-hr average emission rates.

(2) Maximum annual capacity factor of 25% (i.e., annual fuel consumption less than 0.25 x 8760 hr/yr x 213 million Btu/hr = 466 billion Btu/yr)

TAIL GAS THERMAL OXIDIZER — Emissions Summary

11/13/2012

Description

The Tail Gas Thermal Oxidizer (TGTO) is primarily intended to safely dispose of SRU tail gas in the event of an emergency or upset. The TGTO will also be be used to dispose of waste gas during SRU startups and to futher dispose of miscellaneous vent streams from the gasification area. These vent streams may contain trace amounts of reduced sulfur compounds and/or ammonia that could cause nuisance odors if vented directly to the atmosphere.

Process Vent Disposal

Assume nominal natural gas fuel consumption = 13 million Btu/hr

Assume an allowance of 2 lb/hr SO2 emission to account for sulfur in the various vent streams plus fuel.

Emission Calculations

NOx =	0.24	lb/10^6 Btu, HHV (based on previous project, 54 ppmvd @ 3% O2)
=	3.1	lb/hr
CO =	0.2	lb/10^6 Btu, HHV (based on previous project, 74 ppmvd @ 3% O2)
=	2.6	lbhr
SO2 =	2	lb/hr
VOC =	0.006	lb/10^6 Btu, HHV (AP-42, Table1.4 -2)
=	0.1	lb/hr
$PM_{10}/PM_{2.5}$ =	0.008	lb/10^6 Btu, HHV (AP-42, Table1.4 -2)
=	0.1	lb/hr

SRU startup natural gas combustion products disposal

Waste gas

Natural gas fuel 80 x 10^6 Btu/hr, HHV

Emission Calculations

(emission factors same as above)

NOx =	0.24	lb/10^6 Btu, HHV
=	19.2	lbhr
CO =	0.2	lb/10^6 Btu, HHV
=	16.0	lbhr
SO2 =	0.00204	lb/10^6 Btu, HHV
=	0.16	lbhr
VOC =	0.006	lb/10^6 Btu, HHV
=	0.48	lbhr
$PM_{10}/PM_{2.5}$ =	0.008	lb/10^6 Btu, HHV
=	0.64	lbhr

Maximum Short-term Emission Rates

	lb/hr
NOx	22.3
CO	18.6
SO2	2.2
VOC	0.6
$PM_{10}/PM_{2.5}$	0.7

Annualized Startup Emission rate for NO2 1-hr NAAQS

lb/hr

0.1223

Normal operations are higher, therefore normal operating emissions used in NAAQS modeling

Annual Emission Calculations

Assumed annual operating scenario

TGTO normal operation for disposing miscellaneous vent gas

8314 hr/yr

NOx =	13.0	ton/yr
CO =	10.8	ton/yr
SO2 =	8.3	ton/yr
VOC =	0.32	ton/yr
$PM_{10}/PM_{2.5}$ =	0.43	ton/yr

SRU startup hrs/yr = 48 (approx 2 events @ 80 x 10^6 Btu/hr)

NOx =	0.461	ton/yr
CO =	0.3840	ton/yr
SO2 =	0.0039	ton/yr
VOC =	0.0115	ton/yr
$PM_{10}/PM_{2.5}$ =	0.0154	ton/yr

Total annual emission

NOx =	13.43	ton/yr
CO =	11.19	ton/yr
SO2 =	8.32	ton/yr
VOC =	0.34	ton/yr
$PM_{10}/PM_{2.5}$ =	0.45	ton/yr

CO2 Vent — Emissions Summary

11/13/2012

CO2 Vent Maximum Operations

Short-term Emission Rates

Total flow =	761,400	lb/hr	*Based on 380.7 stph CO2 to pipeline from
=	17,584	lbmol/hr	Plant Performance Study
H2S =	10	ppmv	
=	6.0	lb/hr	
COS =	10	ppmv	
	10.6	lb/hr	
CO =	1000	ppmv	(ranges from 500 to 1000 ppmv)
=	492	lb/hr	
VOC (MeOH) =	40	ppmv	
	11	lb/hr (as CH4)	

Annual Emissions

Assume	21	days/yr CO2 venting at full rate
	10	ppmv COS, annual average concentration
H2S =	1.5	ton/yr (based on 10 ppmv)
COS =	2.7	ton/yr (as COS, based on 10 ppmv)
CO =	124	ton/yr (based on 1000 ppmv)
VOC =	2.8	ton/yr (as CH4, based on 40 ppmv)

Note: These emissions represent the maximum emissions associated with Infrequent venting of product CO2.

Emission factors

	lb/10^6 Btu, HHV	Basis
Normal Operation (each flare) - pilots only, natural gas fuel		
SO2	0.00204	12.65 ppmv total sulfur in pipeline natural gas
NOx	0.068	Supplier data
CO	0.08	Supplier data
$PM_{10}/PM_{2.5}$	0.003	Supplier data
VOC	0.0013	99% VOC destruction for typical natural gas
Gasifier Startup - waste gases or H2-rich gas to Gasification Flare		
SO2	negligible	Startup - no sulfur in startup feed
NOx	0.068	Supplier data
CO (1)	2	Supplier data (98% destruction of CO in waste gas)
CO (2)	0.37	Supplier data
$PM_{10}/PM_{2.5}$	negligible	Supplier data
VOC	negligible	no VOC in waste gas or H2-rich gas

(1) Unshifted syngas
(2) Shifted syngas

Short-term Emission Calculations

Normal Operation - include pilots only, natural gas fuel
Maximum emissions include max of startup or shutdown plus pilot

Gasification Flare pilot fuel = 0.5 x 10^6 Btu/hr
SRU and Rectisol Flares pilot fuel = 0.3 x 10^6 Btu/hr, each

	Pilot	Max hourly emissions	Max daily emissions
	lb/hr	lb/hr	lb/hr
Gasification Flare			
SO2	0.00102	6.0	0.2
NOx	0.03	199.0	28.7
CO	0.04	4772.0	283.0
$PM_{10}/PM_{2.5}$	0.0015	8.8	0.4
VOC	0.0007	3.8	0.2
SRU Flare			
SO2	0.0006	18.4	18.4
NOx	0.020	2.5	2.5
CO	0.0240	2.9	2.9
$PM_{10}/PM_{2.5}$	0.0009	0.1	0.1
VOC	0.0004	0.05	0.05
Rectisol Flare			
SO2	0.0006	15.0	15.0
NOx	0.020	29.3	29.3
CO	0.0240	34.4	34.4
$PM_{10}/PM_{2.5}$	0.0009	1.3	1.3
VOC	0.0004	0.6	0.6

Startup/Shutdown - Gasification Flare

*Based on Startup/Shutdown Procedures provided by MHI for the PurGen One Project

Startup								
Step	Duration (hrs)	Heat Input (mmbtu/hr)		SO2	Nox	CO	$PM_{10}/PM_{2.5}$	VOC
2. Flaring NG	3	2,926	lb/hr	6.0	199.0	234.1	8.8	3.8
			lb	17.9	597.0	702.3	26.3	11.4
3. Flaring Unshifted Syngas	2	2,386	lb/hr	0.0	162.2	4772.0	0.0	0.0
			lb	0.0	324.5	9544.0	0.0	0.0
4. Flaring Shifted Syngas	5	2,413	lb/hr	0.0	164.1	892.8	0.0	0.0
			lb	0.0	820.4	4464.1	0.0	0.0
Tons/Startup				**0.01**	**0.87**	**7.36**	**0.01**	**0.01**

Shutdown								
Step	hrs	mmbtu/hr		SO2	Nox	CO	$PM_{10}/PM_{2.5}$	VOC
1. Flaring Shifted Syngas	4	2,413	lb/hr	0	164	893	0	0
			lb	0	656	3,571	0	0
Tons/Shutdown				**0.00**	**0.33**	**1.79**	**0.00**	**0.00**

Gasification Flare

Pilot gas = 4380 x 10^6 Btu

2 startups/shutdowns per year

Gasification Flare Annual Emissions

	ton/yr		
	S/U and S/D	**Pilot**	**Total**
SO2	0.02	0.004	0.022
NOx	2.40	0.149	2.547
CO	18.28	0.175	18.457
$PM_{10}/PM_{2.5}$	0.026	0.007	0.033
VOC	0.01	0.003	0.014

Annualized Startup/Shut down Emission rate for NO2 1-hr NAAQS

lb/hr

0.55

Startup/Shutdown Operation - SRU Flare

Acid gas vent to elevated flare prior to introducng to SRU

Acid gas = 4600 lb/hr SO2 = 72 lbmol/hr H2S

Assume 99.6% sulfur removal for caustic scrubber:

Scrubbed acid gas = 18.4 lb/hr SO2

plus approx 25,000 to 140,000 scf/hr of mostly CO2 and other inerts

Assume 36 x10^6 Btu/hr of natural gas assist fuel

added to scrubbed acid gas for flaring.

Approximate heating value of mixed gas to flare

= 36 x10^6 Btu /(140,000 + 36,000) scf

= 205 Btu/scf, adequate for combustion

Estimated Startup SRU Flare Emissions - flaring scrubbed acid gas

	lb/hr
SO2	18.4
NOx	2.4
CO	2.9
$PM_{10}/PM_{2.5}$	0.11
VOC	0.05

99.6% effective caustic scrubber

(Emissions for NOX, CO, PM10, and VOC based on factors for natural gas pilots above)

SRU Flare

SRU startup vent gas to flare 1) = 40 hr /yr

Pilot gas = 2628 x 10^6 Btu

SRU Flare Annual Emissions

	ton/yr		
	S/U and S/D	**Pilot**	**Total**
SO2	0.368	0.003	0.371
NOx	0.049	0.09	0.14
CO	0.058	0.11	0.16
$PM_{10}/PM_{2.5}$	0.002	0.004	0.006
VOC	0.001	0.002	0.003

Annualized Startup/Shut down Emission rate for NO2 1-hr NAAQS

lb/hr

0.01

Startup Operation - Rectisol Flare

CO2 gas vent to Rectisol Flare until within product specification

Vent gas flow = 4,542 lbmol/hr = 430 x 10^6 Btu/hr, HHV

Sulfur in vent gas = 50 ppmv,max

Estimated Startup Rectisol Flare Emissions

	lb/hr
SO2	15
NOx	29.2
CO	34.4
$PM_{10}/PM_{2.5}$	1.3
VOC	0.6

(Emissions for NOX, CO, PM10, and VOC based on factors for natural gas pilots above)

Rectisol Flare

Rectisol startup vent gas to flare = 40 hr /yr

Pilot gas = 2628 x 10^6 Btu

Rectisol Flare Annual Emissions

	ton/yr		
	S/U and S/D	**Pilot**	**Total**
SO2	0.30	0.003	0.303
NOx	0.58	0.1	0.674
CO	0.69	0.1	0.793
$PM_{10}/PM_{2.5}$	0.03	0.004	0.030
VOC	0.01	0.002	0.013

Annualized Startup/Shut down Emission rate for NO2 1-hr NAAQS

lb/hr

0.13

Flare Stack Parameters

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Parameter	Rectisol Flare (during startup and shutdown)	Rectisol Flare (during normal pilot gas mode)	Rectisol Flare Annualized for NO2 1-hr NAAQS	Gasification Flare (during startup flare nitrogen)	Gasification Flare (during startup flare unshifted syngas gas)	Gasification Flare (during startup flare shifted syngas, sweet)	Gasification Flare (during normal pilot gas mode)	Gasification Flare annualized for NO2 1-hr NAAQS	SRU Flare (during Gasifier Startup and Shutdown)	SRU Flare (during normal pilot gas mode)	SRU Flare Annualized for NO2 1-hr NAAQS
Heat release rate for flare+pilot, (10^6 Btu/hr HHV)	430	0.3	2.263	2,926	2,386	2,413	0.5	4.526	36	0.3	0.464
H = Total Heat release rate (cal/s)	3.01E+07	2.10E+04	1.58E+05	2.05E+08	1.67E+08	1.69E+08	3.50E+04	3.17E+05	2.52E+06	2.10E+04	3.25E+04
Fb = Buoyancy flux	5.00E+02	3.49E-01	2.63E+00	3.40E+03	2.77E+03	2.80E+03	5.81E-01	5.26E+00	4.18E+01	3.49E-01	5.40E-01
Q_H = sensible heat release rate	1.35E+07	9.45E+03	7.13E+04	9.22E+07	7.52E+07	7.60E+07	1.57E+04	1.43E+05	1.13E+06	9.45E+03	1.46E+04
Actual Stack height (m)	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2
GEP stack height for modeling (m)	65	65	65	65	65	65	65	65	65	65	65
AERMOD Input parameters											
He = Effective stack height (m) as calculated in SCREEN3	82.13	65.53	66.39	107.84	103.85	104.06	65.68	66.94	70.23	65.53	65.65
T = Stack temperature (K)	1273	1273	1273	1273	1273	1273	1273	1273	1273	1273	1273
v = Exit velocity (m/s)	20	20	20	20	20	20	20	20	20	20	20
d = effective stack diameter (m)	3.636	0.096	0.264	9.486	8.565	8.614	0.124	0.373	1.052	0.096	0.119

Flare stack parameters are based on calculated using the SCREEN3 technique
Fb = Buoyancy flux = 1.66 x 10-5 x H
QH = sensible heat release rate = 0.45 x H
He = Effective stack height (m) = Hs + 4.56E-03 * H^0.478
BTU/hr to cal/sec 0.06999882

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Cooling Tower Operating Data and Emission Calculation				
Parameter	**Process**	**Power Block**	**ASU**	**Basis**
Cooling water (CW) circulation rate, gpm	162,582	95,500	44,876	Typical plant performance
CW circulation rate, million lb/hr	81	48	22	
CW dissolved solids, ppmw	9,000	9,000	2,000	(See note)
Drift, fraction of circulating CW	0.0005%	0.0005%	0.0005%	Expected BACT
PM10 emission rate, lb/hr	3.7	2.1	0.2	Calculated
PM10 emission rate, ton/yr	15.2	9.3	0.9	Calculated
PM2.5 emission rate, lb/hr	2.2	1.3	0.1	PM2.5 portion is equal to 60% of PM10
PM2.5 emission rate, ton/yr	9.1	5.6	0.6	PM2.5 portion is equal to 60% of PM10
Annual operation (hours/yr)	8314	8668	8314	
Cells per cooling tower	13	12	4	

Notes: Basis: Supplier data
Assumed maximum TDS in circulating cooling water, normally TDS will be less.
Each tower assumed to operate at full capacity, when operating.
Cooling water circulation rates and dissolved solids concentrations may vary, but in combination will not exceed the stated particulate emission rates.
Portion of PM10 that is PM2.5 60%

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Emergency Generator - Expected Emergency Operation and Maintenance

Total Hours of Operation	50	hr/yr
Generator Specification	2,922	Bhp

Generator Pollutant Emission Factors (per generator)

NOx (g/Bhp/hr)	0.50
CO (g/Bhp/hr)	2.60
VOC (g/Bhp/hr)	0.30
SO_2 (g/Bhp/hr)	N/A
PM_{10} = $PM_{2.5}$ (g/Bhp/hr)	0.07

Source: CARB Tier 4 Interim Standard

Generator Pollutant Emission Rates (per generator)

	Generator Emissions			
Pollutant	**lb/hr**	**lb/day**	**lb/yr**	**ton/yr**
NOx	3.22	3.22	161.04	0.08
CO	16.75	16.75	837.43	0.42
VOC	1.93	1.93	96.63	0.05
SO_2	0.03	0.03	1.40	0.00
PM_{10} = $PM_{2.5}$	0.45	0.45	22.55	0.01

Fuel sulfur content =	15	ppmw	Pounds per day assumes 1 hour of operation for maintenance and testing per engine.
SO_2 emissions =	0.20	lb SO_2/1000 gal	
Fuel flow	140.00	gal/hr	

Please note that there are two generators; all emissions are shown for individual generators.

Modeling Worst-Case 1 hr Emissions (per generator)

		Annualized lb/hr for NO2 1-hr NAAQS
NOx (g/sec)	0.4	0.0184
CO (g/sec)	2.1	
SO_2 (g/sec)	0.004	

Only NOx, CO, and SO_2 are considered for an average 1-hour Ambient Air Quality Standard.

Parameters

Days per year:	365
Hours per day:	24
Minutes per hour:	60
Seconds per minute:	60

Modeling Worst-Case 3 hr Emissions (per generator)

SO_2 (lb/3-hr)	0.03
SO_2 (g/sec)	0.001

Only SO_2 is considered for an average 3-hour Ambient Air Quality Standard.
Pounds per 3-hr assumes two (2) hours of operation.

Modeling Worst-Case 8 hr Emissions (per generator)

CO (lb/8-hr)	16.75
CO (g/sec)	0.26

Only CO is considered for an average 8-hour Ambient Air Quality Standard.
Pounds per 8-hr assumes two (2) hours of operation.

Modeling Worst-Case 24 Hour Emissions (per generator)

SO_2 (lb/24-hr)	0.03
SO_2 (g/sec)	0.0001
PM_{10} = $PM_{2.5}$ (lb/24-hr)	0.45
PM_{10} = $PM_{2.5}$ (g/sec)	0.002

Only SO_2 and PM are considered for an average 24-hour Ambient Air Quality Standard.
Pounds per 24-hr assumes two (2) hours of operation.

Modeling Annual Average Emissions (per generator)		**Annual Emissions (tons/yr) per generator**	**both generators**
NOx (g/sec)	0.002	0.081	0.161
CO (g/sec)	0.012	0.419	0.837
VOC (g/sec)	0.001	0.048	0.097
SO_2 (g/sec)	0.00002	0.001	0.001
PM_{10} = $PM_{2.5}$ (g/sec)	0.0003	0.011	0.023

Fire Water Pump - Expected Emergency Operation and Maintenance

Total Hours of Operation	100	hr/yr
Fire Water Pump Specification	556	Bhp

Fire Water Pump Pollutant Emission Factors

NOx (g/Bhp/hr)	1.50
CO (g/Bhp/hr)	2.60
VOC (g/Bhp/hr)	0.14
SO_2 (g/Bhp/hr)	N/A
PM_{10} = $PM_{2.5}$ (g/Bhp/hr)	0.015

Source: CARB Tier 4 Interim Standard

Fire Water Pump Pollutant Emission Rates

	Fire Water Pump Emissions			
Pollutant	**lb/hr**	**lb/day**	**lb/yr**	**ton/yr**
NOx	1.84	3.68	183.86	0.1
CO	3.19	6.37	318.69	0.2
VOC	0.17	0.34	17.16	0.01
SO_2	0.01	0.01	0.56	0.0003
PM_{10} = $PM_{2.5}$	0.02	0.04	1.84	0.00

Fuel sulfur content =	15	ppmw	Pounds per day assumes two (2) hours of operation for maintenance and testing.
SO_2 emissions =	0.20	lb SO_2/1000 gal	
Fuel flow	28.00	gal/hr	

Modeling Worst-Case 1 hr Emissions

		Annualized lb/hr for NO2 1-hr NAAQS
NOx (g/sec)	0.2	0.02
CO (g/sec)	0.4	
SO_2 (g/sec)	0.0007	

Only NOx, CO, and SO_2 are considered for an average 1-hour Ambient Air Quality Standard

Parameters

Days per year:	365
Hours per day:	24
Minutes per hour:	60
Seconds per minute:	60

Modeling Worst-Case 3 hr Emissions

SO_2 (lb/3-hr)	0.01
SO_2 (g/sec)	0.0005

Only SO_2 is considered for an average 3-hour Ambient Air Quality Standard.
Pounds per 3-hr assumes two (2) hours of operation.

Modeling Worst-Case 8 hr Emissions

CO (lb/8-hr)	6.37
CO (g/sec)	0.1

Only CO is considered for an average 8-hour Ambient Air Quality Standard.
Pounds per 8-hr assumes two (2) hours of operation.

Modeling Worst-Case 24 Hour Emissions

SO_2 (lb/24-hr)	0.01
SO_2 (g/sec)	0.0001
PM_{10} = $PM_{2.5}$ (lb/24-hr)	0.04
PM_{10} = $PM_{2.5}$ (g/sec)	0.0002

Only SO_2 and PM are considered for an average 24-hour Ambient Air Quality Standard.
Pounds per 24-hr assumes two (2) hours of operation.

Modeling Annual Average Emissions

		tons/yr
NOx (g/sec)	0.003	0.092
CO (g/sec)	0.005	0.159
VOC (g/sec)	0.0002	0.009
SO_2 (g/sec)	0.00001	0.000
PM_{10} = $PM_{2.5}$ (g/sec)	0.00003	0.001

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Ammonia Synthesis Plant Startup Heater

Maximum heat release	55	10^6 Btu/hr, HHV
Maximum annual usage:	7,700	10^6 Btu/yr, HHV
(equivalent to	140	hours @ full capacity)

Emission factors

	lb/10^6 Btu, HHV	Basis
SO2	0.00204	12.65 ppmv total sulfur in pipeline natural gas (max short-term)
NOx	0.011	Low NOx burner, 9 ppmvd (3% O2)
CO	0.037	50 ppmvd (3% O2)
$PM_{10}/PM_{2.5}$	0.005	Similar equipment from previous project
VOC	0.004	Similar equipment from previous project

	Max short-term lb/hr	Annual average ton/yr
SO2	0.1	0.0079
NOx	0.6	0.0420
CO	2.0	0.1425
$PM_{10}/PM_{2.5}$	0.3	0.0193
VOC	0.2	0.0154

Annualized Startup Emission rate for NO2 1-hr NAAQS

lb/hr
0.010

Used only for Ammonia Plant Startup only.
Natural gas fuel

Urea HP & LP Absorber Emission Calculation

Reference Plant			**HECA**		
Plant Capacity =	3,360	tpd (metric)	Plant Capacity =	1,701	stpd
Urea HP Absorber NH3 =	11	kg/hr	Urea HP Absorber NH3 =	11.1	lb/hr
Urea LP Absorber NH3 =	2	kg/hr	Urea LP Absorber NH3 =	2.0	lb/hr

Reference plant information is from technical proposal provided by UreaCasale for the SCS PurGen One project.

Urea Pastillation Emission Calculation

Reference Plant			**HECA**		
Plant Max Capacity =	3,855	stpd	Plant Capacity =	1,701	stpd
Total Air Flow =	21,000	m^3/hr	NH3 Emission =	1.02	lb/hr
Ammonia Concentration =	50	mg/m^3	Urea Dust Emission =	0.05	lb/hr
Urea Dust =	0.001	gr/dscf	Annual operating hours	8052	hours/year
			PM Annual Emissions =	0.20	tons/yr

Reference plant information provided by Sandvik Fellbach for the SCS PurGen One project.
All PM emissions are PM2.5 or smaller

Nitric Acid Plant Emission Calculation

HECA

Nitric Acid Production =	501	STPD
NOx Emissions Factor* =	0.20	lb/T
NOx Emissions =	4.18	lb/hr
NH3 Emissions =	1.0	lb/hr
Annual operating hours	8052	hours/year
NOx Annual Emissions =	16.8	tons/yr

*Emission factor based on use of the Udhe EnviNOx system. Approx 15 ppmv NOx in vent gas
50% NO2/NOx in-stack ratio used in NAAQS modeling

Ammonium Nitrate Plant Emission Calculation

HECA

Ammonium Nitrate Production =	636	STPD
PM Emissions =	0.20	lb/hr
Annual operating hours	8000	hours/year
PM Annual Emissions =	0.80	tons/yr

Vendor provided emission rate
All PM emissions are PM2.5 or smaller

Hydrogen Energy California LLC
HECA Project

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Material Handling Emissions							Stack Parameters for Modeling			
Emission Pt ID	Operating Capacity		Flow	Grain Loading	Emissions [3]		Stack Diameter	Stack Height	Stack velocity	Stack velocity
Coal/Coke Storage and Handling	hr/day	day/week	ACFM	gr/dscf	Total PM (lb/hr)	Total PM (tons/yr)	ft	ft	(ft/sec)	(m/s)
17 Feedstock Rail Unloading Vent	6	5	20,000	0.001	0.17	0.13	3	30	47.2	14.4
18 Feedstock Transfer Tower 2 [1]	12	7	1,500	0.001	0.01	0.03	0.83	100	46.2	14.1
19 Feedstock Crusher Vent	12	7	12,600	0.001	0.11	0.24	2.5	100	42.8	13.0
20 Feedstock Truck Unloading Vent	12	5	80,000	0.001	0.69	1.07	6	60	47.2	14.4
21 Feedstock Bunkers Vent	12	7	12,600	0.001	0.11	0.24	2.5	240	42.8	13.0
22 Feedstock Transfer Tower 1	12	5	1,500	0.001	0.01	0.02	0.83	100	46.2	14.1
Urea Storage and Handling										
30 Urea Bucket Elevator	24	7	1,500	0.001	0.01	0.06	0.83	50	46.2	14.1
31 Urea Transfer Tower 1	24	7	1,500	0.001	0.01	0.06	0.83	100	46.2	14.1
32 Urea Transfer Tower 2	24	1.75	1,500	0.001	0.01	0.01	0.83	100	46.2	14.1
33 Urea Transfer Tower 3	24	3.5	1,500	0.001	0.01	0.03	0.83	100	46.2	14.1
34 Urea Transfer Tower 4	24	1.75	1,500	0.001	0.01	0.01	0.83	100	46.2	14.1
35 Urea Transfer Tower 5	8	5	1,500	0.001	0.01	0.01	0.83	100	46.2	14.1
23 Urea Loading Vent	8	5	20,000	0.001	0.17	0.18	3	30	47.2	14.4
Gasification Solids Storage and Handling										
24 Gasification Solids Bucket Elevator	24	7	3,000	0.001	0.03	0.11	1.17	30	46.5	14.2
25 Gasification Solids Pad - stacking[2]	24	7	35 tph	NA	0.006	0.02	NA	NA	NA	NA
25 Gasification Solids Pad - reclaim[2]	24	7	35 tph	NA	0.010	0.04	NA	NA	NA	NA
28 Gasification Solids Transfer Tower	8	3	3,000	0.001	0.03	0.02	1.17	30	46.5	14.2
29 Gasification Solids Loading Vent	8	3	10,000	0.001	0.09	0.05	2	30	53.1	16.2
				Total =	**1.50**	**2.33**				

Notes:

(1) Two identical dust collectors are provied for Item 18; only one will operate at a given time.

(2) Fugitive particulate emissions from gasification solids handling on the drying pad are calculated using the following formula:

$E = k(0.0032)(U/5)^{1.3}/(M/2)^{1.4}$ ref: U.S. EPA - AP-42,Section 13.2.4.3, Eq (1)

where:

E = emission factor, lb/ton
k = constant = 0.35 for PM10
U = windspeed, mph = 7.61 for outdoors at project site
M = material moisure content, wt %

Solids stacking, M = 12%
$E = (0.35)(0.0032)(7.61/5)1.3/(12/2)1.4 =$ 0.000157 lb/ton
Solids reclaim, M = 8%
$E = (0.35)(0.0032)(7.61/5)1.3/(8/2)1.4 =$ 0.000278 lb/ton

(3) All PM emissions are PM2.5 or smaller

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Source	HRSG Stack[2] ON-Peak	HRSG Stack[2] OFF-Peak	Gasification Coal Dryer Stack[3]	Urea Plant Absorbers MP	Urea Plant Absorbers LP	Urea Pastillation Stack	Nitric Acid Plant Stack	Gasification Flare
Stack height, ft above grade[1]	213	213	305	130	50	50	145	250
Stack diameter, ft	23	23	16	1	1	1.5	8	9.8
Stack outlet temp, deg F	200	200	200	122	119	ambient	239	(NA)
Stack exit flow, act ft3/sec	22,357	16,953	3,852	19	19	111	860	varies per scenario
Stack exit velocity (ft/sec)	53.81	40.80	19.16	24.19	24.19	62.81	17.11	
Stack exit velocity (m/sec)	16.40	12.44	5.84	7.37	7.37	19.15	5.21	

Source	SRU Flare	Rectisol Flare	Cooling Towers (per cell)[4]	Tail Gas Oxidizer	Fire Pump Engine	Diesel Generator (ea.)	CO2 Vent	Aux Boiler	Ammonia Plant SU Heater	Ammonium Nitrate Vent
Stack height, ft above grade[1]	250	250	55	165	20	20	260	80	80	40
Stack diameter, ft	2	1.3	30	2.5	0.7	1.2	3.5	4.5	3.5	0.17
Stack outlet temp, deg F	(NA)	(NA)	75	1200	850	760	65	300	300	100
Stack exit flow, act ft3/sec	varies per scenario	varies per scenario	18,500	250	60	250	1,765	480	180	0.3
Stack exit velocity (ft/sec)			26.17	50.93	155.91	221.05	183.45	30.18	18.71	13.75
Stack exit velocity (m/sec)			7.98	15.52	47.52	67.38	55.92	9.20	5.70	4.19

Notes:
(1) Actual stack height for flares. Effective stack height for modeling was calculated based on GEP height of 65 meters. See Flare Stack Parameters tab in this workbook.
(2) Stack outlet temperature shown for HRSG is the estimated stack temperature after power cycle optimization. Case 1 On-Peak Power exit flow rate, Case 2 Off-Peak Power exit flow rate
(3) Flow rate shown in table for coal dryer is based on full load syn gas combustion for Case 4 (relatively constant for varying power plant loads and ambient temperatures).
(4) Nine cells estimated for power block cooling tower; 13 cells estimated for process cooling tower, and four cells estimated for the ASU cooling tower.
(5) Flare gas heat release, 10^6 Btu/hr, HHV; first value is normal pilot gas, second value is the maximum startup heat release

Hydrogen Energy California, LLC *11/13/2012*
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		Total Uncontrolled Emissions		Total Controlled Emissions	
Compound	**Name**	**Emissions (lb/hr)**	**Emissions (tpy)**	**Emissions (lb/hr)**	**Emissions (tpy)**
CO_2	Carbon dioxide	34.48	151.03	16.17	71.07
CH_4	Methane	2.78E-01	1.22	1.51E-01	0.66
CO	Carbon monoxide	1.78	7.81	1.37	6.01
NO_2	Nitrogen dioxide	0.01	0.06	0.00	0.00
SO_2	Sulfur dioxide	0.12	0.51	0.02	0.11
H_2S	Hydrogen Sulfide	1.44	6.29	0.34	1.49
NH_3	Ammonia	10.18	44.57	0.94	4.13
HCl	Hydrogen Chloride	2.00E-03	8.74E-03	2.00E-03	8.74E-03
HNO_3	Nitric acid	0.81	3.53	0.08	0.36
COS	Carbonyl Sulfide	1.57E-01	0.69	3.19E-02	0.14
CH_3OH	Methanol	15.94	69.82	1.55	7.41
C_3H_6	Propylene	12.95	56.74	2.09	9.15
HCN	Hydrogen Cyanide	1.76E-03	7.72E-03	3.92E-04	1.73E-03
Total VOC	Volatile organic compounds	29.05	127.26	3.67	16.71

Note: The following compounds are included as VOCs, CH_3OH, C_3H_6, COS, and HCN

Hydrogen Energy California, LLC *11/13/2012*
Hydrogen Energy California (HECA) Project

	Process Area											
	1	2	4	5	6	7	8	9	10	11	12	
	Methanol	Syn Gas	Shifted Syn Gas	Propylene	Sour Water	H_2S Laden Methanol	CO_2 Laden Methanol	Acid Gas	Ammonia-Laden Gas	Sulfur	SRU Tail Gas	Total
Compound	**Annual Fugitive Emissions with LDAR Application (ton/yr**											
CO_2		0.61	22.65		0.36	0.44	0.99	0.52	0.46		12.85	38.89
CO		3.31	1.12		1.34E-03	1.58E-04	4.62E-04	2.13E-02	1.65E-03		0.48	4.94
CH_4		4.51E-02	0.23		5.52E-05	1.27E-04	4.69E-04	2.08E-05	6.62E-05			0.27
H_2S	2.58E-06	4.41E-02	0.23		9.15E-03	2.62E-02	3.64E-06	0.30	1.03E-02	3.86E-04	0.39	1.01
COS		1.87E-02	1.44E-03		1.42E-02	1.16E-04	3.26E-07	0.03	0.02		5.80E-02	0.14
CH_3OH	2.40		3.78E-04			2.24	2.63	0.02	1.68E-05			7.29
C_3H_6				9.15								9.15
NH_3		1.09E-02	4.02E-02		0.13				0.15			0.33
HCN	6.78E-05	5.66E-04	7.56E-05		5.15E-04	8.49E-05	6.55E-05	2.39E-05	3.08E-04			1.71E-03
SO_2								3.24E-02			7.57E-02	0.11
HCl		5.36E-05			8.69E-03							8.74E-03
Total VOC	**2.40**	**0.02**	**1.89E-03**	**9.15**	**1.47E-02**	**2.24**	**2.63**	**0.04**	**0.02**	**0.00E+00**	**0.06**	**16.58**
Total percentage of VOC content of gas in each process area	99.74%	0.25%	0.01%	100.00%	0.08%	79.07%	72.36%	4.23%	2.13%	0.00%	0.29%	

Note: The following compounds are included as VOCs, although not all compounds are found in the gas in each process area.
CH_3OH, C_3H_6, COS, and HCN

Detailed calculations for gasification block fugitives may be found in the Public Health spreadsheet

Summary by Volume Source for Modeling - Emissions are divided by number of Volume Sources

"GASIFICATION" (Area #2)

	lb/hr	lb/yr
CO	0.252	2,207.60
H_2S	3.35E-03	29.38
NH_3	8.28E-04	7.26E+00
CH_3OH		
C_3H_6		
HCN	4.31E-05	3.78E-01
HCl	4.08E-06	3.57E-02

3 number of Volume Sources
28 horizontal dimension (m)
46.48 release ht (m)
13.02 horizontal dimension (m)
43.24 vertical dimension (m)
305 vertical dimension used for calcs (ft)

"SHIFT" (Area #4, 6)

	lb/hr	lb/yr
CO	1.28E-01	1,122.54
H_2S	2.77E-02	242.67
NH_3	1.92E-02	168.47
CH_3OH	4.32E-05	0.38
C_3H_6		
HCN	6.75E-05	0.59
HCl	9.92E-04	8.69

2 number of Volume Sources
35 horizontal dimension (m)
6.10 release ht (m)
16.28 horizontal dimension (m)
5.67 vertical dimension (m)
40 vertical dimension used for calcs (ft)

"AGR" (Area #1, #5, #7, #8, #9)

	lb/hr	lb/yr
CO	5.00E-03	43.79
H_2S	7.36E-02	644.50
NH_3		
CH_3OH	1.66E+00	14575.10
C_3H_6	2.09E+00	18300.12
HCN	5.53E-05	0.48
HCl		
SO_2	7.40E-03	64.83

1 number of Volume Sources
48 horizontal dimension (m)
6.10 release ht (m)
22.33 horizontal dimension (m)
5.67 vertical dimension (m)
40 vertical dimension used for calcs (ft)

"Sour Water Stripper" (Area #10)

	lb/hr	lb/yr
CO	3.77E-04	3.30
H_2S	2.34E-03	20.51
NH_3	3.50E-02	306.90
CH_3OH	3.82E-06	0.03
C_3H_6		
HCN	7.02E-05	0.62
HCl		

1 number of Volume Sources
16 horizontal dimension (m)
6.10 release ht (m)
7.44 horizontal dimension (m)
5.67 vertical dimension (m)
40 vertical dimension used for calcs (ft)

"SRU" (Area #11, #12)

2 number of Volume Sources

	lb/hr	lb/yr
CO	5.52E-02	483.84
H_2S	4.47E-02	391.31
NH_3		
CH_3OH		
C_3H_6		
HCN		
HCl		
SO_2	8.64E-03	75.73

2 number of Volume Sources
16 horizontal dimension (m)
6.10 release ht (m)
7.44 horizontal dimension (m)
5.67 vertical dimension (m)
40 vertical dimension used for calcs (ft)

Note: Selective LDAR program was applied to Areas # 1, #5, #7, #8, #9, #10 due to high uncontrolled emissions for the VOCs (methanol and propylene) and hydrogen sulfide

Fugitive Emissions - Fertilizer Complex

Hydrogen Energy California, LLC *11/13/2012*
Hydrogen Energy California (HECA) Project

	Stream									
	Stream 13 Low NH3 Concentration	**Stream 14 Moderate NH3 Concentration**	**Stream 15 High NH3 Concentration**	**Stream 16 Low CO2 Concentration**	**Stream 17 Moderate CO2 Concentration**	**Stream 18 High CO2 Concentration**	**Stream 19 NO2**	**Stream 20 HNO3**	**Stream 21 PSA Off Gas**	**Total**
Compound	**Annual Fugitive Emissions with LDAR Application (ton/yr)**									
CO_2	0.16	0.03	0.02	0.26	2.62E-02	29.86			1.83	32.18
CO						2.08E-03			1.07	1.07
CH_4						2.81E-03			0.39	0.39
H_2S						0.47				0.47
COS						3.15E-03				0.00
CH_3OH						0.12			3.32E-03	0.13
NH_3	0.42	0.04	2.87	0.43	3.43E-02					3.80
HCN						2.37E-05				0.00
HNO_3							1.11E-05	3.58E-01		0.36
NO_2							4.74E-03			0.00
Total VOC	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.13**	**0.00**	**0.00**	**0.00**	**0.13**
Total percentage of VOC content of gas in each process area	0.00%	0.00%	0.00%	0.00%	0.00%	0.41%	0.00%	0.00%	0.03%	

Note: The following compounds are included as VOCs, although not all compounds are found in the gas in each process area.
CH3OH, COS, and HCN
Detailed calculations for fertilizer complex fugitives may be found in the Public Health spreadsheet

Summary by Volume Source for Modeling - Emissions are divided by number of Volume Sources

UAN Unit — Streams 19, 20

	lb/hr	lb/yr
HNO_3	8.18E-02	7.16E+02
NO_2	1.08E-03	9.48E+00

1 number of Volume Sources
24 horizontal dimension (m)
6.10 release ht (m)
11.16 horizontal dimension (m)
5.67 vertical dimension (m)
40 vertical dimension used for calcs (ft)

Urea Unit — Streams 14, 16, 17

	lb/hr	lb/yr
NH_3	5.79E-02	5.07E+02

2 number of Volume Sources
12 horizontal dimension (m)
6.10 release ht (m)
5.58 horizontal dimension (m)
5.67 vertical dimension (m)
40 vertical dimension used for calcs (ft)

Ammonia Unit — Streams 13, 15

	lb/hr	lb/yr
NH_3	3.75E-01	3.29E+03

2 number of Volume Sources
24 horizontal dimension (m)
6.10 release ht (m)
11.16 horizontal dimension (m)
5.67 vertical dimension (m)
40 vertical dimension used for calcs (ft)

CO2 Compression — Stream 18

	lb/hr	lb/yr
CO	4.74E-04	4.15E+00
H_2S	1.08E-01	9.50E+02
COS	7.18E-04	6.29E+00
CH_3OH	2.79E-02	2.44E+02
HCN	5.41E-06	4.74E-02

1 number of Volume Sources
24 horizontal dimension (m)
6.10 release ht (m)
11.16 horizontal dimension (m)
5.67 vertical dimension (m)
40 vertical dimension used for calcs (ft)

PSA Unit — Stream 21

	lb/hr	lb/yr
CO	2.44E-01	2.13E+03
CH_3OH	7.58E-04	6.64E+00

1 number of Volume Sources
24 horizontal dimension (m)
6.10 release ht (m)
11.16 horizontal dimension (m)
5.67 vertical dimension (m)
40 vertical dimension used for calcs (ft)

Note: LDAR program was applied to All Areas (# 13 through #21)

Methanol and Diesel Tanks

11/13/2012

Hydrogen Energy California, LLC
Hydrogen Energy California (HECA) Project

Methanol storage tank parameters and fugitive emissions

Tank ID	Description	Uncontrolled VOC Emissions	Peak Month VOC Emissions	Daily VOC Emissions	Annual VOC emissions
		lb/month	lb/month	lb/day	lb/year
Methanol	Working Loss (33,000 gal pumped in)	80.82	0.0182	-	-
	Breathing Loss	1277.74	0.2878	0.0096	
	Total Breathing and Working Loss		-	0.0278	3.72

Methanol Vent Scrubber Efficiency		
Pre-scrubber	17.76%	methanol
Post-scrubber	40	ppm methanol
Control Efficiency	99.977%	

Methanol concentration information provided by Fluor
Uncontrolled emissions calculated using TANKS model
Peak daily emissions include losses during filling the entire tank plus breathing losses

Tank ID	Description	Capacity	Turnovers per year	Annual VOC emissions
		gal	#	lb/year
Diesel 1	800 gal Diesel generator #1	800	0.75	0.56
Diesel 2	800 gal Diesel generator #1	800	0.75	0.56
Diesel FWP	400 gal Diesel fire pump	400	0.3	0.34

VOC emissions calculated using TANKS model

Summary of Transportation Vehicles and Routes

11/13/2012

Commodity Handled	Petcoke	Coal	Liquid Sulfur	Gasification	Ammonia	Urea	UAN	Equipment	Miscellaneous
Expected plant operation									
Expected plant operation is 8000 hours / year									
The plant will operate 24 hours / day	24 hours / day	24 hours / day	24 hours / day	24 hours / day	24 hours / day	24 hours / day	24 hours / day	24 hours / day	24 hours / day
The plant will operate 333 days / year	333 days / yr	333 days / yr	333 days / yr	333 days / yr	333 days / yr	333 days / yr	333 days / yr	333 days / yr	333 days / yr
Shipment by trucks	100 %	0 %	75 %	25 %	75 %	25 %	50 %	100 %	100 %
Shipment by train	0 %	100 %	25 %	75 %	25 %	75 %	50 %	0 %	0 %
Production rate									
Required Normal Flow / day	1,140 tons / day	4,580 tons / day	100 tons / day	839 tons / day	500 tons / day	833 tons / day	1,392 tons / day		
Required Normal Flow / year	380,000 tons / yr	1,525,000 tons / yr	33,000 tons / yr	280,000 tons / yr	167,000 tons / yr	280,000 tons / yr	464,000 tons / yr		
Required Maximum Flow day	1,368 tons / day (3)	6,107 tons / day (4)	200 tons / day (5)	1,678 tons / day (6)	1,000 tons / day (6)	1,666 tons / day (6)	2,784 tons / day (6)		
Truck Shipments									
Truck Capacity	25 tons / truck		25 tons / truck	25 tons / truck	25 tons / truck	25 tons / truck	25 tons / truck	25 tons / truck	25 tons / truck
Required trucks loads for normal operation / day	46 trucks / day		4 trucks / day	8 trucks / day	15 trucks / day	8 trucks / day	28 trucks / day	2 trucks / day	3 trucks / day
Required trucks loads for normal operation / yr	15,200 truck / yr		990 truck / yr	2,800 truck / yr	5,010 truck / yr	2,800 truck / yr	9,280 truck / yr		
Required trucks loads for maximum operation /day	55 trucks / day		8 trucks / day	17 trucks / day	30 trucks / day	17 trucks / day	56 trucks / day		
Train Shipments									
Railcar Capacity		117 tons / car	100 tons / car	100 tons / car	117 tons / car	117 tons / car	117 tons / car		
Assume a train has 13,000 ton capacity									
Required railcars for normal operation / day		39 cars / day	0.25 cars / day	6 cars / day	1 cars / day	5 cars / day	6 cars / day		
Required railcar loads for normal operation / yr		13,034 cars / yr	83 cars / yr	2,800 cars / yr	357 cars / yr	1,795 cars / yr	1,983 cars / yr		
Required railcars for maximum operation / day		200 cars / day	1 cars / day	16 cars / day	2 cars / day	11 cars / day	12 cars / day		
Basis	- 91% availability - 25% petcoke (heat input) - 25 ton/truck - 7 days/week receiving - 25% excess truck	- 91% availability - 75% coal (heat input) per - 117 tons/car - 100% coal for maximum - Rack sized to handle two	- 91% availability - High sulfur case - 100 - 25 ton/truck - Weekdays only - Can only move up to 25% of	- 91% availability - 75% coal max annual - 100% capable by rail - 25% capable by truck - Maximun is double the daily	- 91% availability - 500 t/d NH3 sales - 75% by truck - Ability to ship 7500 tons over	- 91% availability - 75% by rail -empty 45 day storage in 10 d '	- 91% availability - 75% by rail -empty 45 day storage in 10 d	'	
Traffic route	Truck Route	Truck Route	Truck Route	Truck Route	Truck Route	Truck Route	Truck Route	Truck Route	Truck Route
Destination/Origin	Carson Refinery	None	California Sulfur	Various	Various	Various	Various	Various	Various
Address	1801 E Sepulveda, Carson		2509 E Grant Street, Wilmington						
Distance	140 Miles		142 Miles	80 Mile radius	40 mile radius	40 mile radius	40 mile ratius	40 mile ratius	40 mile ratius
Route	Alameda 405 Fwy 5 Fwy Stockdale hwy Morris Road Station Road Station Road		Grant Henry Ford Alameda 405 Fwy 5 Fwy Stockdale hwy Morris Road Station Road	40 mile radius Station Road Morris Road Stockdale Hywy 5 Fwy	Station Road Morris Road Stockdale Hywy 5 Fwy	Station Road Morris Road Stockdale Hywy 5 Fwy	Station Road Morris Road Stockdale Hywy 5 Fwy	5 fwy Stockdale Hwy Dairy Road	5 fwy Stockdale Hwy Dairy Road
	Rail Route	Rail Route	Rail Route	Rail Route	Rail Route	Rail Route	Rail Route	Rail Route	Rail Route
Destination/Origin	None	Elk Ranch New Mexico	In SJVAPCD	CEMEX, Victorville	Calamco Port Rd G15, Stockton, CA	Oregon/Washington	Calamco Port Rd G15, Stockton, CA	None	None
Address									
Distance		794 miles		198 miles	264 miles	628 Miles	264 miles		
Route		Kern County: 132.2 miles (County Line near Boron, CA to north prope Mine to Boron, CA: 662 miles Total Distance: 794.2 miles		SJVR/BNSF	SJVR/UPRR	SJVR/UPRR			

Notes

1) Equipment Maintenance Trucks are considered to be 2% of the total trucks per day for the feed and product operation.
2) Miscellaneous trucks are considered to be 3% of the total trucks per day for the feed and product operation.
3) The maximum flow rate of coke is ratioed up from the normal flow rate at 25% to 30% of feed
4) The maximum flow rate of coal is ratioed up from the normal flow rate at 75% to 100% of feed
5) The maximum flow rate of sulfur is 2 times the normal production
6) The maximum flow rate of these commodities is 2 times the normal production
7) The sources of flow data used in the Production Rate calculation were based on the flow rates provided in "Conference Note: Rail and Truck Traffic - Planning Session" and the "FertilizerProductMovement Update", 01-25-12.

Calculations for Trucks Operation Modeling

Data Supplied By Client					
Parameter	**Petcoke Trucks**		**Product Trucks**		**Miscellaneous Trucks**
	Running Emissions	**Idling Emissions**	**Running Emissions**	**Idling Emissions**	**Running Emissions**
Distance Traveled (mi)	0.96		2.49		2.20
Per Truck Idle Time (hr)		0.083		0.083	
Maximum number of trucks or loads:					
1-hr	6	6	13	13	5
3-hr	17	17	39	39	5
8-hr	44	44	104	104	5
24-hr	55	55	130	130	5
Annual average trucks or loads	15,200	15,200	20,880	20,880	1,818

EMFAC2007 Emission Factors + Fugitive Dust (g/mi or g/idle-hour) For Truck Model year 2010

	Petcoke Trucks		**Product Trucks**		**Miscellaneous Trucks**
Pollutant	**Running Emissions (g/mile/trk)**	**Idling Emissions (g/idle-hour/trk)**	**Running Emissions (g/mile/trk)**	**Idling Emissions (g/idle-hour/trk)**	**Running Emissions (g/mile/trk)**
CO	3.03	43.69	3.03	43.69	3.03
NOx	5.43	122.65	5.43	122.65	5.43
ROG	1.39	7.74	1.39	7.74	1.39
SOx	0.03	0.06	0.03	0.06	0.03
PM10 *	0.92	0.11	0.92	0.11	0.92
PM2.5 *	0.29	0.10	0.29	0.10	0.29

EMFAC2007 is the approved federal model for vehicle combustion emissions
* PM10 and PM2.5 includes fugitive dust factor for paved roads obtained from AP-42 Ch. 13 plus PM factors from EMFAC 2007
PM factors from EMFAC = combustion exhaust + tire wear + break wear
EMFAC emissions are for fleet year 2010 travelling at 10 mph.

1-hr Emission Rates for AERMOD (g/s) all trucks

	Petcoke Trucks		**Product Trucks**		**Miscellaneous Trucks**
Pollutant	**Running Emissions**	**Idling Emissions (at each Idle Point)**	**Running Emissions**	**Idling Emissions (at each Idle Point)**	**Running Emissions**
CO	4.424E-03	5.562E-03	2.726E-02	1.319E-02	1.010E-02
NOx	7.929E-03	1.561E-02	4.886E-02	3.702E-02	1.810E-02
ROG	2.028E-03	9.859E-04	1.250E-02	2.337E-03	4.629E-03
SOx	4.383E-05	7.894E-06	2.701E-04	1.871E-05	1.000E-04
PM10	1.340E-03	1.451E-05	8.255E-03	3.441E-05	3.058E-03
PM2.5	4.273E-04	1.324E-05	2.633E-03	3.139E-05	9.754E-04

3-hr Emission Rates for AERMOD (g/s) all trucks

	Petcoke Trucks		**Product Trucks**		**Miscellaneous Trucks**
Pollutant	**Running Emissions**	**Idling Emissions (at each Idle Point)**	**Running Emissions**	**Idling Emissions (at each Idle Point)**	**Running Emissions**
CO	4.424E-03	5.562E-03	2.726E-02	1.319E-02	1.010E-02
NOx	7.929E-03	1.561E-02	4.886E-02	3.702E-02	1.810E-02
ROG	2.028E-03	9.859E-04	1.250E-02	2.337E-03	4.629E-03
SOx	4.383E-05	7.894E-06	2.701E-04	1.871E-05	1.000E-04
PM10	1.340E-03	1.451E-05	8.255E-03	3.441E-05	3.058E-03
PM2.5	4.273E-04	1.324E-05	2.633E-03	3.139E-05	9.754E-04

8-hour Emission Rates for AERMOD (g/s) all trucks

	Coke and Coal Trucks (@ 10 mph)		**Product Trucks (@ 10 mph)**		**Miscellaneous Trucks @ 10 mph**
Pollutant	**Running Emissions**	**Idling Emissions (at each Idle Point)**	**Running Emissions**	**Idling Emissions (at each Idle Point)**	**Running Emissions**
CO	4.424E-03	5.562E-03	2.726E-02	1.319E-02	1.010E-02
NOx	7.929E-03	1.561E-02	4.886E-02	3.702E-02	1.810E-02
ROG	2.028E-03	9.859E-04	1.250E-02	2.337E-03	4.629E-03
SOx	4.383E-05	7.894E-06	2.701E-04	1.871E-05	1.000E-04
PM10	1.340E-03	1.451E-05	8.255E-03	3.441E-05	3.058E-03
PM2.5	4.273E-04	1.324E-05	2.633E-03	3.139E-05	9.754E-04

24-hour Emission Rates for AERMOD (g/s) all trucks

	Petcoke Trucks		Product Trucks		Miscellaneous Trucks
Pollutant	Running Emissions	Idling Emissions (at each Idle Point)	Running Emissions	Idling Emissions (at each Idle Point)	Running Emissions
CO	1.843E-03	2.318E-03	1.136E-02	5.495E-03	1.010E-02
NOx	3.304E-03	6.506E-03	2.036E-02	1.542E-02	1.810E-02
ROG	8.449E-04	4.108E-04	5.207E-03	0.000E+00	4.629E-03
SOx	1.826E-05	3.289E-06	1.125E-04	7.798E-06	1.000E-04
PM10	5.582E-04	6.047E-06	3.440E-03	1.434E-05	3.058E-03
PM2.5	1.781E-04	5.517E-06	1.097E-03	1.308E-05	9.754E-04

Annual Emission Rates for AERMOD (g/s) all trucks

	Petcoke Trucks		Product Trucks		Miscellaneous Trucks
Pollutant	Running Emissions	Idling Emissions (at each Idle Point)	Running Emissions	Idling Emissions (at each Idle Point)	Running Emissions
CO	1.396E-03	1.755E-03	4.983E-03	2.411E-03	3.839E-04
NOx	2.501E-03	4.926E-03	8.931E-03	6.767E-03	6.880E-04
ROG	6.398E-04	3.110E-04	2.284E-03	4.273E-04	1.760E-04
SOx	1.383E-05	2.490E-06	4.937E-05	3.421E-06	3.803E-06
PM10	4.226E-04	4.579E-06	1.509E-03	6.290E-06	1.162E-04
PM2.5	1.348E-04	4.177E-06	4.813E-04	5.738E-06	3.708E-05

Volume, Line Sources

Guidance for Air Dispersion Modeling, SJVAPCD, 2007 and Section 1.2.2 of Volume II of ISC User's Guide			
2.3.2 Oyo=12W/2.15			
Truck Traveling vol src		Truck Idling pt src	
6	ft Release height	12.6	ft Release height
12	ft Width	0.1	m diam
66.98	ft init horz dim Syo	51.71	m/s vel
5.58	ft init vert dim Szo	366	K Temp
		199.134	F Temp

Volume, Stand Alone

Guidance for Air Dispersion Modeling, SJVAPCD, 2007	
2.3.2 + modelers judgement + ISC guidance	
Truck Traveling vol src	
6	ft Release height
12	ft Width
2.79	ft init horz dim Syo
5.58	ft init vert dim Szo

Summary of On-Site Operations Truck Emissions

Emissions Summary

11/13/2012

Transportation Information			Notes
- Onsite Vehicle =	20	trucks	- Information Provided By Applicant
- Vehicle year=	2010		- Information Provided By Applicant
- Maximum annual mileage =	10,000	miles/truck-year	- All routine vehicular traffic is anticipated to travel exclusively on paved roads
			- Assumed 15 mph average speed within HECA facility

Calculations for Trucks Operation Modeling per Truck

	Onsite O&M Trucks
Mileage	
1-hr	1
3-hr	3
8-hr	9
24-hr	27
Annual average trucks or loads	10000

EMFAC2007 Emission Factors (g/mi) For Truck Model year 2010

	AERMOD	
Pollutant	**Gas LHDT1**	**Diesel LHDT2**
CO	0.229	0.920
NOx	0.064	0.672
ROG	0.014	0.085
SOx	0.011	0.005
PM10 *	0.167	0.176
PM2.5 *	0.054	0.062

EMFAC2007 is the approved federal model for vehicle combustion emissions
* PM10 and PM2.5 includes fugitive dust factor for paved roads obtained from AP-42 Ch. 13 plus PM factors from EMFAC 2007
PM factors from EMFAC = combustion exhaust + tire wear + break wear
EMFAC emissions are for fleet year 2010 travelling at 15 mph.

1-hr Emission Rates for AERMOD (g/s) all trucks

	AERMOD	
Pollutant	**Gas LHDT1**	**Diesel LHDT2**
CO	1.45E-03	5.83E-03
NOx	4.06E-04	4.26E-03
ROG	8.88E-05	5.39E-04
SOx	6.98E-05	3.17E-05
PM10	1.06E-03	1.11E-03
PM2.5	3.40E-04	3.91E-04

3-hr Emission Rates for AERMOD (g/s) all trucks

	AERMOD	
Pollutant	**Gas LHDT1**	**Diesel LHDT2**
CO	1.45E-03	5.83E-03
NOx	4.06E-04	4.26E-03
ROG	8.88E-05	5.39E-04
SOx	6.98E-05	3.17E-05
PM10	1.06E-03	1.11E-03
PM2.5	3.40E-04	3.91E-04

8-hour Emission Rates for AERMOD (g/s) all trucks

	AERMOD	
Pollutant	**Gas LHDT1**	**Diesel LHDT2**
CO	1.45E-03	5.83E-03
NOx	4.06E-04	4.26E-03
ROG	8.88E-05	5.39E-04
SOx	6.98E-05	3.17E-05
PM10	1.06E-03	1.11E-03
PM2.5	3.40E-04	3.91E-04

24-hour Emission Rates for AERMOD (g/s) all trucks

	AERMOD	
Pollutant	**Gas LHDT1**	**Diesel LHDT2**
CO	1.45E-03	5.83E-03
NOx	4.06E-04	4.26E-03
ROG	8.88E-05	5.39E-04
SOx	6.98E-05	3.17E-05
PM10	1.06E-03	1.11E-03
PM2.5	3.40E-04	3.91E-04

Annual Emission Rates for AERMOD (g/s) all trucks

	AERMOD	
Pollutant	**Gas LHDT1**	**Diesel LHDT2**
CO	1.45E-03	5.83E-03
NOx	4.06E-04	4.26E-03
ROG	8.88E-05	5.39E-04
SOx	6.98E-05	3.17E-05
PM10	1.06E-03	1.11E-03
PM2.5	3.40E-04	3.91E-04

Fugitive Dust on Paved Road

11/13/2012

AP 42 13.2.1 Paved Roads, updated January 2011

For a daily basis,
E = [k (sL)^0.91 x (W)^1.02](1-P/4N) (2)

P = number of "wet" days with at least 0.254 mm (0.01 in) of precipitation during the averaging period
W = average weight (tons) of vehicles traveling the road
k = particle size multiplier for particle size range and units of interest
sL = road surface silt loading (g/m^2)

	k
	g/VMT
PM2.5	0.25
PM10	1.00

Table 13.2.1-1
PARTICLE SIZE MULTIPLIERS FOR PAVED ROAD EQUATION

Large Trucks

				Empty truck	full truck	Load Capacity
W=	17.5	tons, average		5	30	25 tons
sL=	0.031	g/m2	Default value from URBEMIS 9.2 for Kern County			
P=	36	days/year	Buttonwillow Station 1940-2011, WRCC			

E=
0.19149 g/VMT PM2.5 large delivery trucks
0.76594 g/VMT PM10 large delivery trucks

Operation and Maintenance Vehicles

W=	3	tons	
sL=	0.031	g/m2	Default value from URBEMIS 9.2 for Kern County
P=	36	days/year	Buttonwillow Station 1940-2011, WRCC

E=
0.03169 g/VMT PM2.5 large delivery trucks
0.12675 g/VMT PM10 large delivery trucks
#vol sources= 10

Fugitive Dust on Paved Road

11/13/2012

Fertilizer Product + Sulfur Product trucks + Gas Solids trucks + Misc trucks

102	max trucks/day for Ammonia + Urea + UAN	24 hrs/day
8	max trucks/day for Sulfur	
17	max trucks/day gas solids	
3	miscellaneous truck along this path	
130	Total product trucks max/day	

4000 meters, approximate length of road for product trucks: eastern fenceline to southern fenceline to middle loop and back out the opposite way
2.49 miles

0.47593	grams PM2.5/truck/day	62.059 g PM2.5/day for all product trucks	2.5858 g PM2.5/hr
1.90373	grams PM10/truck/day	248.237 g PM10/day for all product trucks	10.3432 g PM10/hr

volume source in model
73
3.5422E-02 g PM2.5/hr/volume source
1.4169E-01 g PM10/hr/volume source

Coke feedstock trucks (no coal by truck)

55 max feedstock trucks/day

1539 meters, approximate length of road loop to truck feedstock unloading facility on east side
0.96 miles

0.18312	grams PM2.5/truck/day	10.071 g PM2.5/day for all product trucks	0.4196 g PM2.5/hr
0.73246	grams PM10/truck/day	40.285 g PM10/day for all product trucks	1.6786 g PM10/hr

volume source in model
34
1.2342E-02 g PM2.5/hr/volume source
4.9369E-02 g PM10/hr/volume source

Miscellaneous Delivery Trucks

5 max trucks/day

3540 meters, approximate length of road from end of product truck south road, along southern fenceline, north toward main site, to parking lot and back
2.20 miles

0.421	grams PM2.5/truck/day	2.299 g PM2.5/day for all product trucks	0.0958 g PM2.5/hr
1.685	grams PM10/truck/day	9.196 g PM10/day for all product trucks	0.3832 g PM10/hr

volume source in model
5
1.9158E-02 g PM2.5/hr/volume source
7.6631E-02 g PM10/hr/volume source

Assumed Number of Unit Trains (incoming/outgoing)

Averaging Period	Coal Unit Trains (incoming)	Unit Trains of Product (outgoing)	Maximum Total Trains per period
1-hr	1	1	1
3-hr	1	1	2
8-hr	2	1	3
24-hr	2	1	3
Annual average unit trains	109	153	262

# Cars Per train	120	46
maximum # Cars Per day	200-240	42-46

	Switching Enigne/ Rail car movers	Line-Haul Engine for Coal Train	Line-Haul Engine for Product Trains
Engine Power Rating (hp)		4400	3000
Notch Operation		1	1
Notch percentage of hp		5.0%	5.0%
Avg Notch horsepower	260	220	150
# of engines per train	1	2	2
hours to unload/load each train		2	1
max operating hours (hrs/day)	8		
max operating hours (hrs/year)	1248		

The majority of the time the line-haul engine will operate in Notch 1 or idling, therefore emissions were conservatively estimated for Notch 1 horsepower.

Notch percentage presented in PORT OF LONG BEACH AIR EMISSIONS INVENTORY for 2007 (POLB, Jan 2009) derived from EPA data.

For each coal train it takes 2 hours to complete the onsite loop to unload

For each product train it takes 1 hour to load

Summary of On-Site Operations Train Emissions

Emissions Summary

11/13/2012

	CO	NOx	PM10	PM2.5	SO2	VOC
Switching Engine Emission Factors						
Tier 3 Emission Factor (g/bhp-hr)	1.83	4.50	0.08	0.08	0.12	0.27
Emissions (lbs/hr /engine)	1.05	2.58	0.05	0.04	0.07	0.16
Line-Haul Emission Factors						
Tier 3 Emission Factor (g/bhp-hr)	1.28	4.95	0.08	0.08	0.09	0.14
Coal Train Emissions (lbs/hr /engine)	0.62	2.40	0.04	0.04	0.04	0.07
Product Train Emissions (lbs/hr /engine)	0.42	1.64	0.03	0.03	0.03	0.05

1-hr Emission Rates

	CO	NOx	PM10	PM2.5	SO2	VOC
	1-hr Emission Rates (lb/hr) all trains					
Switching engines	1.05	2.58	0.05	0.04	0.07	0.16
Line-haul coal engines	1.24	4.80	0.08	0.08	0.09	0.13
	1-hr Emission Rates for AERMOD (lb/hr) all trains divided by number of volume sources					
All On-site Trains	2.2E-02	7.1E-02	1.2E-03	1.2E-03	1.5E-03	2.8E-03

During a given hour either the line-haul engines for the coal train or product train operate, not both, thus emissions from the larger coal trains are only included in the peak hour emissions.

3-hr Emission Rates

	CO	NOx	PM10	PM2.5	SO2	VOC
	3-hr Emission Rates (lb/period) all trains					
Switching engines	3.14	7.73	0.14	0.13	0.21	0.47
Line-haul coal engines	2.48	9.59	0.16	0.15	0.18	0.27
Line-haul product engines	0.85	3.27	0.05	0.05	0.06	0.09
	3-hr Emission Rates for AERMOD (lb/hr) all trains divided by number of volume sources					
All On-site Trains	2.1E-02	6.6E-02	1.1E-03	1.1E-03	1.4E-03	2.6E-03

In the maximum operations 3 hour period, the switching engine operates up to 3 hours, 1 coal train unloads in 2 hours and 1 product train loads in 1 hour.

8-hour Emission Rates

	CO	NOx	PM10	PM2.5	SO2	VOC
	8-hr Emission Rates (lb/period) all trains					
Switching engines	8.38	20.62	0.37	0.36	0.57	1.25
Line-haul coal engines	4.96	19.19	0.31	0.30	0.35	0.53
Line-haul product engines	0.85	3.27	0.05	0.05	0.06	0.09
	8-hr Emission Rates for AERMOD (lb/hr) all trains divided by number of volume sources					
All On-site Trains	1.7E-02	5.2E-02	8.8E-04	8.5E-04	1.2E-03	2.3E-03

In the maximum operations 8 hour period, the switching engine operates up to 8 hours, 2 coal train unloads in 2 hours each and 1 product train loads in 1 hour.

Summary of On-Site Operations Train Emissions

11/13/2012

24-hour Emission Rates

	CO	NOx	PM10	PM2.5	SO2	VOC
	24-hr Emission Rates (lb/period) all trains					
Switching engines	8.38	20.62	0.37	0.36	0.57	1.25
Line-haul coal engines	4.96	19.19	0.31	0.30	0.35	0.53
Line-haul product engines	0.85	3.27	0.05	0.05	0.06	0.09
	24-hr Emission Rates for AERMOD (lb/hr) all trains divided by number of volume sources					
All On-site Trains	5.7E-03	1.7E-02	2.9E-04	2.8E-04	3.9E-04	7.5E-04

In the maximum operations 24 hour period, the switching engine operates up to 8 hours, 2 coal train unloads in 2 hours each and 1 product train loads in 1 hour.

Annual Emission Rates

	CO	NOx	PM10	PM2.5	SO2	VOC
	Annual Emission Rates (tons/period) all trains					
Switching engines	0.65	1.61	0.03	0.03	0.04	0.10
Line-haul coal engines	0.14	0.52	0.01	0.01	0.01	0.01
Line-haul product engines	0.06	0.25	0.00	0.00	0.00	0.01
	Annual Emission Rates for AERMOD (tons/yr) all trains divided by number of volume sources					
All On-site Trains	8.2E-03	2.3E-02	4.0E-04	3.8E-04	5.6E-04	1.1E-03

AERMOD source parameters

Volume sources spaces every 20 widths

Width	10	ft
Release Height	15	ft
Sigma Y	93	ft
Sigma Z	14	ft
# of volumes	104	

Guidance for Air Dispersion Modeling, SJVAPCD, 2007 and Section 1.2.2 of Volume II of ISC User's Guide

Emission Factors For all Locomotives
SOx
g/gal
1.88

Locomotive Application	Conversion Factor (bhp-hr/gal)
Large Line-haul & Passenger	20.8
Small Line-haul	18.2
Switching	15.2

Notes:

New line-haul engines will be AC locomotives such as the GE Evolution Series, that meet Tier 3 emissions

New switching engines will meet Tier 3 emissions, they may be the Titan Trackmobile railcar movers or similar

EPA's Technical Highlights: Emission Factors for Locomotives, 2009 (http://www.epa.gov/nonroad/locomotv/420f09025.pdf).

Based on 300 ppm sulfur diesel fuel.

VOC emissions can be assumed to be equal to 1.053 times the HC emissions

$PM_{2.5}$ Fraction of PM_{10}, = 0.97

Line-haul engine emissions of CO, NOx, PM, and HC are based on EPA Tier 2+ and Tier 3 emission factors.

Summary of Applicable Operational Emissions for General Conformity (Alternative 1) - 2017 Overlaping with Construction

Hydrogen Energy California LLC *12/2012 revision*
HECA Project

Federal NAAQS Nonattainment or Maintenance Area General Name and State	Detailed Status in Nonattainment or Maintenance Area	Authority Agency	Basis to Estimate the Offsite Transportation Distance	Emission Sources / Applicable General Conformity Thresholds / Comparisons	Project Operational Annual Emission Rates - for General Conformity (tpy)					
					CO	NOx	PM10	PM2.5	SO2	VOC
San Joaquin Valley, CA	8-Hour Ozone (2008) Nonattainment - Extreme PM2.5 Nonattainment CO Maintenance - Maderate - Fresno, CA (Part of Fresno County), Modesto, CA (Part of Stanislaus County), Stockton, CA (Part of San Joaquin County) PM10 Maintenance	SJVAPCD	**Construction** - Entire SJVAPCD jurisdiction area (one way trip: trucks = worker vehicles = 20 miles)	Onsite Construction Equipment	2.65	3.84	1.23	0.35	0.00	0.83
				Onsite Trucks	0.15	0.34	0.77	0.09	0.00	0.09
				Onsite Vehicles	0.08	0.01	1.04	0.10	0.00	0.01
				Onsite Total	2.88	4.18	3.04	0.55	0.01	0.93
				Offsite Linears Equipment	0.00	0.00	0.00	0.00	0.00	0.00
				Offsite Trucks	1.02	5.16	0.42	0.21	0.00	0.22
				Offsite Vehicles	5.98	0.72	0.20	0.07	0.01	0.18
				Offsite Total	6.99	5.87	0.61	0.28	0.01	0.41
				Total Construction Emission (ton/yr)	**9.87**	**10.06**	**3.66**	**0.82**	**0.02**	**1.34**
			Operation - Entire SJVAPCD jurisdiction area (one way trip: trains = 63 to 287 miles, trucks = 40 to 80 miles, worker vehicles = 20 miles)	Offsite Train	2.06	7.95	0.13	0.12	0.15	0.22
				Offsite Truck	1.76	2.90	0.80	0.24	0.02	0.25
				Offsite Workers Commuting	1.39	0.16	0.35	0.09	0.00	0.04
				Onsite Train	0.28	0.79	0.01	0.01	0.02	0.04
				Onsite Truck	0.21	0.33	0.05	0.02	0.00	0.05
				Total Operation Emissions	**5.70**	**12.13**	**1.34**	**0.49**	**0.19**	**0.60**
				Total Construction and Operation Overlapping Emissions	**15.57**	**22.19**	**4.99**	**1.31**	**0.21**	**1.94**
				Applicable General Conformity *de minimis* Thresholds	**100**	**10**	**100**	**100**	**100**	**10**
				Less Than Thresholds?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Los Angeles-South Coast Air Basin, CA	8-Hour Ozone (2008) Nonattainment - Extreme PM10 Nonattainment - Serious PM2.5 Nonattainment NO2 Maintenance CO Maintenance - Serious	SCAQMD	Entire SCAQMD jurisdiction area (one way trip: trucks = 88 to 90 miles)	Offsite Train	0.00	0.00	0.00	0.00	0.00	0.00
				Offsite Truck	1.38	2.27	0.62	0.19	0.02	0.19
				Total Emissions	**1.38**	**2.27**	**0.62**	**0.19**	**0.02**	**0.19**
				Applicable General Conformity *de minimis* Thresholds	**100**	**10**	**70**	**100**	**100**	**10**
				Less Than Thresholds?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Kern County (East Kern), CA	8-Hour Ozone (2008) Nonattainment - Marginal PM10 Nonattainment - Serious	EKAPCD	Entire EKAPCD jurisdiction area (one way trip: trains = 62 to 83 miles)	Offsite Train		4.66	0.08			0.13
				Offsite Truck		0.00	0.00			0.00
				Total Emissions		**4.66**	**0.08**			**0.13**
				Applicable General Conformity *de minimis* Thresholds		**100**	**70**			**100**
				Less Than Thresholds?		**Yes**	**Yes**			**Yes**
Los Angeles-San Bernardino Counties (West Mojave Desert), CA	8-Hour Ozone (2008) Nonattainment - Severe 15 (Part of San Bernardino and Los Angeles Counties)	MDAQMD	Los Angeles-San Bernardino Counties (West Mojave Desert) - 8-hr Ozone (2008) NAA (one way trip: trains = 120	Offsite Train		7.70				0.21
				Offsite Truck		0.00				0.00
				Total Emissions		**7.70**				**0.21**
				Applicable General Conformity *de minimis* Thresholds		**25**				**25**
				Less Than Thresholds?		**Yes**				**Yes**
San Bernardino County, CA (Mojave Desert)	PM10 Nonattainment - Moderate	MDAQMD	Entire MDAQMD jurisdiction area (one way trip: trains = 204 miles)	Offsite Train			0.22			
				Offsite Truck			0.00			
				Total Emissions			**0.22**			
				Applicable General Conformity *de minimis* Thresholds			**100**			
				Less Than Thresholds?			**Yes**			
Sacramento Metro, CA	8-Hour Ozone (2008) Nonattainment - Severe 15 PM10 Nonattainment - Moderate (Sacramento County) PM2.5 Nonattainment CO Maintenance - Moderate - Sacramento, CA (Part of Placer, Sacramento and Yolo Counties)	SMAQMD	Entire SMAQMD jurisdiction area (one way trip: trains = 80 miles)	Offsite Train	0.11	0.42	0.01	0.01	0.01	0.01
				Offsite Truck	0.00	0.00	0.00	0.00	0.00	0.00
				Total Emissions	**0.11**	**0.42**	**0.01**	**0.01**	**0.01**	**0.01**
				Applicable General Conformity *de minimis* Thresholds	**100**	**25**	**100**	**100**	**100**	**25**
				Less Than Thresholds?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Yuba City-Marysville, CA	PM2.5 Nonattainment (Sutter and Part of Yuba Counties)	FRAQMD	Yuba City-Marysville, CA - PM2.5 NAA (one way trip: trains = 50 miles)	Offsite Train		0.27		0.00	0.00	0.01
				Offsite Truck		0.00		0.00	0.00	0.00
				Total Emissions		**0.27**		**0.00**	**0.00**	**0.01**
				Applicable General Conformity *de minimis* Thresholds		**100**		**100**	**100**	**100**
				Less Than Thresholds?		**Yes**		**Yes**	**Yes**	**Yes**
Chico, CA	8-Hour Ozone (2008) Nonattainment - Marginal (Butte County) PM2.5 Nonattainment (Part of Butte County) CO Maintenance - Moderate (Part of Butte County)	BCAQMD	Chico, CA - 8-Hour Ozone (2008) NAA - Entire Butte County (one way trip: trains = 50 miles)	Offsite Train	0.07	0.27		0.00	0.00	0.01
				Offsite Truck	0.00	0.00		0.00	0.00	0.00
				Total Emissions	**0.07**	**0.27**		**0.00**	**0.00**	**0.01**
				Applicable General Conformity *de minimis* Thresholds	**100**	**100**		**100**	**100**	**100**
				Less Than Thresholds?	**Yes**	**Yes**		**Yes**	**Yes**	**Yes**

NAAs in State of Arizona	8-Hour Ozone (2008) Nonattainment - Marginal - Phoenix-Mesa, AZ (Part of Maricopa and Pinal County) PM10 Nonattainment (Moderate, Serious, or Maintenance) (12 Counties) PM2.5 Nonattainment - Nogales, AZ (Part of Santa Cruz County), West Central Pinal, AZ (West Pinal County) SO2 Nonattainment - Hayden (Pinal County), AZ (Part of Pinal County), Maintenance - San Manual (Pinal County), AZ, Ajo (Pima County), AZ, Douglas (Cochise County), AZ, Miami (Gila County), AZ CO Maintenance - Serious - Phoenix, AZ. (Part of Maricopa)	ADEQ	Entire ADEQ jurisdiction area (one way trip: trains = 364 miles)	Offsite Train	6.04	23.37	0.38	0.37	0.43	0.65
				Offsite Truck	0.00	0.00	0.00	0.00	0.00	0.00
				Total Emissions	**6.04**	**23.37**	**0.38**	**0.37**	**0.43**	**0.65**
				Applicable General Conformity *de minimis* Thresholds	**100**	**100**	**70**	**100**	**100**	**100**
				Less Than Thresholds?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NAAs in State of New Mexico	PM10 Nonattainment - Moderate - Anthony, NM (Dona Ana County) CO Maintenance (Bernalillo County) SO2 Maintenance - Grant Co, NM	NMED-AQB	Entire NMED-AQB jurisdiction area (one way trip: trains = 102 miles to coal mine site)	Offsite Train	1.68		1.39		0.12	
				Offsite Truck	0.00		0.00		0.00	
				Total Emissions	**1.68**		**1.39**		**0.12**	
				Applicable General Conformity *de minimis* Thresholds	**100**		**100**		**100**	
				Less Than Thresholds?	**Yes**		**Yes**		**Yes**	

Notes:

1. The associated emissions from the onsite worker travel are negligible
2. To simplify the analysis, the biggest area among all detailed NAA areas was conservativly used to estimate the emissions in each main NAA category area.
   For State of Arizona and New Mexico the total distances accross each state along the train routes were conservativly used to estimate the emissions in NAA.
3. The distance for trains and trucks are varied depending on the type to materials transporting and their destinations.
4. In MDAQMD, it is important to note that the size of the ozone NAA and PM10 NAA area are different and the ozone NAA is smaller than PM10 NAA. Therefore, the train route (distance) within MDAQMD in ozone nonattainment area is smaller than the distance in PM10 nonattainment area.
5. ACRONYMS AND ABBREVIATIONS
   MDAQMD = Mojave Desert Air Quality Management District
   SCAQMD = South Coast Air Quality Management District
   EKAPCD = East Kern County Air Pollution Control District
   SMAQMD = Sacramento Metro Air Quality Management District
   BCAQMD = Butte County Air Quality Management District
   FRAQMD = Feather River Air Quality Management District
   ADEQ = Arizona Department of Environmental Quality
   NMED-AQB = New Mexico Environment Department - Air Quality Bureau
6. Construction of the project is expected to complete in June 2017 and the operation will start from September. Therefore, the operational emissions were scaled from the entire year of project operation.

Summary of Applicable Operational Emissions for General Conformity (Alternative 1) - 2018 and Beyond

Hydrogen Energy California LLC *12/2012 revision*
HECA Project

Federal NAAQS Nonattainment or Maintenance Area General Name and State	Detailed Status in Nonattainment or Maintenance Area	Authority Agency	Basis to Estimate the Offsite Transportation Distance	Emission Sources / Applicable General Conformity Thresholds / Comparisons	Project Operational Annual Emission Rates - for General Conformity (tpy)					
					CO	NOx	PM10	PM2.5	SO2	VOC
San Joaquin Valley, CA	8-Hour Ozone (2008) Nonattainment - Extreme PM2.5 Nonattainment CO Maintenance - Moderate - Fresno, CA (Part of Fresno County), Modesto, CA (Part of Stanislaus County), Stockton, CA (Part of San Joaquin County) PM10 Maintenance	SJVAPCD	Entire SJVAPCD jurisdiction area (one way trip: trains = 63 to 287 miles, trucks = 40 to 80 miles, workers= 20 miles)	Offsite Train	6.17	23.85	0.39	0.37	0.44	0.66
				Offsite Truck	5.29	8.71	2.39	0.72	0.06	0.74
				Offsite Workers Commuting	4.17	0.48	1.05	0.28	0.01	0.13
				Onsite Train	0.85	2.38	0.04	0.04	0.06	0.12
				Onsite Truck	0.63	0.99	0.15	0.05	0.01	0.16
				Total Emissions	**17.11**	**36.40**	**4.01**	**1.46**	**0.57**	**1.80**
				Applicable General Conformity *de minimis* Thresholds	**100**	**10**	**100**	**100**	**100**	**10**
				Less Than Thresholds?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Los Angeles-South Coast Air Basin, CA	8-Hour Ozone (2008) Nonattainment - Extreme PM10 Nonattainment - Serious PM2.5 Nonattainment NO2 Maintenance CO Maintenance - Serious	SCAQMD	Entire SCAQMD jurisdiction area (one way trip: trucks = 88 to 90 miles)	Offsite Train	0.00	0.00	0.00	0.00	0.00	0.00
				Offsite Truck	4.14	6.82	1.87	0.56	0.05	0.58
				Total Emissions	**4.14**	**6.82**	**1.87**	**0.56**	**0.05**	**0.58**
				Applicable General Conformity *de minimis* Thresholds	**100**	**10**	**70**	**100**	**100**	**10**
				Less Than Thresholds?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Kern County (East Kern), CA	8-Hour Ozone (2008) Nonattainment - Marginal PM10 Nonattainment - Serious	EKAPCD	Entire EKAPCD jurisdiction area (one way trip: trains = 62 to 83 miles)	Offsite Train		13.98	0.23			0.39
				Offsite Truck		0.00	0.00			0.00
				Total Emissions		**13.98**	**0.23**			**0.39**
				Applicable General Conformity *de minimis* Thresholds		**100**	**70**			**100**
				Less Than Thresholds?		**Yes**	**Yes**			**Yes**
Los Angeles-San Bernardino Counties (West Mojave Desert), CA	8-Hour Ozone (2008) Nonattainment - Severe 15 (Part of San Bernardino and Los Angeles Counties)	MDAQMD	Los Angeles-San Bernardino Counties (West Mojave Desert) - 8-hr Ozone (2008) NAA (one way trip: trains = 120 miles)	Offsite Train		23.11				0.64
				Offsite Truck		0.00				0.00
				Total Emissions		**23.11**				**0.64**
				Applicable General Conformity *de minimis* Thresholds		**25**				**25**
				Less Than Thresholds?		**Yes**				**Yes**
San Bernardino County, CA (Mojave Desert)	PM10 Nonattainment - Moderate	MDAQMD	Entire MDAQMD jurisdiction area (one way trip: trains = 204 miles)	Offsite Train			0.65			
				Offsite Truck			0.00			
				Total Emissions			**0.65**			
				Applicable General Conformity *de minimis* Thresholds			**100**			
				Less Than Thresholds?			**Yes**			
Sacramento Metro, CA	8-Hour Ozone (2008) Nonattainment - Severe 15 PM10 Nonattainment - Moderate (Sacramento County) PM2.5 Nonattainment CO Maintenance - Moderate - Sacramento, CA (Part of Placer, Sacramento and Yolo Counties)	SMAQMD	Entire SMAQMD jurisdiction area (one way trip: trains = 80 miles)	Offsite Train	0.33	1.27	0.02	0.02	0.02	0.04
				Offsite Truck	0.00	0.00	0.00	0.00	0.00	0.00
				Total Emissions	**0.33**	**1.27**	**0.02**	**0.02**	**0.02**	**0.04**
				Applicable General Conformity *de minimis* Thresholds	**100**	**25**	**100**	**100**	**100**	**25**
				Less Than Thresholds?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Yuba City-Marysville, CA	PM2.5 Nonattainment (Sutter and Part of Yuba Counties)	FRAQMD	Yuba City-Marysville, CA - PM2.5 NAA (one way trip: trains = 50 miles)	Offsite Train		0.80		0.01	0.01	0.02
				Offsite Truck		0.00		0.00	0.00	0.00
				Total Emissions		**0.80**		**0.01**	**0.01**	**0.02**
				Applicable General Conformity *de minimis* Thresholds		**100**		**100**	**100**	**100**
				Less Than Thresholds?		**Yes**		**Yes**	**Yes**	**Yes**
Chico, CA	8-Hour Ozone (2008) Nonattainment - Marginal (Butte County) PM2.5 Nonattainment (Part of Butte County) CO Maintenance - Moderate (Part of Butte County)	BCAQMD	Chico, CA - 8-Hour Ozone (2008) NAA - Entire Butte County (one way trip: trains = 50 miles)	Offsite Train	0.21	0.80		0.01	0.01	0.02
				Offsite Truck	0.00	0.00		0.00	0.00	0.00
				Total Emissions	**0.21**	**0.80**		**0.01**	**0.01**	**0.02**
				Applicable General Conformity *de minimis* Thresholds	**100**	**100**		**100**	**100**	**100**
				Less Than Thresholds?	**Yes**	**Yes**		**Yes**	**Yes**	**Yes**

Summary of Applicable Operational Emissions for General Conformity (Alternative 1) - 2018 and Beyond

Hydrogen Energy California LLC *12/2012 revision*
HECA Project

NAAs in State of Arizona	8-Hour Ozone (2008) Nonattainment - Marginal - Phoenix-Mesa, AZ (Part of Maricopa and Pinal County) PM10 Nonattainment (Moderate, Serious, or Maintenance) (12 Counties) PM2.5 Nonattainment - Nogales, AZ (Part of Santa Cruz County), West Central Pinal, AZ (West Pinal County) SO2 Nonattainment - Hayden (Pinal County), AZ (Part of Pinal County), Maintenance - San Manual (Pinal County), AZ, Ajo (Pima County), AZ, Douglas (Cochise County), AZ, Miami (Gila County), AZ CO Maintenance - Serious - Phoenix, AZ. (Part of Maricopa)	ADEQ	Entire ADEQ jurisdiction area (one way trip: trains = 364 miles)	Offsite Train	18.13	70.10	1.13	1.10	1.28	1.94
				Offsite Truck	0.00	0.00	0.00	0.00	0.00	0.00
				Total Emissions	**18.13**	**70.10**	**1.13**	**1.10**	**1.28**	**1.94**
				Applicable General Conformity *de minimis* Thresholds	**100**	**100**	**70**	**100**	**100**	**100**
				Less Than Thresholds?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NAAs in State of New Mexico	PM10 Nonattainment - Moderate - Anthony, NM (Dona Ana County) CO Maintenance (Bernalillo County) SO2 Maintenance - Grant Co, NM	NMED-AQB	Entire NMED-AQB jurisdiction area (one way trip: trains = 102 miles to coal mine site)	Offsite Train	5.05		4.17		0.36	
				Offsite Truck	0.00		0.00		0.00	
				Total Emissions	**5.05**		**4.17**		**0.36**	
				Applicable General Conformity *de minimis* Thresholds	**100**		**100**		**100**	
				Less Than Thresholds?	**Yes**		**Yes**		**Yes**	

Notes:

1. The associated emissions from the onsite worker travel are negligible
2. To simplify the analysis, the biggest area among all detailed NAA areas was conservativly used to estimate the emissions in each main NAA category area.
   For State of Arizona and New Mexico the total distances accross each state along the train routes were conservativly used to estimate the emissions in NAA.
3. The distance for trains and trucks are varied depending on the type to materials transporting and their destinations.
4. In MDAQMD, it is important to note that the size of the ozone NAA and PM10 NAA area are different and the ozone NAA is smaller than PM10 NAA. Therefore, the train route (distance) within MDAQMD in ozone nonattainment area is smaller than the distance in PM10 nonattainment area.
5. ACRONYMS AND ABBREVIATIONS
   MDAQMD = Mojave Desert Air Quality Management District
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   SMAQMD = Sacramento Metro Air Quality Management District
   BCAQMD = Butte County Air Quality Management District
   FRAQMD = Feather River Air Quality Management District
   ADEQ = Arizona Department of Environmental Quality
   NMED-AQB = New Mexico Environment Department - Air Quality Bureau

Summary of Offsite Operations Train Emissions - HECA

Emissions Summary

12/2012 revision

Annual Number of Train Cars (incoming/outgoing)

	Coal Cars (incoming)	Liquid Sulfur Cars (outgoing)	Gasification Cars (outgoing)	Ammonia Cars (outgoing)	Urea Cars (outgoing)	UAN Cars (outgoing)	Maximum Total Trains per period
Annual average number of train cars	13034	83	2800	357	1795	1983	20051

	Line-Haul Engine for Coal Train	Line-Haul Engine for Product Trains				
		Liquid Sulfur	Gasification	Ammonia	Urea	UAN
ton-mile/gallon	480	480	480	480	480	480
Train car capacity (ton)	117	100	100	117	117	117
Unloaded train car weight (ton)	25	25	25	25	25	25

480 ton-mile/gallon is based on 2009 *class I rail freight fuel consumption and travel* data (Association of American Railroads, *Railroad Facts*)

	Coal Trains			Liquid Sulfur Product Train			Gasification Solid Product Train		
Area	Miles traveled per Train (mile/engine) - One Way *	Coal Train (ton-miles/year) - Round Trip	Fuel Use for Coal Train (gal/year) - Round Trip	Miles traveled per Train (mile/engine) - One Way	Product Train (ton-miles/year) - Round Trip	Fuel Use for Product Train (gal/year) - Round Trip	Miles traveled per Train (mile/engine) - One Way	Product Train (ton-miles/year) - Round Trip	Fuel Use for Product Train (gal/year) - Round Trip
San Joaquin Valley, CA	63	137,132,692	285,693	150	1,856,250	3,867	63	26,460,000	55,125
Kern County (East Kern), CA	62	134,955,983	281,158		0	0	83	34,852,294	72,609
San Bernardino County, CA (Mojave Desert) (PM10 nonattainment)	204	442,960,363	922,834		0	0	52	21,847,706	45,516
Los Angeles-San Bernardino Counties (West Mojave Desert), CA - (Ozone nonattainment)	120	261,205,128	544,177		0	0		0	0
State of Arizona (PM10 nonattainment, the maximum distance)	364	792,322,222	1,650,671		0	0		0	0
State of New Mexico	102	220,936,004	460,283		0	0		0	0

* Since exact route of coal train was not determined yet, It was assumed that the coal train would travel across the maximum distance of the nonattainment area for all pollutants in Arizona.

	Ammonia Product Train			Urea Product Train			UAN Product Train		
Area	Miles traveled per Train (mile/engine) - One Way	Product Train (ton-miles/year) - Round Trip	Fuel Use for Product Train (gal/year) - Round Trip	Miles traveled per Train (mile/engine) - One Way	Product Train (ton-miles/year) - Round Trip	Fuel Use for Product Train (gal/year) - Round Trip	Miles traveled per Train (mile/engine) - One Way	Product Train (ton-miles/year) - Round Trip	Fuel Use for Product Train (gal/year) - Round Trip
San Joaquin Valley, CA	264	15,732,256	32,776	287	86,026,410	179,222	264	87,422,359	182,130
Sacramento Metro, CA		0	0	80	23,979,487	49,957		0	0
Yuba City-Marysville, CA		0	0	50	14,987,179	31,223		0	0
Chico, CA		0	0	50	14,987,179	31,223		0	0
Other Area in State of California		0	0	161	48,258,718	100,539		0	0

12/2012 revision

offsite locomotive travelling speed in average	40	mph
ratio of required horsepower (empty train/full train)	0.76	
locomotive load factor	28%	

Train Type	Coal	Liquid Sulfur	Gasification Solids	Ammonia	Urea	UAN
Railcar Capacity (ton)	117	100	100	117	117	117
Locomotive Engine Power (hp, each)	4,400	3,000	3,000	3,000	3,000	3,000
Railcars per train	120	46	46	46	46	46
Numbers of locomotive engine per train	6	2	2	2	2	2
Total ton of material per locomotive engine	2,340	2,300	2,300	2,691	2,691	2,691
Total # locomotive engines needed to transport material per year	652	4	122	16	79	87
Total # locomotive engines needed for returning trains per year	495	3	93	12	60	66
Total locomotive hours per year in San Joaquin Valley, CA	1,807	26	338	186	997	1,010
Total locomotive hours per year in Kern County (East Kern), CA	1,778		445			
Total locomotive hours per year in San Bernardino County, CA (Mojave Desert) (PM10 nonattainment)	5,836		279			
Total locomotive hours per year in Los Angeles-San Bernardino Counties (West Mojave Desert), CA - (Ozone nonattainment)	3,441					
Total locomotive hours per year in Arizona (PM10 nonattainment, the maximum distance)	10,438					
Total locomotive hours per year in State of New Mexico	2,911					
Total locomotive hours per year in Sacramento Metro, CA					278	
Total locomotive hours per year in Yuba City-Marysville, CA					174	
Total locomotive hours per year in Chico, CA					174	
Total locomotive hours per year in Other Area in the rest State of California and State of Oregon/State of Washington					559	

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	Line-Haul Emission Factors	CO	NOx	PM10	PM2.5	SO2	VOC
	Tier 3 Emission Factor (g/bhp-hr)	1.28	4.95	0.08	0.08	0.09	0.14
	Tier 3 Emission Factor (g/gal)	26.62	102.96	1.66	1.61	1.88	2.85

Annual Emission Rates by Area

Area	Train Types	CO	NOx	PM10	PM2.5	SO2	VOC
		Annual Emission Rates (tons/year) all trains					
San Joaquin Valley, CA	Line-haul coal engines	3.14	12.13	0.20	0.19	0.22	0.34
	Line-haul liquid sulfur product engines	0.03	0.12	0.00	0.00	0.00	0.00
	Line-haul gasification product engines	0.40	1.55	0.03	0.02	0.03	0.04
	Line-haul ammonia product engines	0.22	0.85	0.01	0.01	0.02	0.02
	Line-haul urea product engines	1.18	4.57	0.07	0.07	0.08	0.13
	Line-haul UAN product engines	1.20	4.63	0.07	0.07	0.08	0.13
	Total Trains (ton/yr)	**6.17**	**23.85**	**0.39**	**0.37**	**0.44**	**0.66**
Kern County (East Kern), CA	Line-haul coal engines	3.09	11.94	0.19	0.19	0.22	0.33
	Line-haul gasification product engines	0.53	2.04	0.03	0.03	0.04	0.06
	Total Trains (ton/yr)	**3.62**	**13.98**	**0.23**	**0.22**	**0.26**	**0.39**
San Bernardino County, CA (Mojave Desert) (PM10 nonattainment)	Line-haul coal engines	10.13	39.19	0.63	0.61	0.72	1.08
	Line-haul gasification product engines	0.33	1.28	0.02	0.02	0.02	0.04
	Total Trains (ton/yr)	**10.47**	**40.47**	**0.65**	**0.63**	**0.74**	**1.12**
Los Angeles-San Bernardino Counties (West	Line-haul coal engines	5.98	23.11	0.37	0.36	0.42	0.64
	Line-haul gasification product engines	0.00	0.00	0.00	0.00	0.00	0.00
	Total Trains (ton/yr)	**5.98**	**23.11**	**0.37**	**0.36**	**0.42**	**0.64**
State of Arizona	Line-haul coal engines	18.13	70.10	1.13	1.10	1.28	1.94
	Total Trains (ton/yr)	**18.13**	**70.10**	**1.13**	**1.10**	**1.28**	**1.94**
Sacramento Metro, CA	Line-haul urea product engines	0.33	1.27	0.02	0.02	0.02	0.04
	Total Trains (ton/yr)	**0.33**	**1.27**	**0.02**	**0.02**	**0.02**	**0.04**
Yuba City-Marysville, CA	Line-haul urea product engines	0.21	0.80	0.01	0.01	0.01	0.02
	Total Trains (ton/yr)	**0.21**	**0.80**	**0.01**	**0.01**	**0.01**	**0.02**
Chico, CA	Line-haul urea product engines	0.21	0.80	0.01	0.01	0.01	0.02
	Total Trains (ton/yr)	**0.21**	**0.80**	**0.01**	**0.01**	**0.01**	**0.02**
Other Area in California and State of Oregon/State of Washington	Line-haul urea product engines	0.66	2.56	0.04	0.04	0.05	0.07
	Total Trains (ton/yr)	**0.66**	**2.56**	**0.04**	**0.04**	**0.05**	**0.07**
State of New Mexico	Line-haul coal engines	5.05	19.55	0.32	0.31	0.36	0.54
	Total Trains (ton/yr)	**5.05**	**19.55**	**0.32**	**0.31**	**0.36**	**0.54**

EPA Estimated Locomotive (line-haul) Average Emission Rates by Tiers

Tier	Emission Factor (g/bhp-hr)			
	CO	NO_X	PM	HC
Uncontrolled	1.28	13.00	0.32	0.48
Tier 0	1.28	8.60	0.32	0.48
Tier 0+	1.28	7.20	0.20	0.30
Tier 1	1.28	6.70	0.32	0.47
Tier 1+	1.28	6.70	0.20	0.29
Tier 2	1.28	4.95	0.18	0.26
Tier 2+ and Tier 3	1.28	4.95	0.08	0.13
Tier 4	1.28	1.00	0.015	0.04

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Emission Factors For all Locomotives
SOx (3)
g/gal
1.88

Locomotive Application	Conversion Factor (bhp-hr/gal)
Large Line-haul & Passenger	20.8
Small Line-haul	18.2
Switching	15.2

Note:

(1) EPA's Technical Highlights: Emission Factors for Locomotives, 2009 (http://www.epa.gov/nonroad/locomotv/420f09025.pdf).

(2) Line-haul engine emissions of CO, NOx, PM, and HC are based on EPA Tier 2+ and Tier 3 emission factors.

(3) Based on 300 ppm sulfur diesel fuel.

(4) VOC emissions can be assumed to be equal to 1.053 times the HC emissions

(5) $PM_{2.5}$ Fraction of PM_{10}, = 0.97

(6) No off-site switching or idling was assumed for train transportation.

(7) Average line haul locomotive load factor was obtained from Table 5.12 of The Port Of Long Beach - 2007 Air Emissions Inventory (http://www.polb.com/civica/filebank/blobdload.asp?BlobID=6021)

Summary of Truck Emissions - HECA

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Calculations for Trucks Operations

Data Supplied By Client							
Parameter	Coke and Coal Trucks (Max @ 50 or 60 mph)	Liquid Sulfur Product Trucks (Max @ 50 or 60 mph)	Gasification Product Trucks (Max @ 50 or 60 mph)	Ammonia Product Trucks (Max @ 50 or 60 mph)	Urea Product Trucks (Max @ 50 or 60 mph)	UAN Sulfur Product Trucks (Max @ 50 or 60 mph)	Equipment and Miscellaneous Trucks (Max @ 50 or 60 mph)
	Running Emissions	Running Emissions					Running Emissions
Distance traveled per truck in San Joaquin Valley, CA (mi)	104	104	160	80	80	80	80
Distance traveled per truck in Los Angeles-South Coast Air Basin, CA (mi)	176	180	0	0	0	0	0
Maximum number of trucks or loads:							
Annual average trucks or loads	15,200	990	2,800	5,010	2,800	9,280	1,818

No off-site idling was assumed for truck transportation.
Distance traveled per truck is based on round-trip.

EMFAC2007 Emission Factors + Fugitive Dust (g/mi) For Truck Model year 2010, Scenario year 2015

Pollutant	Coke and Coal Trucks (Max @ 50 or 60 mph) Running Emissions (g/mile/trk)	Liquid Sulfur Product Trucks (Max @ 50 or 60 mph) Running Emissions (g/mile/trk)	Gasification Product Trucks (Max @ 50 or 60 mph) Running Emissions (g/mile/trk)	Ammonia Product Trucks (Max @ 50 or 60 mph) Running Emissions (g/mile/trk)	Urea Product Trucks (Max @ 50 or 60 mph) Running Emissions (g/mile/trk)	UAN Sulfur Product Trucks (Max @ 50 or 60 mph) Running Emissions (g/mile/trk)	Equipment and Miscelleneous Trucks (Max @ 50 or 60 mph) Running Emissions (g/mile/trk)
CO	1.32	1.32	1.32	1.32	1.32	1.32	1.32
NOx	2.17	2.17	2.17	2.17	2.17	2.17	2.17
ROG	0.18	0.18	0.18	0.18	0.18	0.18	0.18
SOx	0.02	0.02	0.02	0.02	0.02	0.02	0.02
PM10 *	0.60	0.60	0.60	0.60	0.60	0.60	0.60
PM2.5 *	0.18	0.18	0.18	0.18	0.18	0.18	0.18

EMFAC2007 is the approved federal model for vehicle combustion emissions
* PM10 and PM2.5 includes fugitive dust factor for paved roads obtained from AP-42 Ch. 13 plus PM factors from EMFAC 2007
PM factors from EMFAC = combustion exhaust + tire wear + break wear
The maximum emission factor from either truck speed at 50 mph or 60 mph was used.
Most California highways have speed limits of 60 or 70 mph and large trucks travel more slowly than the speed limit.

Annual Emission Rates in ton/yr all trucks

Pollutant	Coke and Coal Trucks (Max @ 50 or 60 mph) Running Emissions	Liquid Sulfur Product Trucks (Max @ 50 or 60 Running Emissions	Gasification Product Trucks (Max @ 50 or 60 Running Emissions	Ammonia Product Trucks (Max @ 50 or 60 mph) Running Emissions	Urea Product Trucks (Max @ 50 or 60 mph) Running Emissions	UAN Sulfur Product Trucks (Max @ 50 or 60 mph) Running Emissions	Equipment and Miscelleneous Trucks (Max Running Emissions	Total Truck Emission Rates (tons/yr)
San Joaquin Valley, CA								
CO	2.29	0.15	0.65	0.58	0.32	1.08	0.21	**5.29**
NOx	3.78	0.25	1.07	0.96	0.54	1.77	0.35	**8.71**
ROG	0.32	0.02	0.09	0.08	0.05	0.15	0.03	**0.74**
SOx	0.03	0.00	0.01	0.01	0.00	0.01	0.00	**0.06**
PM10	1.04	0.07	0.29	0.26	0.15	0.49	0.10	**2.39**
PM2.5	0.31	0.02	0.09	0.08	0.04	0.15	0.03	**0.72**
Los Angeles-South Coast Air Basin, CA								
CO	3.88	0.26	0.00	0.00	0.00	0.00	0.00	**4.14**
NOx	6.39	0.43	0.00	0.00	0.00	0.00	0.00	**6.82**
ROG	0.54	0.04	0.00	0.00	0.00	0.00	0.00	**0.58**
SOx	0.05	0.00	0.00	0.00	0.00	0.00	0.00	**0.05**
PM10	1.76	0.12	0.00	0.00	0.00	0.00	0.00	**1.87**
PM2.5	0.53	0.04	0.00	0.00	0.00	0.00	0.00	**0.56**

Summary of Worker Commute Vehicle Emissions - HECA

12/2012 revision

Calculations for Worker Commute Vehicle Operation

OFFSITE - 50 MPH								EF (g/mile)					
Onroad Vehicle	Fuel Type	Vehicle Type	Total Number of Workers per day	Daily Vehicle Count	Round Trip Distance (miles/vehicle/day)	Trips per day	VMT (Annual)	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	TOC
Personal Commuting Vehicles	G/D	LDA/ LDT	200	154	40.0	1	2,246,154	1.6825	0.1930	0.4234	0.1134	3.50E-03	0.0540

Assumptions:

Assumed average distance traveled off site for all employees commuting will be 20 miles

times 2 for return trip = 40 miles

365 days per year

Number of workers per commuter vehicle = 1.3

EMFAC2007 emissions are for fleet mix years 1971-2015 travelling at 50 mph.

Area	Description	CO	NOx	PM10	PM2.5	SO2	VOC
		Annual Emission Rates (tons/year) all worker commute vehicles					
San Joaquin Valley, CA	Personal Commuting Vehicles	4.17	0.48	1.05	0.28	0.01	0.13

Fugitive Dust on Paved Road

AP 42 13.2.1 Paved Roads, updated January 2011

For a daily basis,
E = [k (sL)^0.91 x (W)^1.02](1-P/4N) (2)

P = number of "wet" days with at least 0.254 mm (0.01 in) of precipitation during the averaging period
W = average weight (tons) of vehicles traveling the road
k = particle size multiplier for particle size range and units of interest
sL = road surface silt loading (g/m^2)

	k
	g/VMT
PM2.5	0.25
PM10	1.00

Table 13.2.1-1
PARTICLE SIZE MULTIPLIERS FOR PAVED ROAD EQUATION

Fleet mix on highway

W= 9.1 tons, average
sL= 0.031 g/m2 Default value from URBEMIS 9.2 for Kern County
P= 36 days/year Buttonwillow Station 1940-2011, WRCC

E=
0.09836 g/VMT PM2.5
0.39344 g/VMT PM10

Vehicle weight (tons)		fraction of each vehicle type
1.6	passenger vehicles	0.75
40	large trucks	0.18
9	2-4 axle trucks	0.07
9.1	weighted average for all vehicles (ton)	

On I-5 near the Project, 75% of all vehicles are passenger vehicles,
of the remaining vehicle, 73% are 5-axle trucks and the remainder are 2-4 axle trucks.
From information provided by California Department of Transportation for the traffic analysis.

Industrial Wind Erosion, AP-42 Section 13.2.5

Emission factor (g/m^2-yr) = k $\sum P_i$ (from i=1,N) (Equation 2)

Erosion Potential (P_i) (g/m^2) = 58 ($u^* - u_t^*$)^2 + 25($u^* - u_t^*$) (Equation 3)

0.5	k =	PM_{10} particle size multiplier
0.075	k =	$PM_{2.5}$ particle size multiplier
1	N =	number of disturbances per year
33.76	A =	exposed area of coal, m^2, per car (Table 4.1, Jan 2008 Connell Hatch: exposed area = 33.76 m^2)

Use Equation (1) to determine friction velocity:

$u(z) = u^* / 0.4 \times \ln(z/z_0)$

17.88	u(z) =	fastest mile (m/s) (based on speed of train)
0.2	z =	distance at which wind speed is measured (m) (based on the height above the coal cars at which wind flow would be laminar; assumed this height is equal to the difference between the height of the locomotive engine and the trailing coal cars)
0.003	z_0 =	roughness height for uncrusted coal pile (m), from Table 13.2.5-2
1.70	u* =	friction velocity (m/s), solved for using Equation 1
0.55	u_t^* =	threshold friction velocity (m/s); Table 13.2.5-2 value for ground coal (surrounding coal pile)

Erosion Potential

	P =	105.9	g/m^2	erosion potential corresponding to the observed (or probable) fastest mile of wind for the i^{th} period between disturbances, g/m^2
Annual	A =	440,027.8	m^2/yr	exposed area of coal per car (m^2) times number of cars per year

Unmitigated Emissions

Emission factor (g/m^2-yr) = k $\sum P_i$ (from i=1,N)

E =	23,305,420	grams PM_{10} / year
	25.69	tons PM_{10} / year
E =	3,495,813	grams $PM_{2.5}$ / year
	3.85	tons $PM_{2.5}$ / year

Mitigation Efficiency of Surfactant: 85%

* HECA will be requiring the coal supplier to apply a surfactant to the coal transported by rail to reduce fugitive losses during transport. Surfactant achieves at least an 85% control efficiency.

Mitigated PM_{10}:	**3.85 tons PM_{10} / year**
Mitigated $PM_{2.5}$:	**0.58 tons $PM_{2.5}$ / year**

* It has been assumed that all emitted PM will be lost during the first 100 miles of the trip and has thus all been assigned to New Mexico. Maximum train speed (and thus wind speed) will certainly be reached within this time, and according to AP-42 Section 13.2.5.1, "particulate emission rates tend to decay rapidly (half-life of a few minutes) during an erosion event."

40	train speed, mph
0.447	m/s per 1 mph
453.6	grams per pound
2000	pounds per ton
13034	Required rail car loads per year at normal operation (cars/yr)

Summary of Transportation Vehicles and Routes

Commodity Handled	Petcoke	Coal	Liquid Sulfur	Gasification	Ammonia	Urea	UAN	Equipment	Miscellaneous
Expected plant operation									
Expected plant operation is 8000 hours / year									
The plant will operate 24 hours / day	24 hours / day	24 hours / day	24 hours / day	24 hours / day	24 hours / day	24 hours / day	24 hours / day	24 hours / day	24 hours / day
The plant will operate 333 days / year	333 days / yr	333 days / yr	333 days / yr	333 days / yr	333 days / yr	333 days / yr	333 days / yr	333 days / yr	333 days / yr
Shipment by trucks	100 %	0 %	75 %	25 %	75 %	25 %	50 %	100 %	100 %
Shipment by train	0 %	100 %	25 %	75 %	25 %	75 %	50 %	0 %	0 %
Production rate									
Required Normal Flow / day	1,140 tons / day	4,580 tons / day	100 tons / day	839 tons / day	500 tons / day	833 tons / day	1,392 tons / day		
Required Normal Flow / year	380,000 tons / yr	1,525,000 tons / yr	33,000 tons / yr	280,000 tons / yr	167,000 tons / yr	280,000 tons / yr	464,000 tons / yr		
Required Maximum Flow day	1,368 tons / day (3)	6,107 tons / day (4)	200 tons / day (5)	1,678 tons / day (6)	1,000 tons / day (6)	1,666 tons / day (6)	2,784 tons / day (6)		
Truck Shipments									
Truck Capacity	25 tons / truck		25 tons / truck	25 tons / truck	25 tons / truck	25 tons / truck	25 tons / truck	25 tons / truck	25 tons / truck
Required trucks loads for normal operation / day	46 trucks / day		4 trucks / day	8 trucks / day	15 trucks / day	8 trucks / day	28 trucks / day	2 trucks / day	3 trucks / day
Required trucks loads for normal operation / yr	15,200 truck / yr		990 truck / yr	2,800 truck / yr	5,010 truck / yr	2,800 truck / yr	9,280 truck / yr		
Required trucks loads for maximum operation /day	55 trucks / day		8 trucks / day	17 trucks / day	30 trucks / day	17 trucks / day	56 trucks / day		
Train Shipments									
Railcar Capacity		117 tons / car	100 tons / car	100 tons / car	117 tons / car	117 tons / car	117 tons / car		
Assume a train has 13,000 ton capacity									
Required railcars for normal operation / day		39 cars / day	0.25 cars / day	6 cars / day	1 cars / day	5 cars / day	6 cars / day		
Required railcar loads for normal operation / yr		13,034 cars / yr	83 cars / yr	2,800 cars / yr	357 cars / yr	1,795 cars / yr	1,983 cars / yr		
Required railcars for maximum operation / day		200 cars / day	1 cars / day	16 cars / day	2 cars / day	11 cars / day	12 cars / day		
Basis	- 91% availability - 25% petcoke (heat input) - 25 ton/truck - 7 days/week receiving - 25% excess truck	- 91% availability - 75% coal (heat input) per - 117 tons/car - 100% coal for maximum - Rack sized to handle two	- 91% availability - High sulfur case - 100 - 25 ton/truck - Weekdays only - Can only move up to 25% of	- 91% availability - 75% coal max annual - 100% capable by rail - 25% capable by truck - Maximun is double the daily	- 91% availability - 500 t/d NH3 sales - 75% by truck - Ability to ship 7500 tons ove	- 91% availability - 75% by rail -empty 45 day storage in 10	- 91% availability - 75% by rail -empty 45 day storage in 10	'	
Traffic route	Truck Route	Truck Route	Truck Route	Truck Route	Truck Route	Truck Route	Truck Route	Truck Route	Truck Route
Destination/Origin	Carson Refinery	None	California Sulfur	Various	Various	Various	Various	Various	Various
Address	1801 E Sepulveda, Carson		2509 E Grant Street, Wilmington						
Distance	140 Miles		142 Miles	80 Mile radius	40 mile radius	40 mile radius	40 mile ratius	40 mile ratius	40 mile ratius
Route	Alameda		Grant	40 mile radius	Station Road	Station Road	Station Road	5 fwy	5 fwy
	405 Fwy		Henry Ford	Station Road	Morris Road	Morris Road	Morris Road	Stockdale Hwy	Stockdale Hwy
	5 Fwy		Alameda	Morris Road	Stockdale Hywy	Stockdale Hywy	Stockdale Hywy	Dairy Road	Dairy Road
	Stockdale hwy		405 Fwy	Stockdale Hywy	5 Fwy	5 Fwy	5 Fwy		
	Morris Road		5 Fwy	5 Fwy					
	Station Road		Stockdale hwy						
			Morris Road						
	Station Road		Station Road						
	Rail Route	Rail Route	Rail Route	Rail Route	Rail Route	Rail Route	Rail Route	Rail Route	Rail Route
Destination/Origin	None	Elk Ranch New Mexico	In SJVAPCD	CEMEX, Victorville	Calamco	Oregon/Washington	Calamco	None	None
Address					Port Rd G15, Stockton, CA		Port Rd G15, Stockton, CA		
Distance		794 miles		198 miles	264 miles	628 Miles	264 miles		
Route		Kern County: 132.2 miles (County Line near Boron, CA to north pro		SJVR/BNSF	SJVR/UPRR	SJVR/UPRR			
		Mine to Boron, CA: 662 miles							
		Total Distance: 794.2 miles							

Notes

1) Equipment Maintenance Trucks are considered to be 2% of the total trucks per day for the feed and product operation.
2) Miscellaneous trucks are considered to be 3% of the total trucks per day for the feed and product operation.
3) The maximum flow rate of coke is ratioed up from the normal flow rate at 25% to 30% of feed
4) The maximum flow rate of coal is ratioed up from the normal flow rate at 75% to 100% of feed
5) The maximum flow rate of sulfur is 2 times the normal production
6) The maximum flow rate of these commodities is 2 times the normal production
7) The sources of flow data used in the Production Rate calculation were based on the flow rates provided in "Conference Note: Rail and Truck Traffic - Planning Session" and the "FertilizerProductMovement Update", 01-25-12.

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Calculations for Trucks Operation onsite

Assumed Number of Unit Trains (incoming/outgoing)

Averaging Period	Coal Unit Trains (incoming)	Unit Trains of Product (outgoing)	Maximum Total Trains per period
Annual average unit trains	109	153	262

# Cars Per train	120	46	
maximum # Cars Per day	200-240	42-46	

	Switching Enigne/ Rail car movers	Line-Haul Engine for Coal Train	Line-Haul Engine for Product Trains
Engine Power Rating (hp)		4400	3000
Notch Operation		1	1
Notch percentage of hp		5.0%	5.0%
Avg Notch horsepower	260	220	150
# of engines per train	1	2	2
hours to unload/load each train		2	1
max operating hours (hrs/day)	8		
max operating hours (hrs/year)	1248		

The majority of the time the line-haul engine will operate in Notch 1 or idling, therefore emissions were conservatively estimated for Notch 1 horsepower.

Notch percentage presented in PORT OF LONG BEACH AIR EMISSIONS INVENTORY for 2007 (POLB, Jan 2009) derived from EPA data.

For each coal train it takes 2 hours to complete the onsite loop to unload

For each product train it takes 1 hour to load

	CO	NOx	PM10	PM2.5	SO2	VOC
Switching Engine Emission Factors						
Tier 3 Emission Factor (g/bhp-hr)	1.83	4.50	0.08	0.08	0.12	0.27
Emissions (lbs/hr /engine)	1.05	2.58	0.05	0.04	0.07	0.16
Line-Haul Emission Factors						
Tier 3 Emission Factor (g/bhp-hr)	1.28	4.95	0.08	0.08	0.09	0.14
Coal Train Emissions (lbs/hr /engine)	0.62	2.40	0.04	0.04	0.04	0.07
Product Train Emissions (lbs/hr /engine)	0.42	1.64	0.03	0.03	0.03	0.05

Annual Emission Rates in tons/year

	CO	NOx	PM10	PM2.5	SO2	VOC
Switching engines	0.65	1.61	0.03	0.03	0.04	0.10
Line-haul coal engines	0.14	0.52	0.01	0.01	0.01	0.01
Line-haul product engines	0.06	0.25	0.00	0.00	0.00	0.01

Emission Factors For all Locomotives

SOx
g/gal
1.88

Locomotive Application	Conversion Factor (bhp-hr/gal)
Large Line-haul & Passenger	20.8
Small Line-haul	18.2
Switching	15.2

Notes:

New line-haul engines will be AC locomotives such as the GE Evolution Series, that meet Tier 3 emissions

New switching engines will meet Tier 3 emissions, they may be the Titan Trackmobile railcar movers or similar

Emission factors from EPA's Technical Highlights: Emission Factors for Locomotives, 2009 (http://www.epa.gov/nonroad/locomotv/420f09025.pdf).

SO2 emissions Based on 300 ppm sulfur diesel fuel.

VOC emissions can be assumed to be equal to 1.053 times the HC emissions

$PM_{2.5}$ Fraction of PM_{10}, = 0.97

Line-haul engine emissions of CO, NOx, PM, and HC are based on EPA Tier 2+ and Tier 3 emission factors.

Summary of On-Site Operations Truck Emissions

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Calculations for Trucks Operation onsite

Transportation Information			**Notes**
- Onsite Vehicle =	20	trucks	- Information Provided By Applicant
- Vehicle year=	2010		- Information Provided By Applicant
- Maximum annual mileage =	10,000	miles/truck-year	- All routine vehicular traffic is anticipated to travel exclusively on paved roads
			- Assumed 15 mph average speed within HECA facility

Calculations for Trucks Operation Modeling per Truck

	Onsite O&M Trucks
Mileage	
1-hr	1
3-hr	3
8-hr	9
24-hr	27
Annual average trucks or loads	10000

EMFAC2007 Emission Factors (g/mi) For Truck Model year 2010

	Emission Factors in g/mi	
Pollutant	**Gas LHDT1**	**Diesel LHDT2**
CO	0.229	0.920
NOx	0.064	0.672
ROG	0.014	0.085
SOx	0.011	0.005
PM10 *	0.167	0.176
PM2.5 *	0.054	0.062

EMFAC2007 is the approved federal model for vehicle combustion emissions
* PM10 and PM2.5 includes fugitive dust factor for paved roads obtained from AP-42 Ch. 13 plus PM factors from EMFAC 2007
PM factors from EMFAC = combustion exhaust + tire wear + break wear
EMFAC emissions are for fleet year 2010 travelling at 15 mph.

Annual Emission Rates in g/s From All Trucks

	Emissions in g/s	
Pollutant	**Gas LHDT1**	**Diesel LHDT2**
CO	1.45E-03	5.83E-03
NOx	4.06E-04	4.26E-03
ROG	8.88E-05	5.39E-04
SOx	6.98E-05	3.17E-05
PM10	1.06E-03	1.11E-03
PM2.5	3.40E-04	3.91E-04

Calculations for Trucks Operation onsite

Data Supplied By Client					
Parameter	**Petcoke Trucks**		**Product Trucks**		**Miscellaneous Trucks**
	Running Emissions	**Idling Emissions**	**Running Emissions**	**Idling Emissions**	**Running Emissions**
Distance Traveled (mi)*	0.96		2.49		2.20
Per Truck Idle Time (hr)		0.083		0.083	
Maximum number of trucks or loads:					
1-hr	6	6	13	13	5
3-hr	17	17	39	39	5
8-hr	44	44	104	104	5
24-hr	55	55	130	130	5
Annual average trucks or loads	15,200	15,200	20,880	20,880	1,818

EMFAC2007 Emission Factors + Fugitive Dust (g/mi or g/idle-hour) For Truck Model year 2010

	Petcoke Trucks		**Product Trucks**		**Miscellaneous Trucks**
Pollutant	**Running Emissions (g/mile/trk)**	**Idling Emissions (g/idle-hour/trk)**	**Running Emissions (g/mile/trk)**	**Idling Emissions (g/idle-hour/trk)**	**Running Emissions (g/mile/trk)**
CO	3.03	43.69	3.03	43.69	3.03
NOx	5.43	122.65	5.43	122.65	5.43
ROG	1.39	7.74	1.39	7.74	1.39
SOx	0.03	0.06	0.03	0.06	0.03
PM10 *	0.92	0.11	0.92	0.11	0.92
PM2.5 *	0.29	0.10	0.29	0.10	0.29

EMFAC2007 is the approved federal model for vehicle combustion emissions
* PM10 and PM2.5 includes fugitive dust factor for paved roads obtained from AP-42 Ch. 13 plus PM factors from EMFAC 2007
PM factors from EMFAC = combustion exhaust + tire wear + break wear
EMFAC emissions are for fleet year 2010 travelling at 10 mph.

Annual Emission Rates in g/s For All Trucks

	Petcoke Trucks		**Product Trucks**		**Miscellaneous Trucks**
Pollutant	**Running Emissions**	**Idling Emissions (at each Idle Point)**	**Running Emissions**	**Idling Emissions (at each Idle Point)**	**Running Emissions**
CO	1.40E-03	1.755E-03	4.983E-03	2.411E-03	3.839E-04
NOx	2.501E-03	4.926E-03	8.931E-03	6.767E-03	6.880E-04
ROG	6.398E-04	3.110E-04	2.284E-03	4.273E-04	1.760E-04
SOx	1.383E-05	2.490E-06	4.937E-05	3.421E-06	3.803E-06
PM10	4.226E-04	4.579E-06	1.509E-03	6.290E-06	1.162E-04
PM2.5	1.348E-04	4.177E-06	4.813E-04	5.738E-06	3.708E-05

Fugitive Dust on Paved Road

12/2012 revision

AP 42 13.2.1 Paved Roads, updated January 2011
Calculations for Trucks Operation onsite
For a daily basis,
E = [k (sL)^0.91 x (W)^1.02](1-P/4N) (2)

P = number of "wet" days with at least 0.254 mm (0.01 in) of precipitation during the averaging period
W = average weight (tons) of vehicles traveling the road
k = particle size multiplier for particle size range and units of interest
sL = road surface silt loading (g/m^2)

	k
	g/VMT
PM2.5	0.25
PM10	1.00

Table 13.2.1-1
PARTICLE SIZE MULTIPLIERS FOR PAVED ROAD EQUATION

Large Trucks

				Empty truck	full truck	Load Capacity
W=	17.5	tons, average		5	30	25 tons
sL=	0.031	g/m2	Default value from URBEMIS 9.2 for Kern County			
P=	36	days/year	Buttonwillow Station 1940-2011, WRCC			

E=
0.19149 g/VMT PM2.5 large delivery trucks
0.76594 g/VMT PM10 large delivery trucks

Operation and Maintenance Vehicles

W=	3	tons	
sL=	0.031	g/m2	Default value from URBEMIS 9.2 for Kern County
P=	36	days/year	Buttonwillow Station 1940-2011, WRCC

E=
0.03169 g/VMT PM2.5 O&M trucks
0.12675 g/VMT PM10 O&M trucks
#vol sources= 10

Fertilizer Product + Sulfur Product trucks + Gas Solids trucks + Misc trucks

102 max trucks/day for Ammonia + Urea + UAN 24 hrs/day
8 max trucks/day for Sulfur
17 max trucks/day gas solids
3 miscellaneous truck along this path
130 Total product trucks max/day

4000 meters, approximate length of road for product trucks: eastern fenceline to southern fenceline to middle loop and back out the opposite way
2.49 miles

0.47593 grams PM2.5/truck/day	62.059 g PM2.5/day for all product trucks	2.5858 g PM2.5/hr
1.90373 grams PM10/truck/day	248.237 g PM10/day for all product trucks	10.3432 g PM10/hr

volume source in model
73 3.5422E-02 g PM2.5/hr/volume source
1.4169E-01 g PM10/hr/volume source

Coke feedstock trucks (no coal by truck)

55 max feedstock trucks/day

1539 meters, approximate length of road loop to truck feedstock unloading facility on east side
0.96 miles

0.18312 grams PM2.5/truck/day	10.071 g PM2.5/day for all product trucks	0.4196 g PM2.5/hr
0.73246 grams PM10/truck/day	40.285 g PM10/day for all product trucks	1.6786 g PM10/hr

volume source in model
34 1.2342E-02 g PM2.5/hr/volume source
4.9369E-02 g PM10/hr/volume source

Miscellaneous Delivery Trucks

5 max trucks/day

3540 meters, approximate length of road from end of product truck south road, along southern fenceline, north toward main site, to parking lot and back
2.20 miles

0.421 grams PM2.5/truck/day	2.299 g PM2.5/day for all product trucks	0.0958 g PM2.5/hr
1.685 grams PM10/truck/day	9.196 g PM10/day for all product trucks	0.3832 g PM10/hr

volume source in model
5 1.9158E-02 g PM2.5/hr/volume source
7.6631E-02 g PM10/hr/volume source

Onsite Train

12/2012 revision

Annual Emission Rates in tons per year From All Trains

	CO	NOx	PM10	PM2.5	SO2	VOC
Switching engines	0.654	1.608	0.029	0.028	0.044	0.098
Line-haul coal engines	0.135	0.523	0.008	0.008	0.010	0.014
Line-haul product engines	0.065	0.250	0.004	0.004	0.005	0.007
Total Train Emissions in tons/year	**0.854**	**2.381**	**0.041**	**0.040**	**0.058**	**0.119**

Onsite Truck

Annual Emission Rates in g/s From All Trucks

Pollutant		CO	NOx	PM10	PM2.5	SO2	VOC
Petcoke Trucks	Running Emissions	0.00140	0.00250	0.00042	0.00013	0.00001	0.00064
	Idling Emissions	0.00175	0.00493	0.00000	0.00000	0.00000	0.00031
Product Trucks	Running Emissions	0.00498	0.00893	0.00151	0.00048	0.00005	0.00228
	Idling Emissions	0.00241	0.00677	0.00001	0.00001	0.00000	0.00043
Miscellaneous Trucks	Running Emissions	0.00038	0.00069	0.00012	0.00004	0.00000	0.00018
Gas LHDT1		0.00145	0.00041	0.00106	0.00034	0.00007	0.00009
Diesel LHDT2		0.00583	0.00426	0.00111	0.00039	0.00003	0.00054
Total Truck Emissions in g/s		**0.01821**	**0.02848**	**0.00423**	**0.00139**	**0.00017**	**0.00447**
Total Truck Emissions in tons/year		**0.63262**	**0.98919**	**0.14694**	**0.04844**	**0.00606**	**0.15511**

HECA Offsite transportation distances

Mileage within each air basin

Commodity Handled	Air Basin	Petcoke	Coal	Liquid Sulfur	Gasification Solids	Ammonia	Urea	UAN	Equipment Maintenance	Miscellaneous Activities
Truck Shipments										
	San Joaquin Valley	52		52	80	40	40	40	40	40
	South Coast	88		90						
	Other									
Train Shipments										
	San Joaquin Valley		63	150	63	264	287	264		
	South Coast									
	Other		731		135		341			

Coal	SJV	63
	EKAPCD	62
	MDAQMD (PM10)	204
	MDAQMD (ozone)	120
	Arizona	364
	New Mexico	102

Gasification	From HECA to San Joaquin Valley boundary (around Bealville) - 63 miles	Fraction		63
	From Bealville to EKAPCD boundary (around Boron) - 67 miles		0.61	82.98165138
	From EKAPCD boundary (around Boron) to Cemex, Victorville, CA - 42 r		0.39	52.01834862
			Total	**198**

Urea	From HECA to Bakersfield to Tulare to Fresno to Stockton to San Joaquin Valley Boundary (around Galt, CA) - 287 miles ozone nonattainment (extreme), PM2.5 Nonattainment		287
	From San Joaquin Vallen Bounday (Galt, CA) to Boundary of Sacramento Metro Area (Around Yuba City, CA) - 80 miles in ozone nonattaiment (extreme)- PM2.5 Nonattainment		80
	Yuba City-Marysville - PM2.5 nonattainment - approximately 50 miles		50
	Butte (Chico) Area - ozone nonattainment (marginal), PM2.5 nonattainment area - approximately 50 miles		50
	other area to Oregon/Washinton=		161
		Total	**628**

Ammonia and UAN - In SJVAPCD from south to north

HECA Maximum Annual CO2e Emissions

Source	Permitted CO2e Emissions (tonne/year)
CTG/HRSG Hydrogen-Rich Fuel and PSA Off-gas	267,117
CTG/HRSG Natural Gas	44,772
CO_2 Vent	174,113
SF_6 Circuit breakers	86
Flares	8,257
Thermal Oxidizer	5,946
Emergency generators and fire pump	181
Auxiliary boiler	24,782
Ammonia Synthesis Plant Startup Heater	409
Urea Absorber Vents	116
Nitric Acid Unit	12,659
Fugitives	83
Total CO2e Annual Emissions	**538,522**

Notes:

Maximum permitted emissions include periods of startup and shutdown.

HECA Annual CO2 Emissions for SB1368 Emission Performance Standard

Operating Parameters	Early Operations (Maximum Permitted)	Mature Operations	Expected Mature Syngas Operations
Natural Gas Operation, hours per year	351	351	15
Hydrogen-rich Fuel Operation, hours per year	8,012	8,012	8,012
Intermittent CO_2 Venting, hours per year	504	120	0
Electricity Generated, MWh	2,669,140	2,669,140	2,568,340
Source	**CO2 Emissions (Metric Ton/year)**		
CTG/HRSG Hydrogen-Rich Fuel and PSA Off-gas	256,900	256,900	256,900
CTG/HRSG Natural Gas	44,729	44,729	1,911
CO_2 Vent	174,113	41,456	0
Fugitives	38	38	38
Total CO2 Annual Emissions	**475,779**	**343,122**	**258,849**
CO2 lb/MWh	392.9	283.3	222.1

Notes:

Early operations Maximum permitted emissions include 2 periods of start-up and shut-down, natural gas use in the CTG and 504 hours of CO2 venting.

Mature operations emissions include 2 periods of start-up and shut-down, natural gas use in the CTG and 120 hours of CO2 venting.

During expected mature operation, the CTG and duct burners will fire only hydrogen-rich fuel and PSA off-gas, it includes 2 startups and shutdown (which includes natural gas), but no natural gas backup use and no CO2 venting.

The fugitive CO_2 emissions are from all process areas, therefore overestimate the emissions from the sequestration process.

Power Production

Hydrogen-rich Fuel Operation		
Net Power Exported	267	MW
Fertilizer Production Power	58	MW
Steam Produced by Fertilizer Production	-5	MW
Net Power	**320**	MW
Natural Gas Operation		
Net Power Exported	**300**	MW

SB1368

Emission caclulation

Emissions include annual carbon dioxide emissions from each fuel used in any component directly involved in electricity production associated with the sequestration of the CO2.

Emissions from electricity production come from the CTG/HRSG and coal dryer when burning syngas, PSA off-gas and natural gas

Emissions associated with the CO2 sequestration include CO2 vent and fugitives from CO2 preparation for sequestration.

Circuit breakers are not included in this inventory as these do not emit CO2.

The SB1368 emission calculations do not include emissions associated with the gasification block (flares, thermal oxidizer), fertilizer complex (Ammonia Synthesis Plant Startup Heater, Urea Absorbers, nitric acid unit), auxiliary boiler, emergency generators, fire pump, and vehicles.

MW caclulation

The net electricity production includes the net power exported plus the power used onsite in the Manufacturing Complex minus the steam generated from the Manufacturing Complex.

The net power exported justification is provided in Section 2, Project Description.

Hydrogen Energy California LLC *11/15/2012*
HECA Project

GHG emissions are numerically depicted as metric tons (tonne) of carbon dioxide equivalents (CO_2e). CO_2e represents CO_2 plus the additional warming potential from CH_4 and N_2O. CH_4 and N_2O have 21 and 310 times the warming potential of CO_2, respectively.

	Natural Gas GHG Emission Factors					Diesel GHG Emission Factors				
CO_2 =	53.06	kg/MMBtu =	116.98	lb/MMBtu		CO_2 =	10.15	kg/gal =	22.38	lb/gal
CH_4 =	0.001	kg/MMBtu =	0.002	lb/MMBtu		CH_4 =	0.0004	kg/gal =	0.001	lb/gal
N_2O =	0.0001	kg/MMBtu =	0.00022	lb/MMBtu		N_2O =	0.0001	kg/gal =	0.0002	lb/gal

CO_2, CH_4, and N_2O emission factors are taken from Appendix C of the California Climate Action Registry (CCAR) General Reporting Protocol Version 3.1 (Jan 2009)

Turbine - Burning Hydrogen-Rich Fuel - released to HRSG and Coal Dryer Stacks

					Syngas GHG Emission Factors		
Operating Hours		8012	hr/yr		CO_2 =	17.7	lb/MMBtu
Heat Input (HHV)		2,537	MMBtu/hr		CH_4 =	0.03	lb/MMBtu
CO_2 =	163,244	tonne/yr					
CH_4 =	288	tonne/yr =	6,043	tonne CO_2e/yr			
N_2O =	2.03	tonne/yr =	630	tonne CO_2e/yr	Total tonne CO_2e/yr =	169,917	

HRSG heat input rate is based Case 5, average ambient temperature and peak load.

Operating hours include startup and shutdown operations

Although N2O emissions are expected to be lower than from the combustion of natural gas, N2O emissions were conservatively estimated using the natural gas emission factor.

Duct burner - Burning Hydrogen-Rich Fuel - released to HRSG and Coal Dryer Stacks

					Syngas GHG Emission Factors		
Operating Hours		8000	hr/yr		CO_2 =	17.7	lb/MMBtu
Heat Input (HHV)		165	MMBtu/hr		CH_4 =	0.03	lb/MMBtu
CO_2 =	10,603	tonne/yr					
CH_4 =	19	tonne/yr =	393	tonne CO_2e/yr			
N_2O =	0.13	tonne/yr =	41	tonne CO_2e/yr	Total tonne CO_2e/yr =	11,036	

Duct burner heat input rate is based Case 5, average ambient temperature and peak load.

Duct burner not operated during turbine startup and shutdown

Although N2O emissions are expected to be lower than from the combustion of natural gas, N2O emissions were conservatively estimated using the natural gas emission factor.

Duct burner - Burning PSA Offgas - released to HRSG and Coal Dryer Stacks

					Syngas GHG Emission Factors		
Operating Hours		8,000	hr/yr		CO_2 =	153.6	lb/MMBtu
Heat Input (HHV)		149	MMBtu/hr		CH_4 =	0.3	lb/MMBtu
CO_2 =	83,053	tonne/yr					
CH_4 =	146	tonne/yr =	3,073	tonne CO_2e/yr			
N_2O =	0.12	tonne/yr =	37	tonne CO_2e/yr	Total tonne CO_2e/yr =	86,163	

Duct burner heat input rate is based Case 5, average ambient temperature and peak load.

Duct burner not operated during turbine startup and shutdown

Although N2O emissions are expected to be lower than from the combustion of natural gas, N2O emissions were conservatively estimated using the natural gas emission factor.

Turbine - Burning Natural Gas - released to HRSG Stack

Operating Hours		351	hr/yr			
Heat Input (HHV)		2,401	MMBtu/hr			
CO_2 =	44,729	tonne/yr				
CH_4 =	0.84	tonne/yr =	18	tonne CO_2e/yr		
N_2O =	0.08	tonne/yr =	26	tonne CO_2e/yr	Total tonne CO_2e/yr =	44,772

HRSG heat input rate is assumed to be the maximum heat input rate firing natural gas. Hours of operation include startup and shutdown.

Auxiliary Boiler

Operating Hours		2,190	hr/yr			
Heat Input		213	MMBtu/hr			
CO_2 =	24,758	tonne/yr				
CH_4 =	0	tonne/yr =	10	tonne CO_2e/yr		
N_2O =	0.05	tonne/yr =	14	tonne CO_2e/yr	Total tonne CO_2e/yr =	24,782

Emergency Generators (2)

Operating Hours		50	hr/yr			
Heat Input		2,922	Bhp			
CO_2 =	3,341	lb/hr =	76	tonne CO_2/yr		
CH_4 =	0.13	lb/hr =	0.063	tonne CO_2e/yr		
N_2O =	0.03	lb/hr =	0.2315	tonne CO_2e/yr	Total tonne CO_2e/yr* =	152

The following conversions were used to convert from lb/gallon to lb/hp-hour; and then multiplying by the rated horsepower rating: 1 gallon/137,000 Btu; and 7,000 Btu/hp-hour.

* Total tonnes CO_2e per year represent the contributions from both generators.

Fire Water Pump

Operating Hours		100	hr/yr			
Heat Input		556	Bhp			
CO_2 =	636	lb/hr =	29	tonne CO_2/yr		
CH_4 =	0.03	lb/hr =	0.024	tonne CO_2e/yr		
N_2O =	0.01	lb/hr =	0.0881	tonne CO_2e/yr	Total tonne CO_2e/yr =	29

The following conversions were used to convert from lb/gallon to lb/hp-hour; and then multiplying by the rated horsepower rating: 1 gallon/137,000 Btu; and 7,000 Btu/hp-hour.

Gasification Flare

Pilot Operation						
Operating Hours		8,760	hr/yr			
Heat Input		0.5	MMBtu/hr			
CO_2 =	232	tonne/yr				
CH_4 =	0.00	tonne/yr =	0.1	tonne CO_2e/yr		
N_2O =	0.0004	tonne/yr =	0.1	tonne CO_2e/yr	Total tonne CO_2e/yr =	233
Flaring Events						
Total Operation		70,536	MMBtu/yr			
CO_2 =	3,744	tonne/yr				
CH_4 =	0.1	tonne/yr =	1	tonne CO_2e/yr		
N_2O =	0.01	tonne/yr =	2	tonne CO_2e/yr	Total tonne CO_2e/yr =	3,747

GHG emissions from flaring events are conservatively estimated using GHG emission factors for natural gas combustion.

Rectisol Flare

Pilot Operation						
Operating Hours		8,760	hr/yr			
Heat Input		0.3	MMBtu/hr			
CO_2 =	139	tonne/yr				
CH_4 =	0.00	tonne/yr =	0.1	tonne CO_2e/yr		
N_2O =	0.0003	tonne/yr =	0.08	tonne CO_2e/yr	Total tonne CO_2e/yr =	140
Flaring Events						
Operating Hours		40	hr/yr			
Vent gas flow		4542	lb-mole/hr			
CO_2 =	3,627	tonne/yr				
CH_4 =		tonne/yr =		tonne CO_2e/yr		
N_2O =		tonne/yr =		tonne CO_2e/yr	Total tonne CO_2e/yr =	3,627

GHG emissions from flaring event based on 100% carbon content of the gas during startup.

SRU Flare

Pilot Operation						
Operating Hours		8,760	hr/yr			
Heat Input		0.3	MMBtu/hr			
CO_2 =	139	tonne/yr				
CH_4 =	0.00	tonne/yr =	0.1	tonne CO_2e/yr		
N_2O =	0.0003	tonne/yr =	0.08	tonne CO_2e/yr	Total tonne CO_2e/yr =	140
Flaring Events - natural gas assist for acid gas venting during startup						
Operating Hours		40	hr/yr			
Heat Input		36	MMBtu/hr			
Throughput (inerts) - acid gas venting during startup						
CO_2 =		140000	scf/hr			
CO_2 =		16,240	lb/hr			
CO_2 =	371	tonne/yr				
CH_4 =	0.001	tonne/yr =	0.03	tonne CO_2e/yr		
N_2O =	0.00014	tonne/yr =	0.045	tonne CO_2e/yr	Total tonne CO_2e/yr =	371

Throughtput (inerts) provided from design engineers.

Tail Gas Thermal Oxidizer

Process Vent Disposal Emissions						
Operating Hours		8,314	hr/yr			
Heat Input		13	MMBtu/hr			
CO_2 =	5,736	tonne/yr				
CH_4 =	0.11	tonne/yr =	2.3	tonne CO_2e/yr		
N_2O =	0.0108	tonne/yr =	3.4	tonne CO_2e/yr	Total tonne CO_2e/yr =	5,742
SRU Startup Waste Gas Disposal						
Operating Hours		48	hr/yr			
Heat Input		80	MMBtu/hr			
CO_2 =	204	tonne/yr				
CH_4 =	0.004	tonne/yr =	0.08	tonne CO_2e/yr		
N_2O =	0.00038	tonne/yr =	0.119	tonne CO_2e/yr	Total tonne CO_2e/yr =	204

GHG emissions from thermal oxidizer are estimated using GHG emission factors for natural gas combustion for the assist gas.

Intermittent CO_2 Vent

Operating Hours	504	hr/yr		
CO_2 Emission Rate	761,400	lb/hr		
			Total tonne CO_2e/yr =	174,113

Assumes 504 hours per year venting at full rate.

Fugitives - Gasification Block

Operating Hours		8,760	hr/yr		
CO_2 =	38.9	tpy	37.79	tonne CO_2e/yr	
CH_4 =	0.27	tpy	5.56	tonne CO_2e/yr	
				Total tonne CO_2e/yr =	43

Detailed emission calculations are provided in Appendix M, Public Health.

Fugitives - Manufacturing Complex

Operating Hours		8,760	hr/yr		
CO_2 =	32.2	tpy	31.27	tonne CO_2e/yr	
CH_4 =	0.39	tpy	7.92	tonne CO_2e/yr	
				Total tonne CO_2e/yr =	39

Detailed emission calculations are provided in Appendix M, Public Health.

Ammonia Synthesis Plant Startup Heater

Operating Hours		140	hr/yr			
Heat Input		55	MMBtu/hr			
CO_2 =	409	tonne/yr				
CH_4 =	0	tonne/yr =	0	tonne CO_2e/yr		
N_2O =	0.00	tonne/yr =	0	tonne CO_2e/yr	Total tonne CO_2e/yr =	409

Urea Absorber Vents

Operating Hours		8,000	hr/yr			
CO_2		32	lb/hour			
CO_2 =	116	tonne/yr				
CH_4 =		tonne/yr =	0	tonne CO_2e/yr		
N_2O =		tonne/yr =	0	tonne CO_2e/yr	Total tonne CO_2e/yr =	116

Emission rate provided by project engineers.

Nitric Acid Unit

Operating Hours		8,000	hr/yr			
N_2O uncontrolled		10.78	lb/ton NHO3			
Production rate		501	ton/day			
N_2O uncontrolled		225	lb/hour			
destruction efficiency		95	%			
N_2O controlled		11.25	lb/hour			
CO_2 =		tonne/yr				
CH_4 =		tonne/yr =	0	tonne CO_2e/yr		
N_2O =	41	tonne/yr =	12,659	tonne CO_2e/yr	Total tonne CO_2e/yr =	12,659

Emission factor and destruction efficiency provided by design engineer.

230 kV Circuit Breakers

Number of Circuit Breakers		6				
SF_6 capacity		240	lb/breaker			
Annual Leakage rate		0.5%				
SF_6 =	0.003	tonne/yr =	78	tonne CO_2e/yr	Total tonne CO_2e/yr =	78

SF6 GWP = 23,900 http://www.epa.gov/electricpower-sf6/faq.html)
Sources: SF6 inventory and maximum leakage rates from electrical equipment suppliers

18 kV Circuit Breakers

Number of Circuit Breakers		2				
SF_6 capacity		73	lb/breaker			
Annual Leakage rate		0.5%				
SF_6 =	0.000	tonne/yr =	8	tonne CO_2e/yr	Total tonne CO_2e/yr =	8

SF6 GWP = 23,900 http://www.epa.gov/electricpower-sf6/faq.html)
Sources: SF6 inventory and maximum leakage rates from electrical equipment suppliers

Total tonne CO_2e/yr for Stationary Sources=	**538,522**

Gas Composition for the Syngas and PSA Off-gas

		Greenhouse Gas Fuel Summary and Durations of Major Fuel Consumers											
		Syngas						PSA Off-Gas					
COMPONENTS	MW	mol%	mol*MW (lb/lbmole)	Wt%	MW C	% C	wt%Cmix	mol%	mol*MW (lb/lbmole)	Wt%	MW C	% C	wt%Cmix
CO (CARBON MONOXIDE)	28.01	1.92	0.54	8.48%	12	42.84%	3.63%	9.10	2.55	11.36%	12	42.84%	4.87%
H2 (HYDROGEN)	2.02	83.80	1.69	26.62%	-	0.00%	0.00%	23.78	0.48	2.14%	-	0.00%	0.00%
CO2 (CARBON DIOXIDE)	44.01	1.50	0.66	10.38%	12	27.27%	2.83%	7.09	3.12	13.92%	12	27.27%	3.79%
H2O (WATER)	18.02	-	-	0.00%	-	0.00%	0.00%	-	-	0.00%	-	0.00%	0.00%
CH4 (METHANE)	16.04	1.07	0.17	2.69%	12	74.81%	2.01%	5.03	0.81	3.60%	12	74.81%	2.69%
Ar (ARGON)	39.95	0.13	0.05	0.79%	-	0.00%	0.00%	0.59	0.23	1.04%	-	0.00%	0.00%
N2 (NITROGEN)	28.01	11.58	3.24	51.02%	-	0.00%	0.00%	54.38	15.23	67.90%	-	0.00%	0.00%
H2S (HYDROGEN SULFIDE)	34.08	0.00	0.00	0.00%	-	0.00%	0.00%	0.00	0.00	0.00%	-	0.00%	0.00%
COS (CARBONYL SULFIDE)	60.07	0.00	0.00	0.00%	12	19.98%	0.00%	0.00	0.00	0.00%	12	19.98%	0.00%
CH3OH (METHANOL)	32.03	0.01	0.00	0.03%	12	37.46%	0.01%	0.03	0.01	0.04%	12	37.46%	0.01%
C2H6 (ETHANE)	30.07	-	-	0.00%	24	79.81%	0.00%	-	-	0.00%	24	79.81%	0.00%
C3H8 (PROPANE)	44.10	-	-	0.00%	36	81.63%	0.00%	-	-	0.00%	36	81.63%	0.00%
C4H10 (N-BUTANE)	58.12	-	-	0.00%	48	82.59%	0.00%	-	-	0.00%	48	82.59%	0.00%
C4H10 (ISO-BUTANE)	58.12	-	-	0.00%	48	82.59%	0.00%	-	-	0.00%	48	82.59%	0.00%
C5H12 (N-PENTANE)	72.15	-	-	0.00%	60	83.16%	0.00%	-	-	0.00%	60	83.16%	0.00%
C5H12 (ISO-PENTANE)	72.15	-	-	0.00%	60	83.16%	0.00%	-	-	0.00%	60	83.16%	0.00%
C6+ (HEXANES, ETC)	86.18	-	-	0.00%	72	83.55%	0.00%	-	-	0.00%	72	83.55%	0.00%
NH3 (AMMONIA)	17.04	-	-	0.00%	-	0.00%	0.00%	-	-	0.00%	-	0.00%	0.00%
HCl (HYDROGEN CHLORIDE)	36.48	-	-	0.00%	-	0.00%	0.00%	-	-	0.00%	-	0.00%	0.00%
HCN (HYDROGEN CYANIDE)	27.03	-	-	0.00%	12	44.40%	0.00%	-	-	0.00%	12	44.40%	0.00%
Total		**100.00**	**6.36**	**100.00%**			**8.48%**	**100.00**	**22.43**	**100.00%**			**11.37%**

		Duration (hr)	Fuel input HHV (MMBtu/hr)	fuel consumption (MMscf/hr)	Duration (hr)	Fuel input HHV (MMBtu/hr)	fuel consumption (MMscf/hr)
Gas Turbine	mmBTU/h	8,012	2,536.57	8.79	-	-	
Duct Burner	mmBTU/h	8,000	165.00	0.57	8,000	149.00	0.95
HHV (Btu/scf)		288.6			157.3		
Percentage of destruction of CH4		98.0%			98.0%		
CO2 lb/MMBtu HHV		17.704			153.56		
CH4 lb/MMBtu HHV		0.031			0.27		

		Hourly Emissions (lb/hr)	Annual Emissions (ton/yr)	Annual Emissions (tonnes/yr)	Hourly Emissions (lb/hr)	Annual Emissions (ton/yr)	Annual Emissions (tonnes/yr)
CO2 emissions (lb/hr)	Gas Turbine	44,906	179,895	163,244	22,881	91,524	83,053
CH4 emissions (lb/hr)	Gas Turbine	79	317	288	40	161	146
CO2 emissions (lb/hr)	Duct Burner	2,921	11,684	10,603			
CH4 emissions (lb/hr)	Duct Burner	5	21	19			

Notes:

All Data based on Case 5 Performance Avg Ambient On-Peak

Includes startup and shutdown hours in the turbine operations. Assumed max heating value during SU/SD hours.

No startup or shutdown for duct burners

Greenhouse Gas Emissions Associated with the Mobile Sources During Project Operations

Source	Annual CO2e Emissions (tonne/year)
Onsite Trucks	413
Onsite Trains	291
Offsite Workers Commuting	824
Offsite Trucks	10,866
Offsite Trains	45,226
Total CO2e Annual Emissions	**57,619**

Notes:

Onsite worker travel and associated emissions are negligible

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GHG emissions are numerically depicted as metric tons (tonne) of carbon dioxide equivalents (CO_2e). CO_2e represents CO_2 plus the additional warming potential from CH_4 and N_2O. CH_4 and N_2O have 21 and 310 times the warming potential of CO_2, respectively.

Onsite LHD Gasoline Trucks

Number of Onsite Trucks		10	trucks		EF CO_2 =	1,175	g/mi
Total Annual VMT		10,000	miles/ truck		EF CH_4 =	0.0157	g/mi
					EF N_2O =	0.0101	g/mi
CO_2 =	118	tonne/yr					
CH_4 =	1.57E-03	tonne/yr =	3.E-02	tonne CO_2e/yr			
N_2O =	1.01E-03	tonne/yr =	3.E-01	tonne CO_2e/yr	Total tonne CO_2e/yr =		118

CO2 emissions from EMFAC2007 for fleet year 2010 for light heavy-duty gasoline trucks travelling at 15 mph. Running emission Factor for N2O and CH4 is based on Table C.4, California Climate Action Registry General Reporting Protocol Version 3.1, Jan 2009 for light gasoline trucks.

Onsite LHD Diesel Trucks

Number of Onsite Trucks		10	trucks		EF CO_2 =	519	g/mi
Total Annual VMT		10,000	miles/ truck		EF CH_4 =	0.001	g/mi
					EF N_2O =	0.0015	g/mi
CO_2 =	52	tonne/yr					
CH_4 =	1.00E-04	tonne/yr =	2.E-03	tonne CO_2e/yr			
N_2O =	1.50E-04	tonne/yr =	5.E-02	tonne CO_2e/yr	Total tonne CO_2e/yr =		52

CO2 emissions from EMFAC2007 for fleet year 2010 for light heavy-duty diesel trucks travelling at 15 mph. Running emission Factor for N2O and CH4 is based on Table C.4, California Climate Action Registry General Reporting Protocol Version 3.1, Jan 2009 for light diesel trucks.

Onsite Petcoke Trucks

Number of Truck loads		15,200	truck loads		EF CO_2 =	3,165	g/mi
Distrance Travelled Onsite		1.0	mi/ load		EF CH_4 =	0.0051	g/mi
Truck Idle Time		0.08	hr/load		EF N_2O =	0.0048	g/mi
					EF CO_2 =	6,542	g/ idle hr
					EF CH_4 =	0.011	g/ idle hr
					EF N_2O =	0.010	g/ idle hr
CO_2 =	54	tonne/yr					
CH_4 =	8.75E-05	tonne/yr =	2.E-03	tonne CO_2e/yr			
N_2O =	8.23E-05	tonne/yr =	3.E-02	tonne CO_2e/yr	Total tonne CO_2e/yr =		54

CO2 emissions from EMFAC2007 for fleet year 2010 heavy-heavy duty diesel trucks travelling at 10 mph. Running emission Factor for N2O and CH4 is based on Table C.4, California Climate Action Registry General Reporting Protocol Version 3.1, Jan 2009 for diesel heavy duty vehicles. Idling emission Factor for N2O and CH4 were extrapolated based on the ratio of CO2 emission factor for running vs idling.

Onsite Product Trucks

Number of Truck loads		20,880	truck loads		EF CO_2 =	3,165	g/mi
Distrance Travelled Onsite		2.49	mi/ load		EF CH_4 =	0.0051	g/mi
Truck Idle Time		0.08	hr/load		EF N_2O =	0.0048	g/mi
					EF CO_2 =	6,542	g/ idle hr
					EF CH_4 =	0.011	g/ idle hr
					EF N_2O =	0.010	g/ idle hr
CO_2 =	176	tonne/yr					
CH_4 =	2.83E-04	tonne/yr =	6.E-03	tonne CO_2e/yr			
N_2O =	2.66E-04	tonne/yr =	8.E-02	tonne CO_2e/yr	Total tonne CO_2e/yr =		176

CO2 emissions from EMFAC2007 for fleet year 2010 heavy-heavy duty diesel trucks travelling at 10 mph. Running emission Factor for N2O and CH4 is based on Table C.4, California Climate Action Registry General Reporting Protocol Version 3.1, Jan 2009 for diesel heavy duty vehicles. Idling emission Factor for N2O and CH4 were extrapolated based on the ratio of CO2 emission factor for running vs idling.

Onsite Miscellaneous Diesel Trucks

Number of Truck loads		1,818	truck loads		EF CO_2 =	3,165	g/mi
Distrance Travelled Onsite		2.2	mi/ load		EF CH_4 =	0.0051	g/mi
					EF N_2O =	0.0048	g/mi
CO_2 =	13	tonne/yr					
CH_4 =	2.04E-05	tonne/yr =	4.E-04	tonne CO_2e/yr			
N_2O =	1.92E-05	tonne/yr =	6.E-03	tonne CO_2e/yr	Total tonne CO_2e/yr =		13

CO2 emissions from EMFAC2007 for fleet year 2010 heavy-heavy duty diesel trucks travelling at 10 mph. Running emission Factor for N2O and CH4 is based on Table C.4, California Climate Action Registry General Reporting Protocol Version 3.1, Jan 2009 for diesel heavy duty vehicles.

Onsite Switching Engines

Number of engines		1	per year		EF CO_2 =	672	g/bhp-hr
Avg power used onsite		260	hp		EF CH_4 =	0.053	g/bhp-hr
Annual operations		1248	hours/yr		EF N_2O =	0.0171	g/bhp-hr
CO_2 =	218	tonne/yr					
CH_4 =	1.71E-02	tonne/yr =	4.E-01	tonne CO_2e/yr			
N_2O =	5.55E-03	tonne/yr =	2.E+00	tonne CO_2e/yr	Total tonne CO_2e/yr =		220

New engines will meet Tier 3 emissions (40 CFR Part 1033, EPA Switch and Line-haul Locomotive Emission Standards). CH4 and N2O factors are from California Climate Action Registry General Reporting Protocol Version 3.1 (January 2009), Table C.6 (Methane and Nitrous Oxide Emission Factors for Non-Highway Vehicles) for locomotives.

Onsite Coal Trains

Number of Trains		109	per year		EF CO_2 =	491	g/bhp-hr
Number of engines		218	per year		EF CH_4 =	0.038	g/bhp-hr
Avg power used onsite		220	hp		EF N_2O =	0.0125	g/bhp-hr
Time to unload each train		2	hours				
CO_2 =	47	tonne/yr					
CH_4 =	3.69E-03	tonne/yr =	8.E-02	tonne CO_2e/yr			
N_2O =	1.20E-03	tonne/yr =	4.E-01	tonne CO_2e/yr	Total tonne CO_2e/yr =		48

New engines will meet Tier 3 emissions (40 CFR Part 1033, EPA Switch and Line-haul Locomotive Emission Standards). CH4 and N2O factors are from California Climate Action Registry General Reporting Protocol Version 3.1 (January 2009), Table C.6 (Methane and Nitrous Oxide Emission Factors for Non-Highway Vehicles) for locomotives.

Onsite Product Trains

Number of Trains		153	per year		EF CO_2 =	491	g/bhp-hr
Number of engines		153	per year		EF CH_4 =	0.038	g/bhp-hr
Avg power used onsite		150	hp		EF N_2O =	0.0125	g/bhp-hr
Time to unload each train		2	hours				
CO_2 =	23	tonne/yr					
CH_4 =	1.77E-03	tonne/yr =	4.E-02	tonne CO_2e/yr			
N_2O =	5.74E-04	tonne/yr =	2.E-01	tonne CO_2e/yr	Total tonne CO_2e/yr =		23

New engines will meet Tier 3 emissions (40 CFR Part 1033, EPA Switch and Line-haul Locomotive Emission Standards). CH4 and N2O factors are from California Climate Action Registry General Reporting Protocol Version 3.1 (January 2009), Table C.6 (Methane and Nitrous Oxide Emission Factors for Non-Highway Vehicles) for locomotives.

Offsite Coal Trains

Number of Trains cars per year		13,034	per year		EF CO_2 =	10,217	g/gal
Miles Traveled Per Train		794	Miles one way		EF CH_4 =	0.8	g/gal
Rail Freight Fuel Consumption		480	ton-mile/gallon		EF N_2O =	0.26	g/gal
Loaded train car weight		142	ton				
Unloaded train car weight		25	ton				
All Trains - Round Trip		1.73E+09	ton-miles/year				
Fuel Use for all Trains - Round Trip		3,600,461	gal/year				
CO_2 =	36,786	tonne/yr					
CH_4 =	2.88	tonne/yr =	60.49	tonne CO_2e/yr			
N_2O =	0.94	tonne/yr =	290.20	tonne CO_2e/yr	Total tonne CO_2e/yr =		37,137

New engines will meet Tier 3 emissions (40 CFR Part 1033, EPA Switch and Line-haul Locomotive Emission Standards). CH4 and N2O factors are from California Climate Action Registry General Reporting Protocol Version 3.1 (January 2009), Table C.6 (Methane and Nitrous Oxide Emission Factors for Non-Highway Vehicles) for locomotives.

Offsite Liquid Sulfur Product Trains

Number of Trains cars per year		83	per year		EF CO_2 =	10,217	g/gal
Miles Traveled Per Train		150	Miles one way		EF CH_4 =	0.8	g/gal
Rail Freight Fuel Consumption		480	ton-mile/gallon		EF N_2O =	0.26	g/gal
Loaded train car weight		125	ton				
Unloaded train car weight		25	ton				
All Trains - Round Trip		1.87E+06	ton-miles/year				
Fuel Use for all Trains - Round Trip		3,890	gal/year				
CO_2 =	39.75	tonne/yr					
CH_4 =	3.11E-03	tonne/yr =	7.E-02	tonne CO_2e/yr			
N_2O =	1.01E-03	tonne/yr =	3.E-01	tonne CO_2e/yr	Total tonne CO_2e/yr =		40

New engines will meet Tier 3 emissions (40 CFR Part 1033, EPA Switch and Line-haul Locomotive Emission Standards). CH4 and N2O factors are from California Climate Action Registry General Reporting Protocol Version 3.1 (January 2009), Table C.6 (Methane and Nitrous Oxide Emission Factors for Non-Highway Vehicles) for locomotives.

Offsite Gasification Solid Product Trains

Number of Trains cars per year		2,800	per year		EF CO_2 =	10,217	g/gal
Miles Traveled Per Train		198	Miles one way		EF CH_4 =	0.8	g/gal
Rail Freight Fuel Consumption		480	ton-mile/gallon		EF N_2O =	0.26	g/gal
Loaded train car weight		125	ton				
Unloaded train car weight		25	ton				
All Trains - Round Trip		8.32E+07	ton-miles/year				
Fuel Use for all Trains - Round Trip		173,244	gal/year				
CO_2 =	1,770	tonne/yr					
CH_4 =	1.39E-01	tonne/yr =	3.E+00	tonne CO_2e/yr			
N_2O =	4.50E-02	tonne/yr =	1.E+01	tonne CO_2e/yr	Total tonne CO_2e/yr =		1,787

New engines will meet Tier 3 emissions (40 CFR Part 1033, EPA Switch and Line-haul Locomotive Emission Standards). CH4 and N2O factors are from California Climate Action Registry General Reporting Protocol Version 3.1 (January 2009), Table C.6 (Methane and Nitrous Oxide Emission Factors for Non-Highway Vehicles) for locomotives.

Offsite Ammonia Product Trains

Number of Trains cars per year		357	per year		EF CO_2 =	10,217	g/gal
Miles Traveled Per Train		264	Miles one way		EF CH_4 =	0.8	g/gal
Rail Freight Fuel Consumption		480	ton-mile/gallon		EF N_2O =	0.26	g/gal
Loaded train car weight		142	ton				
Unloaded train car weight		25	ton				
All Trains - Round Trip		1.57E+07	ton-miles/year				
Fuel Use for all Trains - Round Trip		32,789	gal/year				
CO_2 =	335	tonne/yr					
CH_4 =	2.62E-02	tonne/yr =	6.E-01	tonne CO_2e/yr			
N_2O =	8.53E-03	tonne/yr =	3.E+00	tonne CO_2e/yr	Total tonne CO_2e/yr =		338

New engines will meet Tier 3 emissions (40 CFR Part 1033, EPA Switch and Line-haul Locomotive Emission Standards). CH4 and N2O factors are from California Climate Action Registry General Reporting Protocol Version 3.1 (January 2009), Table C.6 (Methane and Nitrous Oxide Emission Factors for Non-Highway Vehicles) for locomotives.

Offsite Urea Product Trains

Number of Trains cars per year		1,795	per year		EF CO_2 =	10,217	g/gal
Miles Traveled Per Train		628	Miles one way		EF CH_4 =	0.8	g/gal
Rail Freight Fuel Consumption		480	ton-mile/gallon		EF N_2O =	0.26	g/gal
Loaded train car weight		142	ton				
Unloaded train car weight		25	ton				
All Trains - Round Trip		1.88E+08	ton-miles/year				
Fuel Use for all Trains - Round Trip		392,179	gal/year				
CO_2 =	4,007	tonne/yr					
CH_4 =	3.14E-01	tonne/yr =	7.E+00	tonne CO_2e/yr			
N_2O =	1.02E-01	tonne/yr =	3.E+01	tonne CO_2e/yr	Total tonne CO_2e/yr =		4,045

New engines will meet Tier 3 emissions (40 CFR Part 1033, EPA Switch and Line-haul Locomotive Emission Standards). CH4 and N2O factors are from California Climate Action Registry General Reporting Protocol Version 3.1 (January 2009), Table C.6 (Methane and Nitrous Oxide Emission Factors for Non-Highway Vehicles) for locomotives.

GHG Emissions Summary for Mobile Sources — Emissions Summary

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Offsite UAN Product Trains

Number of Trains cars per year		1,983	per year		EF CO_2 =	10,217	g/gal
Miles Traveled Per Train		264	Miles one way		EF CH_4 =	0.8	g/gal
Rail Freight Fuel Consumption		480	ton-mile/gallon		EF N_2O =	0.26	g/gal
Loaded train car weight		142	ton				
Unloaded train car weight		25	ton				
All Trains - Round Trip		8.74E+07	ton-miles/year				
Fuel Use for all Trains - Round Trip		182,132	gal/year				
CO_2 =	1,861	tonne/yr					
CH_4 =	1.46E-01	tonne/yr =	3.E+00	tonne CO_2e/yr			
N_2O =	4.74E-02	tonne/yr =	1.E+01	tonne CO_2e/yr	Total tonne CO_2e/yr =		1,879

New engines will meet Tier 3 emissions (40 CFR Part 1033, EPA Switch and Line-haul Locomotive Emission Standards). CH4 and N2O factors are from California Climate Action Registry General Reporting Protocol Version 3.1 (January 2009), Table C.6 (Methane and Nitrous Oxide Emission Factors for Non-Highway Vehicles) for locomotives.

Offsite Petcoke Trucks

Number of Trucks		15,200	truck per year		EF CO_2 =	1,671	g/mi
Distance traveled per Truck (Round Trip)		280	miles/ truck		EF CH_4 =	0.0051	g/mi
Total Annual VMT		4,256,000	miles/ year		EF N_2O =	0.0048	g/mi
CO_2 =	7,110	tonne/yr					
CH_4 =	2.17E-02	tonne/yr =	5.E-01	tonne CO_2e/yr			
N_2O =	2.04E-02	tonne/yr =	6.E+00	tonne CO_2e/yr	Total tonne CO_2e/yr =		7,117

CO2 emissions from EMFAC2007 for fleet year 2010 heavy-heavy duty diesel trucks travelling at 50 mph. Running emission Factor for N2O and CH4 is based on Table C.4, California Climate Action Registry General Reporting Protocol Version 3.1, Jan 2009 for diesel heavy duty vehicles. Idling emission Factor for N2O and CH4 were extrapolated based on the ratio of CO2 emission factor for running vs idling.

Offsite Liquid Sulfur Product Trucks

Number of Trucks		990	truck per year		EF CO_2 =	1,671	g/mi
Distance traveled per Truck (Round Trip)		284	miles/ truck		EF CH_4 =	0.0051	g/mi
Total Annual VMT		281,160	miles/ year		EF N_2O =	0.0048	g/mi
CO_2 =	470	tonne/yr					
CH_4 =	1.43E-03	tonne/yr =	3.E-02	tonne CO_2e/yr			
N_2O =	1.35E-03	tonne/yr =	4.E-01	tonne CO_2e/yr	Total tonne CO_2e/yr =		470

CO2 emissions from EMFAC2007 for fleet year 2010 heavy-heavy duty diesel trucks travelling at 50 mph. Running emission Factor for N2O and CH4 is based on Table C.4, California Climate Action Registry General Reporting Protocol Version 3.1, Jan 2009 for diesel heavy duty vehicles. Idling emission Factor for N2O and CH4 were extrapolated based on the ratio of CO2 emission factor for running vs idling.

Offsite Gasification Solids Product Trucks

Number of Trucks		2,800	truck per year		EF CO_2 =	1,671	g/mi
Distance traveled per Truck (Round Trip)		160	miles/ truck		EF CH_4 =	0.0051	g/mi
Total Annual VMT		448,000	miles/ year		EF N_2O =	0.0048	g/mi
CO_2 =	748	tonne/yr					
CH_4 =	2.28E-03	tonne/yr =	5.E-02	tonne CO_2e/yr			
N_2O =	2.15E-03	tonne/yr =	7.E-01	tonne CO_2e/yr	Total tonne CO_2e/yr =		749

CO2 emissions from EMFAC2007 for fleet year 2010 heavy-heavy duty diesel trucks travelling at 50 mph. Running emission Factor for N2O and CH4 is based on Table C.4, California Climate Action Registry General Reporting Protocol Version 3.1, Jan 2009 for diesel heavy duty vehicles. Idling emission Factor for N2O and CH4 were extrapolated based on the ratio of CO2 emission factor for running vs idling.

Offsite Ammonia Product Trucks

Number of Trucks		5,010	truck per year		EF CO_2 =	1,671	g/mi
Distance traveled per Truck (Round Trip)		80	miles/ truck		EF CH_4 =	0.0051	g/mi
Total Annual VMT		400,800	miles/ year		EF N_2O =	0.0048	g/mi
CO_2 =	670	tonne/yr					
CH_4 =	2.04E-03	tonne/yr =	4.E-02	tonne CO_2e/yr			
N_2O =	1.92E-03	tonne/yr =	6.E-01	tonne CO_2e/yr	Total tonne CO_2e/yr =		670

CO2 emissions from EMFAC2007 for fleet year 2010 heavy-heavy duty diesel trucks travelling at 50 mph. Running emission Factor for N2O and CH4 is based on Table C.4, California Climate Action Registry General Reporting Protocol Version 3.1, Jan 2009 for diesel heavy duty vehicles. Idling emission Factor for N2O and CH4 were extrapolated based on the ratio of CO2 emission factor for running vs idling.

Offsite Urea Product Trucks

Number of Trucks		2,800	truck per year		EF CO_2 =	1,671	g/mi
Distance traveled per Truck (Round Trip)		80	miles/ truck		EF CH_4 =	0.0051	g/mi
Total Annual VMT		224,000	miles/ year		EF N_2O =	0.0048	g/mi
CO_2 =	374	tonne/yr					
CH_4 =	1.14E-03	tonne/yr =	2.E-02	tonne CO_2e/yr			
N_2O =	1.08E-03	tonne/yr =	3.E-01	tonne CO_2e/yr	Total tonne CO_2e/yr =		375

CO2 emissions from EMFAC2007 for fleet year 2010 heavy-heavy duty diesel trucks travelling at 50 mph. Running emission Factor for N2O and CH4 is based on Table C.4, California Climate Action Registry General Reporting Protocol Version 3.1, Jan 2009 for diesel heavy duty vehicles. Idling emission Factor for N2O and CH4 were extrapolated based on the ratio of CO2 emission factor for running vs idling.

Offsite UAN Product Trucks

Number of Trucks		9,280	truck per year		EF CO_2 =	1,671	g/mi
Distance traveled per Truck (Round Trip)		80	miles/ truck		EF CH_4 =	0.0051	g/mi
Total Annual VMT		742,400	miles/ year		EF N_2O =	0.0048	g/mi
CO_2 =	1,240	tonne/yr					
CH_4 =	3.79E-03	tonne/yr =	8.E-02	tonne CO_2e/yr			
N_2O =	3.56E-03	tonne/yr =	1.E+00	tonne CO_2e/yr	Total tonne CO_2e/yr =		1,241

CO2 emissions from EMFAC2007 for fleet year 2010 heavy-heavy duty diesel trucks travelling at 50 mph. Running emission Factor for N2O and CH4 is based on Table C.4, California Climate Action Registry General Reporting Protocol Version 3.1, Jan 2009 for diesel heavy duty vehicles. Idling emission Factor for N2O and CH4 were extrapolated based on the ratio of CO2 emission factor for running vs idling.

Offsite Equipment and Miscellaneous Trucks

Number of Trucks		1,818	truck per year		EF CO_2 =	1,671	g/mi
Distance traveled per Truck (Round Trip)		80	miles/ truck		EF CH_4 =	0.0051	g/mi
Total Annual VMT		145,440	miles/ year		EF N_2O =	0.0048	g/mi
CO_2 =	243	tonne/yr					
CH_4 =	7.42E-04	tonne/yr =	2.E-02	tonne CO_2e/yr			
N_2O =	6.98E-04	tonne/yr =	2.E-01	tonne CO_2e/yr	Total tonne CO_2e/yr =		243

CO2 emissions from EMFAC2007 for fleet year 2010 heavy-heavy duty diesel trucks travelling at 50 mph. Running emission Factor for N2O and CH4 is based on Table C.4, California Climate Action Registry General Reporting Protocol Version 3.1, Jan 2009 for diesel heavy duty vehicles. Idling emission Factor for N2O and CH4 were extrapolated based on the ratio of CO2 emission factor for running vs idling.

GHG Emissions Summary for Mobile Sources — Emissions Summary

Hydrogen Energy California LLC *11/15/2012*
HECA Project

Offsite Employee Commute Vehicles

Total Number of Employee	200	employees/day		EF CO_2 =	364	g/mi
Number of Worker per Commuter Vehicle	1.3			EF CH_4 =	0.0159	g/mi
Daily Vehicle Count	154	vehicles/day		EF N_2O =	0.0093	g/mi
Distance traveled per vehicle (Round Trip)	40	miles/ vehicle/ day				
Day of Commute per Month	365	days/yr				
Total Annual VMT	2,246,154	miles/year				

CO_2 =	817	tonne/yr				
CH_4 =	3.57E-02	tonne/yr =	7.E-01	tonne CO_2e/yr		
N_2O =	2.09E-02	tonne/yr =	6.E+00	tonne CO_2e/yr	Total tonne CO_2e/yr =	824

CO2 emission factor for CO2 is from EMFAC 2007 (average of light duty automobile and light duty truck) for the vehicle model year fro m1971 to 2015. Running emission Factor for N2O and CH4 is based on Table C.4, California Climate Action Registry General Reporting Protocol Version 3.1, Jan 2009 for average of gasoline passenger cars, gasoline light trucks, diesel passenger cars, and diesel light truck.

Total tonne CO_2e/yr for Mobile Sources=	**57,619**

HECA Emissions for all Commissioning Scenarios

	Maximum Hourly Emission Rates (lb/hr)				
Case 1	SO2	Nox	CO	VOC	PM10
One Diesel Generator	0.0	3.2	16.7	1.9	0.5
Power CT	0	0	0	0	1.1
Total	**0.03**	**3.2**	**16.7**	**1.9**	**1.6**
Case A	SO2	Nox	CO	VOC	PM10
Power Block CT	0	0	0	0	1.1
CTG @ 20% No Controls	2.1	67.1	2270	65	15
Total	**2.1**	**67.1**	**2270**	**65**	**16.1**
Case B	SO2	Nox	CO	VOC	PM10
Power Block CT	0	0	0	0	1.1
CTG @ 80% No Controls	4.8	391.2	344.5	3.8	15
Total	**4.8**	**391.2**	**344.5**	**3.8**	**16.1**
Case A2	SO2	Nox	CO	VOC	PM10
Power CT	0	0	0	0	1.1
ASU CT	0	0	0	0	0.2
Process CT	0	0	0	0	1.9
Flare Unshifted	4.1	140	4000	0	0
(NG) Coal Drying	0.3	4.5	44.2	1.9	0.9
(NG) HRSG 80%	4.7	34.1	26	5.9	15
Tail Gas Oxidizer	2.2	22.3	18.6	0.6	0.7
No CO2 Venting					
Total	**11.2**	**201.0**	**4088.8**	**8.4**	**19.8**
Case B2	SO2	Nox	CO	VOC	PM10
Power CT	0	0	0	0	1.1
ASU CT	0	0	0	0	0.2
Process CT	0	0	0	0	1.9
Flare Shifted	4.1	140.0	740.0	0.0	0.0
(NG) Coal Drying	0.3	4.53	44.22	1.9	0.9
(NG) HRSG 80%	4.7	34.1	26	5.9	15
Tail Gas Oxidizer	42.7	22.3	18.6	0.6	0.7
No CO2 Venting					
Total	**51.8**	**201.0**	**828.8**	**8.4**	**19.8**

Case C2	SO2	Nox	CO	VOC	PM10
Power CT	0	0	0	0	1.1
ASU CT	0	0	0	0	0.2
Process CT	0	0	0	0	1.9
H2 Rich Gas Flare	4.1	140.0	740.0	0.0	0.0
(NG) Coal Drying	0.3	4.53	44.22	1.9	0.9
(NG) HRSG 80%	4.7	34.1	26	5.9	15
Tail Gas Oxidizer (Normal Operation)	2.0	3.1	2.6	0.1	0.1
CO2 Vent	0	0	246	5.5	0
Total	**11.1**	**181.8**	**1058.8**	**13.4**	**19.2**

Case D2	SO2	Nox	CO	VOC	PM10
Power CT	0	0	0	0	1.1
ASU CT	0	0	0	0	0.2
Process CT	0	0	0	0	1.9
H2 Rich Gas Flare	3.6	123.8	654.2	0.0	0.0
PSA Off-Gas Flare	0.5	16.2	85.8	0.0	0.0
(NG) Coal Drying	0.3	4.53	44.22	1.9	0.9
(NG) HRSG 80%	4.7	34.1	26	5.9	15
Tail Gas Oxidizer (Normal Operation)	2.0	3.1	2.6	0.1	0.1
No CO2 Venting					
Total	**11.1**	**181.8**	**812.8**	**7.9**	**19.2**

Case E2	SO2	Nox	CO	VOC	PM10
Power CT	0	0	0	0	1.1
ASU CT	0	0	0	0	0.2
Process CT	0	0	0	0	1.9
H2 Rich Gas Flare	1.0	35.0	185.0	0.0	0.0
Coal Drying (H2)	0.9	17.6	21.4	0.6	1.4
HRSG (40% H2)	2.4	66.6	81	4.6	15
Tail Gas Oxidizer (Normal Operation)	2.0	3.1	2.6	0.1	0.1
CO2 Vent	0	0	246	5.5	0
Total	**6.3**	**122.3**	**536.0**	**10.8**	**19.7**

Case A3	SO2	Nox	CO	VOC	PM10
Power CT	0	0	0	0	1.1
ASU CT	0	0	0	0	0.2
Process CT	0	0	0	0	1.9
H2 Purified Flare	0.0	79.9	0.0	0.0	0.0
Coal Drying (Normal)	0.9	4.4	3.2	0.6	1.4
HRSG (normal)	4.1	25	18.3	3.5	15
Tail Gas Oxidizer (Normal Operation)	2.0	3.1	2.6	0.1	0.1
CO2 Vent (blend to CO2 purification)	0	0	103.4	0	0
Total	**7.0**	**112.4**	**127.5**	**4.2**	**19.7**

Case B3	SO2	Nox	CO	VOC	PM10
Power CT	0	0	0	0	1.1
ASU CT	0	0	0	0	0.2
Process CT	0	0	0	0	1.9
H2 Rich Gas Flare	0.0	79.9	0.0	0.0	0.0
Coal Drying (Normal)	0.9	4.4	3.2	0.6	1.4
HRSG (normal)	4.1	25	18.3	3.5	15
Tail Gas Oxidizer (Normal Operation)	2.0	3.1	2.6	0.1	0.1
CO2 Vent (high purity)	0	0	103.4	0	0
Ammon S/U Heater	0.1	0.5	1.5	0.2	0.2
Total	**7.1**	**112.9**	**129.0**	**4.3**	**19.9**

Case C3	SO2	Nox	CO	VOC	PM10
Power CT	0	0	0	0	1.1
ASU CT	0	0	0	0	0.2
Process CT	0	0	0	0	1.9
Coal Drying	0.9	4.4	3.2	0.6	1.4
HRSG (normal)	4.1	25	18.3	3.5	15
Tail Gas Oxidizer (Normal Operation)	2.0	3.1	2.6	0.1	0.1
Nitric Acid Nox Abator	0.0	60.0	0.0	0.0	0.2
Total	**7.0**	**92.5**	**24.1**	**4.2**	**19.9**

Hydrogen Energy California Project
4/13/2012

Flare Stack Parameters for Commissioning Modeling Scenarios

Parameter	Gasification Flare (unshifted) Case A2	Gasification Flare (shifted) Case B2	Gasification Flare (H2 Rich) Case C2	Gasification Flare (H2 Rich gas, PSA Off-Gas Flare) Case D2	Gasification Flare (H2 Rich Gas) Case E2	Gasification Flare (H2 Purified) Case A3 and B3
Heat release rate for flare+pilot, (10^6 Btu/hr HHV)	2000	2000	2,000	2,000	500	1142
H = Total Heat release rate (cal/s)	1.40E+08	1.40E+08	1.40E+08	1.40E+08	3.50E+07	7.99E+07
Fb = Buoyancy flux	2.32E+03	2.32E+03	2.32E+03	2.32E+03	5.81E+02	1.33E+03
Q_H = sensible heat release rate	6.30E+07	6.30E+07	6.30E+07	6.30E+07	1.57E+07	3.60E+07
Actual Stack height (m)	76.2	76.2	76.2	76.2	76.2	76.2
GEP stack height for modeling (m)	65	65	65	65	65	65
AERMOD Input parameters						
He = Effective stack height (m) as calculated in SCREEN3	100.71	100.71	100.71	100.71	83.41	92.32
T = Stack temperature (K)	1273	1273	1273	1273	1273	1273
v = Exit velocity (m/s)	20	20	20	20	20	20
d = effective stack diameter (m)	7.842	7.842	7.842	7.842	3.921	5.926

Flare stack parameters are based on calculated using the SCREEN3 technique
Fb = Buoyancy flux = 1.66 x 10-5 x H
QH = sensible heat release rate = 0.45 x H
He = Effective stack height (m) = Hs + 4.56E-03 * H^0.478
BTU/hr to cal/sec 0.06999882

HECA Modeling Results for all Commissioning Scenarios

Modeling Scenario	Pollutant	Averaging Period	Maximum Estimated Impact (mg/m^3)	Background[1] (mg/m^3)	Monitoring Station Description[1]	Total Predicted Concentration (mg/m^3)	Most Stringent Standard (mg/m^3) [2]
Case 1	CO	1-hour	144.64	4,581	a	4725.64	23,000
		8-hour	46.38	2,485	a	2531.38	10,000
	SO_2	1-hour	0.26	42	d	42.26	655
		24-hour	0.03	13	d	13.03	105
	NO_2[3]	1-hour	24.94	140	b	164.94	339
	PM_{10}	24-hour	0.95	264	c	264.55	50
Case A	CO	1-hour	1975.17	4,581	a	6556.17	23,000
		8-hour	801.25	2,485	a	3286.25	10,000
Case B	SO_2	1-hour	4.18	42	d	46.18	655
		24-hour	0.85	13	d	13.85	105
	NO_2[3]	1-hour	149.73	140	b	289.73	339
Case A2	CO	1-hour	565.85	4,581	a	5146.85	23,000
		8-hour	147.91	2,485	a	2632.91	10,000
	SO_2	1-hour	4.18	42	d	46.18	655
		24-hour	0.85	13	d	13.85	105
	NO_2[3]	1-hour	38.36	140	b	178.36	339
	PM_{10}	24-hour	3.40	264	c	267.00	50
Case B2	SO_2	1-hour	97.43	42	d	139.43	655
		3-hour	37.51	26	d	63.51	1,300
		24-hour	7.48	13	d	20.48	105
	NO_2[3]	1-hour	38.36	140	b	178.36	339
Case C2	CO	1-hour	1097.41	4,581	a	5678.41	23,000
		8-hour	178.21	2,485	a	2663.21	10,000
Case D2	NO_2[3]	1-hour	23.43	140	b	163.43	339
Case E2	CO	1-hour	914.50	4,581	a	5495.50	23,000
		8-hour	146.67	2,485	a	2631.67	10,000
	NO_2[3]	1-hour	66.76	140	b	206.76	339
Case B3	CO	1-hour	384.78	4,581	a	4965.78	23,000
		8-hour	61.38	2,485	a	2546.38	10,000
	SO_2	1-hour	5.53	42	d	47.53	655
		24-hour	0.92	13	d	13.92	105
	NO_2[3]	1-hour	23.23	140	b	163.23	339
Case C3	NO_2[3]	1-hour	128.32	140	b	268.32	339
	PM_{10}	24-hour	3.51	264	c	267.11	50

Source: HECA Project 2012

Notes:

1. Background Concentrations are maximum concentrations from the last 3 years of available EPA AirData and/or CARB data at the following stations

a) Bakersfield Golden State Highway Monitoring Station, Maximum Concentration 2007-2009
b) Shafter Monitoring Station, Maximum Concentration 2009-2011
c) Bakersfield California Avenue Monitoring Station, Maximum Concentration 2008-2010
d) Fresno 1st Street Monitoring Station Maximum Concentrations, 2007-2009 for 3-hour SO_2, 2009-2011 for 1-hour and 24 -hour SO2

2. Although there is a NAAQS for SO2 and NO2 1-hour impacts from commissioning activities are only be compared to the CAAQS due to the infrequent nature of the commissioning activities.

3. NO_2 modeling for commissioning was conducted with the PVMRM algorithm.

CO = carbon monoxide

NO_2 = nitrogen dioxide

PM_{10} = particulate matter less than 10 microns in diameter

SO_2 = sulfur dioxide

$\mu g/m^3$ = micrograms per cubic meter

Summary of Applicable Operational Emissions for General Conformity (Alternative 2) - 2017 Overlaping with Construction

Hydrogen Energy California LLC *12/2012 revision*
HECA Project

Federal NAAQS Nonattainment or Maintenance Area General Name and State	Detailed Status in Nonattainment or Maintenance Area	Authority Agency	Basis to Estimate the Offsite Transportation Distance	Emission Sources / Applicable General Conformity Thresholds / Comparisons	Project Operational Annual Emission Rates - for General Conformity (tpy)					
					CO	NOx	PM10	PM2.5	SO2	VOC
San Joaquin Valley, CA	8-Hour Ozone (2008) Nonattainment - Extreme PM2.5 Nonattainment CO Maintenance - Maderate - Fresno, CA (Part of Fresno County), Modesto, CA (Part of Stanislaus County), Stockton, CA (Part of San Joaquin County) PM10 Maintenance	SJVAPCD	**Construction** - Entire SJVAPCD jurisdiction area (one way trip: trucks = worker vehicles = 20 miles)	Onsite Construction Equipmen	2.65	3.84	1.23	0.35	0.00	0.83
				Onsite Trucks	0.15	0.34	0.77	0.09	0.00	0.09
				Onsite Vehicles	0.08	0.01	1.04	0.10	0.00	0.01
				Onsite Total	2.88	4.18	3.04	0.55	0.01	0.93
				Offsite Linears Equipment	0.00	0.00	0.00	0.00	0.00	0.00
				Offsite Trucks	1.02	5.16	0.42	0.21	0.00	0.22
				Offsite Vehicles	5.98	0.72	0.20	0.07	0.01	0.18
				Offsite Total	6.99	5.87	0.61	0.28	0.01	0.41
				Total Construction Emission	**9.87**	**10.06**	**3.66**	**0.82**	**0.02**	**1.34**
			Operation - Entire SJVAPCD jurisdiction area (one way trip: trains = 70 miles, trucks = 26.5 to 80 miles, workers= 20 miles)	Offsite Train	1.16	4.49	0.07	0.07	0.08	0.12
				Offsite Truck	4.74	7.81	2.14	0.65	0.06	0.66
				Offsite Workers Commuting	1.39	0.16	0.35	0.09	0.00	0.04
				Onsite Train	0.00	0.00	0.00	0.00	0.00	0.00
				Onsite Truck	0.47	0.92	0.09	0.03	0.00	0.14
				Total Operation Emissions	**7.76**	**13.38**	**2.66**	**0.84**	**0.15**	**0.97**
				Total Construction and Operation Overlapping Emissions	**17.63**	**23.44**	**6.32**	**1.66**	**0.16**	**2.30**
				Applicable General Conformity *de minimis* Thresholds	**100**	**10**	**100**	**100**	**100**	**10**
				Less Than Thresholds?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Los Angeles-South Coast Air Basin, CA	8-Hour Ozone (2008) Nonattainment - Extreme PM10 Nonattainment - Serious PM2.5 Nonattainment NO2 Maintenance CO Maintenance - Serious	SCAQMD	Entire SCAQMD jurisdiction area (one way trip: trucks = 88 to 90 miles)	Offsite Train	0.00	0.00	0.00	0.00	0.00	0.00
				Offsite Truck	1.41	2.32	0.64	0.19	0.02	0.20
				Total Emission	**1.41**	**2.32**	**0.64**	**0.19**	**0.02**	**0.20**
				Conformity De minimis (ton/yr)	**100**	**10**	**70**	**100**	**100**	**10**
				Less than De minimis?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Kern County (East Kern), CA	8-Hour Ozone (2008) Nonattainment - Marginal PM10 Nonattainment - Serious	EKAPCD	Entire EKAPCD jurisdiction area (one way trip: trains = 62 miles)	Offsite Train		3.98	0.06			0.11
				Offsite Truck		0.00	0.00			0.00
				Total Emission		**3.98**	**0.06**			**0.11**
				Conformity De minimis (ton/yr)		**100**	**70**			**100**
				Less than De minimis?		**Yes**	**Yes**			**Yes**
Los Angeles-San Bernardino Counties (West Mojave Desert), CA	8-Hour Ozone (2008) Nonattainment - Severe 15 (Part of San Bernardino and Los Angeles Counties)	MDAQMD	Los Angeles-San Bernardino Counties (West Mojave Desert) - 8-hr Ozone (2008) NAA (one way trip: trains = 120 miles)	Offsite Train		7.70				0.21
				Offsite Truck		0.00				0.00
				Total Emission		**7.70**				**0.21**
				Conformity De minimis (ton/yr)		**25**				**25**
				Less than De minimis?		**Yes**				**Yes**
San Bernardino County, CA (Mojave Desert)	PM10 Nonattainment - Moderate	MDAQMD	Entire MDAQMD jurisdiction area (one way trip: trains = 204 miles)	Offsite Train			0.21			
				Offsite Truck			0.00			
				Total Emission			**0.21**			
				Conformity De minimis (ton/yr)			**100**			
				Less than De minimis?			**Yes**			
Sacramento Metro, CA	8-Hour Ozone (2008) Nonattainment - Severe 15 PM10 Nonattainment - Moderate (Sacramento County) PM2.5 Nonattainment CO Maintenance - Moderate - Sacramento, CA (Part of Placer, Sacramento and Yolo Counties)	SMAQMD	Entire SMAQMD jurisdiction area (one way trip: trains = 0 miles)	Offsite Train	0.00	0.00	0.00	0.00	0.00	0.00
				Offsite Truck	0.00	0.00	0.00	0.00	0.00	0.00
				Total Emission	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
				Conformity De minimis (ton/yr)	**NA**	**25**	**100**	**100**	**100**	**25**
				Less than De minimis?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Yuba City-Marysville, CA	PM2.5 Nonattainment (Sutter and Part of Yuba Counties) 1-Hour Ozone (Yuba City)	FRAQMD	Yuba City-Marysville, CA - PM2.5 NAA (one way trip: trains = 0 miles)	Offsite Train		0.00		0.00	0.00	0.00
				Offsite Truck		0.00		0.00	0.00	0.00
				Total Emission		**0.00**		**0.00**	**0.00**	**0.00**
				Conformity De minimis (ton/yr)		**100**		**100**	**100**	**100**
				Less than De minimis?		**Yes**		**Yes**	**Yes**	**Yes**
Chico, CA	8-Hour Ozone (2008) Nonattainment - Marginal (Butte County) PM2.5 Nonattainment (Part of Butte County) CO Maintenance - Moderate (Part of Butte County)	BCAQMD	Chico, CA - 8-Hour Ozone (2008) NAA - Entire Butte County (one way trip: trains = 0 miles)	Offsite Train	0.00	0.00		0.00	0.00	0.00
				Offsite Truck	0.00	0.00		0.00	0.00	0.00
				Total Emission	**0.00**	**0.00**		**0.00**	**0.00**	**0.00**
				Conformity De minimis (ton/yr)	**NA**	**100**		**100**	**100**	**100**
				Less than De minimis?	**Yes**	**Yes**		**Yes**	**Yes**	**Yes**

Summary of Applicable Operational Emissions for General Conformity (Alternative 2) - 2017 Overlaping with Construction

Hydrogen Energy California LLC *12/2012 revision*
HECA Project

Federal NAAQS Nonattainment or Maintenance Area General Name and State	Detailed Status in Nonattainment or Maintenance Area	Authority Agency	Basis to Estimate the Offsite Transportation Distance	Emission Sources / Applicable General Conformity Thresholds / Comparisons	Project Operational Annual Emission Rates - for General Conformity (tpy)					
					CO	NOx	PM10	PM2.5	SO2	VOC
NAAs in State of Arizona	8-Hour Ozone (2008) Nonattainment - Marginal - Phoenix-Mesa, AZ (Part of Maricopa and Pinal County) PM10 Nonattainment (Moderate, Serious, or Maintenance) (12 Counties) PM2.5 Nonattainment - Nogales, AZ (Part of Santa Cruz County), West Central Pinal, AZ (West Pinal County) SO2 Nonattainment - Hayden (Pinal County), AZ (Part of Pinal County), Maintenance - San Manual (Pinal County), AZ, Ajo (Pima County), AZ, Douglas (Cochise County), AZ, Miami (Gila County), AZ CO Maintenance - Serious - Phoenix, AZ. (Part of Maricopa)	ADEQ	Entire ADEQ jurisdiction area (one way trip: trains = 364 miles)	Offsite Train	6.04	23.37	0.38	0.37	0.43	0.65
				Offsite Truck	0.00	0.00	0.00	0.00	0.00	0.00
				Total Emission	**6.04**	**23.37**	**0.38**	**0.37**	**0.43**	**0.65**
				Conformity De minimis (ton/yr)	**100**	**100**	**70**	**100**	**100**	**100**
				Less than De minimis?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NAAs in State of New Mexico	PM10 Nonattainment - Moderate - Anthony, NM (Dona Ana County) CO Maintenance (Bernalillo County) SO2 Maintenance - Grant Co, NM	NMED-AQB	Entire NMED-AQB jurisdiction area (one way trip: trains = 102 miles to coal mine site)	Offsite Train	1.68		1.39		0.12	
				Offsite Truck	0.00		0.00		0.00	
				Total Emission	**1.68**		**1.39**		**0.12**	
				Conformity De minimis (ton/yr)	**100**		**100**		**100**	
				Less than De minimis?	**Yes**		**Yes**		**Yes**	

Notes:

1. The associated emissions from the onsite worker travel are negligible
2. To simplify the analysis, the biggest area among all detailed NAA areas was conservativly used to estimate the emissions in each main NAA category area.
   For State of Arizona and New Mexico the total distances accross each state along the train routes were conservativly used to estimate the emissions in NAA.
3. The distance for trains and trucks are varied depending on the type to materials transporting and their destinations.
ozone nonattainment area is smaller than the distance in PM10 nonattainment area.
5. ACRONYMS AND ABBREVIATIONS
   MDAQMD = Mojave Desert Air Quality Management District
   SCAQMD = South Coast Air Quality Management District
   EKAPCD = East Kern County Air Pollution Control District
   SMAQMD = Sacramento Metro Air Quality Management District
   BCAQMD = Butte County Air Quality Management District
   FRAQMD = Feather River Air Quality Management District
   ADEQ = Arizona Department of Environmental Quality
   NMED-AQB = New Mexico Environment Department - Air Quality Bureau
6. Construction of the project is expected to complete in June 2017 and the operation will start from September. Therefore, the operational emissions were scaled from the entire year of project operation.

Summary of Applicable Operational Emissions for General Conformity (Alternative 2) - 2018 and Beyond

Hydrogen Energy California LLC *12/2012 revision*
HECA Project

Federal NAAQS Nonattainment or Maintenance Area General Name and State	Detailed Status in Nonattainment or Maintenance Area	Authority Agency	Basis to Estimate the Offsite Transportation Distance	Emission Sources / Applicable General Conformity Thresholds / Comparisons	Project Operational Annual Emission Rates - for General Conformity (tpy)					
					CO	NOx	PM10	PM2.5	SO2	VOC
San Joaquin Valley, CA	8-Hour Ozone (2008) Nonattainment - Extreme PM2.5 Nonattainment CO Maintenance - Maderate - Fresno, CA (Part of Fresno County), Modesto, CA (Part of PM10 Maintenance	SJVAPCD	Entire SJVAPCD jurisdiction area (one way trip: trains = 70 miles, trucks = 26.5 to 80 miles, workers= 20 miles)	Offsite Train	3.49	13.48	0.22	0.21	0.25	0.37
				Offsite Truck	14.22	23.42	6.43	1.94	0.17	1.98
				Offsite Workers Commuting	4.17	0.48	1.05	0.28	0.01	0.13
				Onsite Train	0.00	0.00	0.00	0.00	0.00	0.00
				Onsite Truck	1.42	2.76	0.28	0.09	0.01	0.41
				Total Emission	**23.29**	**40.14**	**7.98**	**2.52**	**0.44**	**2.90**
				Conformity De minimis (ton/yr)	**100**	**10**	**100**	**100**	**100**	**10**
				Less than De minimis?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Los Angeles-South Coast Air Basin, CA	8-Hour Ozone (2008) Nonattainment - Extreme PM10 Nonattainment - Serious PM2.5 Nonattainment NO2 Maintenance CO Maintenance - Serious	SCAQMD	Entire SCAQMD jurisdiction area (one way trip: trucks = 88 to 90 miles)	Offsite Train	0.00	0.00	0.00	0.00	0.00	0.00
				Offsite Truck	4.23	6.96	1.91	0.58	0.05	0.59
				Total Emission	**4.23**	**6.96**	**1.91**	**0.58**	**0.05**	**0.59**
				Conformity De minimis (ton/yr)	**100**	**10**	**70**	**100**	**100**	**10**
				Less than De minimis?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Kern County (East Kern), CA	8-Hour Ozone (2008) Nonattainment - Marginal PM10 Nonattainment - Serious	EKAPCD	Entire EKAPCD jurisdiction area (one way trip: trains = 62 miles)	Offsite Train		11.94	0.19			0.33
				Offsite Truck		0.00	0.00			0.00
				Total Emission		**11.94**	**0.19**			**0.33**
				Conformity De minimis (ton/yr)		**100**	**70**			**100**
				Less than De minimis?		**Yes**	**Yes**			**Yes**
Los Angeles-San Bernardino Counties (West Mojave Desert), CA	8-Hour Ozone (2008) Nonattainment - Severe 15 (Part of San Bernardino and Los Angeles Counties)	MDAQMD	Los Angeles-San Bernardino Counties (West Mojave Desert) - 8-hr Ozone (2008) NAA (one way trip: trains = 120 miles)	Offsite Train		23.11				0.64
				Offsite Truck		0.00				0.00
				Total Emission		**23.11**				**0.64**
				Conformity De minimis (ton/yr)		**25**				**25**
				Less than De minimis?		**Yes**				**Yes**
San Bernardino County, CA (Mojave Desert)	PM10 Nonattainment - Moderate	MDAQMD	Entire MDAQMD jurisdiction area (one way trip: trains = 204 miles)	Offsite Train			0.63			
				Offsite Truck			0.00			
				Total Emission			**0.63**			
				Conformity De minimis (ton/yr)			**100**			
				Less than De minimis?			**Yes**			
Sacramento Metro, CA	8-Hour Ozone (2008) Nonattainment - Severe 15 PM10 Nonattainment - Moderate (Sacramento County) PM2.5 Nonattainment CO Maintenance - Moderate - Sacramento, CA (Part of Placer, Sacramento and Yolo Counties)	SMAQMD	Entire SMAQMD jurisdiction area (one way trip: trains = 0 miles)	Offsite Train	0.00	0.00	0.00	0.00	0.00	0.00
				Offsite Truck	0.00	0.00	0.00	0.00	0.00	0.00
				Total Emission	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
				Conformity De minimis (ton/yr)	**NA**	**25**	**100**	**100**	**100**	**25**
				Less than De minimis?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Yuba City-Marysville, CA	PM2.5 Nonattainment (Sutter and Part of Yuba	FRAQMD	Yuba City-Marysville, CA - PM2.5 NAA (one way trip: trains = 0 miles)	Offsite Train		0.00		0.00	0.00	0.00
				Offsite Truck		0.00		0.00	0.00	0.00
				Total Emission		**0.00**		**0.00**	**0.00**	**0.00**
				Conformity De minimis (ton/yr)		**100**		**100**	**100**	**100**
				Less than De minimis?		**Yes**		**Yes**	**Yes**	**Yes**
Chico, CA	8-Hour Ozone (2008) Nonattainment - Marginal (Butte County) PM2.5 Nonattainment (Part of Butte County) CO Maintenance - Moderate (Part of Butte County)	BCAQMD	Chico, CA - 8-Hour Ozone (2008) NAA - Entire Butte County (one way trip: trains = 0 miles)	Offsite Train	0.00	0.00		0.00	0.00	0.00
				Offsite Truck	0.00	0.00		0.00	0.00	0.00
				Total Emission	**0.00**	**0.00**		**0.00**	**0.00**	**0.00**
				Conformity De minimis (ton/yr)	**NA**	**100**		**100**	**100**	**100**
				Less than De minimis?	**Yes**	**Yes**		**Yes**	**Yes**	**Yes**

Summary of Applicable Operational Emissions for General Conformity (Alternative 2) - 2018 and Beyond

Hydrogen Energy California LLC *12/2012 revision*
HECA Project

Federal NAAQS Nonattainment or Maintenance Area General Name and State	Detailed Status in Nonattainment or Maintenance Area	Authority Agency	Basis to Estimate the Offsite Transportation Distance	Emission Sources / Applicable General Conformity Thresholds / Comparisons	Project Operational Annual Emission Rates - for General Conformity (tpy)					
					CO	NOx	PM10	PM2.5	SO2	VOC
NAAs in State of Arizona	8-Hour Ozone (2008) Nonattainment - Marginal - Phoenix-Mesa, AZ (Part of Maricopa and Pinal County) PM10 Nonattainment (Moderate, Serious, or Maintenance) (12 Counties) PM2.5 Nonattainment - Nogales, AZ (Part of Santa Cruz County), West Central Pinal, AZ (West Pinal County) SO2 Nonattainment - Hayden (Pinal County), AZ (Part of Pinal County), Maintenance - San Manual (Pinal County), AZ, Ajo (Pima County), AZ, Douglas (Cochise County), AZ, Miami (Gila County), AZ CO Maintenance - Serious - Phoenix, AZ. (Part of Maricopa)	ADEQ	Entire ADEQ jurisdiction area (one way trip: trains = 364 miles)	Offsite Train	18.13	70.10	1.13	1.10	1.28	1.94
				Offsite Truck	0.00	0.00	0.00	0.00	0.00	0.00
				Total Emission	**18.13**	**70.10**	**1.13**	**1.10**	**1.28**	**1.94**
				Conformity De minimis (ton/yr)	**100**	**100**	**70**	**100**	**100**	**100**
				Less than De minimis?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NAAs in State of New Mexico	PM10 Nonattainment - Moderate - Anthony, NM (Dona Ana County) CO Maintenance (Bernalillo County) SO2 Maintenance - Grant Co, NM	NMED-AQB	Entire NMED-AQB jurisdiction area (one way trip: trains = 102 miles to coal mine site)	Offsite Train	5.05		4.17		0.36	
				Offsite Truck	0.00		0.00		0.00	
				Total Emission	**5.05**		**4.17**		**0.36**	
				Conformity De minimis (ton/yr)	**100**		**100**		**100**	
				Less than De minimis?	**Yes**		**Yes**		**Yes**	

Notes:

1. The associated emissions from the onsite worker travel are negligible
2. To simplify the analysis, the biggest area among all detailed NAA areas was conservativly used to estimate the emissions in each main NAA category area. For State of Arizona and New Mexico the total distances accross each state along the train routes were conservativly used to estimate the emissions in NAA.
3. The distance for trains and trucks are varied depending on the type to materials transporting and their destinations.

nonattainment area is smaller than the distance in PM10 nonattainment area.

5. ACRONYMS AND ABBREVIATIONS
   MDAQMD = Mojave Desert Air Quality Management District
   SCAQMD = South Coast Air Quality Management District
   EKAPCD = East Kern County Air Pollution Control District
   SMAQMD = Sacramento Metro Air Quality Management District
   BCAQMD = Butte County Air Quality Management District
   FRAQMD = Feather River Air Quality Management District
   ADEQ = Arizona Department of Environmental Quality
   NMED-AQB = New Mexico Environment Department - Air Quality Bureau

Summary of Offsite Operations Train Emissions - HECA

Emissions Summary

12/2012 revision

Annual Number of Train Cars (incoming/outgoing)

	Coal Cars (incoming)	Liquid Sulfur Cars (outgoing)	Gasification Cars (outgoing)	Ammonia Cars (outgoing)	Urea Cars (outgoing)	UAN Cars (outgoing)	Maximum Total Trains per period
Annual average number of train cars	13034	0	0	0	0	0	13034

	Line-Haul Engine for Coal Train	Line-Haul Engine for Product Trains				
		Liquid Sulfur	Gasification	Ammonia	Urea	UAN
ton-mile/gallon	480	480	480	480	480	480
Train car capacity (ton)	117	100	100	117	117	117
Unloaded train car weight (ton)	25	25	25	25	25	25

480 ton-mile/gallon is based on 2009 *class I rail freight fuel consumption and travel* data (Association of American Railroads, *Railroad Facts*)

	Coal Trains			Liquid Sulfur Product Train			Gasification Solid Product Train		
Area	Miles traveled per Train (mile/engine) - One Way *	Coal Train (ton-miles/year) - Round Trip	Fuel Use for Coal Train (gal/year) - Round Trip	Miles traveled per Train (mile/engine) - One Way	Product Train (ton-miles/year) - Round Trip	Fuel Use for Product Train (gal/year) - Round Trip	Miles traveled per Train (mile/engine) - One Way	Product Train (ton-miles/year) - Round Trip	Fuel Use for Product Train (gal/year) - Round Trip
SJVAPCD	70	152,369,658	317,426	0	0	0	0	0	0
EKAPCD	62	134,955,983	281,148		0	0	0	0	0
MDAQMD (PM10 nonattainment and the maximum distance)	204	442,960,363	922,802		0	0	0	0	0
MDAQMD (Ozone nonattainment)	120	261,205,128	544,158		0	0		0	0
Arizona (PM10 nonattainment and the maximum distance)	364	792,322,222	1,650,613		0	0		0	0
New Mexico	102	220,936,004	460,267		0	0		0	0

* Since exact route of coal train was not determined yet, It was assumed that the coal train would travel across the maximum distance of the nonattainment area for all pollutants in Arizona.

	Ammonia Product Train			Urea Product Train			UAN Product Train		
Area	Miles traveled per Train (mile/engine) - One Way	Product Train (ton-miles/year) - Round Trip	Fuel Use for Product Train (gal/year) - Round Trip	Miles traveled per Train (mile/engine) - One Way	Product Train (ton-miles/year) - Round Trip	Fuel Use for Product Train (gal/year) - Round Trip	Miles traveled per Train (mile/engine) - One Way	Product Train (ton-miles/year) - Round Trip	Fuel Use for Product Train (gal/year) - Round Trip
SJVAPCD	0	0	0	0	0	0	0	0	0
Sacramento Metro		0	0	0	0	0		0	0
Yuba City-Marysville		0	0	0	0	0		0	0
Chico		0	0	0	0	0		0	0
Other Area in California and Oregon/Washington		0	0	0	0	0		0	0

offsite locomotive travelling speed in average	40	mph
ratio of required horsepower (empty train/full train)	0.76	
locomotive load factor	28%	

12/2012 revision

Train Type	Coal	Liquid Sulfur	Gasification Solids	Ammonia	Urea	UAN
Railcar Capacity (ton)	117	100	100	117	117	117
Locomotive Engine Power (hp, each)	4,400	3,000	3,000	3,000	3,000	3,000
Railcars per train	120	46	46	46	46	46
Numbers of locomotive engine per train	6	2	2	2	2	2
Total ton of material per locomotive engine	2,340	2,300	2,300	2,691	2,691	2,691
Total # locomotive engines needed to transport material per year	652	-	-	-	-	-
Total # locomotive engines needed for returning trains per year	495	-	-	-	-	-
Total locomotive hours per year in SJVAPCD	2,007					
Total locomotive hours per year in EKAPCD	1,778					
Total locomotive hours per year in MDAQMD (PM10 nonattainment and the maximum distance)	5,836					
Total locomotive hours per year in MDAQMD (Ozone nonattainment)	3,441					
Total locomotive hours per year in Arizona (PM10 nonattainment and the maximum distance)	10,438					
Total locomotive hours per year in New Mexico	2,911					
Total locomotive hours per year in Sacramento Metro						
Total locomotive hours per year in Yuba City-Marysville						
Total locomotive hours per year in Chico						
Total locomotive hours per year in Other Area in California and Oregon/Washington						

Summary of Offsite Operations Train Emissions - HECA

Emissions Summary

12/2012 revision

	Line-Haul Emission Factors	CO	NOx	PM10	PM2.5	SO2	VOC
	Tier 3 Emission Factor (g/bhp-hr)	1.28	4.95	0.08	0.08	0.09	0.14
	Tier 3 Emission Factor (g/gal)	26.62	102.96	1.66	1.61	1.88	2.85

Annual Emission Rates by Area

Area		CO	NOx	PM10	PM2.5	SO2	VOC
		Annual Emission Rates (tons/year) all trains					
SJVAPCD (San Joaquin Valley), CA	Line-haul coal engines	3.49	13.48	0.22	0.21	0.25	0.37
	Line-haul liquid sulfur product engines	0.00	0.00	0.00	0.00	0.00	0.00
	Line-haul gasification product engines	0.00	0.00	0.00	0.00	0.00	0.00
	Line-haul ammonia product engines	0.00	0.00	0.00	0.00	0.00	0.00
	Line-haul urea product engines	0.00	0.00	0.00	0.00	0.00	0.00
	Line-haul UAN product engines	0.00	0.00	0.00	0.00	0.00	0.00
	Total Trains (ton/yr)	**3.49**	**13.48**	**0.22**	**0.21**	**0.25**	**0.37**
EKAPCD (East Kern County), CA	Line-haul coal engines	3.09	11.94	0.19	0.19	0.22	0.33
	Line-haul gasification product engines	0.00	0.00	0.00	0.00	0.00	0.00
	Total Trains (ton/yr)	**3.09**	**11.94**	**0.19**	**0.19**	**0.22**	**0.33**
MDAQMD (PM10 nonattainment and total distance)	Line-haul coal engines	10.13	39.19	0.63	0.61	0.72	1.08
	Line-haul gasification product engines	0.00	0.00	0.00	0.00	0.00	0.00
	Total Trains (ton/yr)	**10.13**	**39.19**	**0.63**	**0.61**	**0.72**	**1.08**
MDAQMD (Ozone nonattainment)	Line-haul coal engines	5.98	23.11	0.37	0.36	0.42	0.64
	Line-haul gasification product engines	0.00	0.00	0.00	0.00	0.00	0.00
	Total Trains (ton/yr)	**5.98**	**23.11**	**0.37**	**0.36**	**0.42**	**0.64**
Arizona	Line-haul coal engines	18.13	70.10	1.13	1.10	1.28	1.94
	Total Trains (ton/yr)	**18.13**	**70.10**	**1.13**	**1.10**	**1.28**	**1.94**
Sacramento Metro, CA	Line-haul urea product engines	0.00	0.00	0.00	0.00	0.00	0.00
	Total Trains (ton/yr)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Yuba City-Marysville, CA	Line-haul urea product engines	0.00	0.00	0.00	0.00	0.00	0.00
	Total Trains (ton/yr)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Chico, CA	Line-haul urea product engines	0.00	0.00	0.00	0.00	0.00	0.00
	Total Trains (ton/yr)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Other Area in California and Oregon/Washington	Line-haul urea product engines	0.00	0.00	0.00	0.00	0.00	0.00
	Total Trains (ton/yr)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
New Mexico	Line-haul coal engines	5.05	19.55	0.32	0.31	0.36	0.54
	Total Trains (ton/yr)	**5.05**	**19.55**	**0.32**	**0.31**	**0.36**	**0.54**

EPA Estimated Locomotive Average Emission Rates by Tiers

Tier	Emission Factor (g/bhp-hr)			
	CO	NO_X	PM	HC
Uncontrolled	1.28	13.00	0.32	0.48
Tier 0	1.28	8.60	0.32	0.48
Tier 0+	1.28	7.20	0.20	0.30
Tier 1	1.28	6.70	0.32	0.47
Tier 1+	1.28	6.70	0.20	0.29
Tier 2	1.28	4.95	0.18	0.26
Tier 2+ and Tier 3	1.28	4.95	0.08	0.13
Tier 4	1.28	1.00	0.015	0.04

Emission Factors For all Locomotives
SOx (3)
g/gal
1.88

Locomotive Application	Conversion Factor (bhp-hr/gal)
Large Line-haul & Passenger	20.8
Small Line-haul	18.2
Switching	15.2

Note:

(1) EPA's Technical Highlights: Emission Factors for Locomotives, 2009 (http://www.epa.gov/nonroad/locomotv/420f09025.pdf).

(2) Line-haul engine emissions of CO, Nox, PM, and HC are based on EPA Tier 3.

(3) Based on 300 ppm sulfur diesel fuel.

(4) VOC emissions can be assumed to be equal to 1.053 times the HC emissions

(5) $PM_{2.5}$ Fraction of PM_{10}, = 0.97

(6) No off-site switching or idling was assumed for train transportation.

(7) Average line haul locomotive load factor was obtained from Table 5.12 of The Port Of Long Beach - 2007 Air Emissions Inventory (http://www.polb.com/civica/filebank/blobdload.asp?BlobID=6021)

Summary of Truck Emissions - HECA

12/2012 revision

Calculations for Trucks Operation

Data Supplied By Client

Parameter	Coke Trucks (Max @ 50 or 60 mph)	Coal Trucks (Max @ 50 or 60 mph)	Liquid Sulfur Product Trucks (Max @ 50 or 60 mph)	Gasification Product Trucks (Max @ 50 or 60 mph)	Ammonia Product Trucks (Max @ 50 or 60 mph)	Urea Product Trucks (Max @ 50 or 60 mph)	UAN Sulfur Product Trucks (Max @ 50 or 60 mph)	Equipment and Miscellaneous Trucks (Max @ 50 or 60 mph)
	Running Emissions	Running Emissions	Running Emissions	Running Emissions	Running Emissions	Running Emissions	Running Emissions	Running Emissions
Distance traveled per truck in San Joaquin Valley, CA (mi)	104	53	104	160	80	80	80	80
Distance traveled per truck in Los Angeles-South Coast Air Basin, CA (mi)	176	0	180	0	0	0	0	0
Maximum number of trucks or loads:								
Annual average trucks or loads	15,200	61,000	1,320	11,200	6,680	11,200	18,560	1,818

No off-site idling was assumed for truck transportation.
Distance traveled per truck is based on round-trip.

EMFAC2007 Emission Factors + Fugitive Dust (g/mi) For Truck Model year 2010, Scenario year 2015

Pollutant	Coke Trucks (Max @ 50 or 60 mph) Running Emissions (g/mile/trk)	Coal Trucks (Max @ 50 or 60 mph) Running Emissions (g/mile/trk)	Liquid Sulfur Product Trucks (Max @ 50 or 60 mph) Running Emissions (g/mile/trk)	Gasification Product Trucks (Max @ 50 or 60 mph) Running Emissions (g/mile/trk)	Ammonia Product Trucks (Max @ 50 or 60 mph) Running Emissions (g/mile/trk)	Urea Product Trucks (Max @ 50 or 60 mph) Running Emissions (g/mile/trk)	UAN Sulfur Product Trucks (Max @ 50 or 60 mph) Running Emissions (g/mile/trk)	Equipment and Miscelleneous Trucks (Max @ 50 or 60 mph) Running Emissions (g/mile/trk)
CO	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32
NOx	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17
ROG	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
SOx	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
PM10 *	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
PM2.5 *	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18

EMFAC2007 is the approved federal model for vehicle combustion emissions
* PM10 and PM2.5 includes fugitive dust factor for paved roads obtained from AP-42 Ch. 13 plus PM factors from EMFAC 2007
PM factors from EMFAC = combustion exhaust + tire wear + break wear
The maximum emission factor from either truck speed at 50 mph or 60 mph was used.
Most California highways have speed limits of 60 or 70 mph and large trucks travel more slowly than the speed limit.

Annual Emission Rates in ton/yr all trucks

Pollutant	Coke Trucks (Max @ 50 or 60 mph) Running Emissions	Coal Trucks (Max @ 50 or 60 mph) Running Emissions	Liquid Sulfur Product Trucks (Max @ 50 or 60 Running Emissions	Gasification Product Trucks (Max @ 50 or 60 mph) Running Emissions	Ammonia Product Trucks (Max @ 50 or 60 mph) Running Emissions	Urea Product Trucks (Max @ 50 or 60 mph) Running Emissions	UAN Sulfur Product Trucks (Max @ 50 or 60 mph) Running Emissions	Equipment and Miscelleneous Trucks (Max Running Emissions	Total Truck Emission Rates (tons/yr)
San Joaquin Valley, CA									
CO	2.29	4.69	0.20	2.60	0.78	1.30	2.15	0.21	**14.22**
NOx	3.78	7.72	0.33	4.28	1.28	2.14	3.55	0.35	**23.42**
ROG	0.32	0.65	0.03	0.36	0.11	0.18	0.30	0.03	**1.98**
SOx	0.03	0.06	0.00	0.03	0.01	0.02	0.03	0.00	**0.17**
PM10	1.04	2.12	0.09	1.18	0.35	0.59	0.97	0.10	**6.43**
PM2.5	0.31	0.64	0.03	0.35	0.11	0.18	0.29	0.03	**1.94**
Los Angeles-South Coast Air Basin, CA									
CO	3.88	0.00	0.34	0.00	0.00	0.00	0.00	0.00	**4.23**
NOx	6.39	0.00	0.57	0.00	0.00	0.00	0.00	0.00	**6.96**
ROG	0.54	0.00	0.05	0.00	0.00	0.00	0.00	0.00	**0.59**
SOx	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.05**
PM10	1.76	0.00	0.16	0.00	0.00	0.00	0.00	0.00	**1.91**
PM2.5	0.53	0.00	0.05	0.00	0.00	0.00	0.00	0.00	**0.58**

Summary of Worker Commute Vehicle Emissions - HECA

12/2012 revision

Calculations for Worker Commute Vehicle Operation

OFFSITE - 50 MPH								EF (g/mile)					
Onroad Vehicle	Fuel Type	Vehicle Type	Total Number of Workers per day	Daily Vehicle Count	Round Trip Distance (miles/vehicle/day)	Trips per day	VMT (Annual)	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	TOC
Personal Commuting Vehicles	G/D	LDA/ LDT	200	154	40.0	1	2,246,154	1.6825	0.1930	0.4234	0.1134	3.50E-03	0.0540

Assumptions:

Assumed average distance traveled off site for all employees commuting will be 20 miles

times 2 for return trip = 40 miles

365 days per year

Number of workers per commuter vehicle = 1.3

EMFAC2007 emissions are for fleet mix years 1971-2015 travelling at 50 mph.

Area	Description	Annual Emission Rates (tons/year) all worker commute vehicles					
		CO	NOx	PM10	PM2.5	SO2	VOC
San Joaquin Valley, CA	Personal Commuting Vehicles	4.17	0.48	1.05	0.28	0.01	0.13

Fugitive Dust on Paved Road

AP 42 13.2.1 Paved Roads, updated January 2011

For a daily basis,
E = [k (sL)^0.91 x (W)^1.02](1-P/4N) (2)

P = number of "wet" days with at least 0.254 mm (0.01 in) of precipitation during the averaging period
W = average weight (tons) of vehicles traveling the road
k = particle size multiplier for particle size range and units of interest
sL = road surface silt loading (g/m^2)

	k
	g/VMT
PM2.5	0.25
PM10	1.00

Table 13.2.1-1
PARTICLE SIZE MULTIPLIERS FOR PAVED ROAD EQUATION

Fleet mix on highway

W= 9.1 tons, average
sL= 0.031 g/m2 Default value from URBEMIS 9.2 for Kern County
P= 36 days/year Buttonwillow Station 1940-2011, WRCC

E=
0.09836 g/VMT PM2.5
0.39344 g/VMT PM10

Vehicle weight (tons)		fraction of each vehicle type
1.6	passenger vehicles	0.75
40	large trucks	0.18
9	2-4 axle trucks	0.07

9.1 weighted average for all vehicles (ton)

On I-5 near the Project, 75% of all vehicles are passenger vehicles,
of the remaining vehicle, 73% are 5-axle trucks and the remainder are 2-4 axle trucks.
From information provided by California Department of Transportation for the traffic analysis.

Industrial Wind Erosion, AP-42 Section 13.2.5

Emission factor (g/m^2-yr) = $k \sum P_i$ (from i=1,N) (Equation 2)

Erosion Potential (P_i) (g/m^2) = $58 (u^* - u_t^*)^2 + 25(u^* - u_t^*)$ (Equation 3)

0.5	k =	PM_{10} particle size multiplier
0.075	k =	$PM_{2.5}$ particle size multiplier
1	N =	number of disturbances per year
33.76	A =	exposed area of coal, m^2, per car (Table 4.1, Jan 2008 Connell Hatch: exposed area = 33.76 m^2)

Use Equation (1) to determine friction velocity:

$u(z) = u^* / 0.4 \times \ln(z/z_0)$

17.88	u(z) =	fastest mile (m/s) (based on speed of train)
0.2	z =	distance at which wind speed is measured (m) (based on the height above the coal cars at which wind flow would be laminar; assumed this height is equal to the difference between the height of the locomotive engine and the trailing coal cars)
0.003	z_0 =	roughness height for uncrusted coal pile (m), from Table 13.2.5-2
1.70	u* =	friction velocity (m/s), solved for using Equation 1
0.55	u_t^* =	threshold friction velocity (m/s); Table 13.2.5-2 value for ground coal (surrounding coal pile)

Erosion Potential

	P =	105.9	g/m^2	erosion potential corresponding to the observed (or probable) fastest mile of wind for the i^{th} period between disturbances, g/m^2
Annual	A =	440,027.8	m^2/yr	exposed area of coal per car (m^2) times number of cars per year

Unmitigated Emissions

Emission factor (g/m^2-yr) = $k \sum P_i$ (from i=1,N)

E =	23,305,420	grams PM_{10} / year
	25.69	tons PM_{10} / year
E =	3,495,813	grams $PM_{2.5}$ / year
	3.85	tons $PM_{2.5}$ / year

Mitigation Efficiency of Surfactant: 85%

* HECA will be requiring the coal supplier to apply a surfactant to the coal transported by rail to reduce fugitive losses during transport. Surfactant achieves at least an 85% control efficiency.

Mitigated PM_{10}:	**3.85 tons PM_{10} / year**
Mitigated $PM_{2.5}$:	**0.58 tons $PM_{2.5}$ / year**

* It has been assumed that all emitted PM will be lost during the first 100 miles of the trip and has thus all been assigned to New Mexico. Maximum train speed (and thus wind speed) will certainly be reached within this time, and according to AP-42 Section 13.2.5.1, "particulate emission rates tend to decay rapidly (half-life of a few minutes) during an erosion event."

40	train speed, mph
0.447	m/s per 1 mph
453.6	grams per pound
2000	pounds per ton
13034	Required rail car loads per year at normal operation (cars/yr)

Summary of Transportation Vehicles and Routes

Commodity Handled	Petcoke	Coal	Liquid Sulfur	Gasification	Ammonia	Urea	UAN	Equipment	Miscellaneous
Expected plant operation									
Expected plant operation is 8000 hours / year									
The plant will operate 24 hours / day	24 hours / day	24 hours / day	24 hours / day	24 hours / day	24 hours / day	24 hours / day	24 hours / day	24 hours / day	24 hours / day
The plant will operate 333 days / year	333 days / yr	333 days / yr	333 days / yr	333 days / yr	333 days / yr	333 days / yr	333 days / yr	333 days / yr	333 days / yr
Shipment by trucks	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Shipment by train	0 %	100 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %
Production rate									
Required Normal Flow / day	1,140 tons / day	4,580 tons / day	100 tons / day	839 tons / day	500 tons / day	833 tons / day	1,392 tons / day		
Required Normal Flow / year	380,000 tons / yr	1,525,000 tons / yr	33,000 tons / yr	280,000 tons / yr	167,000 tons / yr	280,000 tons / yr	464,000 tons / yr		
Required Maximum Flow day	1,368 tons / day (3)	6,107 tons / day (4)	200 tons / day (5)	1,678 tons / day (6)	1,000 tons / day (6)	1,666 tons / day (6)	2,784 tons / day (6)		
Truck Shipments									
Truck Capacity	25 tons / truck	25 tons / truck	25 tons / truck	25 tons / truck	25 tons / truck	25 tons / truck	25 tons / truck	25 tons / truck	25 tons / truck
Required trucks loads for normal operation / day	46 trucks / day	183 trucks / day	4 trucks / day	34 trucks / day	20 trucks / day	33 trucks / day	56 trucks / day	2 trucks / day	3 trucks / day
Required trucks loads for normal operation / yr	15,200 truck / yr	61,000 truck / yr	1,320 truck / yr	11,200 truck / yr	6,680 truck / yr	11,200 truck / yr	18,560 truck / yr		
Required trucks loads for maximum operation /day	55 trucks / day	244 trucks / day	8 trucks / day	67 trucks / day	40 trucks / day	67 trucks / day	111 trucks / day		
Train Shipments									
Railcar Capacity		117 tons / car	100 tons / car	100 tons / car	117 tons / car	117 tons / car	117 tons / car		
Assume a train has 13,000 ton capacity									
Required railcars for normal operation / day		39 cars / day	0 cars / day	0 cars / day	0 cars / day	0 cars / day	0 cars / day		
Required railcar loads for normal operation / yr		13,034 cars / yr	0 cars / yr	0 cars / yr	0 cars / yr	0 cars / yr	0 cars / yr		
Required railcars for maximum operation / day		200 cars / day	0 cars / day	0 cars / day	0 cars / day	0 cars / day	0 cars / day		
Basis	- 91% availability - 25% petcoke (heat input) - 25 ton/truck - 7 days/week receiving - 25% excess truck	- 91% availability - 75% coal (heat input) per year - 117 tons/car - 100% coal for maximum - Rack sized to handle two trains/day	- 91% availability - High sulfur case - 100 - 25 ton/truck - Weekdays only	- 91% availability - 75% coal max annual - Maximum is double the daily average rate	- 91% availability - 500 t/d NH3 sales - Ability to ship 7500 tons over 10 days (75% of tank plus some production)	- 91% availability -empty 45 day storage in 10 days	- 91% availability -empty 45 day storage in 10 days	'	
Traffic route	Truck Route	Truck Route	Truck Route	Truck Route	Truck Route	Truck Route	Truck Route	Truck Route	Truck Route
Destination/Origin	Carson Refinery	Wasco rail terminal to site	California Sulfur 2509 E Grant Street, Wilmington	Various	Various	Various	Various	Various	Various
Address	1801 E Sepulveda, Carson								
Distance	140 miles	26.5 miles	142 miles	80 mile radius	40 mile radius	40 mile radius	40 mile radius	40 mile ratius	40 mile ratius
Route	Alameda 405 Fwy 5 Fwy Stockdale hwy Morris Road Station Road		Grant Henry Ford Alameda 405 Fwy 5 Fwy Stockdale hwy Morris Road Station Road	40 mile radius Station Road Morris Road Stockdale Hywy 5 Fwy	Station Road Morris Road Stockdale Hywy 5 Fwy	Station Road Morris Road Stockdale Hywy 5 Fwy	Station Road Morris Road Stockdale Hywy 5 Fwy	5 fwy Stockdale Hwy Dairy Road	5 fwy Stockdale Hwy Dairy Road
	Rail Route	Rail Route	Rail Route	Rail Route	Rail Route	Rail Route	Rail Route	Rail Route	Rail Route
Destination/Origin	None	Elk Ranch New Mexico	None	None	None	None	None	None	None
Address									
Distance		801 miles							
Route		Kern County: 139.2 miles (County Line near Boron, CA to north property line of plant) Mine to Boron, CA: 662 miles Total Distance: 801.2 miles							

Notes

1) Equipment Maintenance Trucks are considered to be 2% of the total trucks per day for the feed and product operation.
2) Miscellaneous trucks are considered to be 3% of the total trucks per day for the feed and product operation.
3) The maximum flow rate of coke is ratioed up from the normal flow rate at 25% to 30% of feed
4) The maximum flow rate of coal is ratioed up from the normal flow rate at 75% to 100% of feed
5) The maximum flow rate of sulfur is 2 times the normal production
6) The maximum flow rate of these commodities is 2 times the normal production
7) The sources of flow data used in the Production Rate calculation were based on the flow rates provided in "Conference Note: Rail and Truck Traffic - Planning Session" and the "FertilizerProductMovement Update", 01-25-12.

Summary of Feedstock and Product Truck Emissions

Emissions Summary

12/2012 revision

Calculations for Trucks Operation onsite

Data Supplied By Client						
Parameter	**Petcoke and Coal Trucks**		**Product Trucks**		**Miscellaneous Trucks**	
	Running Emissions	**Idling Emissions**	**Running Emissions**	**Idling Emissions**	**Running Emissions**	
Distance Traveled (mi)*	0.96		2.49		2.20	
Per Truck Idle Time (hr)		0.083		0.083		
Maximum number of trucks or loads:						percent of trucks from old HECA trucks/day
1-hr	30	30	30	30	5	0.1
3-hr	90	90	89	89	5	0.3
8-hr	239	239	237	237	5	0.8
24-hr	299	299	296	296	5	
Annual average trucks or loads	76,200	76,200	48,960	48,960	1,818	0.005

EMFAC2007 Emission Factors + Fugitive Dust (g/mi or g/idle-hour) For Truck Model year 2010

Pollutant	Coke and Coal Trucks		Product Trucks		Miscellaneous Trucks		
	Running Emissions (g/mile/trk)	**Idling Emissions (g/idle-hour/trk)**	**Running Emissions (g/mile/trk)**	**Idling Emissions (g/idle-hour/trk)**	**Running Emissions (g/mile/trk)**		
CO	3.03	43.69	3.03	43.69	3.03	Truck dump	
NOx	5.43	122.65	5.43	122.65	5.43	5 min	Idling is rule
ROG	1.39	7.74	1.39	7.74	1.39		
SOx	0.03	0.06	0.03	0.06	0.03		
PM10 *	0.92	0.11	0.92	0.11	0.92		
PM2.5 *	0.29	0.10	0.29	0.10	0.29		

EMFAC2007 is the approved federal model for vehicle combustion emissions
* PM10 and PM2.5 includes fugitive dust factor for paved roads obtained from AP-42 Ch. 13 plus PM factors from EMFAC 2007
PM factors from EMFAC = combustion exhaust + tire wear + break wear
EMFAC emissions are for fleet year 2010 travelling at 10 mph.

Annual Emission Rates in g/s For All Trucks

Pollutant	Coke and Coal Trucks		Product Trucks		Miscellaneous Trucks			
	Running Emissions	**Idling Emissions (at each Idle Point)**	**Running Emissions**	**Idling Emissions (at each Idle Point)**	**Running Emissions**	**TOTAL (g/s)**		**TOTAL (tpy)**
CO	6.997E-03	8.797E-03	1.168E-02	5.652E-03	3.839E-04	3.35E-02		1.17E+00
NOx	1.254E-02	2.470E-02	2.094E-02	1.587E-02	6.880E-04	7.47E-02		2.60E+00
ROG	3.207E-03	1.559E-03	5.356E-03	1.002E-03	1.760E-04	1.13E-02		3.93E-01
SOx	6.932E-05	1.248E-05	1.158E-04	8.021E-06	3.803E-06	2.09E-04		7.28E-03
PM10	2.119E-03	2.295E-05	3.538E-03	1.475E-05	1.162E-04	5.81E-03		2.02E-01
PM2.5	6.758E-04	2.094E-05	1.129E-03	1.346E-05	3.708E-05	1.88E-03		6.52E-02

Summary of On-Site Operations Truck Emissions

12/2012 revision

Transportation Information

- Onsite Vehicle =	20 trucks	
- Vehicle year=	2010	
- Maximum annual mileage =	10,000 miles/truck-year	

Notes

- Information Provided By Applicant
- Information Provided By Applicant
- All routine vehicular traffic is anticipated to travel exclusively on paved roads
- Assumed 15 mph average speed within HECA facility

Calculations for Trucks Operation Modeling per Truck

	Onsite O&M Trucks
Mileage	
1-hr	1
3-hr	3
8-hr	9
24-hr	27
Annual average trucks or loads	10000

EMFAC2007 Emission Factors (g/mi) For Truck Model year 2010

	Emission Factors in g/mi	
Pollutant	**Gas LHDT1**	**Diesel LHDT2**
CO	0.229	0.920
NOx	0.064	0.672
ROG	0.014	0.085
SOx	0.011	0.005
PM10 *	0.167	0.176
PM2.5 *	0.054	0.062

EMFAC2007 is the approved federal model for vehicle combustion emissions
* PM10 and PM2.5 includes fugitive dust factor for paved roads obtained from AP-42 Ch. 13 plus PM factors from EMFAC 2007
PM factors from EMFAC = combustion exhaust + tire wear + break wear
EMFAC emissions are for fleet year 2010 travelling at 15 mph.

Annual Emission Rates in g/s From All Trucks

	Emissions in g/s			
Pollutant	**Gas LHDT1**	**Diesel LHDT2**	**TOTAL (g/s)**	**TOTAL (tpy)**
CO	1.45E-03	5.83E-03	7.29E-03	0.253
NOx	4.06E-04	4.26E-03	4.67E-03	0.162
ROG	8.88E-05	5.39E-04	6.28E-04	0.022
SOx	6.98E-05	3.17E-05	1.01E-04	0.004
PM10	1.06E-03	1.11E-03	2.17E-03	0.076
PM2.5	3.40E-04	3.91E-04	7.32E-04	0.025

Fugitive Dust on Paved Road

12/2012 revision

AP 42 13.2.1 Paved Roads, updated January 2011

For a daily basis,
E = [k (sL)^0.91 x (W)^1.02](1-P/4N) (2)

P = number of "wet" days with at least 0.254 mm (0.01 in) of precipitation during the averaging period
W = average weight (tons) of vehicles traveling the road
k = particle size multiplier for particle size range and units of interest
sL = road surface silt loading (g/m^2)

	k
	g/VMT
PM2.5	0.25
PM10	1.00

Table 13.2.1-1
PARTICLE SIZE MULTIPLIERS FOR PAVED ROAD EQUATION

Large Trucks

				Empty truck	full truck	Load Capacity
W=	17.5	tons, average		5	30	25 tons
sL=	0.031	g/m2	Default value from URBEMIS 9.2 for Kern County			
P=	36	days/year	Buttonwillow Station 1940-2011, WRCC			

E=
0.19149 g/VMT PM2.5 large delivery trucks
0.76594 g/VMT PM10 large delivery trucks

Operation and Maintenance Vehicles

W=	3	tons	
sL=	0.031	g/m2	Default value from URBEMIS 9.2 for Kern County
P=	36	days/year	Buttonwillow Station 1940-2011, WRCC

E=
0.03169 g/VMT PM2.5 large delivery trucks
0.12675 g/VMT PM10 large delivery trucks
#vol sources= 10

Fertilizer Product + Sulfur Product trucks + Gas Solids trucks + Misc trucks

218 max trucks/day for Ammonia + Urea + UAN 24 hrs/day
8 max trucks/day for Sulfur
67 max trucks/day gas solids
3 miscellaneous truck along this path
296 Total product trucks max/day

4000 meters, approximate length of road for product trucks: eastern fenceline to southern fenceline to middle loop and back out the opposite way
2.49 miles

0.47593 grams PM2.5/truck/day	141.064 g PM2.5/day for all product trucks	5.8777 g PM2.5/hr
1.90373 grams PM10/truck/day	564.257 g PM10/day for all product trucks	23.5107 g PM10/hr

volume source in model
73 8.0516E-02 g PM2.5/hr/volume source
3.2206E-01 g PM10/hr/volume source

Coke + coal feedstock trucks

299 max feedstock trucks/day

1539 meters, approximate length of road loop to truck feedstock unloading facility on east side
0.96 miles

0.18312 grams PM2.5/truck/day	54.800 g PM2.5/day for all product trucks	2.2833 g PM2.5/hr
0.73246 grams PM10/truck/day	219.201 g PM10/day for all product trucks	9.1334 g PM10/hr

volume source in model
34 6.7157E-02 g PM2.5/hr/volume source
2.6863E-01 g PM10/hr/volume source

Miscellaneous Delivery Trucks

5 max trucks/day

3540 meters, approximate length of road from end of product truck south road, along southern fenceline, north toward main site, to parking lot and back
2.20 miles

0.421 grams PM2.5/truck/day	2.299 g PM2.5/day for all product trucks	0.0958 g PM2.5/hr
1.685 grams PM10/truck/day	9.196 g PM10/day for all product trucks	0.3832 g PM10/hr

volume source in model
5 1.9158E-02 g PM2.5/hr/volume source
7.6631E-02 g PM10/hr/volume source

HECA Offsite transportation distances

Mileage within each air basin

Commodity Handled	Air Basin	Petcoke	Coal	Liquid Sulfur	Gasification Solids	Ammonia	Urea	UAN	Equipment Maintenance	Miscellaneous Activities
Truck Shipments										
	San Joaquin Valley	52	26.5	52	80	40	40	40	40	40
	South Coast	88		90						
	Other									
Train Shipments [1]										
	San Joaquin Valley		70	0	0	0	0	0		
	South Coast									
	Other		731		0		0			

Notes:
1. In Alternative 2, trains only used to bring in coal to Wasco station (no outgoing product on trains)

MILEAGE CALCULATIONS

Coal	SJV	70
	EKAPCD	62
	MDAQMD	204
	MDAQMD (PM10)	204
	MDAQMD (ozone)	120
	Arizona	364
	New Mexico	102

Chose Bakersfield as the incoming split point for trains - intersection of SR99 and SR58 (no longer going to HECA, instead going up to Wasco)

Bakersfield to Wasco:	28	miles
Bakersfield to HECA:	21	miles

Assume total train distance is the same except for this one change (add BAK to Wasco and subtract BAK to HECA)

TOTAL train distance:	801	miles

Hydrogen Energy California (HECA) Project
December 20, 2012
Emissions Summary

Compound	CAS #	Annual Rate	CTG/HRSG Stack	Coal Dryer Stack	Cooling Tower (Power Block)	Cooling Tower (Process Area)	Cooling Tower (ASU)	Auxiliary Boiler	Ammonia Plant Startup Heater	Emergency Generators	Fire Water Pump	Gasification Flare	SRU Flare	Rectisol Flare	TG Thermal Oxidizer	CO_2 Vent	Manufacturing Complex	Onsite Truck	Onsite Train	Fugitives
		(TPY)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)
Acetaldehyde	75-07-0	2.13E-02	3.62E+01	6.38E+00																
Ammonia*	7664-41-7	1.57E+02	1.54E+05	2.72E+04				1.03E+03									1.22E+05			8.26E+03
Antimony	7440-36-0	1.30E-02	2.21E+01	3.90E+00																
Arsenic	7440-38-2	2.85E-02	4.82E+01	8.51E+00	5.33E-02	8.70E-02	2.40E-02	8.89E-02	1.47E-03			1.43E-02	7.75E-04	3.78E-03	2.13E-02					
Benzene	71-43-2	2.91E-02	4.82E+01	8.51E+00				9.33E-01	1.54E-02			1.50E-01	8.14E-03	3.97E-02	2.24E-01					
Beryllium	7440-41-7	3.08E-03	5.22E+00	9.22E-01				5.33E-03	8.80E-05			8.56E-04	4.65E-05	2.27E-04	1.28E-03					
Cadmium	7440-43-9	1.14E-01	1.93E+02	3.40E+01				4.89E-01	8.07E-03			7.85E-02	4.26E-03	2.08E-02	1.17E-01					
Carbon Disulfide	75-15-0	5.44E-01	9.24E+02	1.63E+02																
Carbonyl Sulfide	463-58-1	2.80E+00														5.32E+03				2.79E+02
Chromium	7440-47-3	6.49E-03	1.02E+01	1.81E+00				6.22E-01	1.03E-02			9.99E-02	5.42E-03	2.64E-02	1.49E-01					
Chromium (hexavalent)	18540-29-9	1.81E-03	3.07E+00	5.43E-01																
Cobalt	7440-48-4	3.10E-03	5.22E+00	9.22E-01				3.73E-02	6.16E-04			5.99E-03	3.25E-04	1.59E-03	8.95E-03					
Copper*	7440-50-8	2.93E-04			1.03E-02	1.69E-02	4.66E-03	3.78E-01	6.23E-03			6.06E-02	3.29E-03	1.61E-02	9.06E-02					
Cyanides	57-12-5	6.91E-02	1.15E+02	2.02E+01																3.46E+00
Fluoride*	1101	1.44E-03			9.31E-01	1.52E+00	4.20E-01													
Formaldehyde	50-00-0	2.25E-01	3.42E+02	6.03E+01				3.33E+01	5.50E-01			5.35E+00	2.91E-01	1.42E+00	7.99E+00					
Hexane	110-54-3	5.87E-01						8.00E+02	1.32E+01			1.28E+02	6.97E+00	3.40E+01	1.92E+02					
Hydrochloric Acid	7647-01-0	1.62E-01	2.61E+02	4.61E+01																1.75E+01
Hydrogen Fluoride (hydrofluoric acid)	7664-39-3	5.91E-01	1.00E+03	1.77E+02																
Hydrogen Sulfide	7783-06-4	2.99E+00														3.01E+03				2.97E+03
Lead	7439-92-1	6.62E-03	1.13E+01	1.99E+00																
Manganese	7439-96-5	1.65E-02	2.09E+01	3.69E+00	2.66E+00	4.35E+00	1.20E+00	1.69E-01	2.79E-03			2.71E-02	1.47E-03	7.18E-03	4.05E-02					
Mercury	7439-97-6	4.22E-03	4.09E+00	4.18E+00				1.16E-01	1.91E-03			1.85E-02	1.01E-03	4.91E-03	2.77E-02					
Methanol	67-56-1	9.83E+00														4.83E+03				1.48E+04
Methyl Bromide (Bromomethane)	74-83-9	5.64E-01	9.59E+02	1.69E+02																
Methylene Chloride (Dichloromethane)	75-09-2	2.60E-02	4.42E+01	7.80E+00																
Naphthalene	91-20-3	2.98E-02	5.02E+01	8.87E+00				2.71E-01	4.47E-03			4.35E-02	2.36E-03	1.15E-02	6.50E-02					
Nickel	7440-02-0	5.30E-03	7.84E+00	1.38E+00				9.33E-01	1.54E-02			1.50E-01	8.14E-03	3.97E-02	2.24E-01					
Nitric Acid*	7697-37-2	3.58E-01																		7.16E+02
Phenol	108-95-2	4.35E-01	7.40E+02	1.31E+02																
Propylene*	115-07-1	9.15E+00																		1.83E+04
Selenium	7782-49-2	6.70E-03	1.13E+01	1.99E+00	4.43E-02	7.23E-02	2.00E-02	1.07E-02	1.76E-04			1.71E-03	9.30E-05	4.53E-04	2.56E-03					
Sulfuric Acid and Sulfates*	7664-93-9	1.12E+00	1.91E+03	3.37E+02																
Toluene	108-88-3	1.50E-03	6.63E-01	1.17E-01				1.51E+00	2.49E-02			2.43E-01	1.32E-02	6.42E-02	3.62E-01					
Vanadium*	7440-62-2	7.50E-04						1.02E+00	1.69E-02			1.64E-01	8.91E-03	4.34E-02	2.45E-01					
Diesel Particulate Matter*	DPM	6.79E-02								4.51E+01	1.84E+00							1.48E+01	7.41E+01	
2-Methylnaphthalene	91-57-6	7.83E-06						1.07E-02	1.76E-04			1.71E-03	9.30E-05	4.53E-04	2.56E-03					
3-Methylchloranthrene	56-49-5	5.87E-07						8.00E-04	1.32E-05			1.28E-04	6.97E-06	3.40E-05	1.92E-04					
7,12-Dimethylbenz(a)anthracene	57-97-6	5.22E-06						7.11E-03	1.17E-04			1.14E-03	6.20E-05	3.02E-04	1.71E-03					
Acenaphthene	83-32-9	5.87E-07						8.00E-04	1.32E-05			1.28E-04	6.97E-06	3.40E-05	1.92E-04					
Acenaphthylene	208-96-8	5.87E-07						8.00E-04	1.32E-05			1.28E-04	6.97E-06	3.40E-05	1.92E-04					
Anthracene	120-12-7	7.83E-07						1.07E-03	1.76E-05			1.71E-04	9.30E-06	4.53E-05	2.56E-04					
Benz(a)anthracene	56-55-3	2.78E-05	4.62E-02	8.16E-03				8.00E-04	1.32E-05			1.28E-04	6.97E-06	3.40E-05	1.92E-04					
Benzo(a)pyrene	50-32-8	3.91E-07						5.33E-04	8.80E-06			8.56E-05	4.65E-06	2.27E-05	1.28E-04					
Benzo(b)fluoranthene	205-99-2	5.87E-07						8.00E-04	1.32E-05			1.28E-04	6.97E-06	3.40E-05	1.92E-04					
Benzo(g,h,i)perylene	191-24-2	3.91E-07						5.33E-04	8.80E-06			8.56E-05	4.65E-06	2.27E-05	1.28E-04					
Benzo(k)fluoranthene	207-08-9	5.87E-07						8.00E-04	1.32E-05			1.28E-04	6.97E-06	3.40E-05	1.92E-04					
Chrysene	218-01-9	5.87E-07						8.00E-04	1.32E-05			1.28E-04	6.97E-06	3.40E-05	1.92E-04					
Dibenzo(a,h)anthracene	53-70-3	3.91E-07						5.33E-04	8.80E-06			8.56E-05	4.65E-06	2.27E-05	1.28E-04					
Dichlorobenzene	106-46-7	3.91E-04						5.33E-01	8.80E-03			8.56E-02	4.65E-03	2.27E-02	1.28E-01					
Fluoranthene	206-44-0	9.78E-07						1.33E-03	2.20E-05			2.14E-04	1.16E-05	5.67E-05	3.20E-04					
Fluorene	86-73-7	9.13E-07						1.24E-03	2.05E-05			2.00E-04	1.08E-05	5.29E-05	2.98E-04					
Indeno(1,2,3-cd)pyrene	193-39-5	5.87E-07						8.00E-04	1.32E-05			1.28E-04	6.97E-06	3.40E-05	1.92E-04					
Phenanathrene	85-01-8	5.54E-06						7.55E-03	1.25E-04			1.21E-03	6.59E-05	3.21E-04	1.81E-03					
Pyrene	129-00-0	1.63E-06						2.22E-03	3.67E-05			3.57E-04	1.94E-05	9.44E-05	5.33E-04					
Total Combined HAPs and TACs (tpy)		**186.44**	**80.52**	**14.21**	**0.00**	**0.00**	**0.00**	**0.93**	**0.01**	**0.02**	**0.00**	**0.07**	**0.00**	**0.02**	**0.10**	**6.58**	**61.24**	**0.01**	**0.04**	**2.27E+01**
Total HAPs* (tpy)		**19.12**	**2.43**	**0.43**	**0.00**	**0.00**	**0.00**	**0.42**	**0.01**	**0.00**	**0.00**	**0.07**	**0.00**	**0.02**	**0.10**	**6.58**	**0.00**	**0.00**	**0.00**	**9.05E+00**

Note:
* Denotes pollutants that are not listed as Federal HAPs. These pollutants are not included in the HAP total provided. As shown, combined annual HAP emissions are less than 25 tons per year. Additionally, individual HAP emissions are below 10 tons per year.

Hydrogen Energy California, LLC *20-Dec-2012*
Hydrogen Energy California (HECA) Project

Annual emissions based on 100 percent load at annual average temperature (65°F)

CT Fuel Input (Yearly Average - 65°F)=	2,537	10^6 Btu/hr (higher heating value)
Duct Burner Heat Input (Yearly Average - 65°F)=	290	10^6 Btu/hr (higher heating value)
Total HRSG Heat Input (Yearly Average - 65°F)=	2,827	10^6 Btu/hr (higher heating value)

Hourly emissions based on 100 percent load at average high ambient temperature (97°F)

CT Fuel Input (Avg. High Ambient - 97°F) =	2,583	10^6 Btu/hr (higher heating value)
Duct Burner Heat Input (97°F) =	278	10^6 Btu/hr (higher heating value)
Total HRSG Heat Input (97°F) =	2,861	10^6 Btu/hr (higher heating value)

HRSG

HRSG (Firing Syngas) Normal Operating Hours =	8000	hr/yr
HRSG (Firing Natural Gas) Normal Operating Hours =	336	hr/yr
HRSG Startup Hours =	9	hr/yr
HRSG Shutdown Hours =	18	hr/yr
Total HRSG Operating Hours	**8,363**	**hr/yr**

Coal Dryer

Coal Dryer Normal Operating Hours =	8000	hr/yr
Coal Dryer Startup Hours =	8	hr/yr
Coal Dryer Shutdown Hours =	8	hr/yr
Total Coal Dryer Operating Hours	**8,016**	**hr/yr**

Exhaust from HRSG normal operation would be splitted into	**85%**	**to HRSG stack**
	15%	**to coal dryer stack**

			HRSG + Coal Dryer					
			Toal Hourly Combined Emission	**Total Annual Combined Emissions**	**CTG/HRSG Stack**		**Coal Dryer Stack**	
Compound	**CAS #**	**Emission Factor** ($lb/10^{12}$ Btu coal)	**Hourly** (lb/hr)	**Annual** (lb/yr)	**Hourly** (lb/hr)	**Annual** (lb/yr)	**Hourly** (lb/hr)	**Annual** (lb/yr)
Acetaldehyde	75-07-0	1.8	5.15E-03	4.26E+01	4.38E-03	3.62E+01	7.72E-04	6.38E+00
Ammonia	7664-41-7	5 ppm	2.17E+01	1.81E+05	1.85E+01	1.54E+05	3.20E+00	2.72E+04
Antimony	7440-36-0	1.1	3.15E-03	2.60E+01	2.68E-03	2.21E+01	4.72E-04	3.90E+00
Arsenic	7440-38-2	2.4	6.87E-03	5.67E+01	5.84E-03	4.82E+01	1.03E-03	8.51E+00
Benz(a)anthracene	56-55-3	0.0023	6.58E-06	5.44E-02	5.59E-06	4.62E-02	9.87E-07	8.16E-03
Benzene	71-43-2	2.4	6.87E-03	5.67E+01	5.84E-03	4.82E+01	1.03E-03	8.51E+00
Beryllium	7440-41-7	0.26	7.44E-04	6.15E+00	6.32E-04	5.22E+00	1.12E-04	9.22E-01
Cadmium	7440-43-9	9.6	2.75E-02	2.27E+02	2.33E-02	1.93E+02	4.12E-03	3.40E+01
Carbon disulfide	75-15-0	46	1.32E-01	1.09E+03	1.12E-01	9.24E+02	1.97E-02	1.63E+02
Chromium (hexavalent)	18540-29-9	0.15	4.38E-04	3.62E+00	3.72E-04	3.07E+00	6.57E-05	5.43E-01
Chromium	7440-47-3	0.51	1.46E-03	1.21E+01	1.24E-03	1.02E+01	2.19E-04	1.81E+00
Cobalt	7440-48-4	0.26	7.44E-04	6.15E+00	6.32E-04	5.22E+00	1.12E-04	9.22E-01
Cyanides	57-12-5	5.7	1.63E-02	1.35E+02	1.39E-02	1.15E+02	2.45E-03	2.02E+01
Formaldehyde	50-00-0	17	4.86E-02	4.02E+02	4.13E-02	3.42E+02	7.30E-03	6.03E+01
Hydrochloric acid	7647-01-0	13	3.72E-02	3.07E+02	3.16E-02	2.61E+02	5.58E-03	4.61E+01
Hydrogen fluoride (Hydrofluoric acid)	7664-39-3	50	1.43E-01	1.18E+03	1.22E-01	1.00E+03	2.15E-02	1.77E+02
Lead	7439-92-1	0.56	1.60E-03	1.32E+01	1.36E-03	1.13E+01	2.40E-04	1.99E+00
Manganese	7439-96-5	1.0	2.98E-03	2.46E+01	2.53E-03	2.09E+01	4.46E-04	3.69E+00
Mercury	7439-97-6	see notes	1.01E-03	8.27E+00	4.89E-04	4.09E+00	5.22E-04	4.18E+00
Methyl bromide (Bromomethane)	74-83-9	47.7	1.36E-01	1.13E+03	1.16E-01	9.59E+02	2.05E-02	1.69E+02
Methylene chloride (Dichloromethane)	75-09-2	2.2	6.29E-03	5.20E+01	5.35E-03	4.42E+01	9.44E-04	7.80E+00
Naphthalene	91-20-3	2.5	7.15E-03	5.91E+01	6.08E-03	5.02E+01	1.07E-03	8.87E+00
Nickel	7440-02-0	0.39	1.12E-03	9.22E+00	9.48E-04	7.84E+00	1.67E-04	1.38E+00
Phenol	108-95-2	36.8	1.05E-01	8.70E+02	8.95E-02	7.40E+02	1.58E-02	1.31E+02
Selenium	7782-49-2	0.56	1.60E-03	1.32E+01	1.36E-03	1.13E+01	2.40E-04	1.99E+00
Sulfuric acid and sulfates	7664-93-9	95	2.72E-01	2.25E+03	2.31E-01	1.91E+03	4.08E-02	3.37E+02
Toluene	108-88-3	0.033	9.44E-05	7.80E-01	8.03E-05	6.63E-01	1.42E-05	1.17E-01

Notes:

1) For the normal operating scenario, the unit will primarily fire syngas with natural gas as a backup fuel.

2) Emission factors are taken from Wabash River test data and the National Energy Technology Laboratory, U.S. Dept of Energy, Major Environmental Aspects of Gasification-based Power Generation Technologies, Final Report, December 2002.

3) Ammonia slip from the SCR (5 parts per million volume dry @ 15 percent O_2) - provided by Fluor - see Criteria Pollutant emission spreadsheet for details.

4) Btu = British thermal units.

5) Mercury (Hg) emission estimates are based on the following assumptions:

Total gasifier coal feed rate	3900 stpd		
Hg concentration in coal feed	0.09 ppmw		
Total Hg in coal feed	0.702 lb/day	0.0293	lb/hr
Uncontrolled coal dryer Hg emission from volatilization (MHI est)	0.048 lb/day	0.0020	lb/hr
Coal dryer Hg emissions control efficiency	75%		
Controlled coal dryer Hg emission from volatilization	0.0120 lb/day	0.0005	lb/hr
Total Controlled coal dryer Hg emission from volatilization + HRSG flue gas	0.0125 lb/day	**0.000522**	lb/hr
Hg in syngas from gasifier	0.690 lb/day	0.0288	lb/hr
Control efficiency of the mercury cleanup in the syngas	98%		
Controlled HG emissions in HRSG flue gas	0.014 lb/day	0.000575	lb/hr
Controlled HG emissions from the HRSG stack	0.012 lb/day	**0.000489**	lb/hr
Total Hg emissions from HRSG + coal dryer	0.024 lb/day	0.001010	lb/hr
Total Hg emissions from HRSG + coal dryer		0.0025	lb/GWh

6) The emission rates of natural gas firing (startup, shutdown, and 336 hours of steady state operation) were calculated based on the emission factors used for the syngas firing.

7) Approximiately 15% of the HRSG exhaust is directed to the coal dryer where is passes over pulverized coal to dry it before it is injected into the gasifier. Therefore, it was assumed that HRSG/coal dryer exhaust is split based on 85%/15%. No exhaust will be directed to the coal dryer during natural gas operations or portions of startup and shutdown.

8) Annual emissions for both HRSG and coal dryer based on the higher hours of operation of the HRSG

Hydrogen Energy California, LLC *20-Dec-2012*
Hydrogen Energy California (HECA) Project

Cooling Tower Operating Parameters

	Power Block	Process Area	ASU
Cooling water (CW) circulation rate, gpm =	95,500	162,582	44,876
CW circulation rate (million lb/hr) =	48	81	22
CW dissolved solids (ppmw) =	9,000	9,000	2,000
Drift, fraction of circulating CW =	0.0005%	0.0005%	0.0005%
Cooling Tower Operating Hours	8,668	8,314	8,314
Number of cells in tower	12	13	4

Assumed maximum TDS in circulating cooling water, normally TDS will be less.

Power Block Cooling Tower

Compound	CAS # / OEHHA reference #	Emission Factor (ppm)	Hourly (lb/hr)	Annual (lb/yr)	Hourly per Cell (lb/hr)	Annual per Cell (lb/yr)
Arsenic	7440-38-2	0.026	6.15E-06	5.33E-02	5.12E-07	4.44E-03
Copper	7440-50-8	0.005	1.19E-06	1.03E-02	9.95E-08	8.62E-04
Fluoride	1101	0.45	1.07E-04	9.31E-01	8.95E-06	7.76E-02
Manganese	7439-96-5	1.29	3.07E-04	2.66E+00	2.56E-05	2.22E-01
Selenium	7784-49-2	0.02	5.11E-06	4.43E-02	4.26E-07	3.69E-03

Notes:

1) The emissions are based on the concentrations of each constituent found in the raw cooling water analysis, cycles of concentration, and drift rate.

2) Arsenic ppm value shown taken as average of analytical test results (Fruit Growers Laboratory).

3) Copper ppm value shown is one-half of stated detection limit.

4) Fluoride ppm value shown taken as average of analytical test results (Fruit Growers Laboratory).

5) Manganese ppm value shown taken as average of analytical test results (Fruit Growers Laboratory).

6) Selenium ppm value shown taken as average of analytical test results (DWR).

Process Area Cooling Tower

Compound	CAS # / OEHHA reference #	Emission Factor (ppm)	Hourly (lb/hr)	Annual (lb/yr)	Hourly per Cell (lb/hr)	Annual per Cell (lb/yr)
Arsenic	7440-38-2	0.026	1.05E-05	8.70E-02	8.05E-07	6.69E-03
Copper	7440-50-8	0.005	2.03E-06	1.69E-02	1.56E-07	1.30E-03
Fluoride	1101	0.45	1.83E-04	1.52E+00	1.41E-05	1.17E-01
Manganese	7439-96-5	1.29	5.23E-04	4.35E+00	4.02E-05	3.34E-01
Selenium	7784-49-2	0.02	8.70E-06	7.23E-02	6.69E-07	5.56E-03

Notes:

1) The emissions are based on the concentrations of each constituent found in the raw cooling water analysis, cycles of concentration, and drift rate.

2) Arsenic ppm value shown taken as average of analytical test results (Fruit Growers Laboratory).

3) Copper ppm value shown is one-half of stated detection limit.

4) Fluoride ppm value shown taken as average of analytical test results (Fruit Growers Laboratory).

5) Manganese ppm value shown taken as average of analytical test results (Fruit Growers Laboratory).

6) Selenium ppm value shown taken as average of analytical test results (DWR).

ASU Cooling Tower

Compound	CAS # / OEHHA reference #	Emission Factor (ppm)	Hourly (lb/hr)	Annual (lb/yr)	Hourly per Cell (lb/hr)	Annual per Cell (lb/yr)
Arsenic	7440-38-2	0.026	2.89E-06	2.40E-02	7.22E-07	6.00E-03
Copper	7440-50-8	0.005	5.61E-07	4.66E-03	1.40E-07	1.17E-03
Fluoride	1101	0.45	5.05E-05	4.20E-01	1.26E-05	1.05E-01
Manganese	7439-96-5	1.29	1.44E-04	1.20E+00	3.61E-05	3.00E-01
Selenium	7784-49-2	0.02	2.40E-06	2.00E-02	6.00E-07	4.99E-03

Notes:

1) The emissions are based on the concentrations of each constituent found in the raw cooling water analysis, cycles of concentration, and drift rate.

2) Arsenic ppm value shown taken as average of analytical test results (Fruit Growers Laboratory).

3) Copper ppm value shown is one-half of stated detection limit.

4) Fluoride ppm value shown taken as average of analytical test results (Fruit Growers Laboratory).

5) Manganese ppm value shown taken as average of analytical test results (Fruit Growers Laboratory).

6) Selenium ppm value shown taken as average of analytical test results (DWR).

Auxiliary Boiler — HAP Emissions Summary

Hydrogen Energy California, LLC *20-Dec-2012*
Hydrogen Energy California (HECA) Project

Operating Parameters

Auxiliary Boiler Heat Input =	213	10^6 Btu/hr (HHV)
Natural gas heating value =	1,050	Btu/scf
Fuel usage =	0.203	10^6 scf/hr
Auxiliary Boiler Operating Hours =	2,190	hours per year

Compound	CAS #	Emission Factor ($lb/10^6$ scf)	Hourly (lb/hr)	Annual (lb/yr)
Ammonia	7664-41-7	5 ppm	4.69E-01	1.03E+03
Arsenic	7440-38-2	2.00E-04	4.06E-05	8.89E-02
Benzene	71-43-2	2.10E-03	4.26E-04	9.33E-01
Beryllium	7440-41-7	1.20E-05	2.43E-06	5.33E-03
Cadmium	7440-43-9	1.10E-03	2.23E-04	4.89E-01
Chromium	7440-47-3	1.40E-03	2.84E-04	6.22E-01
Cobalt	7440-48-4	8.40E-05	1.70E-05	3.73E-02
Copper	7440-50-8	8.50E-04	1.72E-04	3.78E-01
Formaldehyde	50-00-0	7.50E-02	1.52E-02	3.33E+01
Hexane	110-54-3	1.80E+00	3.65E-01	8.00E+02
Manganese	7439-96-5	3.80E-04	7.71E-05	1.69E-01
Mercury	7439-97-6	2.60E-04	5.27E-05	1.16E-01
Naphthalene	91-20-3	6.10E-04	1.24E-04	2.71E-01
Nickel	7440-02-0	2.10E-03	4.26E-04	9.33E-01
Selenium	7782-49-2	2.40E-05	4.87E-06	1.07E-02
Toluene	108-88-3	3.40E-03	6.90E-04	1.51E+00
Vanadium	7440-62-2	2.30E-03	4.67E-04	1.02E+00
Benzo(a)pyrene	50-32-8	1.20E-06	2.43E-07	5.33E-04
Benz(a)anthracene	56-55-3	1.80E-06	3.65E-07	8.00E-04
Benzo(b)fluoranthene	205-99-2	1.80E-06	3.65E-07	8.00E-04
Chrysene	218-01-9	1.80E-06	3.65E-07	8.00E-04
Dibenzo(a,h)anthracene	53-70-3	1.20E-06	2.43E-07	5.33E-04
Dichlorobenzene	106-46-7	1.20E-03	2.43E-04	5.33E-01
Indeno(1,2,3-cd)pyrene	193-39-5	1.80E-06	3.65E-07	8.00E-04
2-Methylnaphthalene	91-57-6	2.40E-05	4.87E-06	1.07E-02
3-Methylchloranthrene	56-49-5	1.80E-06	3.65E-07	8.00E-04
7,12-Dimethylbenz(a)anthracene	57-97-6	1.60E-05	3.25E-06	7.11E-03
Acenaphthene	83-32-9	1.80E-06	3.65E-07	8.00E-04
Acenaphthylene	208-96-8	1.80E-06	3.65E-07	8.00E-04
Anthracene	120-12-7	2.40E-06	4.87E-07	1.07E-03
Benzo(g,h,i)perylene	191-24-2	1.20E-06	2.43E-07	5.33E-04
Benzo(k)fluoranthene	207-08-9	1.80E-06	3.65E-07	8.00E-04
Fluoranthene	206-44-0	3.00E-06	6.09E-07	1.33E-03
Fluorene	86-73-7	2.80E-06	5.68E-07	1.24E-03
Phenanathrene	85-01-8	1.70E-05	3.45E-06	7.55E-03
Pyrene	129-00-0	5.00E-06	1.01E-06	2.22E-03

Notes:

1) Emission factors (lb/106 scf) are from EPA AP-42, Chapter 1.4, Table 1.4-3 and 1.4-4.

2) Ammonia slip from the SCR (5 parts per million volume dry @ 15 percent O_2) - provided by Fluor - see Criteria Pollutant emission spreadsheet for details.

Ammonia Plant Startup Heater — HAP Emissions Summary

Hydrogen Energy California, LLC *20-Dec-2012*
Hydrogen Energy California (HECA) Project

Operating Parameters

Heat Input =	55	10^6 Btu/hr (HHV)
Natural gas heating value =	1,050	Btu/scf
Fuel usage =	0.052	10^6 scf/hr
Operating Hours =	140	hours per year

Compound	CAS #	Emission Factor ($lb/10^6$ scf)	Hourly (lb/hr)	Annual (lb/yr)
Arsenic	7440-38-2	2.00E-04	1.05E-05	1.47E-03
Benzene	71-43-2	2.10E-03	1.10E-04	1.54E-02
Beryllium	7440-41-7	1.20E-05	6.29E-07	8.80E-05
Cadmium	7440-43-9	1.10E-03	5.76E-05	8.07E-03
Chromium	7440-47-3	1.40E-03	7.33E-05	1.03E-02
Cobalt	7440-48-4	8.40E-05	4.40E-06	6.16E-04
Copper	7440-50-8	8.50E-04	4.45E-05	6.23E-03
Formaldehyde	50-00-0	7.50E-02	3.93E-03	5.50E-01
Hexane	110-54-3	1.80E+00	9.43E-02	1.32E+01
Manganese	7439-96-5	3.80E-04	1.99E-05	2.79E-03
Mercury	7439-97-6	2.60E-04	1.36E-05	1.91E-03
Naphthalene	91-20-3	6.10E-04	3.20E-05	4.47E-03
Nickel	7440-02-0	2.10E-03	1.10E-04	1.54E-02
Selenium	7782-49-2	2.40E-05	1.26E-06	1.76E-04
Toluene	108-88-3	3.40E-03	1.78E-04	2.49E-02
Vanadium	7440-62-2	2.30E-03	1.20E-04	1.69E-02
Benzo(a)pyrene	50-32-8	1.20E-06	6.29E-08	8.80E-06
Benz(a)anthracene	56-55-3	1.80E-06	9.43E-08	1.32E-05
Benzo(b)fluoranthene	205-99-2	1.80E-06	9.43E-08	1.32E-05
Chrysene	218-01-9	1.80E-06	9.43E-08	1.32E-05
Dibenzo(a,h)anthracene	53-70-3	1.20E-06	6.29E-08	8.80E-06
Dichlorobenzene	106-46-7	1.20E-03	6.29E-05	8.80E-03
Indeno(1,2,3-cd)pyrene	193-39-5	1.80E-06	9.43E-08	1.32E-05
2-Methylnaphthalene	91-57-6	2.40E-05	1.26E-06	1.76E-04
3-Methylchloranthrene	56-49-5	1.80E-06	9.43E-08	1.32E-05
7,12-Dimethylbenz(a)anthracene	57-97-6	1.60E-05	8.38E-07	1.17E-04
Acenaphthene	83-32-9	1.80E-06	9.43E-08	1.32E-05
Acenaphthylene	208-96-8	1.80E-06	9.43E-08	1.32E-05
Anthracene	120-12-7	2.40E-06	1.26E-07	1.76E-05
Benzo(g,h,i)perylene	191-24-2	1.20E-06	6.29E-08	8.80E-06
Benzo(k)fluoranthene	207-08-9	1.80E-06	9.43E-08	1.32E-05
Fluoranthene	206-44-0	3.00E-06	1.57E-07	2.20E-05
Fluorene	86-73-7	2.80E-06	1.47E-07	2.05E-05
Phenanathrene	85-01-8	1.70E-05	8.90E-07	1.25E-04
Pyrene	129-00-0	5.00E-06	2.62E-07	3.67E-05

Notes:

1) Emission factors (lb/106 scf) are from EPA AP-42, Chapter 1.4, Table 1.4-3 and 1.4-4.

Gasification Flare — HAP Emissions Summary

Hydrogen Energy California, LLC *20-Dec-2012*
Hydrogen Energy California (HECA) Project

Operating Parameters

Reference HHV = 1,050 btu/scf

Gasification Flare - Normal Operating Emissions From Pilot

Total Hours of Pilot Operation = 8,760 hr/yr
Flare Pilot Fuel Use = 0.5 10^6 Btu/hr

Gasification Flare - Operating Emissions During Gasifier Startup and Shutdown

	10^6 Btu/yr	Hours per year
Total Flare SU/SD Operation =	70,528	28
Flaring NG-Firing Rate =	2,926	6
Wet Unshifted Gas-Firing Rate =	2,386	4
Dry Shifted Gas-Firing Rate =	2,413	18

Compound	CAS #	Emission Factor ($lb/10^6$ scf)	Emission Factor ($lb/10^6$ Btu)	Hourly (lb/hr)	Annual (lb/yr)
Arsenic	7440-38-2	2.00E-04	1.90E-07	5.57E-04	1.43E-02
Benzene	71-43-2	2.10E-03	2.00E-06	5.85E-03	1.50E-01
Beryllium	7440-41-7	1.20E-05	1.14E-08	3.34E-05	8.56E-04
Cadmium	7440-43-9	1.10E-03	1.05E-06	3.07E-03	7.85E-02
Chromium	7440-47-3	1.40E-03	1.33E-06	3.90E-03	9.99E-02
Cobalt	7440-48-4	8.40E-05	8.00E-08	2.34E-04	5.99E-03
Copper	7440-50-8	8.50E-04	8.10E-07	2.37E-03	6.06E-02
Formaldehyde	50-00-0	7.50E-02	7.14E-05	2.09E-01	5.35E+00
Hexane	110-54-3	1.80E+00	1.71E-03	5.02E+00	1.28E+02
Manganese	7439-96-5	3.80E-04	3.62E-07	1.06E-03	2.71E-02
Mercury	7439-97-6	2.60E-04	2.48E-07	7.25E-04	1.85E-02
Naphthalene	91-20-3	6.10E-04	5.81E-07	1.70E-03	4.35E-02
Nickel	7440-02-0	2.10E-03	2.00E-06	5.85E-03	1.50E-01
Selenium	7782-49-2	2.40E-05	2.29E-08	6.69E-05	1.71E-03
Toluene	108-88-3	3.40E-03	3.24E-06	9.48E-03	2.43E-01
Vanadium	7440-62-2	2.30E-03	2.19E-06	6.41E-03	1.64E-01
Benzo(a)pyrene	50-32-8	1.20E-06	1.14E-09	3.34E-06	8.56E-05
Benz(a)anthracene	56-55-3	1.80E-06	1.71E-09	5.02E-06	1.28E-04
Benzo(b)fluoranthene	205-99-2	1.80E-06	1.71E-09	5.02E-06	1.28E-04
Chrysene	218-01-9	1.80E-06	1.71E-09	5.02E-06	1.28E-04
Dibenzo(a,h)anthracene	53-70-3	1.20E-06	1.14E-09	3.34E-06	8.56E-05
Dichlorobenzene	106-46-7	1.20E-03	1.14E-06	3.34E-03	8.56E-02
Indeno(1,2,3-cd)pyrene	193-39-5	1.80E-06	1.71E-09	5.02E-06	1.28E-04
2-Methylnaphthalene	91-57-6	2.40E-05	2.29E-08	6.69E-05	1.71E-03
3-Methylchloranthrene	56-49-5	1.80E-06	1.71E-09	5.02E-06	1.28E-04
7,12-Dimethylbenz(a)anthracene	57-97-6	1.60E-05	1.52E-08	4.46E-05	1.14E-03
Acenaphthene	83-32-9	1.80E-06	1.71E-09	5.02E-06	1.28E-04
Acenaphthylene	208-96-8	1.80E-06	1.71E-09	5.02E-06	1.28E-04
Anthracene	120-12-7	2.40E-06	2.29E-09	6.69E-06	1.71E-04
Benzo(g,h,i)perylene	191-24-2	1.20E-06	1.14E-09	3.34E-06	8.56E-05
Benzo(k)fluoranthene	207-08-9	1.80E-06	1.71E-09	5.02E-06	1.28E-04
Fluoranthene	206-44-0	3.00E-06	2.86E-09	8.36E-06	2.14E-04
Fluorene	86-73-7	2.80E-06	2.67E-09	7.80E-06	2.00E-04
Phenanathrene	85-01-8	1.70E-05	1.62E-08	4.74E-05	1.21E-03
Pyrene	129-00-0	5.00E-06	4.76E-09	1.39E-05	3.57E-04

Notes:

1) Annual operation assumes total pilot operation of 8,760 hr/yr and plus gasifier startup and shutdown.

2) Emission factors ($lb/10^6$ scf) are from EPA AP-42, Chapter 1.4, Table 1.4-3 and 1.4-4.

SRU Flare — HAP Emissions Summary

Hydrogen Energy California, LLC *20-Dec-2012*
Hydrogen Energy California (HECA) Project

Operating Parameters

Reference HHV =	1,050	btu/scf

SRU Flare - Normal Operating Emissions From Pilot

Total Hours of Pilot Operation =	8,760	hr/yr
Elevated Flare Pilot Fuel Use =	0.3	10^6 Btu/hr

SRU Flare - Operating Emissions During Gasifier Startup and Shutdown

Total Flare Operation During SU/SD =	40.0	hr/yr
Natural Gas Heat Rate (assist gas) =	36.0	10^6 Btu/hr

Compound	CAS #	Emission Factor (lb/10^6 scf)	Emission Factor (lb/10^6 Btu)	Hourly (lb/hr)	Annual (lb/yr)
Arsenic	7440-38-2	2.00E-04	1.90E-07	6.91E-06	7.75E-04
Benzene	71-43-2	2.10E-03	2.00E-06	7.26E-05	8.14E-03
Beryllium	7440-41-7	1.20E-05	1.14E-08	4.15E-07	4.65E-05
Cadmium	7440-43-9	1.10E-03	1.05E-06	3.80E-05	4.26E-03
Chromium	7440-47-3	1.40E-03	1.33E-06	4.84E-05	5.42E-03
Cobalt	7440-48-4	8.40E-05	8.00E-08	2.90E-06	3.25E-04
Copper	7440-50-8	8.50E-04	8.10E-07	2.94E-05	3.29E-03
Formaldehyde	50-00-0	7.50E-02	7.14E-05	2.59E-03	2.91E-01
Hexane	110-54-3	1.80E+00	1.71E-03	6.22E-02	6.97E+00
Manganese	7439-96-5	3.80E-04	3.62E-07	1.31E-05	1.47E-03
Mercury	7439-97-6	2.60E-04	2.48E-07	8.99E-06	1.01E-03
Naphthalene	91-20-3	6.10E-04	5.81E-07	2.11E-05	2.36E-03
Nickel	7440-02-0	2.10E-03	2.00E-06	7.26E-05	8.14E-03
Selenium	7782-49-2	2.40E-05	2.29E-08	8.30E-07	9.30E-05
Toluene	108-88-3	3.40E-03	3.24E-06	1.18E-04	1.32E-02
Vanadium	7440-62-2	2.30E-03	2.19E-06	7.95E-05	8.91E-03
Benzo(a)pyrene	50-32-8	1.20E-06	1.14E-09	4.15E-08	4.65E-06
Benz(a)anthracene	56-55-3	1.80E-06	1.71E-09	6.22E-08	6.97E-06
Benzo(b)fluoranthene	205-99-2	1.80E-06	1.71E-09	6.22E-08	6.97E-06
Chrysene	218-01-9	1.80E-06	1.71E-09	6.22E-08	6.97E-06
Dibenzo(a,h)anthracene	53-70-3	1.20E-06	1.14E-09	4.15E-08	4.65E-06
Dichlorobenzene	106-46-7	1.20E-03	1.14E-06	4.15E-05	4.65E-03
Indeno(1,2,3-cd)pyrene	193-39-5	1.80E-06	1.71E-09	6.22E-08	6.97E-06
2-Methylnaphthalene	91-57-6	2.40E-05	2.29E-08	8.30E-07	9.30E-05
3-Methylchloranthrene	56-49-5	1.80E-06	1.71E-09	6.22E-08	6.97E-06
7,12-Dimethylbenz(a)anthracene	57-97-6	1.60E-05	1.52E-08	5.53E-07	6.20E-05
Acenaphthene	83-32-9	1.80E-06	1.71E-09	6.22E-08	6.97E-06
Acenaphthylene	208-96-8	1.80E-06	1.71E-09	6.22E-08	6.97E-06
Anthracene	120-12-7	2.40E-06	2.29E-09	8.30E-08	9.30E-06
Benzo(g,h,i)perylene	191-24-2	1.20E-06	1.14E-09	4.15E-08	4.65E-06
Benzo(k)fluoranthene	207-08-9	1.80E-06	1.71E-09	6.22E-08	6.97E-06
Fluoranthene	206-44-0	3.00E-06	2.86E-09	1.04E-07	1.16E-05
Fluorene	86-73-7	2.80E-06	2.67E-09	9.68E-08	1.08E-05
Phenanathrene	85-01-8	1.70E-05	1.62E-08	5.88E-07	6.59E-05
Pyrene	129-00-0	5.00E-06	4.76E-09	1.73E-07	1.94E-05

Notes:

1) Annual operation assumes total pilot operation of 8,760 hr/yr plus gasifier startup and shutdown with assist gas.

2) Emission factors (lb/10^6 scf) are from EPA AP-42, Chapter 1.4, Table 1.4-3 and 1.4-4.

Rectisol Flare — HAP Emissions Summary

Hydrogen Energy California, LLC *20-Dec-2012*
Hydrogen Energy California (HECA) Project

Operating Parameters

Reference HHV = 1,050 btu/scf

Operating Parameters - Normal Operating Emissions From Pilot

Rectisol Flare Pilot Firing Rate = 0.3 MMBtu/hr
Annual Operating Hours = 8,760 hr/yr

Rectisol Flare - Operating Emissions During Rectisol Startup and Shutdown

Total Flare Operation During SU/SD = 40 hr/yr
Heat Rate of Vent Gas, HHV = 430 10^6 Btu/hr

Compound	CAS Number	Emission Factor ($lb/10^6$ scf)	Emission Factor (lb/MMBtu)	Hourly (lb/hr)	Annual (lb/yr)
Arsenic	7440-38-2	2.00E-04	1.90E-07	8.20E-05	3.78E-03
Benzene	71-43-2	2.10E-03	2.00E-06	8.61E-04	3.97E-02
Beryllium	7440-41-7	1.20E-05	1.14E-08	4.92E-06	2.27E-04
Cadmium	7440-43-9	1.10E-03	1.05E-06	4.51E-04	2.08E-02
Chromium	7440-47-3	1.40E-03	1.33E-06	5.74E-04	2.64E-02
Cobalt	7440-48-4	8.40E-05	8.00E-08	3.44E-05	1.59E-03
Copper	7440-50-8	8.50E-04	8.10E-07	3.48E-04	1.61E-02
Formaldehyde	50-00-0	7.50E-02	7.14E-05	3.07E-02	1.42E+00
Hexane	110-54-3	1.80E+00	1.71E-03	7.38E-01	3.40E+01
Manganese	7439-96-5	3.80E-04	3.62E-07	1.56E-04	7.18E-03
Mercury	7439-97-6	2.60E-04	2.48E-07	1.07E-04	4.91E-03
Naphthalene	91-20-3	6.10E-04	5.81E-07	2.50E-04	1.15E-02
Nickel	7440-02-0	2.10E-03	2.00E-06	8.61E-04	3.97E-02
Selenium	7782-49-2	2.40E-05	2.29E-08	9.84E-06	4.53E-04
Toluene	108-88-3	3.40E-03	3.24E-06	1.39E-03	6.42E-02
Vanadium	7440-62-2	2.30E-03	2.19E-06	9.43E-04	4.34E-02
Benzo(a)pyrene	50-32-8	1.20E-06	1.14E-09	4.92E-07	2.27E-05
Benz(a)anthracene	56-55-3	1.80E-06	1.71E-09	7.38E-07	3.40E-05
Benzo(b)fluoranthene	205-99-2	1.80E-06	1.71E-09	7.38E-07	3.40E-05
Chrysene	218-01-9	1.80E-06	1.71E-09	7.38E-07	3.40E-05
Dibenzo(a,h)anthracene	53-70-3	1.20E-06	1.14E-09	4.92E-07	2.27E-05
Dichlorobenzene	106-46-7	1.20E-03	1.14E-06	4.92E-04	2.27E-02
Indeno(1,2,3-cd)pyrene	193-39-5	1.80E-06	1.71E-09	7.38E-07	3.40E-05
2-Methylnaphthalene	91-57-6	2.40E-05	2.29E-08	9.84E-06	4.53E-04
3-Methylchloranthrene	56-49-5	1.80E-06	1.71E-09	7.38E-07	3.40E-05
7,12-Dimethylbenz(a)anthracene	57-97-6	1.60E-05	1.52E-08	6.56E-06	3.02E-04
Acenaphthene	83-32-9	1.80E-06	1.71E-09	7.38E-07	3.40E-05
Acenaphthylene	208-96-8	1.80E-06	1.71E-09	7.38E-07	3.40E-05
Anthracene	120-12-7	2.40E-06	2.29E-09	9.84E-07	4.53E-05
Benzo(g,h,i)perylene	191-24-2	1.20E-06	1.14E-09	4.92E-07	2.27E-05
Benzo(k)fluoranthene	207-08-9	1.80E-06	1.71E-09	7.38E-07	3.40E-05
Fluoranthene	206-44-0	3.00E-06	2.86E-09	1.23E-06	5.67E-05
Fluorene	86-73-7	2.80E-06	2.67E-09	1.15E-06	5.29E-05
Phenanathrene	85-01-8	1.70E-05	1.62E-08	6.97E-06	3.21E-04
Pyrene	129-00-0	5.00E-06	4.76E-09	2.05E-06	9.44E-05

Notes:

1) Annual operation assumes total pilot operation of 8,760 hr/yr plus rectisol startup and shutdown.

2) Emission factors ($lb/10^6$ scf) are from EPA AP-42, Chapter 1.4, Table 1.4-3 and 1.4-4.

Tail Gas Thermal Oxidizer — HAP Emissions Summary

Hydrogen Energy California, LLC *20-Dec-2012*
Hydrogen Energy California (HECA) Project

Operating Parameters

Normal Operations		
Tail Gas Thermal Oxidizer Heat Input =	13	10^6 Btu/hr (HHV)
Natural gas heating value =	1,050	Btu/scf
Fuel usage =	0.012	10^6 scf/hr
Tail Gas Thermal Oxidizer Operating Hours =	8,314	hr/yr
Startup Operations		
Heat Input =	80	10^6 Btu/hr (HHV)
Fuel usage =	0.076	10^6 scf/hr
Startup Hours per year =	48	hr/yr

Compound	CAS #	Emission Factor ($lb/10^6$ scf)	Hourly (lb/hr)	Annual (lb/yr)
Arsenic	7440-38-2	2.00E-04	1.77E-05	2.13E-02
Benzene	71-43-2	2.10E-03	1.86E-04	2.24E-01
Beryllium	7440-41-7	1.20E-05	1.06E-06	1.28E-03
Cadmium	7440-43-9	1.10E-03	9.74E-05	1.17E-01
Chromium	7440-47-3	1.40E-03	1.24E-04	1.49E-01
Cobalt	7440-48-4	8.40E-05	7.44E-06	8.95E-03
Copper	7440-50-8	8.50E-04	7.53E-05	9.06E-02
Formaldehyde	50-00-0	7.50E-02	6.64E-03	7.99E+00
Hexane	110-54-3	1.80E+00	1.59E-01	1.92E+02
Manganese	7439-96-5	3.80E-04	3.37E-05	4.05E-02
Mercury	7439-97-6	2.60E-04	2.30E-05	2.77E-02
Naphthalene	91-20-3	6.10E-04	5.40E-05	6.50E-02
Nickel	7440-02-0	2.10E-03	1.86E-04	2.24E-01
Selenium	7782-49-2	2.40E-05	2.13E-06	2.56E-03
Toluene	108-88-3	3.40E-03	3.01E-04	3.62E-01
Vanadium	7440-62-2	2.30E-03	2.04E-04	2.45E-01
Benzo(a)pyrene	50-32-8	1.20E-06	1.06E-07	1.28E-04
Benz(a)anthracene	56-55-3	1.80E-06	1.59E-07	1.92E-04
Benzo(b)fluoranthene	205-99-2	1.80E-06	1.59E-07	1.92E-04
Chrysene	218-01-9	1.80E-06	1.59E-07	1.92E-04
Dibenzo(a,h)anthracene	53-70-3	1.20E-06	1.06E-07	1.28E-04
Dichlorobenzene	106-46-7	1.20E-03	1.06E-04	1.28E-01
Indeno(1,2,3-cd)pyrene	193-39-5	1.80E-06	1.59E-07	1.92E-04
2-Methylnaphthalene	91-57-6	2.40E-05	2.13E-06	2.56E-03
3-Methylchloranthrene	56-49-5	1.80E-06	1.59E-07	1.92E-04
7,12-Dimethylbenz(a)anthracene	57-97-6	1.60E-05	1.42E-06	1.71E-03
Acenaphthene	83-32-9	1.80E-06	1.59E-07	1.92E-04
Acenaphthylene	208-96-8	1.80E-06	1.59E-07	1.92E-04
Anthracene	120-12-7	2.40E-06	2.13E-07	2.56E-04
Benzo(g,h,i)perylene	191-24-2	1.20E-06	1.06E-07	1.28E-04
Benzo(k)fluoranthene	207-08-9	1.80E-06	1.59E-07	1.92E-04
Fluoranthene	206-44-0	3.00E-06	2.66E-07	3.20E-04
Fluorene	86-73-7	2.80E-06	2.48E-07	2.98E-04
Phenanathrene	85-01-8	1.70E-05	1.51E-06	1.81E-03
Pyrene	129-00-0	5.00E-06	4.43E-07	5.33E-04

Notes:

1) Emission factors ($lb/10^6$ scf) are from EPA AP-42, Chapter 1.4, Table 1.4-3 and 1.4-4.

Intermittent CO_2 Vent — HAP Emissions Summary

Hydrogen Energy California, LLC *20-Dec-2012*
Hydrogen Energy California (HECA) Project

Operating Parameters

Total Hours of Operation =	504	hr/yr
Maximum Hourly Flow =	761,400	lb/hr
Maximum Hourly Flow =	17,584	lbmol/hr
Maximum Annual Flow =	191,873	ton/yr
Maximum Annual Flow =	8,862,485	lbmol/yr
Average flow capacity for year =	85%	of maximum (varies between 70% - 100%)
Average Annual Flow =	163,092	ton/yr
Average Annual Flow =	7,533,112	lbmol/yr
	Molecular weight	
COS	60	lb/lbmol
H_2S	34	lb/lbmol
Methanol	32	lb/lbmol

Compound	CAS #	Short-term Emission Factor (ppm)	Long-term Emission Factor (ppm)	Hourly (lb/hr)	Annual (lb/yr)
Carbonyl Sulfide	463-58-1	10	10	1.06E+01	5.32E+03
Hydrogen Sulfide	7783-06-4	10	10	5.98E+00	3.01E+03
Methanol	67-56-1	40	20	2.25E+01	4.83E+03

Notes:

1) Vent gas methanol concentrations are based on process licensor data. The methanol concentration is expected to be 18-20 ppm, but could be as high as 40 ppm associated short-term operational conditions such as transient impacts on the wash column.

2) Annual emission rates are based on 504 hours per year of full venting for COS and H2S and the average venting of 85% flow rate for methanol.

Emergency Diesel Generator — HAP Emissions Summary

Hydrogen Energy California, LLC *20-Dec-2012*
Hydrogen Energy California (HECA) Project

Operating Parameters

Emergency Generator Specification =	2,922	Bhp
Emergency Generator Operating Hours =	50	hr/yr

PLEASE NOTE THAT THERE ARE TWO GENERATORS; EMISSION SHOWN IS FOR INDIVIDUAL GENERATORS.

Compound	CAS # /OEHHA reference #	Emission Factor (g/Bhp/hr)	Hourly (lb/hr)	Annual (lb/yr)
Diesel Particulate Matter	9901	0.07	4.51E-01	2.25E+01

Note:

1) Emission factor shown is based on U.S. EPA Tier 4 non-road diesel engine emissions standards.

2) Emission rate shown is for individual generator. There are two generators associated with the Project.

Emergency Diesel Firewater Pump — HAP Emissions Summary

Hydrogen Energy California, LLC *20-Dec-2012*
Hydrogen Energy California (HECA) Project

Operating Parameters

Fire Water Pump Specification =	556	Bhp
Fire Water Pump Operating Hours =	100	hr/yr

Compound	CAS # /OEHHA reference #	Emission Factor (g/Bhp/hr)	Hourly (lb/hr)	Annual (lb/yr)
Diesel Particulate Matter	9901	0.015	1.84E-02	1.84E+00

Note:

1) Emission factor shown is based on U.S. EPA Tier 4 non-road diesel engine emissions standards.

Urea HP Absorber

Urea HP Absorber Operating Hours = 8,052 hr/yr

Compound	CAS #	Hourly (lb/hr)	Annual (lb/yr)
Ammonia (NH3)	8013-59-0	11.14	89,675

Note:

1) Emission rate was estimated based on reference plant information. See criteria pollutant emission calculations. Annual operation includes hours for plant startup.

Urea LP Absorber

Urea LP Absorber Operating Hours = 8,052 hr/yr

Compound	CAS #	Hourly (lb/hr)	Annual (lb/yr)
Ammonia (NH3)	8013-59-0	2.02	16,305

Note:

1) Emission rate was estimated based on reference plant information. See criteria pollutant emission calculations. Annual operation includes hours for plant startup.

Urea Pastillation

Urea Pastillation Operating Hours = 8,052 hr/yr

Compound	CAS #	Hourly (lb/hr)	Annual (lb/yr)
Ammonia (NH3)	8013-59-0	1.02	8,224

Note:

1) Emission rate was estimated based on reference plant information. See criteria pollutant emission calculations. Annual operation includes hours for plant startup.

Nitric Acid Unit

Nitric Acid Unit Operating Hours = 8,052 hr/yr

Compound	CAS #	Hourly (lb/hr)	Annual (lb/yr)
Ammonia (NH3)	8013-59-0	1.03	8,282

Note:

1) Emission rate was estimated based on reference plant information. See criteria pollutant emission calculations. Annual operation includes hours for plant startup.

Trucks Operation **HAP Emissions Summary**

Hydrogen Energy California, LLC *20-Dec-2012*
Hydrogen Energy California (HECA) Project

Alternative 1

Data Supplied By Client						
	Onsite Petcoke and Coal Trucks(@ 10 mph)		Product Truck (@ 10 mph)		Miscellaneous Truck (@ 10 mph)	Onsite O&M Trucks (@ 15 mph)
Parameter	Running Emissions	Idling Emissions (at each Idle Point)	Running Emissions	Idling Emissions (at each Idle Point)	Running Emissions	Running Emissions Diesel LHDT2
Distance Traveled (mile)	0.96		2.49		2.20	1.00
Per Truck Idle Time (hour)		0.083		0.083		
No. Volume Sources On and Offsite on Stn Road	34	2	73	7	5	10
Maximum number of trucks or loads						
1-hour	6	6	13	13	5	10
Annual average	15,200	15,200	20,880	20,880	1,818	10000
EMFAC2007 Emission Factors (g/mi/trk or g/idle-hour/trk)						
PM_{10}	0.087	0.114	0.087	0.114	0.087	0.024

EMFAC emissions are for fleet year 2010. PM10 emission factor does not include tire wear or break wear contributions.
Feedstock and Product truck emissions are for HHD diesel trucks. O&M trucks are light heavy-duty 2 trucks.

PM10 Emission Rates

	Petcoke and Coal Trucks (@ 10 mph)		Product Trucks (@ 10 mph)		Miscellaneous Truck (@ 10 mph)	Onsite O&M Trucks (@ 15 mph)
Emission Rates for HARP	Running Emissions	Idling Emissions (at each Idle Point)	Running Emissions	Idling Emissions (at each Idle Point)	Running Emissions	Running Emissions Diesel LHDT2
1-hr PM_{10} (pounds per hour)	1.0E-03	1.2E-04	6.2E-03	2.7E-04	2.3E-03	5.3E-04
Annual PM_{10} (pounds per year)	2.8E+00	3.2E-01	1.0E+01	4.4E-01	7.7E-01	5.3E-01

HARP Inputs - Annual and Hourly Emission Rates per Volume Source

	Onsite Petcoke and Coal Trucks (@ 10 mph)		Product Trucks (@ 10 mph)		Miscellaneous Truck (@ 10 mph)	Onsite O&M Trucks (@ 15 mph)
	Running Emissions	Idling Emissions (at each Idle Point)	Running Emissions	Idling Emissions (at each Idle Point)	Running Emissions	Running Emissions
Max PM_{10} pounds per hour per volume source	3.0E-05	5.8E-05	8.5E-05	3.9E-05	4.6E-04	5.3E-05
PM_{10} pounds per year per volume source	8.2E-02	1.6E-01	1.4E-01	6.2E-02	1.5E-01	5.3E-02

Train Operation - Alternative 1 — HAP Emissions Summary

Hydrogen Energy California, LLC *20-Dec-2012*
Hydrogen Energy California (HECA) Project

Maximum Number of Unit Trains	Coal Unit Train (incoming)	Product Unit Train (outgoing)	Maximum Total Trains per period
1-hour	1	1	1
Annual average	109	153	262

	Switching Engine	Line-haul Engine for Coal Train	Line-haul Engine for Product Train
PM10 Emission Factor (g/bhp-hr)	0.08	0.08	0.08
Conversion Factor (bhp-hr/gal)	15.2	20.8	20.8
PM10 Emissions (lbs/hr /engine)	0.046	0.039	0.026
Engine Power Rating (hp)		4400	3000
Notch Operation		1	1
Notch percentage of hp		5.0%	5.0%
Avg Notch horsepower	260	220	150
# of engines per train	1	2	2
hours to unload/load each train		2	1
max operating hours (hrs/year)	1248		
Number of Vome Sources in AERMOD/HARP	104		

Notes:

Emission factors from EPA's Technical Highlights: Emission Factors for Locomotives, 2009 (http://www.epa.gov/nonroad/locomotv/420f09025.pdf).
The majority of the time the line-haul engine will operate in Notch 1 or idling, therefore emissions were conservatively estimated for Notch 1 horsepower.
Notch percentage presented in PORT OF LONG BEACH AIR EMISSIONS INVENTORY for 2007 (POLB, Jan 2009) derived from EPA data.
New line-haul engines will be AC locomotives such as the GE Evolution Series, that meet Tier 3 emissions
New switching engines will meet Tier 3 emissions, they may be the Titan Trackmobile railcar movers or similar

PM10 Emission Rates

	Switching Engine Emissions	Coal Line-haul Engine Emissions	Product Line-haul Engine Emissions
1-hr PM_{10} (pounds per hour)	0.05	0.08	0.00
Annual PM_{10} (pounds per year)	57.18	16.90	8.09

During a given hour either the line-haul engines for the coal train or product train operate, not both, thus emissions from the larger coal trains are only included in the peak hour emissions.

HARP Inputs - Annual and Hourly Emission Rates per Volume Source

Diesel Particulate Matter	Onsite Train Emissions
Max PM_{10} pounds per hour per volume source	1.2E-03
PM_{10} pounds per year per volume source	7.9E-01

Hydrogen Energy California, LLC *12/20/2012*
Hydrogen Energy California (HECA) Project

		Total Uncontrolled Emissions		Total Controlled Emissions	
Compound	**Name**	**Emissions (lb/hr)**	**Emissions (tpy)**	**Emissions (lb/hr)**	**Emissions (tpy)**
CO_2	Carbon dioxide	34.48	151.03	16.17	71.07
CH_4	Methane	2.78E-01	1.22	1.51E-01	0.66
CO	Carbon monoxide	1.78	7.81	1.37	6.01
NO_2	Nitrogen dioxide	0.01	0.06	0.00	0.00
SO_2	Sulfur dioxide	0.12	0.51	0.02	0.11
H_2S	Hydrogen Sulfide	1.44	6.29	0.34	1.49
NH_3	Ammonia	10.18	44.57	0.94	4.13
HCl	Hydrogen Chloride	2.00E-03	8.74E-03	2.00E-03	8.74E-03
HNO_3	Nitric acid	0.81	3.53	0.08	0.36
COS	Carbonyl Sulfide	1.57E-01	0.69	3.19E-02	0.14
CH_3OH	Methanol	15.94	69.82	1.55	7.41
C_3H_6	Propylene	12.95	56.74	2.09	9.15
HCN	Hydrogen Cyanide	1.76E-03	7.72E-03	3.92E-04	1.73E-03
Total VOC	Volatile organic compounds	29.05	127.26	3.67	16.71

Note: The following compounds are included as VOCs, CH_3OH, C_3H_6, COS, and HCN

Fugitive Emissions - Gasification Unit **Emissions Summary**

Hydrogen Energy California, LLC *12/20/2012*
Hydrogen Energy California (HECA) Project

	Total Uncontrolled Emissions		Total Controlled Emissions	
Compound	**Emissions (lb/hr)**	**Emissions (tpy)**	**Emissions (lb/hr)**	**Emissions (tpy)**
CO_2	14.14	61.93	8.82	38.89
CO	1.19	5.23	1.13	4.94
CH_4	6.34E-02	2.78E-01	6.21E-02	2.72E-01
H_2S	1.15	5.03	0.23	1.01
COS	1.55E-01	6.80E-01	3.12E-02	0.14
CH_3OH	15.87	69.49	1.52	7.29
C_3H_6	12.95	56.74	2.09	9.15
NH_3	0.50	2.21	0.08	0.33
HCN	1.75E-03	7.66E-03	3.86E-04	1.71E-03
SO2	1.16E-01	5.08E-01	2.47E-02	1.08E-01
HCl	2.00E-03	8.74E-03	2.00E-03	8.74E-03
Total VOC	**28.98**	**126.92**	**3.64**	**16.58**

EPA Table 2-1SOCMI Average Fugitive Emission Factors

Component Type	Service Type	Emission Factor [1] (kg/hr/source)	Control Efficiency (%) [3]
Valves	Gas	5.97E-03	92%
	Light Liquid	4.03E-03	88%
	Heavy Liquid	2.30E-04	
Pump Seals	Light Liquid	1.99E-02	75%
	Heavy Liquid	8.62E-03	
Compressors	Gas	2.28E-01	
Pressure Relief Valves	Gas	1.04E-01	
Connectors	All	1.83E-03	93%
Open-Ended Lines	All	1.70E-03	
Sampling Connections	All	1.50E-02	
Agitator Seals [2]	All	1.99E-02	

Note:
Source: EPA 1995, Protocol for Equipment Leak Emission Estimates
(1) Factors are for total organic compound emission rates. Emission factors assumed to be same for other constituents emitted from the stream.
(2) Factors for light liquid pump seals can be used to estimate the leak rate from agitator seals
(3) Control efficiencies for an LDAR program at a SOCMI process unit using HON reg neg
(control effectiveness attributable to requirements of the hazardous NESHAPS equipment leak regulations)
Emission are conservative since many of these streams are not as volatile as the streams that the SOCMI factors were developed for.
(4) Each Compressor stage considered as a separate compressor.

Area #1: Methanol

Component	Service	Equipment Count (N)	Annual Hours of Operation	Uncontrolled Emissions (E_{TOC})		Controlled Emissions (E_{TOC})	
				lb/hr	tpy	lb/hr	tpy
Valves	Gas	0	8760	-	-	-	-
Valves	Light Liquid	257	8760	2.27	9.96	0.27	1.19
Valves	Heavy Liquid	0	8760	-	-	-	-
Pump Seals	Light Liquid	4	8760	0.18	0.77	0.04	0.19
Pump Seals	Heavy Liquid	0	8760	-	-	-	-
Compressors	Gas	0	8760	-	-	-	-
Connectors	All	824	8760	3.32	14.52	0.23	1.02
			Total	**5.76**	**25.25**	**0.55**	**2.40**
			H_2S	6.18E-06	2.71E-05	5.89E-07	2.58E-06
			CH_3OH	5.76	25.25	0.55	2.40
			HCN	1.63E-04	7.12E-04	1.55E-05	6.78E-05

Area #2: Syn Gas

Component	Service	Equipment Count (N)	Annual Hours of Operation	Uncontrolled Emissions (E_{TOC})	
				lb/hr	tpy
Valves	Gas	69	8760	0.48	2.10
Valves	Light Liquid	0	8760	-	-
Valves	Heavy Liquid	0	8760	-	-
Pump Seals	Light Liquid	0	8760	-	-
Pump Seals	Heavy Liquid	0	8760	-	-
Compressors	Gas	0	8760	-	-
Connectors	All	208	8760	0.44	1.94
			Total	**0.92**	**4.04**
			CO_2	0.14	0.61
			CO	0.76	3.31
			CH_4	1.03E-02	4.51E-02
			H_2S	1.01E-02	4.41E-02
			COS	4.27E-03	1.87E-02
			NH_3	2.48E-03	1.09E-02
			HCN	1.29E-04	5.66E-04
			HCl	1.22E-05	5.36E-05

Area #4: Shifted Syn Gas

Component	Service	Equipment Count (N)	Annual Hours of Operation	Uncontrolled Emissions (E_{TOC})	
				lb/hr	tpy
Valves	Gas	342	8760	2.89	12.66
Valves	Light Liquid	0	8760	-	-
Valves	Heavy Liquid	0	8760	-	-
Pump Seals	Light Liquid	0	8760	-	-
Pump Seals	Heavy Liquid	0	8760	-	-
Compressors	Gas	0	8760	-	-
Connectors	All	1024	8760	2.65	11.61
			Total	**5.54**	**24.27**
			CO_2	5.17	22.65
			CO	2.56E-01	1.12E+00
			CH_4	5.17E-02	2.26E-01
			H_2S	5.33E-02	2.34E-01
			COS	3.28E-04	1.44E-03
			CH_3OH	8.63E-05	3.78E-04
			NH_3	9.18E-03	4.02E-02
			HCN	1.73E-05	7.56E-05

Area #5: Propylene

Component	Service	Equipment Count (N)	Annual Hours of Operation	Uncontrolled Emissions (E_{TOC})		Controlled Emissions (E_{TOC})	
				lb/hr	tpy	lb/hr	tpy
Valves	Gas	36	8760	0.47	2.08	0.04	0.17
Valves	Light Liquid	546	8760	4.85	21.25	0.58	2.55
Valves	Heavy Liquid	0	8760	-	-	-	-
Pump Seals	Light Liquid	0	8760	-	-	-	-
Pump Seals	Heavy Liquid	0	8760	-	-	-	-
Compressors	Gas	2	8760	1.01	4.40	1.01	4.40
Connectors	All	1642	8760	6.62	29.02	0.46	2.03
			Total	**12.95**	**56.74**	**2.09**	**9.15**
			C_3H_6	12.95	56.74	2.09	9.15

Area #6: Sour Water

Component	Service	Equipment Count (N)	Annual Hours of Operation	Uncontrolled Emissions (E_{TOC})	
				lb/hr	tpy
Valves	Gas	0	8760	-	-
Valves	Light Liquid	0	8760	-	-
Valves	Heavy Liquid	366	8760	0.01	0.02
Pump Seals	Light Liquid	0	8760	-	-
Pump Seals	Heavy Liquid	8	8760	0.00	0.02
Compressors	Gas	0	8760	-	-
Connectors	All	958	8760	0.11	0.48
			Total	**0.12**	**0.53**
			CO_2	0.08	0.36
			CO	3.07E-04	1.34E-03
			CH_4	1.26E-05	5.52E-05
			H_2S	2.09E-03	9.15E-03
			COS	3.24E-03	1.42E-02
			NH_3	2.93E-02	0.13
			HCN	1.18E-04	5.15E-04
			HCl	1.98E-03	8.69E-03

Area #7: H_2S Laden Methanol

Component	Service	Equipment Count (N)	Annual Hours of Operation	Uncontrolled Emissions (E_{TOC})		Controlled Emissions (E_{TOC})	
				lb/hr	tpy	lb/hr	tpy
Valves	Gas	0	8760	-	-	-	-
Valves	Light Liquid	290	8760	2.46	10.77	0.30	1.29
Valves	Heavy Liquid	0	8760	-	-	-	-
Pump Seals	Light Liquid	6	8760	0.25	1.10	0.06	0.28
Pump Seals	Heavy Liquid	0	8760	-	-	-	-
Compressors	Gas	0	8760	-	-	-	-
Connectors	All	962	8760	3.71	16.26	0.26	1.14
			Total	**6.42**	**28.14**	**0.62**	**2.71**
			CO_2	1.05	4.60	0.10	0.44
			CO	3.76E-04	0.00	3.62E-05	1.58E-04
			CH_4	3.02E-04	1.32E-03	2.91E-05	1.27E-04
			H_2S	0.06	0.27	0.01	0.03
			COS	2.75E-04	1.21E-03	2.65E-05	1.16E-04
			CH_3OH	5.31	23.26	0.51	2.24
			HCN	2.01E-04	8.83E-04	1.94E-05	8.49E-05

Area #8: CO_2 Laden Methanol

Component	Service	Equipment Count (N)	Annual Hours of Operation	Uncontrolled Emissions (E_{TOC})		Controlled Emissions (E_{TOC})	
				lb/hr	tpy	lb/hr	tpy
Valves	Gas	0	8760	-	-	-	-
Valves	Light Liquid	285	8760	2.53	11.06	0.30	1.33
Valves	Heavy Liquid	0	8760	-	-	-	-
Pump Seals	Light Liquid	6	8760	0.26	1.15	0.07	1.15
Pump Seals	Heavy Liquid	0	8760	-	-	-	-
Compressors	Gas	0	8760	-	-	-	-
Connectors	All	932	8760	3.75	16.42	0.26	1.15
			Total	**6.54**	**28.64**	**0.63**	**3.63**
			CO_2	1.79	7.85	0.17	0.99
			CO	8.33E-04	0.00	8.04E-05	4.62E-04
			CH_4	8.46E-04	3.70E-03	8.16E-05	4.69E-04
			H_2S	6.56E-06	2.87E-05	6.33E-07	3.64E-06
			COS	5.87E-07	2.57E-06	5.67E-08	3.26E-07
			CH_3OH	4.74	20.78	0.46	2.63
			HCN	1.18E-04	5.17E-04	1.14E-05	6.55E-05

Area #9: Acid Gas

Component	Service	Equipment Count (N)	Annual Hours of Operation	Uncontrolled Emissions (E_{TOC})		Controlled Emissions (E_{TOC})	
				lb/hr	tpy	lb/hr	tpy
Valves	Gas	122	8760	1.40	6.14	0.11	0.49
Valves	Light Liquid	0	8760	-	-	-	-
Valves	Heavy Liquid	0	8760	-	-	-	-
Pump Seals	Light Liquid	0	8760	-	-	-	-
Pump Seals	Heavy Liquid	0	8760	-	-	-	-
Compressors	Gas	0	8760	-	-	-	-
Connectors	All	388	8760	1.37	6.01	0.10	0.42
			Total	**2.77**	**12.14**	**0.21**	**0.91**
			CO_2	1.57	6.90	0.12	0.52
			CO	6.47E-02	0.28	4.86E-03	2.13E-02
			CH_4	6.33E-05	2.77E-04	4.75E-06	2.08E-05
			H_2S	0.90	3.94	0.07	0.30
			COS	0.09	0.38	6.45E-03	0.03
			CH_3OH	4.78E-02	0.21	3.59E-03	1.57E-02
			HCN	7.28E-05	3.19E-04	5.46E-06	2.39E-05
			SO_2	9.86E-02	4.32E-01	7.40E-03	3.24E-02

Area #10: Ammonia-Laden Gas

Component	Service	Equipment Count (N)	Annual Hours of Operation	Uncontrolled Emissions (E_{TOC})		Controlled Emissions (E_{TOC})	
				lb/hr	tpy	lb/hr	tpy
Valves	Gas	98	8760	1.08	4.75	0.09	0.38
Valves	Light Liquid	0	8760	-	-	-	-
Valves	Heavy Liquid	0	8760	-	-	-	-
Pump Seals	Light Liquid	0	8760	-	-	-	-
Pump Seals	Heavy Liquid	0	8760	-	-	-	-
Compressors	Gas	0	8760	-	-	-	-
Connectors	All	252	8760	0.86	3.76	0.06	0.26
			Total	**1.94**	**8.50**	**0.15**	**0.64**
			CO_2	1.39	6.10	0.11	0.46
			CO	4.99E-03	2.18E-02	3.77E-04	1.65E-03
			CH_4	2.00E-04	8.76E-04	1.51E-05	6.62E-05
			H_2S	0.03	0.14	2.34E-03	1.03E-02
			COS	4.80E-02	2.10E-01	3.62E-03	1.59E-02
			CH_3OH	5.06E-05	2.22E-04	3.82E-06	1.68E-05
			NH_3	0.46	2.03	0.04	0.15
			HCN	9.29E-04	4.07E-03	7.02E-05	3.08E-04

Area #11: Sulfur

Component	Service	Equipment Count (N)	Annual Hours of Operation	Uncontrolled Emissions (E_{TOC})	
				lb/hr	tpy
Valves	Gas	0	8760	-	-
Valves	Light Liquid	0	8760	-	-
Valves	Heavy Liquid	17	8760	1.52E-06	6.67E-06
Pump Seals	Light Liquid	0	8760	-	-
Pump Seals	Heavy Liquid	0	8760	-	-
Compressors	Gas	0	8760	-	-
Connectors	All	118	8760	8.66E-05	3.80E-04
			Total	**8.82E-05**	**3.86E-04**
			H_2S	8.82E-05	3.86E-04

Area #12: SRU Tail Gas

Component	Service	Equipment Count (N)	Annual Hours of Operation	Uncontrolled Emissions (E_{TOC})	
				lb/hr	tpy
Valves	Gas	66	8760	0.61	2.68
Valves	Light Liquid	0	8760	-	-
Valves	Heavy Liquid	0	8760	-	-
Pump Seals	Light Liquid	0	8760	-	-
Pump Seals	Heavy Liquid	0	8760	-	-
Compressors	Gas	5	8760	1.77	7.75
Connectors	All	276	8760	0.78	3.43
			Total	**3.16**	**13.86**
			CO_2	2.93	12.85
			CO	0.11	0.48
			H_2S	0.09	0.39
			COS	1.33E-02	5.80E-02
			SO_2	1.73E-02	7.57E-02

Note:
Please note that component counts listed in the tables above are only estimates, and do not represent exact component counts

E_{TOC} = $F_A * WF_{TOC} * N$

Where:
F_A = Applicable average emisison factor for equipment type
WF_{TOC} = Average weight fraction of TOC in the stream
N = Number of pieces of equipment of the applicable equipment type

The SOCMI emission factor does not need to be corrected for methane in the stream, because the emission factor is for total organic compounds.

Area Speciation

Comound	Wt % ($WF_{Constituents}$)										
	Stream 1 Methanol	Stream 2 Syn Gas	Stream 4 Shifted Syn Gas	Stream 5 Propylene	Stream 6 Sour Water	Stream 7 H_2S Laden Methanol	Stream 8 CO_2 Laden Methanol	Stream 9 Acid Gas	Stream 10 Ammonia-Laden Gas	Stream 11 Sulfur	Stream 12 SRU Tail Gas
CO_2	0.0000%	8.0190%	59.8954%	0.0000%	1.9817%	15.6429%	27.3433%	49.7579%	60.5702%	0.0000%	65.2550%
CO	0.0000%	43.2679%	2.9653%	0.0000%	0.0073%	0.0056%	0.0127%	2.0450%	0.2169%	0.0000%	2.4573%
CH_4	0.0000%	0.5887%	0.5989%	0.0000%	0.0003%	0.0045%	0.0129%	0.0020%	0.0087%	0.0000%	0.0000%
H_2S	0.0001%	0.5758%	0.6176%	0.0000%	0.0497%	0.9249%	0.0001%	28.4604%	1.3471%	0.0182%	1.9854%
COS	0.0000%	0.2446%	0.0038%	0.0000%	0.0770%	0.0041%	0.00001%	2.7139%	2.0850%	0.0000%	0.2948%
CH_3OH	99.7400%	0.0000%	0.0010%	0.0000%	0.0000%	79.0583%	72.3583%	1.5120%	0.0022%	0.0000%	0.0000%
C_3H_6	0.0000%	0.0000%	0.0000%	100.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
NH_3	0.0000%	0.1422%	0.1063%	0.0000%	0.6969%	0.0000%	0.0000%	0.0000%	20.1544%	0.0000%	0.0000%
HCN	0.0028%	0.0074%	0.0002%	0.0000%	0.0028%	0.0030%	0.0018%	0.0023%	0.0404%	0.0000%	0.0000%
SO_2	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	3.1161%	0.0000%	0.0000%	0.3846%
HCl	0.0000%	0.0007%	0.0000%	0.0000%	0.0472%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
$WF_{Constituents}$ [1]	**99.74%**	**52.85%**	**64.19%**	**100.00%**	**2.86%**	**95.64%**	**99.73%**	**87.61%**	**84.42%**	**0.02%**	**70.38%**

Conversion Note:
1 kg = 2.20 pound

Note:
(1) $WF_{Constituents}$ does not always equal 100% due to the presence of inerts in the area not listed in table above.

	Process Area										
Component Count	**1**	**2**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
	Methanol	**Syn Gas**	**Shifted Syn Gas**	**Propylene**	**Sour Water**	**H_2S Laden Methanol**	**CO_2 Laden Methanol**	**Acid Gas**	**Ammonia-Laden Gas**	**Sulfur**	**SRU Tail Gas**
Valves - Gas	0	69	342	36	0	0	0	122	98	0	66
Valves - Light Liquid	257	0	0	546	0	290	285	0	0	0	0
Valves - Heavy Liquid	0	0	0	0	366	0	0	0	0	17	0
Pumps - Light Liquid	4	0	0	0	0	6	6	0	0	0	0
Pumps - Heavy Liquid	0	0	0	0	8	0	0	0	0	0	0
Compressors	0	0	0	2	0	0	0	0	0	0	5
Connectors	824	208	1024	1642	958	962	932	388	252	118	276
	1085	**277**	**1366**	**2226**	**1332**	**1258**	**1223**	**510**	**350**	**135**	**347**

	Process Area											
	1	**2**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	
	Methanol	**Syn Gas**	**Shifted Syn Gas**	**Propylene**	**Sour Water**	**H_2S Laden Methanol**	**CO_2 Laden Methanol**	**Acid Gas**	**Ammonia-Laden Gas**	**Sulfur**	**SRU Tail Gas**	**Total**
Compound	**Annual Fugitive Emissions with LDAR Application (ton/yr)**											
CO_2		0.61	22.65		0.36	0.44	0.99	0.52	0.46		12.85	38.89
CO		3.31	1.12		1.34E-03	1.58E-04	4.62E-04	2.13E-02	1.65E-03		0.48	4.94
CH_4		4.51E-02	0.23		5.52E-05	1.27E-04	4.69E-04	2.08E-05	6.62E-05			0.27
H_2S	2.58E-06	4.41E-02	0.23		9.15E-03	2.62E-02	3.64E-06	0.30	1.03E-02	3.86E-04	0.39	1.01
COS		1.87E-02	1.44E-03		1.42E-02	1.16E-04	3.26E-07	0.03	0.02		5.80E-02	0.14
CH_3OH	2.40		3.78E-04			2.24	2.63	0.02	1.68E-05			7.29
C_3H_6				9.15								9.15
NH_3		1.09E-02	4.02E-02		0.13				0.15			0.33
HCN	6.78E-05	5.66E-04	7.56E-05		5.15E-04	8.49E-05	6.55E-05	2.39E-05	3.08E-04			1.71E-03
SO_2								3.24E-02			7.57E-02	0.11
HCl		5.36E-05			8.69E-03							8.74E-03
Total VOC	**2.40**	**0.02**	**1.89E-03**	**9.15**	**1.47E-02**	**2.24**	**2.63**	**0.04**	**0.02**	**0.00E+00**	**0.06**	**16.58**
Total percentage of VOC content of gas in each process area	99.74%	0.25%	0.01%	100.00%	0.08%	79.07%	72.36%	4.23%	2.13%	0.00%	0.29%	

Note: The following compounds are included as VOCs, although not all compounds are found in the gas in each process area.
CH_3OH, C_3H_6, COS, and HCN

Summary by Volume Source for Modeling - Emissions are divided by number of Volume Sources

"GASIFICATION" (Area #2)

	lb/hr	lb/yr
CO	0.252	2,207.60
H_2S	3.35E-03	29.38
NH_3	8.28E-04	7.26E+00
CH_3OH		
C_3H_6		
HCN	4.31E-05	3.78E-01
HCl	4.08E-06	3.57E-02

3 number of Volume Sources
28 horizontal dimension (m)
46.48 release ht (m)
13.02 horizontal dimension (m)
43.24 vertical dimension (m)
305 vertical dimension used for calcs (ft)

"SHIFT" (Area #4, 6)

	lb/hr	lb/yr
CO	1.28E-01	1,122.54
H_2S	2.77E-02	242.67
NH_3	1.92E-02	168.47
CH_3OH	4.32E-05	0.38
C_3H_6		
HCN	6.75E-05	0.59
HCl	9.92E-04	8.69

2 number of Volume Sources
35 horizontal dimension (m)
6.10 release ht (m)
16.28 horizontal dimension (m)
5.67 vertical dimension (m)
40 vertical dimension used for calcs (ft)

"AGR" (Area #1, #5, #7, #8, #9)

	lb/hr	lb/yr
CO	5.00E-03	43.79
H_2S	7.36E-02	644.50
NH_3		
CH_3OH	1.66E+00	14575.10
C_3H_6	2.09E+00	18300.12
HCN	5.53E-05	0.48
HCl		
SO_2	7.40E-03	64.83

1 number of Volume Sources
48 horizontal dimension (m)
6.10 release ht (m)
22.33 horizontal dimension (m)
5.67 vertical dimension (m)
40 vertical dimension used for calcs (ft)

"Sour Water Stripper" (Area #10)

	lb/hr	lb/yr
CO	3.77E-04	3.30
H_2S	2.34E-03	20.51
NH_3	3.50E-02	306.90
CH_3OH	3.82E-06	0.03
C_3H_6		
HCN	7.02E-05	0.62
HCl		

1 number of Volume Sources
16 horizontal dimension (m)
6.10 release ht (m)
7.44 horizontal dimension (m)
5.67 vertical dimension (m)
40 vertical dimension used for calcs (ft)

"SRU" (Area #11, #12)

2 number of Volume Sources

	lb/hr	lb/yr
CO	5.52E-02	483.84
H_2S	4.47E-02	391.31
NH_3		
CH_3OH		
C_3H_6		
HCN		
HCl		
SO_2	8.64E-03	75.73

2 number of Volume Sources
16 horizontal dimension (m)
6.10 release ht (m)
7.44 horizontal dimension (m)
5.67 vertical dimension (m)
40 vertical dimension used for calcs (ft)

Note: Selective LDAR program was applied to Areas # 1,#5, #7, #8, #9, #10 due to high uncontrolled emissions for the VOCs (methanol and propylene) and hydrogen sulfide

Fugitive Emissions - Fertilizer Complex

Hydrogen Energy California, LLC *12/20/2012*
Hydrogen Energy California (HECA) Project

	Total Uncontrolled Emissions		Total Controlled Emissions	
Compound	**Emissions (lb/hr)**	**Emissions (tpy)**	**Emissions (lb/hr)**	**Emissions (tpy)**
CO_2	20.34	89.11	7.35	32.18
CO	5.89E-01	2.58E+00	2.44E-01	1.07E+00
CH_4	2.14E-01	9.38E-01	8.87E-02	3.88E-01
H_2S	0.29	1.26	1.08E-01	0.47
COS	1.91E-03	8.35E-03	7.18E-04	3.15E-03
CH_3OH	0.08	0.33	0.03	0.13
NH_3	9.67	42.36	0.87	3.80
HCN	1.44E-05	6.30E-05	5.41E-06	2.37E-05
HNO_3	0.81	3.53	0.08	0.36
NO_2	1.48E-02	6.47E-02	1.08E-03	4.74E-03
Total VOC	**0.08**	**0.34**	**0.03**	**0.13**

EPA Table 2-1SOCMI Average Fugitive Emission Factors

Component Type	Service Type	Emission Factor[1] (kg/hr/source)	Control Efficiency (%)[3]
Valves	Gas	5.97E-03	92%
	Light Liquid	4.03E-03	88%
	Heavy Liquid	2.30E-04	
Pump Seals	Light Liquid	1.99E-02	75%
	Heavy Liquid	8.62E-03	
Compressor Seals	Gas	2.28E-01	
Pressure Relief Valves	Gas	1.04E-01	
Connectors	All	1.83E-03	93%
Open-Ended Lines	All	1.70E-03	
Sampling Connections	All	1.50E-02	
Agitator Seals[2]	All	1.99E-02	

Note:
Source: EPA 1995, Protocol for Equipment Leak Emission Estimates
(1) Factors are for total organic compound emission rates. Emission factors assumed to be same for other constituents emitted from the stream.
(2) Factors for light liquid pump seals can be used to estimate the leak rate from agitator seals
(3) Control efficiencies for an LDAR program at a SOCMI process unit using HON reg neg
(control effectiveness attributable to requirements of the hazardous NESHAPS equipment leak regulations)
It was assumed that factors for connectors can be used to estimate the leak rate from flanges.
Emission are conservative since these streams are not as volatile as the streams that the SOCMI factors were developed for.

Stream 13: Low NH3 Concentration

Component	Service	Equipment Count (N)	Annual Hours of Operation	Uncontrolled Emissions (E_{TOC}) lb/hr	Uncontrolled Emissions (E_{TOC}) tpy	Controlled Emissions (E_{TOC}) lb/hr	Controlled Emissions (E_{TOC}) tpy
Valves	Gas	196.5	8760	0.55	2.42	0.04	0.19
Valves	Light Liquid	105	8760	0.20	0.87	0.02	0.10
Pumps	Light Liquid	6	8760	0.06	0.25	0.01	0.06
Compressors	All	0	8760	-	-	-	-
Connectors	All	826	8760	0.71	3.12	0.05	0.22
			Total	**1.52**	**6.66**	**0.13**	**0.58**
			CO_2	0.41	1.80	0.04	0.16
			NH_3	1.11	4.86	0.10	0.42

Stream 14: Moderate NH3 Concentration

Component	Service	Equipment Count (N)	Annual Hours of Operation	Uncontrolled Emissions (E_{TOC}) lb/hr	Uncontrolled Emissions (E_{TOC}) tpy	Controlled Emissions (E_{TOC}) lb/hr	Controlled Emissions (E_{TOC}) tpy
Valves	Gas	6	8760	0.07	0.30	0.01	0.02
Valves	Light Liquid	2	8760	0.01	0.05	0.00	0.01
Pumps	Light Liquid	0	8760	-	-	-	-
Compressors	All	0	8760	-	-	-	-
Connectors	All	44	8760	0.15	0.67	0.01	0.05
			Total	**0.23**	**1.02**	**0.02**	**0.08**
			CO_2	0.10	0.44	0.01	0.03
			NH_3	0.13	0.58	0.01	0.04

Stream 15: High NH3 Concentration

Component	Service	Equipment Count (N)	Annual Hours of Operation	Uncontrolled Emissions (E_{TOC}) lb/hr	Uncontrolled Emissions (E_{TOC}) tpy	Controlled Emissions (E_{TOC}) lb/hr	Controlled Emissions (E_{TOC}) tpy
Valves	Gas	147	8760	1.91	8.37	1.53E-01	6.69E-01
Valves	Light Liquid	206	8760	1.80	7.90	0.22	0.95
Pumps	Light Liquid	4	8760	0.17	0.76	0.04	0.19
Compressors	All	0	8760	-	-	-	-
Connectors	All	886	8760	3.53	15.46	2.47E-01	1.08E+00
			Total	**7.42**	**32.48**	**6.60E-01**	**2.89E+00**
			CO_2	0.06	0.25	5.07E-03	2.22E-02
			NH_3	7.36	32.23	0.65	2.87

Stream 16: Low CO2 Concentration

Component	Service	Equipment Count (N)	Annual Hours of Operation	Uncontrolled Emissions (E_{TOC}) lb/hr	Uncontrolled Emissions (E_{TOC}) tpy	Controlled Emissions (E_{TOC}) lb/hr	Controlled Emissions (E_{TOC}) tpy
Valves	Gas	20	8760	0.13	0.56	1.03E-02	4.52E-02
Valves	Light Liquid	107	8760	0.48	2.08	0.06	0.25
Pumps	Light Liquid	6	8760	0.13	0.58	0.03	0.14
Compressors	All	0	8760	-	-	-	-
Connectors	All	400	8760	0.81	3.55	5.67E-02	2.48E-01
			Total	**1.55**	**6.77**	**1.57E-01**	**6.88E-01**
			CO_2	0.58	2.55	5.91E-02	2.59E-01
			NH_3	0.96	4.22	0.10	0.43

Stream 17: Moderate CO2 Concentration

Component	Service	Equipment Count (N)	Annual Hours of Operation	Uncontrolled Emissions (E_{TOC}) lb/hr	Uncontrolled Emissions (E_{TOC}) tpy	Controlled Emissions (E_{TOC}) lb/hr	Controlled Emissions (E_{TOC}) tpy
Valves	Gas	6	8760	0.07	0.30	0.01	0.02
Valves	Light Liquid	0	8760	-	0.00E+00	0.00E+00	0.00E+00
Pumps	Light Liquid	0	8760	-	-	-	-
Compressors	All	0	8760	-	-	-	-
Connectors	All	34	8760	0.12	5.21E-01	8.32E-03	3.65E-02
			Total	**1.87E-01**	**8.21E-01**	**1.38E-02**	**6.05E-02**
			CO_2	8.11E-02	3.55E-01	5.98E-03	2.62E-02
			NH_3	1.06E-01	4.65E-01	7.83E-03	3.43E-02

Stream 18: High CO2 Concentration

Component	Service	Equipment Count (N)	Annual Hours of Operation	Uncontrolled Emissions (E_{TOC})		Controlled Emissions (E_{TOC})	
				lb/hr	tpy	lb/hr	tpy
Valves	Gas	506	8760	6.64	29.07	5.31E-01	2.33
Valves	Light Liquid	0	8760	-	-	-	-
Pumps	Light Liquid	0	8760	-	-	-	-
Compressors	All	12	8760	6.02	26.35	6.02	26.35
Connectors	All	1446	8760	5.82	25.49	4.07E-01	1.78
			Total	**18.47**	**80.90**	**6.95E+00**	**30.46**
			CO_2	18.10	79.30	6.82	29.86
			CO	1.26E-03	5.52E-03	4.74E-04	2.08E-03
			CH_4	1.70E-03	7.46E-03	6.41E-04	2.81E-03
			H_2S	0.29	1.26	0.11	0.47
			COS	1.91E-03	8.35E-03	7.18E-04	3.15E-03
			CH_3OH	0.07	0.32	0.03	0.12
			HCN	1.44E-05	6.30E-05	5.41E-06	2.37E-05

Stream 19: NO2

Component	Service	Equipment Count (N)	Annual Hours of Operation	Uncontrolled Emissions (E_{TOC})		Controlled Emissions (E_{TOC})	
				lb/hr	tpy	lb/hr	tpy
Valves	Gas	5	8760	4.80E-03	2.10E-02	3.84E-04	1.68E-03
Valves	Light Liquid	0	8760	-	-	-	-
Pumps	Light Liquid	0	8760	-	-	-	-
Compressors	All	0	8760	-	-	-	-
Connectors	All	34	8760	1.00E-02	4.38E-02	7.00E-04	3.07E-03
			Total	**1.48E-02**	**6.48E-02**	**1.08E-03**	**4.75E-03**
			HNO_3	3.46E-05	1.51E-04	2.53E-06	1.11E-05
			NO_2	1.48E-02	6.47E-02	1.08E-03	4.74E-03

Stream 20: HNO3

Component	Service	Equipment Count (N)	Annual Hours of Operation	Uncontrolled Emissions (E_{TOC})		Controlled Emissions (E_{TOC})	
				lb/hr	tpy	lb/hr	tpy
Valves	Gas	0	8760	-	-	-	-
Valves	Light Liquid	66	8760	0.33	1.44	0.04	0.17
Pumps	Light Liquid	2	8760	4.93E-02	2.16E-01	1.23E-02	5.40E-02
Compressors	All	0	8760	-	-	-	-
Connectors	All	188	8760	0.43	1.87	2.99E-02	0.13
			Total	**0.81**	**3.53**	**0.08**	**0.36**
			HNO_3	0.81	3.53	0.08	0.36

Stream 21: PSA Off Gas

Component	Service	Equipment Count (N)	Annual Hours of Operation	Uncontrolled Emissions (E_{TOC})		Controlled Emissions (E_{TOC})	
				lb/hr	tpy	lb/hr	tpy
Valves	Gas	164	8760	0.57	2.50	0.05	0.20
Valves	Light Liquid	0	8760	-	-	-	-
Pumps	Light Liquid	0	8760	-	-	-	-
Compressors	All	5	8760	0.66	2.91	0.66	2.91
Connectors	All	540	8760	0.58	2.52	0.04	0.18
			Total	**1.81**	**7.93**	**0.75**	**3.28**
			CO_2	1.01	4.42	0.42	1.83
			CO	0.59	2.57	2.44E-01	1.07
			CH_4	0.21	0.93	8.80E-02	0.39
			CH_3OH	1.83E-03	8.01E-03	7.58E-04	3.32E-03

Note:
Please note that component counts listed in the tables above are only estimates, and do not represent exact component counts

E_{TOC} = $F_A * WF_{TOC} * N$

Where:
F_A = Applicable average emisison factor for equipment type
WF_{TOC} = Average weight fraction of TOC in the stream
N = Number of pieces of equipment of the applicable equipment type

The SOCMI emission factor does not need to be corrected for methane in the stream, because the emission factor is for total organic compounds.

Stream Speciation

Compound	Wt % ($WF_{Constituent}$)								
	Stream 13 Low NH3 Concentration	Stream 14 Moderate NH3 Concentration	Stream 15 High NH3 Concentration	Stream 16 Low CO2 Concentration	Stream 17 Moderate CO2 Concentration	Stream 18 High CO2 Concentration	Stream 19 NO2	Stream 20 HNO3	Stream 21 PSA Off Gas
CO_2	5.7714%	37.5330%	0.7583%	18.9000%	37.5330%	97.7605%	0.0000%	0.0000%	14.7155%
CO	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0068%	0.0000%	0.0000%	8.5794%
CH_4	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0092%	0.0000%	0.0000%	3.1006%
H_2S	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	1.5552%	0.0000%	0.0000%	0.0000%
COS	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0103%	0.0000%	0.0000%	0.0000%
CH_3OH	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.4003%	0.0000%	0.0000%	0.0267%
NH_3	15.5943%	49.1670%	97.9750%	31.3143%	49.1670%	0.0000%	0.0000%	0.0000%	0.0000%
HCN	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0001%	0.0000%	0.0000%	0.0000%
HNO_3	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0170%	56.2243%	0.0000%
NO_2	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	7.2766%	0.0000%	0.0000%
$WF_{Constituents}$ [1]	**21.4%**	**86.7%**	**98.7%**	**50.2%**	**86.7%**	**99.7%**	**7.3%**	**56.2%**	**26.4%**

Conversion Note:
1 kg = 2.20 pound

Note:
(1) $WF_{Constituent}$ only shows the constituants that are of concern for air quality permitting, such as VOCs, TACs, criteria pollutants and GHGs

	Stream								
	Stream 13 Low NH3 Concentration	Stream 14 Moderate NH3 Concentration	Stream 15 High NH3 Concentration	Stream 16 Low CO2 Concentration	Stream 17 Moderate CO2 Concentration	Stream 18 High CO2 Concentration	Stream 19 NO2	Stream 20 HNO3	Stream 21 PSA Off Gas
Valves - Gas	197	6	147	20	6	506	5	0	164
Valves - Light Liquid	105	2	206	107	0	0	0	66	0
Pumps - Light Liquid	6	0	4	6	0	0	0	2	0
Compressors	0	0	0	0	0	12	0	0	5
Connectors	826	44	886	400	34	1446	34	188	540
	1134	**52**	**1243**	**532**	**40**	**1964**	**39**	**256**	**709**

	Stream									
	Stream 13 Low NH3 Concentration	Stream 14 Moderate NH3 Concentration	Stream 15 High NH3 Concentration	Stream 16 Low CO2 Concentration	Stream 17 Moderate CO2 Concentration	Stream 18 High CO2 Concentration	Stream 19 NO2	Stream 20 HNO3	Stream 21 PSA Off Gas	Total
Compound	**Annual Fugitive Emissions with LDAR Application (ton/yr)**									
CO_2	0.16	0.03	0.02	0.26	2.62E-02	29.86			1.83	32.18
CO						2.08E-03			1.07	1.07
CH_4						2.81E-03			0.39	0.39
H_2S						0.47				0.47
COS						3.15E-03				0.00
CH_3OH						0.12			3.32E-03	0.13
NH_3	0.42	0.04	2.87	0.43	3.43E-02					3.80
HCN						2.37E-05				0.00
HNO_3							1.11E-05	3.58E-01		0.36
NO_2							4.74E-03			0.00
Total VOC	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.13**	**0.00**	**0.00**	**0.00**	**0.13**
Total percentage of VOC content of gas in each process area	0.00%	0.00%	0.00%	0.00%	0.00%	0.41%	0.00%	0.00%	0.03%	

Note: The following compounds are included as VOCs, although not all compounds are found in the gas in each process area.
CH_3OH, COS, and HCN

Summary by Volume Source for Modeling - Emissions are divided by number of Volume Sources

UAN Unit — Streams 19, 20

	lb/hr	lb/yr
HNO_3	8.18E-02	7.16E+02
NO_2	1.08E-03	9.48E+00

1 number of Volume Sources
24 horizontal dimension (m)
6.10 release ht (m)
11.16 horizontal dimension (m)
5.67 vertical dimension (m)
40 vertical dimension used for calcs (ft)

Urea Unit — Streams 14, 16, 17

	lb/hr	lb/yr
NH_3	5.79E-02	5.07E+02

2 number of Volume Sources
12 horizontal dimension (m)
6.10 release ht (m)
5.58 horizontal dimension (m)
5.67 vertical dimension (m)
40 vertical dimension used for calcs (ft)

Ammonia Unit — Streams 13, 15

	lb/hr	lb/yr
NH_3	3.75E-01	3.29E+03

2 number of Volume Sources
24 horizontal dimension (m)
6.10 release ht (m)
11.16 horizontal dimension (m)
5.67 vertical dimension (m)
40 vertical dimension used for calcs (ft)

CO2 Compression — Stream 18

	lb/hr	lb/yr
CO	4.74E-04	4.15E+00
H_2S	1.08E-01	9.50E+02
COS	7.18E-04	6.29E+00
CH_3OH	2.79E-02	2.44E+02
HCN	5.41E-06	4.74E-02

1 number of Volume Sources
24 horizontal dimension (m)
6.10 release ht (m)
11.16 horizontal dimension (m)
5.67 vertical dimension (m)
40 vertical dimension used for calcs (ft)

PSA Unit — Stream 21

	lb/hr	lb/yr
CO	2.44E-01	2.13E+03
CH_3OH	7.58E-04	6.64E+00

1 number of Volume Sources
24 horizontal dimension (m)
6.10 release ht (m)
11.16 horizontal dimension (m)
5.67 vertical dimension (m)
40 vertical dimension used for calcs (ft)

Note: LDAR program was applied to All Areas (# 13 through #21)

Methanol Tank

Hydrogen Energy California, LLC *20-Dec-2012*
Hydrogen Energy California (HECA) Project

Methanol storage tank parameters and fugitive emissions

Tank ID	Description	Uncontrolled VOC Emissions	Peak Month VOC Emissions	Daily VOC Emissions	Annual VOC emissions
		lb/month	lb/month	lb/day	lb/year
Methanol	Working Loss (33,000 gal pumped in)	80.82	0.0182	-	-
	Breathing Loss	1277.74	0.2878	0.0096	
	Total Breathing and Working Loss		-	0.0278	3.72

Methanol Vent Scrubber Efficiency		
Pre-scrubber	17.76%	methanol
Post-scrubber	40	ppm methanol
Control Efficiency	99.977%	

Methanol concentration information provided by Fluor
Uncontrolled emissions calculated using TANKS model
Peak daily emissions include losses during filling the entire tank plus breathing losses

HECA Project
Major Source Emission Calculations with Significance Thresholds for PSD

Total Reduced Sulfur

Pollutant	Annual Rate (tons per year)	TRS as H2S (tons/yr)	Molecular Wt	Source of emissions		
Hydrogen Sulfide	2.99	2.99	34	CO_2 vent and fugitives		
Carbonyl Sulfide	2.80	1.59	60	CO_2 vent and fugitives	**Significance Threshold (tons/yr)**	**Significant?**
	Total	**4.58**			10.00	no

TRS definition: the total reduced sulfur contained in hydrogen sulfide, mercaptans, dimethyl sulfide, dimethyl disulfide or other organic sulfide compounds, all expressed as hydrogen sulfide. Sulfur dioxide, sulfur trioxide, or sulfuric acid are not to be included in the determination of TRS.

Reduced Sulfur Compounds

Pollutant	Annual Rate (tons per year)	RSC as H2S (tons/yr)	Molecular Wt	Source of emissions		
Hydrogen Sulfide	2.99	2.99	34	CO_2 vent and fugitives		
Carbon Disulfide	0.54	0.24	76	CTG/HRSG and coal dryer		
Carbonyl Sulfide	2.80	1.59	60	CO_2 vent and fugitives	**Significance Threshold (tons/yr)**	**Significant?**
	Total	**4.82**			10.00	no

Reduced sulfur compounds means H2S, carbonyl sulfide (COS), and carbon disulfide (CS2).

Sulfuric Acid Mist

Pollutant	Annual Rate (tons per year)	Significance Threshold (tons/yr)	Significant ?	Source of emissions
Sulfuric Acid Mist	1.12	7.00	no	CTG/HRSG and coal dryer

Hydrogen Sulfide

Pollutant	Annual Rate (tons per year)	Significance Threshold (tons/yr)	Significant ?	Source of emissions
Hydrogen Sulfide	2.99	10.00	no	CO_2 vent and fugitives

Fluorides

Pollutant	Annual Rate (tons per year)	Significance Threshold (tons/yr)	Significant ?	Source of emissions
Fluoride	0.001	3.00	no	Cooling towers

Lead

Pollutant	Annual Rate (tons per year)	Significance Threshold (tons/yr)	Significant ?	Source of emissions
Lead	0.007	0.60	no	CTG/HRSG and coal dryer

Pollutants listed above are in 40 CFR 52.21 (as of Apr 6, 2012)

Emission Source Modification List

Since the submittal of the Amended Application for Certification (AFC), emissions from some sources have changed due to Project refinements and in response to data requests. Changes that have affected emissions estimates and the details of the filing where each change is presented are summarized below. All of these changes are included in the updated criteria pollutant, greenhouse gas (GHG) and toxic air contaminant (TAC) spreadsheets in this January 2013 submittal. This is the same list that was provided in response to CEC Workshop Data Request A35, with only one addition – the Applicant's response to Sierra Club Data Request 109 resulted in changes to emissions from the CO_2 vent, as described below.

Operations Emissions – Stationary Sources

CTG/HRSG and Coal Dryer

- Minor decrease in mercury emissions due to better control identified by vendor. Information presented in response to CEC Data Request A135 on October 10, 2012.
- Reduction in startup hours for CTG and coal dryer at 40 percent load on syngas from 50 hours to 2 hours, which causes a reduction in all pollutant emissions. Provided via email to Homero Ramirez, SJVAPCD on September 26, 2012.

Flares

- As discussed with SJVAPCD, BACT for the pilot is 0.068 lb/MMBtu for NOx, resulting in a very minor NOx reduction. Provided via email to Homero Ramirez, SJVAPCD on November 5, 2012.

Nitric Acid Unit

- Ammonia (NH_3) and nitrous oxide (N_2O) emissions increased due to new information provided by the vendor. These emissions are described in the response to the Notice of Incomplete Application provided to SJVAPCD on August 1, 2012.

Fugitives

- In the response to CEC Data Request A16 on August 22, 2012, fugitive emissions for both the gasification block and the fertilizer complex were updated to reflect the refined Project design. Minor changes in emissions of criteria pollutants, GHGs and TACs occurred.

Methanol and Diesel Tanks

- In the response to Sierra Club Data Request 76 on October 3, 2012, emissions of the volatile organic compounds (VOCs) from the methanol tank and diesel storage tanks were provided. This results in a very small increase in methanol and VOC emissions.

CO_2 Vent

- Emissions of methanol from the CO_2 vent were updated in response to Sierra Club Data Request 109, submitted to the CEC on December 21, 2012. These changes are presented in the Public Health TAC emissions spreadsheet.

Material Handling

- As described in the response to the Notice of Incomplete Application provided to SJVAPCD on August 1, 2012, modifications were made to the material handling baghouses due to Project refinements. New process flow diagrams (PFDs) for the material handling system were provided.
- Through email communication with SJVAPCD staff, modified material handling emissions were provided to match the updated material handling system. The emission calculations for the currently proposed material handling system are provided in the revised criteria pollutant operations spreadsheet.

  The main changes in the solids handling emission control equipment are the following:

  1. An additional baghouse, Source 21, has been added to control PM from the inlet of the gasification coal/petcoke grinding system.

  2. Source 24 in the original permit application has been removed. Source 24 now identifies a new dust collector at the gasification solids drainage/drying pad.

  3. Source 28, the gasification solids transfer tower, has been moved across the road and pipe rack from the gasification solids pad.

  4. The fugitive dust calculation for material handling on the gasification solids pad has been divided into two parts to account for the difference in material moisture content for placement versus removal and the corresponding different emission factors.

  5. Terminology used in the emission summary table and emission source plot plan has been revised to be consistent with the latest process flow diagrams.

Operations Emissions –Transportation

Changes to the transportation emissions for both Alternative 1 (Rail Transportation , Amended AFC Appendix E-5) and Alternative 2 (Truck Transportation, Amended AFC Appendix E-12) were presented in the General Conformity Evaluation (docketed with the CEC on September 14, 2012) and also in response to data requests as noted. These changes affected the transportation criteria pollutant and diesel particulate matter emissions for Alternatives 1 and 2. These changes did not affect GHG or other TAC emissions.

Onsite Train

- At the recommendation of the CEC, emission factors used in the train calculations came from the EPA's Technical Highlights: Emission Factors for Locomotives, April 2009

(http://www.epa.gov/nonroad/locomotv/420f09025.pdf). This change was noted in the response to CEC Data Request A18 on August 22, 2012. This resulted in a decrease in criteria pollutants and diesel particulate matter.

Offsite Train

- The transportation related emissions in 2017, when the construction and operation phases overlap, were calculated and included in the new spreadsheets.

- The travel distances for trucks and trains in each affected area were refined and revised.

- The train emissions were calculated using EPA Tier 3 emission factors, locomotive conversion factors, and locomotive load factors. At the recommendation of the CEC, the emission factors used in the train calculations came from the EPA's Technical Highlights: Emission Factors for Locomotives, April 2009 (http://www.epa.gov/nonroad/locomotv/420f09025.pdf). This change was presented in the response to CEC Data Request A18 on August 22, 2012.

- Fugitive coal dust emissions from coal trains were calculated and presented in the response to CEC Workshop Data Request A34 on December 20, 2012.

Construction Emissions

All changes made to construction emissions apply to fugitive PM_{10} and $PM_{2.5}$.

- The estimated daily mileage for scrapers was changed using the methodology from CalEEMod, as presented in the response to CEC Data Request A5 on August 22, 2012.
- The estimated daily mileage for graders was changed to the average speed from the Caterpillar construction equipment guide at the recommendation of CEC Staff. This change was incorporated into the response to CEC Workshop Data Request A1 on November 5, 2012.
- The unpaved road emission factor was updated to use the average vehicle weight as recommended in AP-42, and presented in the response to CEC Data Request A7 on August 22, 2012.
- At the recommendation of CEC, the mitigation efficiencies for reduced travel speed and watering were revised to use the updated SCAQMD CEQA values and which activities they apply to, as presented in the response to CEC Workshop Request A1 on November 5, 2012.
- In response to CEC Workshop Request A1 on November 5, 2012, the mileage for the paved and unpaved sections of the onsite access road were updated to more accurately represent the site configuration. A summary of changes in fugitive emissions from construction activity and updated modeling results were also provided in this response.
- Scraper emissions were updated to include not only topsoil removal by scrapers, but also emissions from scraper travel and unloading. These changes and a summary of emissions were presented in the response to CEC Workshop Request A36 on December 20, 2012.

STATE OF CALIFORNIA
ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

In the Matter of:	)	Docket No. 08-AFC-08A
	)	
REVISED APPLICATION FOR CERTIFICATION FOR THE HYDROGEN ENERGY CALIFORNIA POWER PLANT PROJECT ("HECA")	)	**PROOF OF SERVICE**
	)	(December 24, 2012)

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DECLARATION OF SERVICE

I, Paul Kihm, declare that on January 10, 2013, I served and filed copies of the attached:

LETTER FROM MICHAEL CARROLL TO ROBERT WORL RE UPDATED EMISSIONS DATA

to all parties identified on the Proof of Service List above in the following manner:

California Energy Commission Docket Unit

☒ Transmission via electronic mail to:

CALIFORNIA ENERGY COMMISSION
Attn: DOCKET NO. 08-AFC-08A
1516 Ninth Street, MS-4
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For Service to All Other Parties

☒ Transmission via electronic mail to all email addresses on the Proof of Service list.

I declare under penalty of perjury that the foregoing is true and correct. Executed on January 10, 2013, at Costa Mesa, California.

/s/ Paul Kihm

Paul Kihm