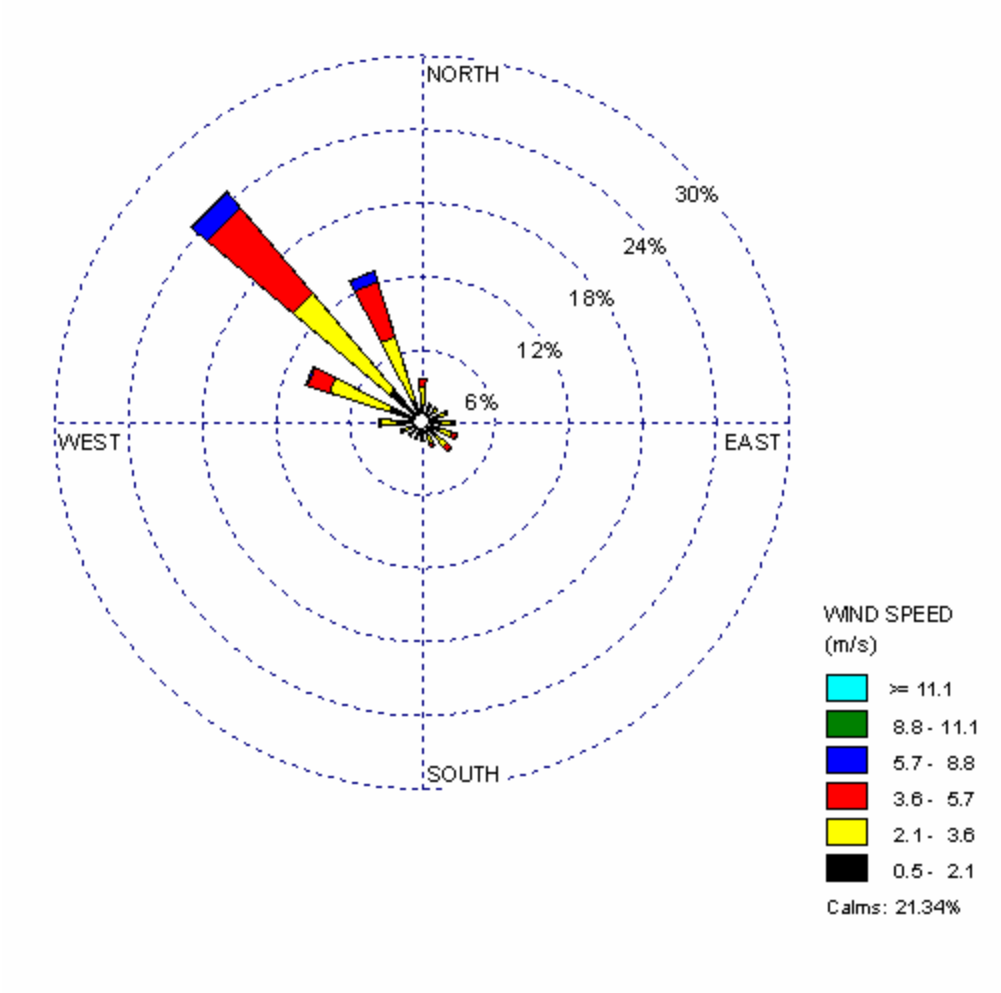
SEASONAL WINDROSE



Annual Windrose
2000-2004 Annual Meteorological Data from Hanford, CA Meteorological Station

Displays wind speed, direction (blowing from)

Average wind speed: 2.51 m/s

Station ID: 53119
Year: 2000 2001 2002 2003 2004
Date Range: Jan 1 - 31-Dec Annual
Time Range: 00:00 - 23:00

Frequency Distribution
(Count)

Speed m/s

Wind Direction	0.5 - 2.1	2.1 - 3.6	3.6 - 5.7	5.7 - 8.8	8.8 - 11.1	>= 11.1	Total
348.75 - 11.25	486	668	213	9	0	0	1376
11.25 - 33.75	346	240	54	4	0	0	644
33.75 - 56.25	400	210	22	3	0	0	635
56.25 - 78.75	541	273	40	3	0	0	857
78.75 - 101.25	604	324	71	12	0	0	1011
101.25 - 123.75	582	401	158	23	0	1	1165
123.75 - 146.25	584	450	147	32	3	0	1216
146.25 - 168.75	419	298	109	20	3	0	849
168.75 - 191.25	320	209	81	16	0	1	627
191.25 - 213.75	311	169	65	17	2	0	564
213.75 - 236.25	394	161	46	7	0	0	608
236.25 - 258.75	475	222	38	7	1	0	743
258.75 - 281.25	787	518	74	7	1	0	1387
281.25 - 303.75	1107	1922	710	56	0	0	3795
303.75 - 326.25	1371	3870	3443	639	37	1	9361
326.25 - 348.75	745	2061	1775	339	17	0	4937
Sub-Total:	9472	11996	7046	1194	64	3	29775
Calms:							8077
Missing/Incomplete:							5996
Total:							43848

Frequency of Calm
Wi nds: 21.34%
Average Wind Speed: 2.51 m/s

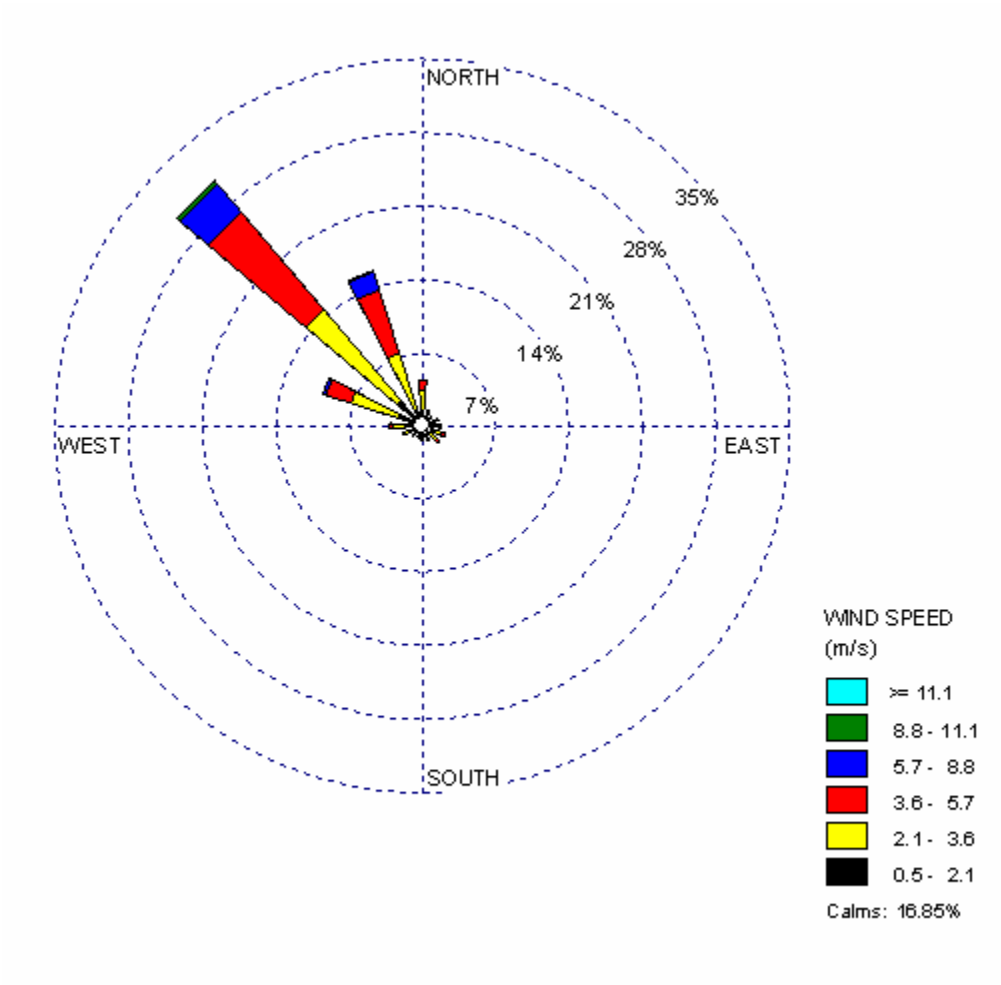
Station ID: 53119
Year: 2000 2001 2002 2003 2004
Date Range: Jan 1 - 31-Dec Annual
Time Range: 00:00 - 23:00

Frequency Distribution
(Normalized)

Speed m/s

Wind Direction	0.5 - 2.1	2.1 - 3.6	3.6 - 5.7	5.7 - 8.8	8.8 - 11.1	>= 11.1	Total
348.75 - 11.25	0.012839	0.017648	0.005627	0.000238	0	0	0.036352
11.25 - 33.75	0.009141	0.00634	0.001427	0.000106	0	0	0.017014
33.75 - 56.25	0.010567	0.005548	0.000581	0.000079	0	0	0.016776
56.25 - 78.75	0.014293	0.007212	0.001057	0.000079	0	0	0.022641
78.75 - 101.25	0.015957	0.00856	0.001876	0.000317	0	0	0.026709
101.25 - 123.75	0.015376	0.010594	0.004174	0.000608	0	0.000026	0.030778
123.75 - 146.25	0.015429	0.011888	0.003884	0.000845	0.000079	0	0.032125
146.25 - 168.75	0.011069	0.007873	0.00288	0.000528	0.000079	0	0.022429
168.75 - 191.25	0.008454	0.005522	0.00214	0.000423	0	0.000026	0.016565
191.25 - 213.75	0.008216	0.004465	0.001717	0.000449	0.000053	0	0.0149
213.75 - 236.25	0.010409	0.004253	0.001215	0.000185	0	0	0.016063
236.25 - 258.75	0.012549	0.005865	0.001004	0.000185	0.000026	0	0.019629
258.75 - 281.25	0.020792	0.013685	0.001955	0.000185	0.000026	0	0.036643
281.25 - 303.75	0.029245	0.050777	0.018757	0.001479	0	0	0.100259
303.75 - 326.25	0.03622	0.10224	0.09096	0.016882	0.000977	0.000026	0.247305
326.25 - 348.75	0.019682	0.054449	0.046893	0.008956	0.000449	0	0.130429
Sub-Total:	0.250238	0.316919	0.186146	0.031544	0.001691	0.000079	0.67905
Calms:							0.184205
Missing/Incomplete:							0.136745
Total:							1

Frequency of Calm Winds: 21.34%
Average Wind Speed: 2.51 m/s



Spring Windrose
2000-2004 March, April, May Meteorological Data from Hanford, CA Meteorological Station

Displays wind speed, direction (blowing from)

Average wind speed: 2.96 m/s

Station ID: 53119
Year: 2000 2001 2002 2003 2004
Date Range: Mar 1 - 31-May Spring
Time Range: 00:00 - 23:00

Frequency Distribution
(Count)

Speed m/s

Wind Direction	0.5 - 2.1	2.1 - 3.6	3.6 - 5.7	5.7 - 8.8	8.8 - 11.1	>= 11.1	Total
348.75 - 11.25	121	215	103	5	0	0	444
11.25 - 33.75	68	68	23	2	0	0	161
33.75 - 56.25	61	61	9	1	0	0	132
56.25 - 78.75	104	56	9	1	0	0	170
78.75 - 101.25	106	62	15	2	0	0	185
101.25 - 123.75	128	75	31	4	0	1	239
123.75 - 146.25	105	87	25	6	0	0	223
146.25 - 168.75	76	48	31	3	0	0	158
168.75 - 191.25	72	52	25	1	0	0	150
191.25 - 213.75	52	46	21	7	0	0	126
213.75 - 236.25	72	44	24	7	0	0	147
236.25 - 258.75	105	78	17	7	0	0	207
258.75 - 281.25	154	134	28	1	0	0	317
281.25 - 303.75	240	470	248	32	0	0	990
303.75 - 326.25	329	1110	1195	349	29	1	3013
326.25 - 348.75	169	552	623	177	14	0	1535
Sub-Total:	1962	3158	2427	605	43	2	8197
Calms:							1661
Missing/Incomplete:							5996
Total:							15854

Frequency of Calm
Wi nds: 16.85%
Average Wind Speed: 2.96 m/s

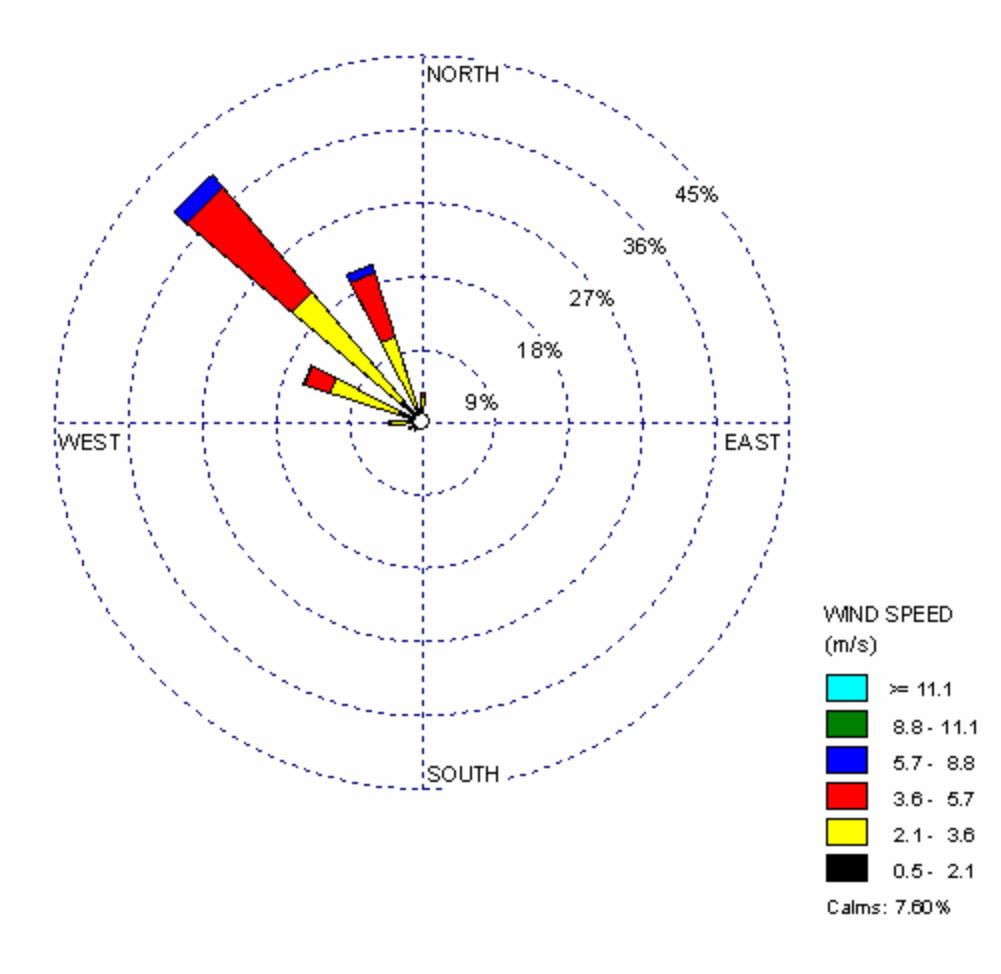
Station ID: 53119
Year: 2000 2001 2002 2003 2004
Date Range: Mar 1 - 31-May Spring
Time Range: 00:00 - 23:00

Frequency Distribution
(Normalized)

Speed m/s

Wind Direction	0.5 - 2.1	2.1 - 3.6	3.6 - 5.7	5.7 - 8.8	8.8 - 11.1	>= 11.1	Total
348.75 - 11.25	0.012274	0.02181	0.010448	0.000507	0	0	0.04504
11.25 - 33.75	0.006898	0.006898	0.002333	0.000203	0	0	0.016332
33.75 - 56.25	0.006188	0.006188	0.000913	0.000101	0	0	0.01339
56.25 - 78.75	0.01055	0.005681	0.000913	0.000101	0	0	0.017245
78.75 - 101.25	0.010753	0.006289	0.001522	0.000203	0	0	0.018766
101.25 - 123.75	0.012984	0.007608	0.003145	0.000406	0	0.000101	0.024244
123.75 - 146.25	0.010651	0.008825	0.002536	0.000609	0	0	0.022621
146.25 - 168.75	0.007709	0.004869	0.003145	0.000304	0	0	0.016028
168.75 - 191.25	0.007304	0.005275	0.002536	0.000101	0	0	0.015216
191.25 - 213.75	0.005275	0.004666	0.00213	0.00071	0	0	0.012781
213.75 - 236.25	0.007304	0.004463	0.002435	0.00071	0	0	0.014912
236.25 - 258.75	0.010651	0.007912	0.001724	0.00071	0	0	0.020998
258.75 - 281.25	0.015622	0.013593	0.00284	0.000101	0	0	0.032157
281.25 - 303.75	0.024346	0.047677	0.025157	0.003246	0	0	0.100426
303.75 - 326.25	0.033374	0.112599	0.121221	0.035403	0.002942	0.000101	0.30564
326.25 - 348.75	0.017143	0.055995	0.063197	0.017955	0.00142	0	0.155711
Sub-Total:	0.199026	0.320349	0.246196	0.061371	0.004362	0.000203	0.51703
Calms:							0.104769
Missing/Incomplete:							0.378201
Total:							1

Frequency of Calm Winds: 16.85%
Average Wind Speed: 2.96 m/s



Summer Windrose
2000-2004 June, July, Aug Meteorological Data from Hanford, CA Meteorological Station

Displays wind speed, direction (blowing from)

Average wind speed: 3.21 m/s

Station ID: 53119
Year: 2000 2001 2002 2003 2004
Date Range: Jun 1 - 31-Aug Summer
Time Range: 00:00 - 23:00

Frequency Distribution
(Count)

Speed m/s

Wind Direction	0.5 - 2.1	2.1 - 3.6	3.6 - 5.7	5.7 - 8.8	8.8 - 11.1	>= 11.1	Total
348.75 - 11.25	92	211	54	1	0	0	358
11.25 - 33.75	36	61	17	1	0	0	115
33.75 - 56.25	22	19	1	0	0	0	42
56.25 - 78.75	29	13	1	0	0	0	43
78.75 - 101.25	38	14	0	0	0	0	52
101.25 - 123.75	35	21	2	0	0	0	58
123.75 - 146.25	37	17	2	0	0	0	56
146.25 - 168.75	34	18	0	1	0	0	53
168.75 - 191.25	29	17	8	0	0	0	54
191.25 - 213.75	52	19	4	0	0	0	75
213.75 - 236.25	98	39	0	0	0	0	137
236.25 - 258.75	109	64	4	0	0	0	177
258.75 - 281.25	203	169	27	0	0	0	399
281.25 - 303.75	301	845	317	12	0	0	1475
303.75 - 326.25	346	1671	1605	194	2	0	3818
326.25 - 348.75	190	877	788	104	1	0	1960
Sub-Total:	1651	4075	2830	313	3	0	8872
Calms:							730
Missing/Incomplete:							5996
Total:							15598

Frequency of Calm
Wi nds: 7.60%
Average Wind Speed: 3.21 m/s

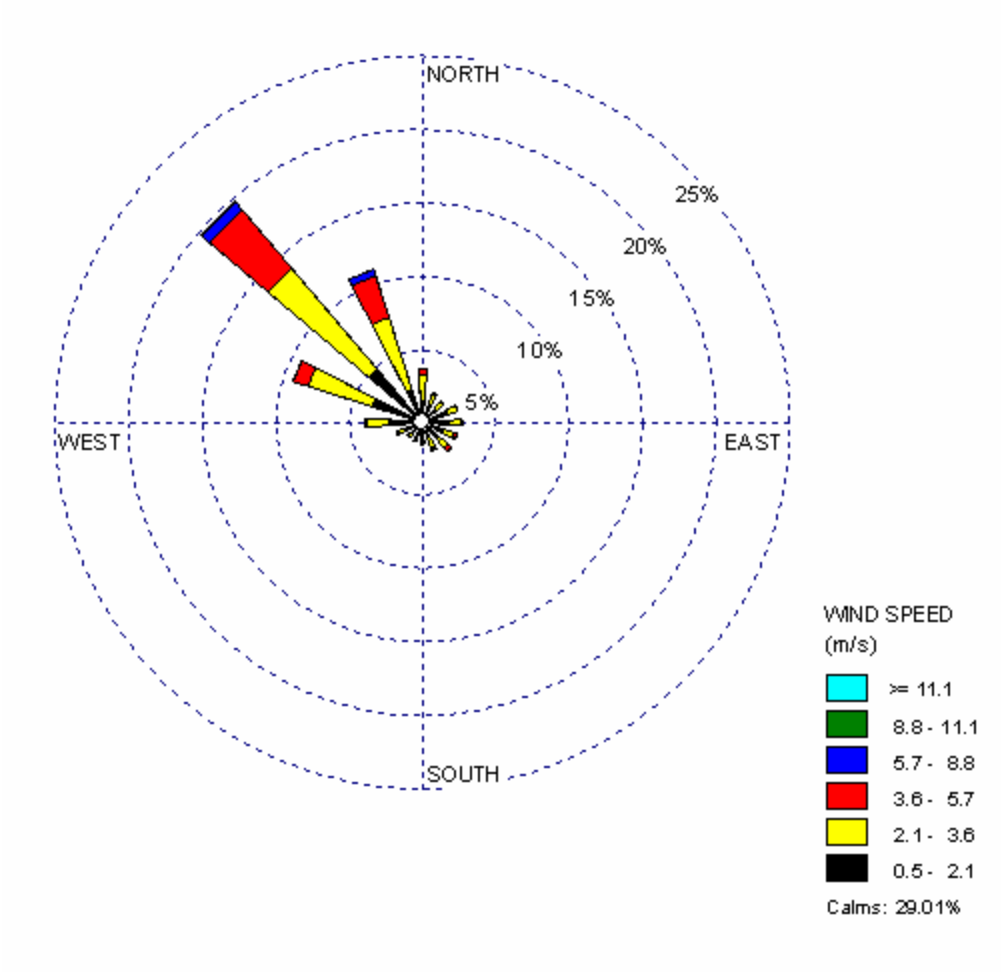
Station ID: 53119
Year: 2000 2001 2002 2003 2004
Date Range: Jun 1 - 31-Aug Summer
Time Range: 00:00 - 23:00

Frequency Distribution
(Normalized)

Speed m/s

Wind Direction	0.5 - 2.1	2.1 - 3.6	3.6 - 5.7	5.7 - 8.8	8.8 - 11.1	>= 11.1	Total
348.75 - 11.25	0.009581	0.021975	0.005624	0.000104	0	0	0.037284
11.25 - 33.75	0.003749	0.006353	0.00177	0.000104	0	0	0.011977
33.75 - 56.25	0.002291	0.001979	0.000104	0	0	0	0.004374
56.25 - 78.75	0.00302	0.001354	0.000104	0	0	0	0.004478
78.75 - 101.25	0.003958	0.001458	0	0	0	0	0.005416
101.25 - 123.75	0.003645	0.002187	0.000208	0	0	0	0.00604
123.75 - 146.25	0.003853	0.00177	0.000208	0	0	0	0.005832
146.25 - 168.75	0.003541	0.001875	0	0.000104	0	0	0.00552
168.75 - 191.25	0.00302	0.00177	0.000833	0	0	0	0.005624
191.25 - 213.75	0.005416	0.001979	0.000417	0	0	0	0.007811
213.75 - 236.25	0.010206	0.004062	0	0	0	0	0.014268
236.25 - 258.75	0.011352	0.006665	0.000417	0	0	0	0.018434
258.75 - 281.25	0.021141	0.0176	0.002812	0	0	0	0.041554
281.25 - 303.75	0.031348	0.088002	0.033014	0.00125	0	0	0.153614
303.75 - 326.25	0.036034	0.174026	0.167153	0.020204	0.000208	0	0.397625
326.25 - 348.75	0.019788	0.091335	0.082066	0.010831	0.000104	0	0.204124
Sub-Total:	0.171943	0.424391	0.29473	0.032597	0.000312	0	0.568791
Calms:							0.046801
Missing/Incomplete:							0.384408
Total:							1

Frequency of Calm Winds: 7.60%
Average Wind Speed: 3.21 m/s



Fall Windrose
2000-2004 Sept, Oct, Nov Meteorological Data from Hanford, CA Meteorological Station

Displays wind speed, direction (blowing from)

Average wind speed: 2.01 m/s

Station ID: 53119 Ru n ID:
Year: 2000 2001 2002 2003 2004
Date Range: Sep 1 - 30-Nov Fall
Time Range: 00:00 - 23:00

Frequency Distribution
(Count)

Speed m/s

Wind Direction	0.5 - 2.1	2.1 - 3.6	3.6 - 5.7	5.7 - 8.8	8.8 - 11.1	>= 11.1	Total
348.75 - 11.25	134	160	38	1	0	0	333
11.25 - 33.75	122	67	8	0	0	0	197
33.75 - 56.25	120	51	3	0	0	0	174
56.25 - 78.75	168	60	3	0	0	0	231
78.75 - 101.25	172	66	8	0	0	0	246
101.25 - 123.75	137	69	19	5	0	0	230
123.75 - 146.25	134	71	32	6	0	0	243
146.25 - 168.75	103	63	18	4	0	0	188
168.75 - 191.25	83	42	11	5	0	0	141
191.25 - 213.75	83	32	12	5	0	0	132
213.75 - 236.25	86	31	6	0	0	0	123
236.25 - 258.75	120	46	7	0	0	0	173
258.75 - 281.25	212	126	11	3	0	0	352
281.25 - 303.75	325	405	92	4	0	0	826
303.75 - 326.25	432	792	462	64	4	0	1754
326.25 - 348.75	216	456	266	39	1	0	978
Sub-Total:	2647	2537	996	136	5	0	6321
Calms:							2583
Missing/Incomplete:							5996
Total:							14900

Frequency of Calm
Wi nds: 29.01%
Average Wind Speed: 2.01 m/s

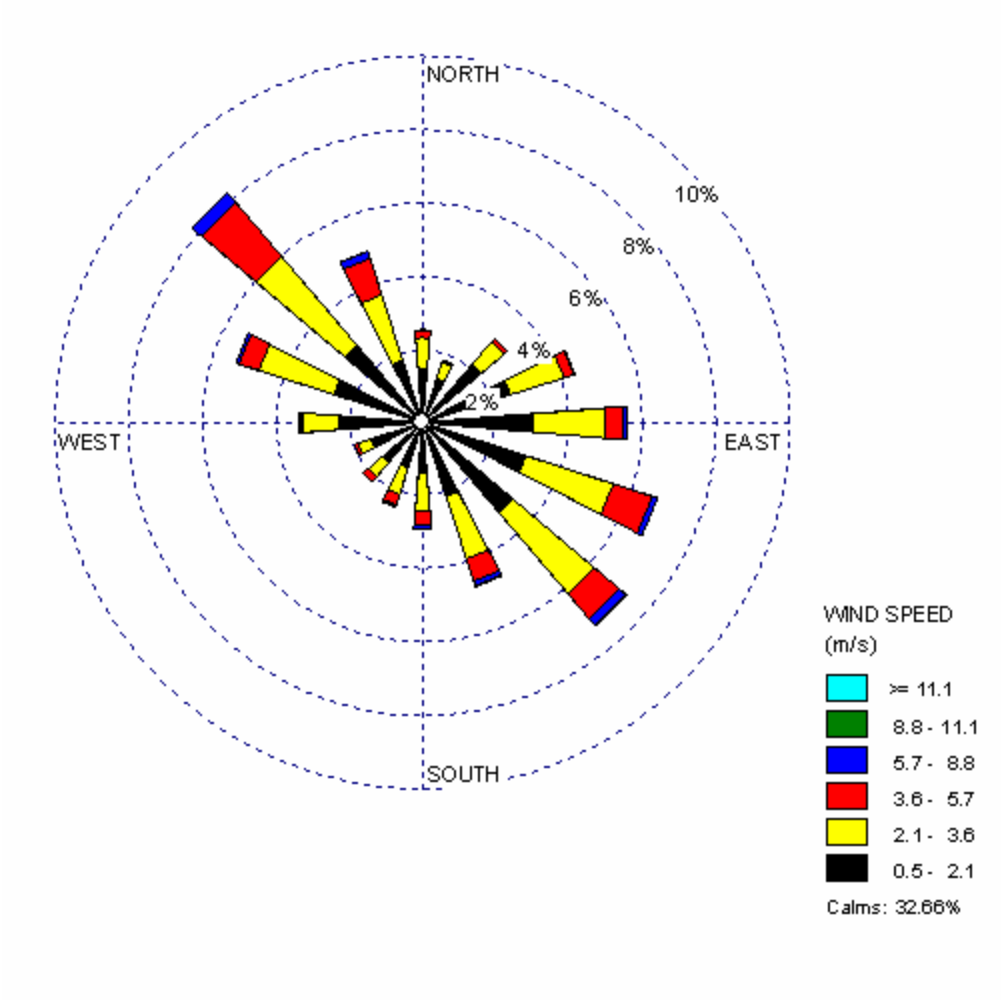
Station ID: 53119 Ru n ID:
Year: 2000 2001 2002 2003 2004
Date Range: Sep 1 - 30-Nov Fall
Time Range: 00:00 - 23:00

Frequency Distribution
(Normaliz ed)

Speed m/s

Wind Direction	0.5 - 2.1	2.1 - 3.6	3.6 - 5.7	5.7 - 8.8	8.8 - 11.1	>= 11.1	Total
348.75 - 11.25	0.015049	0.017969	0.004268	0.000112	0	0	0.037399
11.25 - 33.75	0.013702	0.007525	0.000898	0	0	0	0.022125
33.75 - 56.25	0.013477	0.005728	0.000337	0	0	0	0.019542
56.25 - 78.75	0.018868	0.006739	0.000337	0	0	0	0.025943
78.75 - 101.25	0.019317	0.007412	0.000898	0	0	0	0.027628
101.25 - 123.75	0.015386	0.007749	0.002134	0.000562	0	0	0.025831
123.75 - 146.25	0.015049	0.007974	0.003594	0.000674	0	0	0.027291
146.25 - 168.75	0.011568	0.007075	0.002022	0.000449	0	0	0.021114
168.75 - 191.25	0.009322	0.004717	0.001235	0.000562	0	0	0.015836
191.25 - 213.75	0.009322	0.003594	0.001348	0.000562	0	0	0.014825
213.75 - 236.25	0.009659	0.003482	0.000674	0	0	0	0.013814
236.25 - 258.75	0.013477	0.005166	0.000786	0	0	0	0.019429
258.75 - 281.25	0.02381	0.014151	0.001235	0.000337	0	0	0.039533
281.25 - 303.75	0.0365	0.045485	0.010332	0.000449	0	0	0.092767
303.75 - 326.25	0.048518	0.088949	0.051887	0.007188	0.000449	0	0.19699
326.25 - 348.75	0.024259	0.051213	0.029874	0.00438	0.000112	0	0.109838
Sub-Total:	0.297282	0.284928	0.11186	0.015274	0.000562	0	0.424228
Calms:							0.173356
Missing/Incomplete:							0.402416
Total:							1

Frequency of Calm
Wi nds: 29.01%
Average Wind Speed: 2.01 m/s



Winter Windrose
2000-2004 Dec, Jan, Feb Meteorological Data from Hanford, CA Meteorological Station

Displays wind speed, direction (blowing from)

Average wind speed: 1.79 m/s

Station ID: 53119 R un ID:
Year: 2000 2001 2002 2003 2004
Date Range: Nov-Jan Winter
Time Range: 00:00 - 23:00

Fr equency Distr ibution (Count)

Speed m/s

Wind Direction	0.5 - 2.1	2.1 - 3.6	3.6 - 5.7	5.7 - 8.8	8.8 - 11.1	>= 11.1	Total
348.75 - 11.25	138	82	18	2	0	0	240
11.25 - 33.75	120	44	6	1	0	0	171
33.75 - 56.25	197	79	9	2	0	0	287
56.25 - 78.75	239	143	27	2	0	0	411
78.75 - 101.25	287	182	47	10	0	0	526
101.25 - 123.75	281	234	105	14	0	0	634
123.75 - 146.25	305	272	86	20	3	0	686
146.25 - 168.75	202	168	60	12	3	0	445
168.75 - 191.25	134	96	37	10	0	1	278
191.25 - 213.75	124	72	28	5	2	0	231
213.75 - 236.25	138	47	16	0	0	0	201
236.25 - 258.75	141	34	10	0	1	0	186
258.75 - 281.25	218	89	8	3	1	0	319
281.25 - 303.75	240	202	53	8	0	0	503
303.75 - 326.25	264	297	181	32	2	0	776
326.25 - 348.75	170	176	98	19	1	0	464
Sub-Total:	3198	2217	789	140	13	1	6358
Calms:							3084
Missing/Incomplete:							5996
Total:							15438

Frequency of Calm Wi nds: 32.66%
Average Wind Speed: 1.79 m/s

Station ID: 53119 R un ID:
Year: 2000 2001 2002 2003 2004
Date Range: Nov-Jan Winter
Time Range: 00:00 - 23:00

Fr equency Distr ibution (Normaliz ed)

Speed m/s

Wind Direction	0.5 - 2.1	2.1 - 3.6	3.6 - 5.7	5.7 - 8.8	8.8 - 11.1	>= 11.1	Total
348.75 - 11.25	0.014616	0.008685	0.001906	0.000212	0	0	0.025418
11.25 - 33.75	0.012709	0.00466	0.000635	0.000106	0	0	0.018111
33.75 - 56.25	0.020864	0.008367	0.000953	0.000212	0	0	0.030396
56.25 - 78.75	0.025312	0.015145	0.00286	0.000212	0	0	0.043529
78.75 - 101.25	0.030396	0.019276	0.004978	0.001059	0	0	0.055709
101.25 - 123.75	0.029761	0.024783	0.011121	0.001483	0	0	0.067147
123.75 - 146.25	0.032302	0.028807	0.009108	0.002118	0.000318	0	0.072654
146.25 - 168.75	0.021394	0.017793	0.006355	0.001271	0.000318	0	0.04713
168.75 - 191.25	0.014192	0.010167	0.003919	0.001059	0	0.000106	0.029443
191.25 - 213.75	0.013133	0.007626	0.002965	0.00053	0.000212	0	0.024465
213.75 - 236.25	0.014616	0.004978	0.001695	0	0	0	0.021288
236.25 - 258.75	0.014933	0.003601	0.001059	0	0.000106	0	0.019699
258.75 - 281.25	0.023088	0.009426	0.000847	0.000318	0.000106	0	0.033785
281.25 - 303.75	0.025418	0.021394	0.005613	0.000847	0	0	0.053273
303.75 - 326.25	0.02796	0.031455	0.01917	0.003389	0.000212	0	0.082186
326.25 - 348.75	0.018005	0.01864	0.010379	0.002012	0.000106	0	0.049142
Sub-Total:	0.338699	0.234802	0.083563	0.014827	0.001377	0.000106	0.411841
Calms:							0.199767
Missing/Incomplete:							0.388392
Total:							1

Frequency of Calm Wi nds: 32.66%
Average Wind Speed: 1.79 m/s

CONSTRUCTION EMISSION CALCULATIONS

Daily Maximum Construction Emissions of Criteria Pollutants (lbs/day)						
Activity	**PM_{10}**	**$PM_{2.5}$**	**CO**	**ROC**	**NO_x**	**SO_x**
Onsite Combustion Emissions						
Diesel Construction Equipment	14.15	13.01	184.13	35.78	279.35	0.30
Worker passenger vehicles	0.0113	0.0083	0.8370	0.0714	0.0722	0.0012
Construction Combustion Subtotal	***14.2***	***13.0***	***185.0***	***35.8***	***279.4***	***0.3***
Onsite Fugitive Dust Emissions						
Vehicle Travel on Unpaved Roads and Parking Lot	32.40	6.87				
Earth clearing/Bulldozing	3.18	0.66				
Earth Loading/Storage	4.26	0.89				
Subtotal of Onsite Fugitive Emissions	***39.8***	***8.4***				
Subtotal of Onsite Emissions	***54.0***	***21.4***	***185.0***	***35.8***	***279.4***	***0.3***
Offsite Combustion Emissions						
Worker Passenger Vehicle – Combustion Emissions	3.91	2.88	289.83	24.72	25.01	0.43
Delivery Truck – Combustion Emissions	18.52	15.84	124.85	74.79	297.25	0.25
Subtotal of Offsite Combustion Emissions	***22.4***	***18.7***	***414.7***	***99.5***	***322.3***	***0.7***
Offsite Fugitive Dust Emissions						
Worker Passenger Vehicle – Paved Road Dust	138.29	23.37				
Delivery Truck – Paved Road Dust	39.60	6.69				
Subtotal of Offsite Fugitive Emissions	***177.9***	***30.1***				
Subtotal of Offsite Emissions	***200.3***	***48.8***	***414.7***	***99.5***	***322.3***	***0.7***
Total Maximum Daily Emissions	**254.3**	**70.2**	**599.6**	**135.4**	**601.7**	**1.0**

Notes:
PM_{10} = particulate matter less than 10 micrometers in diameter
$PM_{2.5}$ = particulate matter less than 2.5 micrometers in diameter
ROC = reactive organic compounds
CO = carbon monoxide
NO_x = nitrogen oxide(s)
SO_x = sulfur oxide(s)

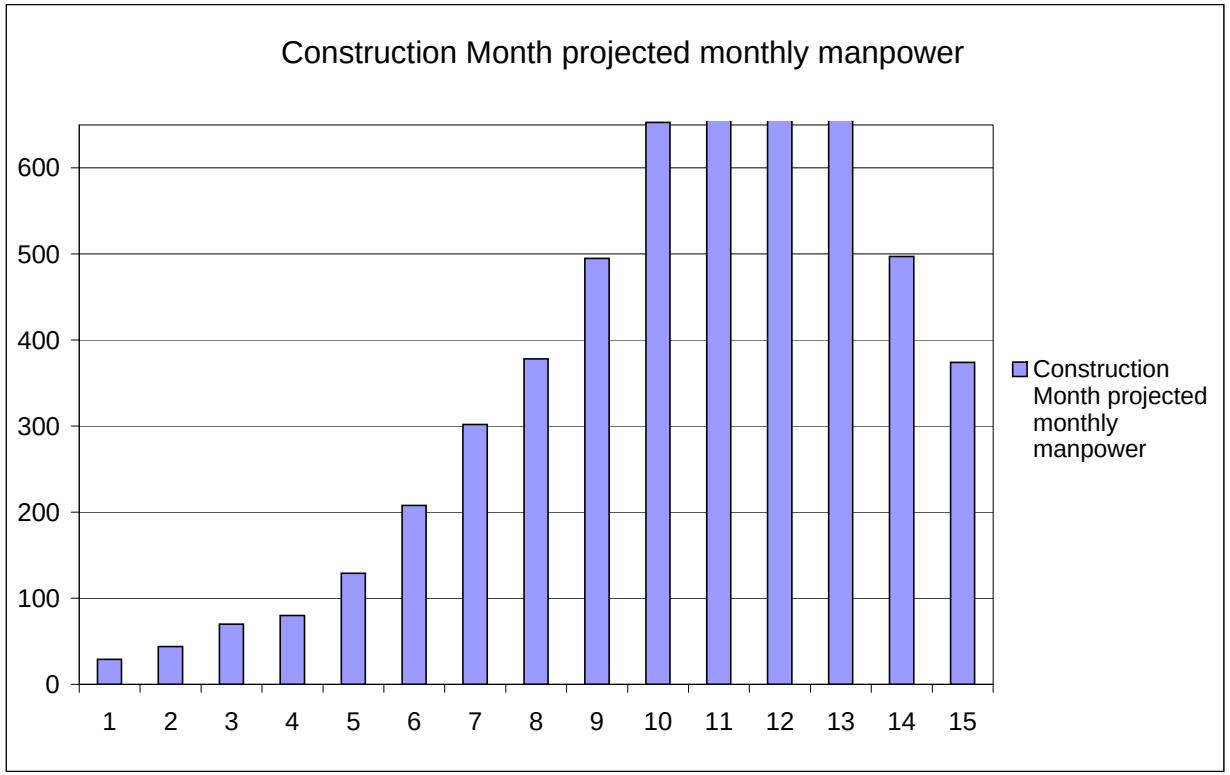
Maximum Annual Construction Emissions of Criteria Pollutants (ton/year [tpy])						
Activity	**PM_{10}**	**$PM_{2.5}$**	**CO**	**ROC**	**NO_x**	**SO_x**
Onsite Combustion Emissions						
Diesel Construction Equipment	1.7050	1.5686	13.8539	4.3348	32.7927	0.0355
Worker passenger vehicles	0.003	0.002	0.230	0.020	0.020	0.000
Construction Combustion Subtotal	***1.7***	***1.6***	***14.1***	***4.4***	***32.8***	***0.0***
Onsite Fugitive Dust Emissions						
Vehicle Travel on Unpaved Roads and Parking Lot	3.66	0.78				
Earth clearing/Bulldozing	0.29	0.06				
Earth Loading/Storage	0.60	0.12				
Subtotal of Onsite Fugitive Emissions	***4.6***	***1.0***				
Subtotal of Onsite Emissions	***6.3***	***2.5***	***14.1***	***4.4***	***32.8***	***0.0***
Offsite Combustion Emissions						
Worker Passenger Vehicle – Combustion Emissions	0.516	0.381	38.258	3.264	3.301	0.057
Delivery Truck – Combustion Emissions	2.45	2.09	16.48	9.87	39.24	0.03
Subtotal of Offsite Combustion Emissions	***3.0***	***2.5***	***54.7***	***13.1***	***42.5***	***0.1***
Offsite Fugitive Dust Emissions						
Worker Passenger Vehicle – Paved Road Dust	18.25	3.09				
Delivery Truck – Paved Road Dust	5.23	0.88				
Subtotal of Offsite Fugitive Emissions	***23.5***	***4.0***				
Subtotal of Offsite Emissions	***26.4***	***6.4***	***54.7***	***13.1***	***42.5***	***0.1***
Total Max. Annual Emissions	**32.7**	**9.0**	**68.8**	**17.5**	**75.4**	**0.1**

Notes:
PM_{10} = particulate matter less than 10 micrometers in diameter
$PM_{2.5}$ = particulate matter less than 2.5 micrometers in diameter
ROC = reactive organic compounds
CO = carbon monoxide
NO_x = nitrogen oxide(s)
SO_x = sulfur oxide(s)

Total Construction Emissions of Greenhouse Gases (tonnes/year)				
Activity	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Onsite Combustion Emissions				
Diesel Construction Equipment	2714.5	0.3	0.0002	2721.9
Worker passenger vehicles	32.9	0.001	0.001	33.3
Subtotal of Onsite Emissions	***2747.4***	***0.4***	***0.002***	***2755.2***
Offsite Combustion Emissions				
Worker Passenger Vehicle – Combustion Emissions	5479.6	0.2	0.2	5555.1
Delivery Truck – Combustion Emissions	3164.7	0.1	0.04	3179.3
Subtotal of Offsite Emissions	***8644.3***	***0.3***	***0.3***	***8734.4***
Total Construction GHG Emissions	**11391.6**	**0.6**	**0.3**	**11489.6**

SJS 1&2	Horsepower	Utilization Load Factor	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14	Month 15	month 1 to 12	month 2 to 13	month 3 to 14	month 4 to 15
Scraper	250	0.72	4	4	3	2	2	2	1	1								19	15	11	8
Grader	120	0.61	3	3	2	2	2	2	2	1								17	14	11	9
Dozer	175	0.65	3	3	3	3	3	3	2	1								21	18	15	12
Loaders	120	0.54	3	3	1	1	1	1	1	1	1	1	1	1				16	13	10	9
Augers	120	0.75			6	6	6	6	6	6	6	6	6	6	3	3	3	60	63	66	63
Cement Trucks	250	0.5			6	6	6	7	7	7	7	6	6	6	5	4	4	64	69	73	71
Excavator	175	0.57	3	2	1	1	1	1	1	1	1	1	1					14	11	9	8
Backhoe	120	0.55	2	2	2	1	1	1	1	1	1	1	1					14	12	10	8
Water Truck	250	0.57	4	4	3	3	3	3	2	2	2	2	2	2	2	2	2	32	30	28	27
Dump Truck	250	0.57	4	4	2	2	2	1	1	1	1				1	1		18	15	12	10
Crane (20 Ton)	120	0.43				1	1	1	2	4	4	6	4	3	3	3	2	26	29	32	34
Crane (90 Ton)	250	0.43						1	1	1	1	1	1					6	6	6	6
Boom Truck	250	0.57	1	1	1	2	2	2	3	3	4	6	4	3	3	2	2	32	34	35	36
ATVs	50	0.5	5	5	5	5	5	5	5	5	5	5	5	1	1	1	5	56	52	48	48
Pick Up trucks (1/2 ton)	120	0.5	2	2	2	2	2	2	2	2	2	2	4	4	4	3	2	28	30	31	31
Pavers	175	0.62													2	2	1	0	2	4	5
Rollers	175	0.56													2	2	1	0	2	4	5
Plate Compactors	15	0.25						1	1	1	1							4	4	4	4
Forklift	50	0.6			1	2	2	2	2	2	2	2	2	2	2	2		19	21	23	22
Welder	50	0.45						1	1	1	1	1	1	1	1	1	1	7	8	9	10
Generator	50	0.75				1	1	1	1	1	2	2	3	3	3	3	2	15	18	21	23
Aerial Lift	50	0.46						1	1	1	1	1	1	1	1	1	1	7	8	9	10
Total			**34**	**33**	**38**	**40**	**40**	**44**	**43**	**43**	**42**	**43**	**42**	**33**	**33**	**30**	**26**	475	474	471	459
																		475			
			5750	5575	6260	6260	6260	6510	6205	6150	5855	6095	5595	4480	4350	3730	3265				
			0	0	50	150	150	265	265	265	315	300	350	350	700	700	375				
		Total Hp	5750	5575	6310	6410	6410	6775	6470	6415	6170	6395	5945	4830	5050	4430	3640	73455	72755	71610	68940
								6775										73455			

Construction Month projected monthly manpower																Rolling total			
(months)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	1-12	2-13	3-14	4-15
Const. Discipline																			
Laborers	3	5	5	6	23	36	60	64	80	100	110	82	70	52	40	574	641	688	723
Operators	5	9	18	15	10	16	30	20	26	30	24	20	15	18	12	223	233	242	236
Electricians	3	4	4	4	10	17	25	32	70	87	100	105	105	78	55	461	563	637	688
Pipefitters	1	2	5	5	10	15	28	40	50	92	100	105	98	85	75	453	550	633	703
Ironworkers	3	4	4	6	10	18	25	30	40	76	72	75	70	46	33	363	430	472	501
Boilermakers							5	8	14	18	30	50	50	30	25	125	175	205	230
Carpenters	1	2	2	2	10	17	20	24	30	50	37	37	40	38	24	232	271	307	329
Cement Wrk	3	4	9	10	15	29	35	55	60	60	55	70	50	35	20	405	452	483	494
Milwrights								10	15	25	25	50	35	35	25	125	160	195	220
Truck Drivers	2	4	8	12	16	20	24	35	45	45	45	65	55	40	25	321	374	410	427
Total Const. Workers per Month	21	34	55	60	104	168	252	318	430	583	598	659	588	457	334	3282	3849	4272	4551
Staff	8	10	15	20	25	40	50	60	65	70	75	75	75	40	40	513	580	610	635
Delivery	1	1	2	4	6	11	12	19	26	35	30	30	30	25	20	177	206	230	248
HD Truck Delievery	1	1	2	3	4	6	10	15	24	20	20	21	25	15	12	127	151	165	175
Total Manpower Per Month	**29**	**44**	**70**	**80**	**129**	**208**	**302**	**378**	**495**	**653**	**673**	**734**	**663**	**497**	**374**	3795	4429	4882	5186


Construction Month projected monthly manpower
600
500
400
300
200
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
Construction Month projected monthly manpower

Worker/Delivery Commuting Emissions
Annual Maximum using Months 1-12

1g = 0.0022046 lb

COMBUSTION EMISSION FACTOR FOR ONROAD VEHICLES

Onroad Vehicle Combustion	Fuel Type	Daily Vehicle Count	Vehicle Type	EF (lbs/mile)[1]									
				PM_{10}	$PM_{2.5}$	CO	VOC	NOx	SO_2	CO_2	CH_4	N_2O	CO_2e
Heavy Truck	Diesel	30	HHD	0.0060	0.0051	0.0398	0.0248	0.0959	0.0001	8.4776	0.0001	0.0001	8.5145
Medium Truck	Diesel	3	Delivery	0.0019	0.0016	0.0184	0.0015	0.0323	0.0000	3.3180	0.0001	0.0001	3.3549
Personal Commuting Vehicles	Gasoline	216	Passenger	0.0002	0.0001	0.0134	0.0011	0.0012	0.0000	2.1177	0.0001	0.0001	2.1468

EMISSION CALCULATION FOR ONROAD VEHICLES

	Total Days / Year	Daily VMT / Vehicle	Annual VMT	Daily Emissions (lbs/day)									
				PM_{10}	$PM_{2.5}$	CO	VOC	NOx	SO_2	CO_2	CH_4	N_2O	CO_2e
Heavy Truck	264	100	792,000	17.96	15.36	119.33	74.35	287.56	0.24	25432.71	0.40	0.33	25543.56
Medium Truck	264	100	79,200	0.56	0.48	5.52	0.45	9.69	0.01	995.39	0.04	0.03	1006.47
Personal Commuting Vehicles	264	100	5,704,600	3.91	2.88	289.83	24.72	25.01	0.43	45759.00	1.91	1.91	46389.73
			Total	**22.43**	**18.73**	**414.69**	**99.52**	**322.26**	**0.68**	**72187.09**	**2.34**	**2.27**	**72939.75**

Onroad Vehicle Combustion	Annual Emission Rate (tons/year)									
	PM_{10}	$PM_{2.5}$	CO	VOC	NOx	SO_2	CO_2	CH_4	N_2O	CO_2e
Heavy Truck	2.37	2.03	15.75	9.81	37.96	0.03	3357.12	0.05	0.04	3371.75
Medium Truck	0.07	0.06	0.73	0.06	1.28	0.00	131.39	0.01	0.00	132.85
Personal Commuting Vehicles	0.52	0.38	38.26	3.26	3.30	0.06	6040.19	0.25	0.25	6123.44
Total	**2.96**	**2.47**	**54.74**	**13.14**	**42.54**	**0.09**	**9528.70**	**0.31**	**0.30**	**9628.05**

Note 1: Fresno County Prepared - Highest (Most Conservative) Emfac 2009 (version 2.3)
Emission Factors for On-Road Personal Commuting Vehicles
Scenario Year: 2009
All model years in the range 1965 to 2009

FUGITIVE EMISSION FACTOR FOR ONROAD VEHICLES

Personal Commuting Vehicles EF= 0.0064 PM10 lb/VMT (from CEQA Handbook, Table A9-9-B-1 for major streets/highways)
Truck Travel on paved roads EF = 0.0120 PM10 lb/VMT (from CEQA Handbook Table A9-9-C-1 for major streets/highways)

Onroad Vehicle Fugitive	Daily PM10 Emissions (lb/day)	Annual PM10 Emissions (tons/yr)	Daily PM2.5 Emissions (lb/day)	Annual PM2.5 Emissions (tons/yr)
Heavy Truck	36.0	4.75	6.08	0.80
Medium Truck	3.6	0.48	0.61	0.08
Personal Commuting Vehicles	138.3	18.25	23.37	3.09
Total	**177.89**	**23.48**	**30.06**	**3.97**

Assumptions:
Assumed average distance travelled off site for all employees commuting will be 50 miles
times 2 for return trip = 100 miles
22 days per month of construction

Average daily workers, months 4-15 = 432

Number of workers per communter vehicle = 2

Contruction Traffic, per project description:
30 heavy duty trucks
3 Delivery trucks

Greenhouse Gas Global Warming Potential
Source: Intergovernmental Panel on Climate Change, Second Assessment Report (1996)

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

Annual Combustion Emissions

Annual construction equipment activity months 1-12.

10 hours / day 7am to 5 pm

Diesel Fired Offroad Equipment
MONTH 1-12

					Emission factors (lb/hr)									Annual Emissions (ton/yr)									
Equipment	Hp	Quantity/ year	Hours/ day	Days/ month	PM	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e	PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
Scraper	250	19	7.2	22	1.1E-01	7.7E-01	2.7E-01	2.6E+00	2.4E-03	2.1E+02	2.5E-02	0.0E+00	209.80	0.16	0.15	1.16	0.41	3.93	0.00	314.93	0.04	0.00	315.71
Grader	120	17	6.1	22	9.0E-02	5.5E-01	1.7E-01	9.8E-01	8.8E-04	7.5E+01	1.5E-02	0.0E+00	75.21	0.10	0.09	0.63	0.19	1.12	0.00	85.44	0.02	0.00	85.79
Dozer	175	21	6.5	22	1.1E-01	8.8E-01	2.5E-01	1.9E+00	1.5E-03	1.3E+02	2.3E-02	0.0E+00	129.83	0.16	0.15	1.32	0.37	2.81	0.00	194.23	0.03	0.00	194.94
Loaders	120	16	5.4	22	7.0E-02	4.3E-01	1.3E-01	7.7E-01	6.9E-04	5.9E+01	1.2E-02	0.0E+00	59.11	0.07	0.06	0.41	0.12	0.73	0.00	55.94	0.01	0.00	56.17
Augers	120	60	7.5	22	5.2E-02	4.9E-01	8.6E-02	6.8E-01	9.0E-04	7.7E+01	7.7E-03	0.0E+00	77.22	0.26	0.24	2.41	0.42	3.37	0.00	381.41	0.04	0.00	382.22
Cement Trucks	250	64	5	22	6.1E-02	4.5E-01	1.7E-01	1.7E+00	1.9E-03	1.7E+02	1.6E-02	0.0E+00	166.72	0.22	0.20	1.59	0.61	6.10	0.01	585.71	0.05	0.00	586.86
Excavator	175	14	5.7	22	7.0E-02	6.7E-01	1.6E-01	1.2E+00	1.3E-03	1.1E+02	1.4E-02	0.0E+00	112.42	0.06	0.06	0.59	0.14	1.05	0.00	98.42	0.01	0.00	98.68
Backhoe	120	14	5.5	22	5.5E-02	3.7E-01	9.9E-02	6.1E-01	6.1E-04	5.2E+01	9.0E-03	0.0E+00	51.87	0.05	0.04	0.31	0.08	0.51	0.00	43.77	0.01	0.00	43.93
Water Truck	250	32	5.7	22	6.1E-02	4.5E-01	1.7E-01	1.7E+00	1.9E-03	1.7E+02	1.6E-02	0.0E+00	166.72	0.12	0.11	0.91	0.35	3.48	0.00	333.86	0.03	0.00	334.51
Dump Truck	250	18	5.7	22	6.1E-02	4.5E-01	1.7E-01	1.7E+00	1.9E-03	1.7E+02	1.6E-02	0.0E+00	166.72	0.07	0.06	0.51	0.19	1.95	0.00	187.79	0.02	0.00	188.16
Crane (20 Ton)	120	26	4.3	22	6.3E-02	3.8E-01	1.2E-01	6.9E-01	5.9E-04	5.0E+01	1.1E-02	0.0E+00	50.33	0.08	0.07	0.46	0.15	0.85	0.00	61.62	0.01	0.00	61.89
Crane (90 Ton)	250	6	4.3	22	5.0E-02	3.7E-01	1.3E-01	1.3E+00	1.3E-03	1.1E+02	1.2E-02	0.0E+00	112.31	0.01	0.01	0.10	0.04	0.37	0.00	31.80	0.00	0.00	31.87
Boom Truck	250	32	5.7	22	6.1E-02	4.5E-01	1.7E-01	1.7E+00	1.9E-03	1.7E+02	1.6E-02	0.0E+00	166.72	0.12	0.11	0.91	0.35	3.48	0.00	333.86	0.03	0.00	334.51
ATVs	50	56	5	22	9.3E-04	1.2E-01	7.6E-02	2.3E-05	4.5E-04	2.5E-01	4.7E-03	8.6E-05	0.38	0.00	0.00	0.37	0.24	0.00	0.00	0.78	0.01	0.00	1.17
Pick Up trucks (1/2 ton)	120	28	5	22	8.2E-02	7.6E-01	1.8E-01	1.4E+00	1.4E-03	1.2E+02	1.7E-02	0.0E+00	125.32	0.13	0.12	1.18	0.28	2.12	0.00	192.46	0.03	0.00	193.00
Pavers	175	0	6.2	22	9.4E-02	8.0E-01	2.1E-01	1.7E+00	1.4E-03	1.3E+02	1.9E-02	0.0E+00	128.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rollers	175	0	5.6	22	6.9E-02	6.3E-01	1.6E-01	1.3E+00	1.2E-03	1.1E+02	1.4E-02	0.0E+00	108.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Plate Compactors	15	4	2.5	22	1.8E-03	2.6E-02	5.1E-03	3.2E-02	6.7E-05	4.3E+00	4.6E-04	0.0E+00	4.32	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.48
Forklift	50	19	6	22	4.0E-02	4.3E-01	1.7E-01	3.6E-01	4.4E-04	3.4E+01	1.6E-02	0.0E+00	34.16	0.05	0.05	0.54	0.22	0.45	0.00	42.42	0.02	0.00	42.83
Welder	50	7	4.5	22	4.5E-03	4.3E-02	1.3E-02	7.0E-02	9.1E-05	7.1E+00	1.1E-03	0.0E+00	7.17	0.00	0.00	0.01	0.00	0.02	0.00	2.47	0.00	0.00	2.48
Generator	50	15	7.5	22	2.9E-02	2.9E-01	1.2E-01	3.1E-01	4.0E-04	3.1E+01	1.1E-02	0.0E+00	30.82	0.04	0.03	0.37	0.14	0.38	0.00	37.86	0.01	0.00	38.14
Aerial Lift	50	7	4.6	22	1.9E-02	2.0E-01	7.9E-02	2.0E-01	2.5E-04	2.0E+01	7.1E-03	0.0E+00	19.74	0.01	0.01	0.07	0.03	0.07	0.00	6.94	0.00	0.00	6.99
		475											**Subtotal**	**1.71E+00**	**1.57E+00**	**1.39E+01**	**4.33E+00**	**3.28E+01**	**3.55E-02**	**2.99E+03**	**3.85E-01**	**2.64E-04**	**3.00E+03**

Notes:
Diesel Fired Offroad Equipment Emission factors from "Off-road Mobile Source Emission Factors (Scenario Years 2009):, San Joaquin Valley, 2009
Equipment list, quantity, horsepower, and hours of operation from client.
PM2.5 emission factors from updated CEIDARS List with PM2.5 fractions. PM2.5 numbers obtained by multiplying the PM10 values by fraction in CEIDARS list for onroad or offroad diesel vehicles.
Auger is a Bore/Drill Rig. Dozer is a Crawler Tractor. Trucks are Off Highway Trucks.

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

MONTH 2-13

					Emission factors (lb/hr)									Annual Emissions (ton/yr)									
Equipment	Hp	Quantity/ year	Hours/ day	Days/ month	PM	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e	PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
Scraper	250	15	7.2	22	1.1E-01	7.7E-01	2.7E-01	2.6E+00	2.4E-03	2.1E+02	2.5E-02	0.0E+00	209.80	0.13	0.12	0.92	0.33	3.10	0.00	248.63	0.03	0.00	249.25
Grader	120	14	6.1	22	9.0E-02	5.5E-01	1.7E-01	9.8E-01	8.8E-04	7.5E+01	1.5E-02	0.0E+00	75.21	0.08	0.08	0.52	0.16	0.92	0.00	70.36	0.01	0.00	70.65
Dozer	175	18	6.5	22	1.1E-01	8.8E-01	2.5E-01	1.9E+00	1.5E-03	1.3E+02	2.3E-02	0.0E+00	129.83	0.14	0.13	1.13	0.32	2.41	0.00	166.49	0.03	0.00	167.10
Loaders	120	13	5.4	22	7.0E-02	4.3E-01	1.3E-01	7.7E-01	6.9E-04	5.9E+01	1.2E-02	0.0E+00	59.11	0.05	0.05	0.33	0.10	0.59	0.00	45.45	0.01	0.00	45.64
Augers	120	63	7.5	22	5.2E-02	4.9E-01	8.6E-02	6.8E-01	9.0E-04	7.7E+01	7.7E-03	0.0E+00	77.22	0.27	0.25	2.53	0.45	3.54	0.00	400.48	0.04	0.00	401.33
Cement Trucks	250	69	5	22	6.1E-02	4.5E-01	1.7E-01	1.7E+00	1.9E-03	1.7E+02	1.6E-02	0.0E+00	166.72	0.23	0.21	1.72	0.65	6.57	0.01	631.47	0.06	0.00	632.71
Excavator	175	11	5.7	22	7.0E-02	6.7E-01	1.6E-01	1.2E+00	1.3E-03	1.1E+02	1.4E-02	0.0E+00	112.42	0.05	0.04	0.46	0.11	0.83	0.00	77.33	0.01	0.00	77.53
Backhoe	120	12	5.5	22	5.5E-02	3.7E-01	9.9E-02	6.1E-01	6.1E-04	5.2E+01	9.0E-03	0.0E+00	51.87	0.04	0.04	0.27	0.07	0.44	0.00	37.52	0.01	0.00	37.66
Water Truck	250	30	5.7	22	6.1E-02	4.5E-01	1.7E-01	1.7E+00	1.9E-03	1.7E+02	1.6E-02	0.0E+00	166.72	0.12	0.11	0.85	0.32	3.26	0.00	312.99	0.03	0.00	313.60
Dump Truck	250	15	5.7	22	6.1E-02	4.5E-01	1.7E-01	1.7E+00	1.9E-03	1.7E+02	1.6E-02	0.0E+00	166.72	0.06	0.05	0.43	0.16	1.63	0.00	156.50	0.01	0.00	156.80
Crane (20 Ton)	120	29	4.3	22	6.3E-02	3.8E-01	1.2E-01	6.9E-01	5.9E-04	5.0E+01	1.1E-02	0.0E+00	50.33	0.09	0.08	0.52	0.16	0.95	0.00	68.73	0.01	0.00	69.03
Crane (90 Ton)	250	6	4.3	22	5.0E-02	3.7E-01	1.3E-01	1.3E+00	1.3E-03	1.1E+02	1.2E-02	0.0E+00	112.31	0.01	0.01	0.10	0.04	0.37	0.00	31.80	0.00	0.00	31.87
Boom Truck	250	34	5.7	22	6.1E-02	4.5E-01	1.7E-01	1.7E+00	1.9E-03	1.7E+02	1.6E-02	0.0E+00	166.72	0.13	0.12	0.97	0.37	3.69	0.00	354.72	0.03	0.00	355.42
ATVs	50	52	5	22	9.3E-04	1.2E-01	7.6E-02	2.3E-05	4.5E-04	2.5E-01	4.7E-03	8.6E-05	0.38	0.00	0.00	0.34	0.22	0.00	0.00	0.72	0.01	0.00	1.09
Pick Up trucks (1/2 ton)	120	30	5	22	8.2E-02	7.6E-01	1.8E-01	1.4E+00	1.4E-03	1.2E+02	1.7E-02	0.0E+00	125.32	0.13	0.12	1.26	0.30	2.27	0.00	206.21	0.03	0.00	206.78
Pavers	175	2	6.2	22	9.4E-02	8.0E-01	2.1E-01	1.7E+00	1.4E-03	1.3E+02	1.9E-02	0.0E+00	128.58	0.01	0.01	0.11	0.03	0.23	0.00	17.48	0.00	0.00	17.54
Rollers	175	2	5.6	22	6.9E-02	6.3E-01	1.6E-01	1.3E+00	1.2E-03	1.1E+02	1.4E-02	0.0E+00	108.34	0.01	0.01	0.08	0.02	0.16	0.00	13.31	0.00	0.00	13.35
Plate Compactors	15	4	2.5	22	1.8E-03	2.6E-02	5.1E-03	3.2E-02	6.7E-05	4.3E+00	4.6E-04	0.0E+00	4.32	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.48
Forklift	50	21	6	22	4.0E-02	4.3E-01	1.7E-01	3.6E-01	4.4E-04	3.4E+01	1.6E-02	0.0E+00	34.16	0.06	0.05	0.60	0.24	0.50	0.00	46.89	0.02	0.00	47.34
Welder	50	8	4.5	22	4.5E-03	4.3E-02	1.3E-02	7.0E-02	9.1E-05	7.1E+00	1.1E-03	0.0E+00	7.17	0.00	0.00	0.02	0.01	0.03	0.00	2.83	0.00	0.00	2.84
Generator	50	18	7.5	22	2.9E-02	2.9E-01	1.2E-01	3.1E-01	4.0E-04	3.1E+01	1.1E-02	0.0E+00	30.82	0.04	0.04	0.44	0.17	0.46	0.00	45.43	0.02	0.00	45.76
Aerial Lift	50	8	4.6	22	1.9E-02	2.0E-01	7.9E-02	2.0E-01	2.5E-04	2.0E+01	7.1E-03	0.0E+00	19.74	0.01	0.01	0.08	0.03	0.08	0.00	7.93	0.00	0.00	7.99
		474											**Subtotal**	**1.67E+00**	**1.54E+00**	**1.37E+01**	**4.26E+00**	**3.20E+01**	**3.49E-02**	**2.94E+03**	**3.78E-01**	**2.45E-04**	**2.95E+03**

Annual Combustion Emissions

Annual construction equipment activity months 1-12.

MONTH 3-14

					Emission factors (lb/hr)									Annual Emissions (ton/yr)									
Equipment	**Hp**	**Quantity/ year**	**Hours/ day**	**Days/ month**	**PM**	**CO**	**ROG**	**NOX**	**SOX**	**CO2**	**CH4**	**N2O**	**CO_2e**	**PM10**	**PM2.5**	**CO**	**ROG**	**NOX**	**SOX**	**CO2**	**CH4**	**N2O**	**CO_2e**
Scraper	250	11	7.2	22	1.1E-01	7.7E-01	2.7E-01	2.6E+00	2.4E-03	2.1E+02	2.5E-02	0.0E+00	209.80	0.09	0.09	0.67	0.24	2.28	0.00	182.33	0.02	0.00	182.78
Grader	120	11	6.1	22	9.0E-02	5.5E-01	1.7E-01	9.8E-01	8.8E-04	7.5E+01	1.5E-02	0.0E+00	75.21	0.07	0.06	0.41	0.12	0.72	0.00	55.28	0.01	0.00	55.51
Dozer	175	15	6.5	22	1.1E-01	8.8E-01	2.5E-01	1.9E+00	1.5E-03	1.3E+02	2.3E-02	0.0E+00	129.83	0.12	0.11	0.94	0.27	2.00	0.00	138.74	0.02	0.00	139.25
Loaders	120	10	5.4	22	7.0E-02	4.3E-01	1.3E-01	7.7E-01	6.9E-04	5.9E+01	1.2E-02	0.0E+00	59.11	0.04	0.04	0.26	0.08	0.45	0.00	34.96	0.01	0.00	35.11
Augers	120	66	7.5	22	5.2E-02	4.9E-01	8.6E-02	6.8E-01	9.0E-04	7.7E+01	7.7E-03	0.0E+00	77.22	0.28	0.26	2.65	0.47	3.71	0.00	419.55	0.04	0.00	420.44
Cement Trucks	250	73	5	22	6.1E-02	4.5E-01	1.7E-01	1.7E+00	1.9E-03	1.7E+02	1.6E-02	0.0E+00	166.72	0.25	0.23	1.82	0.69	6.95	0.01	668.08	0.06	0.00	669.39
Excavator	175	9	5.7	22	7.0E-02	6.7E-01	1.6E-01	1.2E+00	1.3E-03	1.1E+02	1.4E-02	0.0E+00	112.42	0.04	0.04	0.38	0.09	0.68	0.00	63.27	0.01	0.00	63.44
Backhoe	120	10	5.5	22	5.5E-02	3.7E-01	9.9E-02	6.1E-01	6.1E-04	5.2E+01	9.0E-03	0.0E+00	51.87	0.03	0.03	0.22	0.06	0.37	0.00	31.27	0.01	0.00	31.38
Water Truck	250	28	5.7	22	6.1E-02	4.5E-01	1.7E-01	1.7E+00	1.9E-03	1.7E+02	1.6E-02	0.0E+00	166.72	0.11	0.10	0.80	0.30	3.04	0.00	292.12	0.03	0.00	292.70
Dump Truck	250	12	5.7	22	6.1E-02	4.5E-01	1.7E-01	1.7E+00	1.9E-03	1.7E+02	1.6E-02	0.0E+00	166.72	0.05	0.04	0.34	0.13	1.30	0.00	125.20	0.01	0.00	125.44
Crane (20 Ton)	120	32	4.3	22	6.3E-02	3.8E-01	1.2E-01	6.9E-01	5.9E-04	5.0E+01	1.1E-02	0.0E+00	50.33	0.10	0.09	0.57	0.18	1.04	0.00	75.84	0.02	0.00	76.18
Crane (90 Ton)	250	6	4.3	22	5.0E-02	3.7E-01	1.3E-01	1.3E+00	1.3E-03	1.1E+02	1.2E-02	0.0E+00	112.31	0.01	0.01	0.10	0.04	0.37	0.00	31.80	0.00	0.00	31.87
Boom Truck	250	35	5.7	22	6.1E-02	4.5E-01	1.7E-01	1.7E+00	1.9E-03	1.7E+02	1.6E-02	0.0E+00	166.72	0.13	0.12	0.99	0.38	3.80	0.00	365.16	0.03	0.00	365.87
ATVs	50	48	5	22	9.3E-04	1.2E-01	7.6E-02	2.3E-05	4.5E-04	2.5E-01	4.7E-03	8.6E-05	0.38	0.00	0.00	0.31	0.20	0.00	0.00	0.67	0.01	0.00	1.00
Pick Up trucks (1/2 ton)	120	31	5	22	8.2E-02	7.6E-01	1.8E-01	1.4E+00	1.4E-03	1.2E+02	1.7E-02	0.0E+00	125.32	0.14	0.13	1.30	0.31	2.34	0.00	213.08	0.03	0.00	213.68
Pavers	175	4	6.2	22	9.4E-02	8.0E-01	2.1E-01	1.7E+00	1.4E-03	1.3E+02	1.9E-02	0.0E+00	128.58	0.03	0.02	0.22	0.06	0.46	0.00	34.96	0.01	0.00	35.08
Rollers	175	4	5.6	22	6.9E-02	6.3E-01	1.6E-01	1.3E+00	1.2E-03	1.1E+02	1.4E-02	0.0E+00	108.34	0.02	0.02	0.16	0.04	0.31	0.00	26.62	0.00	0.00	26.70
Plate Compactors	15	4	2.5	22	1.8E-03	2.6E-02	5.1E-03	3.2E-02	6.7E-05	4.3E+00	4.6E-04	0.0E+00	4.32	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.48
Forklift	50	23	6	22	4.0E-02	4.3E-01	1.7E-01	3.6E-01	4.4E-04	3.4E+01	1.6E-02	0.0E+00	34.16	0.06	0.06	0.66	0.26	0.55	0.00	51.35	0.02	0.00	51.85
Welder	50	9	4.5	22	4.5E-03	4.3E-02	1.3E-02	7.0E-02	9.1E-05	7.1E+00	1.1E-03	0.0E+00	7.17	0.00	0.00	0.02	0.01	0.03	0.00	3.18	0.00	0.00	3.19
Generator	50	21	7.5	22	2.9E-02	2.9E-01	1.2E-01	3.1E-01	4.0E-04	3.1E+01	1.1E-02	0.0E+00	30.82	0.05	0.05	0.51	0.20	0.54	0.00	53.01	0.02	0.00	53.39
Aerial Lift	50	9	4.6	22	1.9E-02	2.0E-01	7.9E-02	2.0E-01	2.5E-04	2.0E+01	7.1E-03	0.0E+00	19.74	0.01	0.01	0.09	0.04	0.09	0.00	8.92	0.00	0.00	8.99
		471											**Subtotal**	**1.63E+00**	**1.50E+00**	**1.34E+01**	**4.16E+00**	**3.10E+01**	**3.40E-02**	**2.88E+03**	**3.70E-01**	**2.26E-04**	**2.88E+03**

MONTH 4-15

					Emission factors (lb/hr)									Annual Emissions (ton/yr)									
Equipment	**Hp**	**Quantity/ year**	**Hours/ day**	**Days/ month**	**PM**	**CO**	**ROG**	**NOX**	**SOX**	**CO2**	**CH4**	**N2O**	**CO_2e**	**PM10**	**PM2.5**	**CO**	**ROG**	**NOX**	**SOX**	**CO2**	**CH4**	**N2O**	**CO_2e**
Scraper	250	8	7.2	22	1.1E-01	7.7E-01	2.7E-01	2.6E+00	2.4E-03	2.1E+02	2.5E-02	0.0E+00	209.80	0.07	0.06	0.49	0.17	1.66	0.00	132.60	0.02	0.00	132.93
Grader	120	9	6.1	22	9.0E-02	5.5E-01	1.7E-01	9.8E-01	8.8E-04	7.5E+01	1.5E-02	0.0E+00	75.21	0.05	0.05	0.33	0.10	0.59	0.00	45.23	0.01	0.00	45.42
Dozer	175	12	6.5	22	1.1E-01	8.8E-01	2.5E-01	1.9E+00	1.5E-03	1.3E+02	2.3E-02	0.0E+00	129.83	0.09	0.08	0.75	0.21	1.60	0.00	110.99	0.02	0.00	111.40
Loaders	120	9	5.4	22	7.0E-02	4.3E-01	1.3E-01	7.7E-01	6.9E-04	5.9E+01	1.2E-02	0.0E+00	59.11	0.04	0.03	0.23	0.07	0.41	0.00	31.47	0.01	0.00	31.60
Augers	120	63	7.5	22	5.2E-02	4.9E-01	8.6E-02	6.8E-01	9.0E-04	7.7E+01	7.7E-03	0.0E+00	77.22	0.27	0.25	2.53	0.45	3.54	0.00	400.48	0.04	0.00	401.33
Cement Trucks	250	71	5	22	6.1E-02	4.5E-01	1.7E-01	1.7E+00	1.9E-03	1.7E+02	1.6E-02	0.0E+00	166.72	0.24	0.22	1.77	0.67	6.76	0.01	649.78	0.06	0.00	651.05
Excavator	175	8	5.7	22	7.0E-02	6.7E-01	1.6E-01	1.2E+00	1.3E-03	1.1E+02	1.4E-02	0.0E+00	112.42	0.04	0.03	0.34	0.08	0.60	0.00	56.24	0.01	0.00	56.39
Backhoe	120	8	5.5	22	5.5E-02	3.7E-01	9.9E-02	6.1E-01	6.1E-04	5.2E+01	9.0E-03	0.0E+00	51.87	0.03	0.02	0.18	0.05	0.29	0.00	25.01	0.00	0.00	25.10
Water Truck	250	27	5.7	22	6.1E-02	4.5E-01	1.7E-01	1.7E+00	1.9E-03	1.7E+02	1.6E-02	0.0E+00	166.72	0.10	0.10	0.77	0.29	2.93	0.00	281.69	0.03	0.00	282.24
Dump Truck	250	10	5.7	22	6.1E-02	4.5E-01	1.7E-01	1.7E+00	1.9E-03	1.7E+02	1.6E-02	0.0E+00	166.72	0.04	0.04	0.28	0.11	1.09	0.00	104.33	0.01	0.00	104.53
Crane (20 Ton)	120	34	4.3	22	6.3E-02	3.8E-01	1.2E-01	6.9E-01	5.9E-04	5.0E+01	1.1E-02	0.0E+00	50.33	0.10	0.09	0.60	0.19	1.11	0.00	80.58	0.02	0.00	80.94
Crane (90 Ton)	250	6	4.3	22	5.0E-02	3.7E-01	1.3E-01	1.3E+00	1.3E-03	1.1E+02	1.2E-02	0.0E+00	112.31	0.01	0.01	0.10	0.04	0.37	0.00	31.80	0.00	0.00	31.87
Boom Truck	250	36	5.7	22	6.1E-02	4.5E-01	1.7E-01	1.7E+00	1.9E-03	1.7E+02	1.6E-02	0.0E+00	166.72	0.14	0.13	1.02	0.39	3.91	0.00	375.59	0.04	0.00	376.33
ATVs	50	48	5	22	9.3E-04	1.2E-01	7.6E-02	2.3E-05	4.5E-04	2.5E-01	4.7E-03	8.6E-05	0.38	0.00	0.00	0.31	0.20	0.00	0.00	0.67	0.01	0.00	1.00
Pick Up trucks (1/2 ton)	120	31	5	22	8.2E-02	7.6E-01	1.8E-01	1.4E+00	1.4E-03	1.2E+02	1.7E-02	0.0E+00	125.32	0.14	0.13	1.30	0.31	2.34	0.00	213.08	0.03	0.00	213.68
Pavers	175	5	6.2	22	9.4E-02	8.0E-01	2.1E-01	1.7E+00	1.4E-03	1.3E+02	1.9E-02	0.0E+00	128.58	0.03	0.03	0.27	0.07	0.57	0.00	43.71	0.01	0.00	43.84
Rollers	175	5	5.6	22	6.9E-02	6.3E-01	1.6E-01	1.3E+00	1.2E-03	1.1E+02	1.4E-02	0.0E+00	108.34	0.02	0.02	0.19	0.05	0.39	0.00	33.28	0.00	0.00	33.37
Plate Compactors	15	4	2.5	22	1.8E-03	2.6E-02	5.1E-03	3.2E-02	6.7E-05	4.3E+00	4.6E-04	0.0E+00	4.32	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.48
Forklift	50	22	6	22	4.0E-02	4.3E-01	1.7E-01	3.6E-01	4.4E-04	3.4E+01	1.6E-02	0.0E+00	34.16	0.06	0.05	0.63	0.25	0.52	0.00	49.12	0.02	0.00	49.59
Welder	50	10	4.5	22	4.5E-03	4.3E-02	1.3E-02	7.0E-02	9.1E-05	7.1E+00	1.1E-03	0.0E+00	7.17	0.00	0.00	0.02	0.01	0.03	0.00	3.54	0.00	0.00	3.55
Generator	50	23	7.5	22	2.9E-02	2.9E-01	1.2E-01	3.1E-01	4.0E-04	3.1E+01	1.1E-02	0.0E+00	30.82	0.06	0.05	0.56	0.22	0.59	0.00	58.05	0.02	0.00	58.48
Aerial Lift	50	10	4.6	22	1.9E-02	2.0E-01	7.9E-02	2.0E-01	2.5E-04	2.0E+01	7.1E-03	0.0E+00	19.74	0.01	0.01	0.10	0.04	0.10	0.00	9.92	0.00	0.00	9.99
		459											**Subtotal**	**1.54E+00**	**1.42E+00**	**1.28E+01**	**3.98E+00**	**2.94E+01**	**3.25E-02**	**2.74E+03**	**3.53E-01**	**2.26E-04**	**2.75E+03**

Annual Comparison of Diesel Offroad Equipment:

Month of Contruction	**Offroad Equipment Quantity**	**PM10**	**PM2.5**	**CO**	**ROG**	**NOX**	**SOX**	**CO2**	**CH4**	**N2O**	**CO_2e**
1-12	475	1.71E+00	1.57E+00	1.39E+01	4.33E+00	3.28E+01	3.55E-02	2.99E+03	3.85E-01	2.64E-04	3.00E+03
2-13	474	1.67E+00	1.54E+00	1.37E+01	4.26E+00	3.20E+01	3.49E-02	2.94E+03	3.78E-01	2.45E-04	2.95E+03
3-14	471	1.63E+00	1.50E+00	1.34E+01	4.16E+00	3.10E+01	3.40E-02	2.88E+03	3.70E-01	2.26E-04	2.88E+03
4-15	459	1.54E+00	1.42E+00	1.28E+01	3.98E+00	2.94E+01	3.25E-02	2.74E+03	3.53E-01	2.26E-04	2.75E+03
MAX VALUE	475	1.71E+00	1.57E+00	1.39E+01	4.33E+00	########	3.55E-02	2.99E+03	3.85E-01	2.64E-04	3.00E+03

Combustion Exhaust from Travel on Unpaved Roads							Emission factor (lb/mile)											Annual Emissions (ton/yr)									
Vehicle Type		**Quantity/ year**	**Ave Round Trips/ Day/ Unit**	**Round Trip Distance (mile)**	**Daily VMT per Unit**	**VMT for all Units**	**PM10**	**PM2.5**	**CO**	**ROG**	**NOX**	**SOX**	**CO2**	**CH4**	**N2O**	**CO_2e**	**EF vehicle type**	**PM10**	**PM2.5**	**CO**	**ROG**	**NOX**	**SOX**	**CO2**	**CH4**	**N2O**	**CO_2e**
Worker Personal Vehicles in Parking lot		2593	1	0.6	0.6	34228	1.81E-04	1.33E-04	1.34E-02	1.14E-03	1.16E-03	1.98E-05	2.12E+00	8.82E-05	8.82E-05	2.15E+00	passenger	3.09E-03	2.28E-03	2.30E-01	1.96E-02	1.98E-02	3.40E-04	3.62E+01	1.51E-03	1.51E-03	3.67E+01
																	Total Unpaved Road	**3.09E-03**	**2.28E-03**	**2.30E-01**	**1.96E-02**	**1.98E-02**	**3.40E-04**	**3.62E+01**	**1.51E-03**	**1.51E-03**	**3.67E+01**

Notes: 1g = 0.0022 lb

Fresno County Prepared - Highest (Most Conservative) Emfac 2009 (version 2.3)

Emission Factors for On-Road Passenger Vehicles & Delivery Trucks & Heavy Heavy Duty Diesel Trucks

Scenario Year: 2009

All vehicle model years in the range 1965 to 2009

Annual VMT for all units based on average daily triip for each vehicle type

22 Maximum number of days per month of construction

Annual Combustion Emissions

Annual construction equipment activity months 1-12.

Model Inputs:

	Annual (MAX) Emissions (ton/yr)					
	PM10	**PM2.5**	**CO**	**VOC**	**NOx**	**SOx**
Offroad Equipment	1.705	1.569	13.854	4.335	32.793	0.036
Travel on Unpaved Roads	0.003	0.002	0.230	0.020	0.020	0.000
TOTAL	1.708	1.571	14.083	4.354	32.813	3.58E-02

Emission location	**Pieces of Equipment Onsite per Area**	Percentage
Q1	90	0.189
Q2	90	0.189
Q3	90	0.189
Q4	90	0.189
Main	85	0.179
Evaporation Pond	15	0.032
Water Treatment	15	0.032
	475	
Total Equipment onsite annually	475	1.000

Q1

Total MODEL EMISSION RATE (lb/hr)			
NOx Annual	**PM10 Annual**	**SO2 Annual**	**PM2.5 Annual**
3.407	0.177	3.7E-03	0.163

Q2

Total MODEL EMISSION RATE (lb/hr)			
NOx Annual	**PM10 Annual**	**SO2 Annual**	**PM2.5 Annual**
3.407	0.177	3.7E-03	0.163

Q3

Total MODEL EMISSION RATE (lb/hr)			
NOx Annual	**PM10 Annual**	**SO2 Annual**	**PM2.5 Annual**
3.407	0.177	3.7E-03	0.163

Q4

Total MODEL EMISSION RATE (lb/hr)			
NOx Annual	**PM10 Annual**	**SO2 Annual**	**PM2.5 Annual**
3.407	0.177	3.7E-03	0.163

Main

Total MODEL EMISSION RATE (lb/hr)			
NOx Annual	**PM10 Annual**	**SO2 Annual**	**PM2.5 Annual**
3.217	0.167	3.5E-03	0.154

Evaporation Pond

Total MODEL EMISSION RATE (lb/hr)			
NOx Annual	**PM10 Annual**	**SO2 Annual**	**PM2.5 Annual**
0.568	0.030	6.2E-04	2.7E-02

Water Treatment

Total MODEL EMISSION RATE (lb/hr)			
NOx Annual	**PM10 Annual**	**SO2 Annual**	**PM2.5 Annual**
0.568	0.030	6.2E-04	2.7E-02

Annual Fugitive Dust Emissions

annual fugitive dust activity months 1-12.

Bulldozing/Earth clearing

$E = 0.45 * G^{1.5} / H^{1.4} * 2.2046$ PM10 Emissions from bulldozing (lb/hr) from SCAQMD Table A9-9-F

7.5 G = Silt content (%) (from Table A9-9-F-1 for overburden)

15 H = Moisture content of surface material (%) (from Table A9-9-F-2 for moist dirt)

0.46 lb/hr of PM10

Equipment	Quantity/ year	Hours/ Day	Hours/ year	Watering Control Efficiency	PM10 Emissions (tons/yr)	PM2.5 Emissions (tons/yr)
Scraper	19	7	3010	85%	0.10	0.02
Grader	17	6	2281	85%	0.08	0.02
Dozer	21	7	3003	85%	0.10	0.02
				Total	**0.29**	**0.06**

8 months of earth work

10 hours per work day

22 construction days per month

Water efficiency from CEQA Table 11-4 watering 3 times daily or using chemical suppressants

Dirt Piling or Material Handling

$E = 0.00112 * (G/5)^{1.3} / (H/2)^{1.4}$ PM10 Emissions from Dirt Piling or Material Handling (lb/hr) from SCAQMD Table A9-9-G

12 G = Mean Wind speed (mph) default

15 H = Moisture content of surface material (%) (from Table A9-9-G-1 for moist dirt)

0.00021 lb/ton of PM10

Equipment	Quantity/ year	Hours/ Day	Annual Material Handled (ton)	Watering Control Efficiency	PM10 Emissions (tons/yr)	PM2.5 Emissions (tons/yr)
Wheeled Loader	16	5	3,918,400	85%	0.0612	0.0127
Excavator	14	6	2,742,880	85%	0.0428	0.0089
Backhoe	14	6	1,175,520	85%	0.0184	0.0038
Dump Trucks	18	6	7,836,800	85%	0.1224	0.0254
				Total	**0.24**	**0.05**

Water efficiency from CEQA Table 11-4 watering 3 times daily or using chemical suppressants

Assume Loader moves 50% of dirt, Excavator moves 35% and Backhoe moves 15%

35227 yd3/day 44527 ton/day

6,200,000 yd3 7,836,800 tons 2528 density of soil (lb/yd3)

(USDA NRCS Physical Soil Properties from Fresno County

fro Mugatu Fine Sandy Loam soil 0-30% slopes)

6,200,000 cubic yds,

Client supplied volume of cut/fill.

Cover Storage Pile

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

7.5 G = Silt content (%) (from Table A9-9-E-1 for overburden)

37 H = Mean number of days per year with at least 0.01 inches of precipitation (from WRCC for Coalinga COOP Station)

5 I = Percentage of time that the unobstructed wind speed exceeds 12 mph at mean pile height

0.5 J = Fraction of TSP that is PM10 = 0.5

1.977 lb/acre/day

wind speed percentage based on 2000-04 (5 yrs) of wind speed data (actual hours > 10 knots) as recorded at Coalinga Airport

Source	Quantity	Size of Pile (acre)	Days / year	Watering Control Efficiency	PM10 Emissions (tons/yr)	PM2.5 Emissions (tons/yr)
Cover Storage Pile	10	1	240	85%	0.36	0.074

Water efficiency from CEQA Table 11-4 watering 3 times daily or using chemical suppressants

pile size assumed

Days per year accounts for weekend days also, not just work days

Travel on unpaved road

$F = 2.1 * G/12 * H/30 * (J/3)^{0.7} * (I/4)^{0.5} * (365-K)/365$ SCAQMD Table A9-9-D

Emission factor for vehicle travel on unpaved roads (lb/VMT)

16 G = Surface silt loading (%) (value for farm road)

5 H = Mean vehicle speed (mph)

value listed in table I = Mean number of wheels on vehicle

value listed in table J = Mean vehicle weight (ton)

37 K = Mean number of days per year with at least 0.01 inches of precipitation (from WRCC for Coalinga COOP Station)

Vehicle Type	Quantity/ year	Round Trips /Day/ Unit	Round Trip Distance (mile)	Daily VMT per Unit	Annual VMT for all Units	Mean Vehicle Weight (tons)	Number of Wheels on Vehicle	PM10 EF (lbs/VMT)	Watering Control Efficiency	PM10 Emissions (tons/yr)	PM2.5 Emissions (tons/yr)
Augers	60	6	0.75	4.5	5940	13	10	1.85	85%	0.824	0.175
Cement Trucks	64	2	0.5	1	1408	30	10	3.32	85%	0.351	0.074
Water Truck	32	4	2.5	10	7040	25	10	2.93	85%	1.544	0.327
Crane (20 Ton)	26	1	0.1	0.1	57.2	40	10	4.06	85%	0.017	0.004
Crane (90 Ton)	6	1	0.1	0.1	13.2	75	10	6.31	85%	0.006	0.001
Boom Truck	32	5	0.75	3.75	2640	13	10	1.85	85%	0.366	0.078
ATVs	56	9	1.25	11.25	13860	0.5	4	0.12	85%	0.124	0.026
Pick Up trucks (1/2 ton)	28	9	1.25	11.25	6930	1.0	4	0.19	85%	0.101	0.021
Pavers	0	1	0.5	0.5	0	15	4	1.29	85%	0.000	0.000
Rollers	0	4	0.5	2	0	8	4	0.83	85%	0.000	0.000
Forklift	19	6	0.5	3	1254	10	4	0.97	85%	0.092	0.019
Welder	7	1	0.001	0.001	0.154	0.5	2	0.08	85%	0.000	0.000
Generator	15	1	0.001	0.001	0.33	0.5	2	0.08	85%	0.000	0.000
Aerial Lift	7	2	0.5	1	154	11	4	1.04	85%	0.012	0.003
worker personal vehicles	1898	1	0.6	0.6	25047	0.5	4	0.12	85%	0.225	0.048
Delivery Truck	304	1	0.6	0.6	4012.8	13.0	6	1.43	85%	0.431	0.091
									Total	**3.664**	**0.777**

Assumed maximum travel speed is 5 mph

Assume average number of trucks is 10 per day

Equipment weight from SCAQMD Table A9-9-D-3 and various websites

Water efficiency from CEQA Table 11-4 watering 3 times daily or using chemical suppressants

PM2.5 emission factors from updated CEIDARS List with PM2.5 fractions.

PM2.5 numbers obtained by multiplying the PM10 values by fraction in CEIDARS list for appropriate fugitive dust sources.

Water trucks operate at least 4 times per day.

Truck quantity based on monthly maximums, worker vehicle quantity based on total vehicles per day per month

22 Maximum number of days per month of construction

Model Inputs:

Emission location	**Activity**
Various	excavation
	travel

Location	**X (m)**	**Y (m)**	**AREA (m2)**	**percent of total area**	
Q1DUST	750	600	450000	0.240	
Q2DUST	750	600	450000	0.240	
Q3DUST	750	600	450000	0.240	
Q4DUST	750	600	450000	0.240	
MAINDUST	500	100	50000	0.027	
PONDDUST	100	75	7500	0.004	
WATERDUST	150	100	15000	0.008	**TOTAL**
Total Construction Area			1872500	1.000	

	PM10	PM2.5
	lb/hr	lb/hr
travel dust	0.84	0.18

TOTAL

Q1

Total MODEL EMISSION RATE (lb/hr)		
PM10	**PM2.5**	
Annual	**Annual**	
0.0699	0.0145	
0.201	0.043	
0.271	0.057	**TOTAL**

Main Site

Total MODEL EMISSION RATE (lb/hr)		
PM10	**PM2.5**	
Annual	**Annual**	
0.0130	0.0016	
0.022	0.005	
0.035	0.006	**TOTAL**

Q2

Total MODEL EMISSION RATE (lb/hr)		
PM10	**PM2.5**	
Annual	**Annual**	
0.0699	0.0145	
0.201	0.043	
0.271	0.057	**TOTAL**

Evaporation Pond

Total MODEL EMISSION RATE (lb/hr)		
PM10	**PM2.5**	
Annual	**Annual**	
0.0012	0.0002	
0.003	0.001	
0.005	0.001	**TOTAL**

Q3

Total MODEL EMISSION RATE (lb/hr)		
PM10	**PM2.5**	
Annual	**Annual**	
0.0699	0.0145	
0.201	0.043	
0.271	0.057	**TOTAL**

Water Treatment

Total MODEL EMISSION RATE (lb/hr)		
PM10	**PM2.5**	
Annual	**Annual**	
0.0023	0.0005	
0.007	0.001	
0.009	0.002	**TOTAL**

Q4

Total MODEL EMISSION RATE (lb/hr)		
PM10	**PM2.5**	
Annual	**Annual**	
0.0699	0.0145	
0.201	0.043	
0.271	0.057	**TOTAL**

Short Term Combustion Exhaust Emissions

Maximum construction emissions occur in month 6.

10 hours / day 7am to 5 pm

Diesel Fired Offroad Equipment

Equipment	HP	Hours/ Day	Emission factors (ton/hr) PM	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
Scraper	250	7.2	5.3E-05	3.9E-04	1.4E-04	1.3E-03	1.2E-06	1.0E-01	1.2E-05	0.0E+00	0.10
Grader	120	6.1	4.5E-05	2.8E-04	8.3E-05	4.9E-04	4.4E-07	3.7E-02	7.5E-06	0.0E+00	0.04
Dozer	175	6.5	5.4E-05	4.4E-04	1.2E-04	9.3E-04	7.3E-07	6.5E-02	1.1E-05	0.0E+00	0.06
Loaders	120	5.4	3.5E-05	2.2E-04	6.5E-05	3.8E-04	3.5E-07	2.9E-02	5.8E-06	0.0E+00	0.03
Augers	120	7.5	2.6E-05	2.4E-04	4.3E-05	3.4E-04	4.5E-07	3.9E-02	3.9E-06	0.0E+00	0.04
Cement Trucks	250	5	3.1E-05	2.3E-04	8.6E-05	8.7E-04	9.4E-07	8.3E-02	7.8E-06	0.0E+00	0.08
Excavator	175	5.7	3.5E-05	3.4E-04	7.8E-05	6.0E-04	6.3E-07	5.6E-02	7.1E-06	0.0E+00	0.06
Backhoe	120	5.5	2.8E-05	1.8E-04	5.0E-05	3.0E-04	3.0E-07	2.6E-02	4.5E-06	0.0E+00	0.03
Water Truck	250	5.7	3.1E-05	2.3E-04	8.6E-05	8.7E-04	9.4E-07	8.3E-02	7.8E-06	0.0E+00	0.08
Dump Truck	250	5.7	3.1E-05	2.3E-04	8.6E-05	8.7E-04	9.4E-07	8.3E-02	7.8E-06	0.0E+00	0.08
Crane (20 Ton)	120	4.3	3.2E-05	1.9E-04	5.9E-05	3.4E-04	2.9E-07	2.5E-02	5.4E-06	0.0E+00	0.03
Crane (90 Ton)	250	4.3	2.5E-05	1.8E-04	6.6E-05	6.5E-04	6.3E-07	5.6E-02	5.9E-06	0.0E+00	0.06
Boom Truck	250	5.7	3.1E-05	2.3E-04	8.6E-05	8.7E-04	9.4E-07	8.3E-02	7.8E-06	0.0E+00	0.08
ATVs	50	5	2.6E-07	4.5E-05	2.0E-05	3.9E-07	2.3E-07	1.3E-04	1.2E-06	2.2E-07	0.00
Pick Up trucks (1/2 ton)	120	5	4.1E-05	3.8E-04	9.2E-05	6.9E-04	7.0E-07	6.2E-02	8.3E-06	0.0E+00	0.06
Pavers	175	6.2	4.7E-05	4.0E-04	1.1E-04	8.4E-04	7.2E-07	6.4E-02	9.7E-06	0.0E+00	0.06
Rollers	175	5.6	3.4E-05	3.1E-04	7.8E-05	6.3E-04	6.1E-07	5.4E-02	7.0E-06	0.0E+00	0.05
Plate Compactors	15	2.5	1.3E-05	8.8E-04	2.4E-05	1.6E-05	5.1E-08	1.6E-03	1.4E-06	2.0E-06	0.00
Forklift	50	6	4.8E-06	1.5E-03	4.1E-05	7.7E-05	1.1E-07	9.0E-03	3.0E-06	2.2E-06	0.01
Welder	50	4.5	8.2E-06	1.2E-03	7.6E-05	1.4E-04	2.0E-07	1.6E-02	5.4E-06	3.1E-06	0.02
Generator	50	7.5	8.1E-06	1.0E-03	6.3E-05	1.4E-04	2.1E-07	1.7E-02	4.6E-06	2.9E-06	0.02
Aerial Lift	50	4.6	5.4E-06	7.3E-04	3.9E-05	8.3E-05	1.4E-07	1.1E-02	2.9E-06	2.0E-06	0.01

Equipment	Emission factors (lb/hr) PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
Scraper	0.11	0.10	0.77	0.27	2.61	0.00	209.28	0.02	0.00	209.80
Grader	0.09	0.08	0.55	0.17	0.98	0.00	74.90	0.01	0.00	75.21
Dozer	0.11	0.10	0.88	0.25	1.87	0.00	129.36	0.02	0.00	129.83
Loaders	0.07	0.06	0.43	0.13	0.77	0.00	58.86	0.01	0.00	59.11
Augers	0.05	0.05	0.49	0.09	0.68	0.00	77.05	0.01	0.00	77.22
Cement Trucks	0.06	0.06	0.45	0.17	1.73	0.00	166.40	0.02	0.00	166.72
Excavator	0.07	0.06	0.67	0.16	1.20	0.00	112.12	0.01	0.00	112.42
Backhoe	0.06	0.05	0.37	0.10	0.61	0.00	51.68	0.01	0.00	51.87
Water Truck	0.06	0.06	0.45	0.17	1.73	0.00	166.40	0.02	0.00	166.72
Dump Truck	0.06	0.06	0.45	0.17	1.73	0.00	166.40	0.02	0.00	166.72
Crane (20 Ton)	0.06	0.06	0.38	0.12	0.69	0.00	50.10	0.01	0.00	50.33
Crane (90 Ton)	0.05	0.05	0.37	0.13	1.31	0.00	112.06	0.01	0.00	112.31
Boom Truck	0.06	0.06	0.45	0.17	1.73	0.00	166.40	0.02	0.00	166.72
ATVs	0.00	0.00	0.09	0.04	0.00	0.00	0.25	0.00	0.00	0.44
Pick Up trucks (1/2 ton)	0.08	0.08	0.76	0.18	1.37	0.00	124.98	0.02	0.00	125.32
Pavers	0.09	0.09	0.80	0.21	1.68	0.00	128.17	0.02	0.00	128.58
Rollers	0.07	0.06	0.63	0.16	1.27	0.00	108.05	0.01	0.00	108.34
Plate Compactors	0.03	0.02	1.77	0.05	0.03	0.00	3.12	0.00	0.00	4.40
Forklift	0.01	0.01	2.94	0.08	0.15	0.00	17.95	0.01	0.00	19.43
Welder	0.02	0.02	2.36	0.15	0.29	0.00	32.78	0.01	0.01	34.96
Generator	0.02	0.01	2.08	0.13	0.29	0.00	34.09	0.01	0.01	36.10
Aerial Lift	0.01	0.01	1.47	0.08	0.17	0.00	22.90	0.01	0.00	24.24
Total	**34.00**	**13.73**	**12.63**	**105.08**	**33.34**	**271.84**	**0.27**	**23151.99**	**2.98**	**0.01**

Equipment	Month 1 Daily Emissions (lb/day) Quantity Mo 1	PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
Scraper	4	3.1	2.8	22.3	7.9	75.3	0.1	6027.3	0.7	0.0	6042.3
Grader	3	1.6	1.5	10.1	3.0	18.0	0.0	1370.6	0.3	0.0	1376.4
Dozer	3	2.1	1.9	17.1	4.9	36.4	0.0	2522.5	0.4	0.0	2531.8
Loaders	3	1.1	1.0	7.0	2.1	12.4	0.0	953.5	0.2	0.0	957.5
Augers	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cement Trucks	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator	3	1.2	1.1	11.5	2.7	20.5	0.0	1917.3	0.2	0.0	1922.3
Backhoe	2	0.6	0.6	4.0	1.1	6.7	0.0	568.5	0.1	0.0	570.6
Water Truck	4	1.4	1.3	10.3	3.9	39.5	0.0	3793.8	0.4	0.0	3801.3
Dump Truck	4	1.4	1.3	10.3	3.9	39.5	0.0	3793.8	0.4	0.0	3801.3
Crane (20 Ton)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crane (90 Ton)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boom Truck	1	0.3	0.3	2.6	1.0	9.9	0.0	948.5	0.1	0.0	950.3
ATVs	5	0.0	0.0	2.2	1.0	0.0	0.0	6.3	0.1	0.0	11.0
Pick Up trucks (1/2 ton)	2	0.8	0.8	7.6	1.8	13.7	0.0	1249.8	0.2	0.0	1253.2
Pavers	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rollers	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Plate Compactors	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
Welder	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Generator	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aerial Lift	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**33.00**	**13.33**	**12.26**	**101.26**	**32.45**	**265.01**	**0.27**	**22512.90**	**2.90**	**0.01**	**22577.17**

Equipment	Month 2 Daily Emissions (lb/day) Quantity Mo 2	PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
Scraper	4	3.1	2.8	22.3	7.9	75.3	0.1	6027.3	0.7	0.0	6042.3
Grader	3	1.6	1.5	10.1	3.0	18.0	0.0	1370.6	0.3	0.0	1376.4
Dozer	3	2.1	1.9	17.1	4.9	36.4	0.0	2522.5	0.4	0.0	2531.8
Loaders	3	1.1	1.0	7.0	2.1	12.4	0.0	953.5	0.2	0.0	957.5
Augers	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cement Trucks	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Excavator	2	0.8	0.7	7.6	1.8	13.7	0.0	1278.2	0.2	0.0	1281.6
Backhoe	2	0.6	0.6	4.0	1.1	6.7	0.0	568.5	0.1	0.0	570.6
Water Truck	4	1.4	1.3	10.3	3.9	39.5	0.0	3793.8	0.4	0.0	3801.3
Dump Truck	4	1.4	1.3	10.3	3.9	39.5	0.0	3793.8	0.4	0.0	3801.3
Crane (20 Ton)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crane (90 Ton)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boom Truck	1	0.3	0.3	2.6	1.0	9.9	0.0	948.5	0.1	0.0	950.3
ATVs	5	0.0	0.0	2.2	1.0	0.0	0.0	6.3	0.1	0.0	11.0
Pick Up trucks (1/2 ton)	2	0.8	0.8	7.6	1.8	13.7	0.0	1249.8	0.2	0.0	1253.2
Pavers	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rollers	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Plate Compactors	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
Welder	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Generator	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aerial Lift	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**33.00**	**13.33**	**12.26**	**101.26**	**32.45**	**265.01**	**0.27**	**22512.90**	**2.90**	**0.01**	**22577.17**

Dozer = Rubber tired dozer
Loaders = Rubber tired loaders
Augers = Bore/Drill Rigs
Cement Trucks = Off-Highway Trucks
Backhoe = Tractors/Loaders/Backhoes
Water Trucks = Off-Highway Trucks
Dump Trucks = Off-Highway Trucks
Boom Truck = Off-Highway Trucks
ATV = Average of G2 and G4
Pick Up Trucks (1/2 ton) = Off-Highway Trucks 175 HP
Plate Compactors = Average of G2 and G4
Forklift = Average of G4 and D
Welder = Average of G4 and D
Generator = Average of G4 and D
Aerial Lift = Average of G4 and D

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

Monthly Comparison of Diesel Offroad Equipment:

lb/day

Month of Contruction	Offroad Equipment Quantity	PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
1	34.00	13.73	12.63	105.08	33.34	271.84	0.27	23151.99	2.98	0.01	23217.95
2	33.00	13.33	12.26	101.26	32.45	265.01	0.27	22512.90	2.90	0.01	22577.17
3	38.00	14.05	12.93	129.21	33.75	279.00	0.30	24995.98	3.01	0.04	25070.69
4	40.00	13.79	12.68	159.06	34.17	272.78	0.29	24732.14	3.02	0.11	24828.91
5	40.00	13.79	12.68	159.06	34.17	272.78	0.29	24732.14	3.02	0.11	24828.91
6	44.00	14.15	13.01	182.09	35.78	279.35	0.30	25358.21	3.14	0.16	25474.96
7	43.00	12.95	11.92	172.43	32.69	251.35	0.28	23225.98	2.87	0.16	23336.88
8	43.00	12.25	11.27	166.61	31.07	239.14	0.27	22359.14	2.72	0.16	22466.98
9	42.00	10.71	9.85	170.15	28.40	214.23	0.25	20758.70	2.46	0.21	20874.76
10	43.00	11.23	10.33	169.28	29.42	221.29	0.25	21298.25	2.56	0.20	21413.28
11	42.00	10.92	10.05	184.13	29.22	211.52	0.25	20475.85	2.52	0.24	20603.82
12	33.00	9.37	8.62	170.72	24.94	182.87	0.21	17901.70	2.16	0.23	18019.31
13	33.00	9.79	9.01	174.77	26.84	199.72	0.22	18766.10	2.33	0.23	18887.32
14	30.00	8.73	8.03	166.11	24.08	174.32	0.19	16360.79	2.08	0.23	16476.77
15	26.00	6.51	5.99	100.50	18.31	133.07	0.16	12706.31	1.57	0.15	12784.36
MAX VALUE	44.00	14.15	13.01	184.13	35.78	279.35	0.30	25358.21	3.14	0.24	25474.96

Notes:
Emission factors from San Joaquin Valley composite off-road emission factors from CARB's Off-Road Model for year 2009.
Equipment list, quantity, horsepower, and hours of operation from client.
PM2.5 emission factors from updated CEIDARS List with PM2.5 fractions.
PM2.5 numbers obtained by multiplying the PM10 values by fraction in CEIDARS list for onroad or offroad diesel vehicles.
Construction day is assumed to be 10 hours long.

		PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
lb/day	Daily Total	44.00	14.15	13.01	184.13	35.78	279.35	0.30			

Combustion Exhaust from Travel on Unpaved Roads

Vehicle Type	No. Of Unit	Peak Round Trips /Day/ Unit	Round Trip Distance (mile)	Daily VMT (all units)	Emission factor (lb/mile) PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e	Emission factor vehicle type
Worker Personal Vehicles in Parking lo	104	1	0.6	62.4	1.81E-04	1.33E-04	1.34E-02	1.14E-03	1.16E-03	1.98E-05	2.12E+00	8.82E-05	8.82E-05	2.15E+00	passenger

Vehicle Type	Hourly Emissions (lb/hr) PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
Worker Personal Vehicles in Parking lo	1.13E-03	8.33E-04	8.37E-02	7.14E-03	7.22E-03	1.24E-04	1.32E+01	5.50E-04	5.50E-04	1.34E+01
	1.13E-03	**8.33E-04**	**8.37E-02**	**7.14E-03**	**7.22E-03**	**1.24E-04**	**1.32E+01**	**5.50E-04**	**5.50E-04**	**1.34E+01**

Vehicle Type	Daily Emissions (lb/day) PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
Worker Personal Vehicles in Parking lo	1.13E-02	8.33E-03	8.37E-01	7.14E-02	7.22E-02	1.24E-03	1.32E+02	5.50E-03	5.50E-03	1.34E+02
	1.13E-02	**8.33E-03**	**8.37E-01**	**7.14E-02**	**7.22E-02**	**1.24E-03**	**1.32E+02**	**5.50E-03**	**5.50E-03**	**1.34E+02**

Notes: 1g = 0.00220462 lb
Fresno County Prepared - Highest (Most Conservative) Emfac 2009 (version 2.3)
Emission Factors for On-Road Passenger Vehicles & Delivery Trucks & Heavy Heavy Duty Diesel Trucks Scenario Year: 2009
All model years in the range 1965 to 2009
Worker vehiles based on number of employees in Month 6, assuming 2 workers per vehicle.
Construction day is assumed to be 10 hours long (7 am to 5 pm).
10 Maximum number of construction work hours per day

Model Inputs:

Emission location	Activity	Number of Sources	MODEL EMISSION RATE per source (lb/hr) NOx 1-hr	CO 1 & 8 hr	PM10 24hr	SO2 1 & 3 hr	SO2 24hr	PM2.5 24hr
Various	excavation/building	44	6.35E-01	4.20E-01	3.22E-02	6.85E-04	6.85E-04	2.96E-02

MODEL EMISSION RATE per source (g/s) NOx 1-hr	CO 1 & 8 hr	PM10 24hr	SO2 1 & 3 hr	SO2 24hr	PM2.5 24hr
0.08	0.053	0.004	8.64E-05	8.64E-05	0.004

Note: Each source doing excavation/building includes the emissions from "Worker Personal Vehicles in Parking lot"

Month 3 Daily Emissions (lb/day)											
Quantity Mo 3	PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
3	2.3	2.1	16.7	5.9	56.4	0.1	4520.5	0.5	0.0	4531.7
2	1.1	1.0	6.7	2.0	12.0	0.0	913.8	0.2	0.0	917.6
3	2.1	1.9	17.1	4.9	36.4	0.0	2522.5	0.4	0.0	2531.8
1	0.4	0.3	2.3	0.7	4.1	0.0	317.8	0.1	0.0	319.2
6	2.3	2.2	21.9	3.9	30.6	0.0	3467.4	0.3	0.0	3474.7
6	1.8	1.7	13.6	5.2	52.0	0.1	4991.9	0.5	0.0	5001.7
1	0.4	0.4	3.8	0.9	6.8	0.0	639.1	0.1	0.0	640.8
2	0.6	0.6	4.0	1.1	6.7	0.0	568.5	0.1	0.0	570.6
3	1.0	1.0	7.7	2.9	29.6	0.0	2845.4	0.3	0.0	2851.0
2	0.7	0.6	5.2	2.0	19.7	0.0	1896.9	0.2	0.0	1900.6
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
1	0.3	0.3	2.6	1.0	9.9	0.0	948.5	0.1	0.0	950.3
5	0.0	0.0	2.2	1.0	0.0	0.0	6.3	0.1	0.0	11.0
2	0.8	0.8	7.6	1.8	13.7	0.0	1249.8	0.2	0.0	1253.2
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
1	0.1	0.1	17.6	0.5	0.9	0.0	107.7	0.0	0.0	116.6
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
38.00	**14.05**	**12.93**	**129.21**	**33.75**	**279.00**	**0.30**	**24995.98**	**3.01**	**0.04**	**25070.69**

Month 4 Daily Emissions (lb/day)										
Quantity Mo 4	PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
2	1.5	1.4	11.1	4.0	37.6	0.0	3013.7	0.4	0.0	3021.2
2	1.1	1.0	6.7	2.0	12.0	0.0	913.8	0.2	0.0	917.6
3	2.1	1.9	17.1	4.9	36.4	0.0	2522.5	0.4	0.0	2531.8
1	0.4	0.3	2.3	0.7	4.1	0.0	317.8	0.1	0.0	319.2
6	2.3	2.2	21.9	3.9	30.6	0.0	3467.4	0.3	0.0	3474.7
6	1.8	1.7	13.6	5.2	52.0	0.1	4991.9	0.5	0.0	5001.7
1	0.4	0.4	3.8	0.9	6.8	0.0	639.1	0.1	0.0	640.8
1	0.3	0.3	2.0	0.5	3.3	0.0	284.2	0.0	0.0	285.3
3	1.0	1.0	7.7	2.9	29.6	0.0	2845.4	0.3	0.0	2851.0
2	0.7	0.6	5.2	2.0	19.7	0.0	1896.9	0.2	0.0	1900.6
1	0.3	0.3	1.6	0.5	3.0	0.0	215.4	0.0	0.0	216.4
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.7	0.6	5.2	2.0	19.7	0.0	1896.9	0.2	0.0	1900.6
5	0.0	0.0	2.2	1.0	0.0	0.0	6.3	0.1	0.0	11.0
2	0.8	0.8	7.6	1.8	13.7	0.0	1249.8	0.2	0.0	1253.2
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
2	0.1	0.1	35.3	1.0	1.9	0.0	215.4	0.1	0.1	233.2
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	15.6	1.0	2.2	0.0	255.6	0.1	0.0	270.8
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40.00	**13.79**	**12.68**	**159.06**	**34.17**	**272.78**	**0.29**	**24732.14**	**3.02**	**0.11**	**24828.91**

Month 5 Daily Emissions (lb/day)										
Quantity Mo 5	PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
2	1.5	1.4	11.1	4.0	37.6	0.0	3013.7	0.4	0.0	3021.2
2	1.1	1.0	6.7	2.0	12.0	0.0	913.8	0.2	0.0	917.6
3	2.1	1.9	17.1	4.9	36.4	0.0	2522.5	0.4	0.0	2531.8
1	0.4	0.3	2.3	0.7	4.1	0.0	317.8	0.1	0.0	319.2
6	2.3	2.2	21.9	3.9	30.6	0.0	3467.4	0.3	0.0	3474.7
6	1.8	1.7	13.6	5.2	52.0	0.1	4991.9	0.5	0.0	5001.7
1	0.4	0.4	3.8	0.9	6.8	0.0	639.1	0.1	0.0	640.8
1	0.3	0.3	2.0	0.5	3.3	0.0	284.2	0.0	0.0	285.3
3	1.0	1.0	7.7	2.9	29.6	0.0	2845.4	0.3	0.0	2851.0
2	0.7	0.6	5.2	2.0	19.7	0.0	1896.9	0.2	0.0	1900.6
1	0.3	0.3	1.6	0.5	3.0	0.0	215.4	0.0	0.0	216.4
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.7	0.6	5.2	2.0	19.7	0.0	1896.9	0.2	0.0	1900.6
5	0.0	0.0	2.2	1.0	0.0	0.0	6.3	0.1	0.0	11.0
2	0.8	0.8	7.6	1.8	13.7	0.0	1249.8	0.2	0.0	1253.2
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
2	0.1	0.1	35.3	1.0	1.9	0.0	215.4	0.1	0.1	233.2
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	15.6	1.0	2.2	0.0	255.6	0.1	0.0	270.8
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40.00	**13.79**	**12.68**	**159.06**	**34.17**	**272.78**	**0.29**	**24732.14**	**3.02**	**0.11**	**######**

Month 6 Daily Emissions (lb/day)										
Quantity Mo 6	PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
2	1.5	1.4	11.1	4.0	37.6	0.0	3013.7	0.4	0.0	3021.2
2	1.1	1.0	6.7	2.0	12.0	0.0	913.8	0.2	0.0	917.6
3	2.1	1.9	17.1	4.9	36.4	0.0	2522.5	0.4	0.0	2531.8
1	0.4	0.3	2.3	0.7	4.1	0.0	317.8	0.1	0.0	319.2
6	2.3	2.2	21.9	3.9	30.6	0.0	3467.4	0.3	0.0	3474.7
7	2.1	2.0	15.9	6.0	60.6	0.1	5823.9	0.5	0.0	5835.3
1	0.4	0.4	3.8	0.9	6.8	0.0	639.1	0.1	0.0	640.8
1	0.3	0.3	2.0	0.5	3.3	0.0	284.2	0.0	0.0	285.3
3	1.0	1.0	7.7	2.9	29.6	0.0	2845.4	0.3	0.0	2851.0
1	0.3	0.3	2.6	1.0	9.9	0.0	948.5	0.1	0.0	950.3
1	0.3	0.3	1.6	0.5	3.0	0.0	215.4	0.0	0.0	216.4
1	0.2	0.2	1.6	0.6	5.6	0.0	481.9	0.1	0.0	482.9
2	0.7	0.6	5.2	2.0	19.7	0.0	1896.9	0.2	0.0	1900.6
5	0.0	0.0	2.2	1.0	0.0	0.0	6.3	0.1	0.0	11.0
2	0.8	0.8	7.6	1.8	13.7	0.0	1249.8	0.2	0.0	1253.2
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
1	0.1	0.1	4.4	0.1	0.1	0.0	7.8	0.0	0.0	11.0
2	0.1	0.1	35.3	1.0	1.9	0.0	215.4	0.1	0.1	233.2
1	0.1	0.1	10.6	0.7	1.3	0.0	147.5	0.0	0.0	157.3
1	0.1	0.1	15.6	1.0	2.2	0.0	255.6	0.1	0.0	270.8
1	0.0	0.0	6.7	0.4	0.8	0.0	105.4	0.0	0.0	111.5
44.00	**14.15**	**13.01**	**182.09**	**35.78**	**279.35**	**0.30**	**######**	**3.14**	**0.16**	**######**

Month 7 Daily Emissions (lb/day)										
Quantity Mo 7	PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
1	0.8	0.7	5.6	2.0	18.8	0.0	1506.8	0.2	0.0	1510.6
2	1.1	1.0	6.7	2.0	12.0	0.0	913.8	0.2	0.0	917.6
2	1.4	1.3	11.4	3.2	24.3	0.0	1681.7	0.3	0.0	1687.8
1	0.4	0.3	2.3	0.7	4.1	0.0	317.8	0.1	0.0	319.2
6	2.3	2.2	21.9	3.9	30.6	0.0	3467.4	0.3	0.0	3474.7
7	2.1	2.0	15.9	6.0	60.6	0.1	5823.9	0.5	0.0	5835.3
1	0.4	0.4	3.8	0.9	6.8	0.0	639.1	0.1	0.0	640.8
1	0.3	0.3	2.0	0.5	3.3	0.0	284.2	0.0	0.0	285.3
2	0.7	0.6	5.2	2.0	19.7	0.0	1896.9	0.2	0.0	1900.6
1	0.3	0.3	2.6	1.0	9.9	0.0	948.5	0.1	0.0	950.3
2	0.5	0.5	3.2	1.0	5.9	0.0	430.9	0.1	0.0	432.8
1	0.2	0.2	1.6	0.6	5.6	0.0	481.9	0.1	0.0	482.9
3	1.0	1.0	7.7	2.9	29.6	0.0	2845.4	0.3	0.0	2851.0
5	0.0	0.0	2.2	1.0	0.0	0.0	6.3	0.1	0.0	11.0
2	0.8	0.8	7.6	1.8	13.7	0.0	1249.8	0.2	0.0	1253.2
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
1	0.1	0.1	4.4	0.1	0.1	0.0	7.8	0.0	0.0	11.0
2	0.1	0.1	35.3	1.0	1.9	0.0	215.4	0.1	0.1	233.2
1	0.1	0.1	10.6	0.7	1.3	0.0	147.5	0.0	0.0	157.3
1	0.1	0.1	15.6	1.0	2.2	0.0	255.6	0.1	0.0	270.8
1	0.0	0.0	6.7	0.4	0.8	0.0	105.4	0.0	0.0	111.5
43.00	**12.95**	**11.92**	**172.43**	**32.69**	**251.35**	**0.28**	**######**	**2.87**	**0.16**	**######**

Month 8 Daily Emissions (lb/day)

Quantity Mo 8	PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
1	0.8	0.7	5.6	2.0	18.8	0.0	1506.8	0.2	0.0	1510.6
1	0.5	0.5	3.4	1.0	6.0	0.0	456.9	0.1	0.0	458.8
1	0.7	0.6	5.7	1.6	12.1	0.0	840.8	0.1	0.0	843.9
1	0.4	0.3	2.3	0.7	4.1	0.0	317.8	0.1	0.0	319.2
6	2.3	2.2	21.9	3.9	30.6	0.0	3467.4	0.3	0.0	3474.7
7	2.1	2.0	15.9	6.0	60.6	0.1	5823.9	0.5	0.0	5835.3
1	0.4	0.4	3.8	0.9	6.8	0.0	639.1	0.1	0.0	640.8
1	0.3	0.3	2.0	0.5	3.3	0.0	284.2	0.0	0.0	285.3
2	0.7	0.6	5.2	2.0	19.7	0.0	1896.9	0.2	0.0	1900.6
1	0.3	0.3	2.6	1.0	9.9	0.0	948.5	0.1	0.0	950.3
4	1.1	1.0	6.5	2.0	11.9	0.0	861.8	0.2	0.0	865.6
1	0.2	0.2	1.6	0.6	5.6	0.0	481.9	0.1	0.0	482.9
3	1.0	1.0	7.7	2.9	29.6	0.0	2845.4	0.3	0.0	2851.0
5	0.0	0.0	2.2	1.0	0.0	0.0	6.3	0.1	0.0	11.0
2	0.8	0.8	7.6	1.8	13.7	0.0	1249.8	0.2	0.0	1253.2
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
1	0.1	0.1	4.4	0.1	0.1	0.0	7.8	0.0	0.0	11.0
2	0.1	0.1	35.3	1.0	1.9	0.0	215.4	0.1	0.1	233.2
1	0.1	0.1	10.6	0.7	1.3	0.0	147.5	0.0	0.0	157.3
1	0.1	0.1	15.6	1.0	2.2	0.0	255.6	0.1	0.0	270.8
1	0.0	0.0	6.7	0.4	0.8	0.0	105.4	0.0	0.0	111.5
43.00	**12.25**	**11.27**	**166.61**	**31.07**	**239.14**	**0.27**	**#######**	**2.72**	**0.16**	**#######**

Month 9 Daily Emissions (lb/day)

Quantity Mo 9	PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	0.4	0.3	2.3	0.7	4.1	0.0	317.8	0.1	0.0	319.2
6	2.3	2.2	21.9	3.9	30.6	0.0	3467.4	0.3	0.0	3474.7
7	2.1	2.0	15.9	6.0	60.6	0.1	5823.9	0.5	0.0	5835.3
1	0.4	0.4	3.8	0.9	6.8	0.0	639.1	0.1	0.0	640.8
1	0.3	0.3	2.0	0.5	3.3	0.0	284.2	0.0	0.0	285.3
2	0.7	0.6	5.2	2.0	19.7	0.0	1896.9	0.2	0.0	1900.6
1	0.3	0.3	2.6	1.0	9.9	0.0	948.5	0.1	0.0	950.3
4	1.1	1.0	6.5	2.0	11.9	0.0	861.8	0.2	0.0	865.6
1	0.2	0.2	1.6	0.6	5.6	0.0	481.9	0.1	0.0	482.9
4	1.4	1.3	10.3	3.9	39.5	0.0	3793.8	0.4	0.0	3801.3
5	0.0	0.0	2.2	1.0	0.0	0.0	6.3	0.1	0.0	11.0
2	0.8	0.8	7.6	1.8	13.7	0.0	1249.8	0.2	0.0	1253.2
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
1	0.1	0.1	4.4	0.1	0.1	0.0	7.8	0.0	0.0	11.0
2	0.1	0.1	35.3	1.0	1.9	0.0	215.4	0.1	0.1	233.2
1	0.1	0.1	10.6	0.7	1.3	0.0	147.5	0.0	0.0	157.3
2	0.2	0.2	31.2	1.9	4.3	0.0	511.3	0.1	0.1	541.5
1	0.0	0.0	6.7	0.4	0.8	0.0	105.4	0.0	0.0	111.5
42.00	**10.71**	**9.85**	**170.15**	**28.40**	**214.23**	**0.25**	**#######**	**2.46**	**0.21**	**20874.76**

Month 10 Daily Emissions (lb/day)

Quantity Mo 10	PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	0.4	0.3	2.3	0.7	4.1	0.0	317.8	0.1	0.0	319.2
6	2.3	2.2	21.9	3.9	30.6	0.0	3467.4	0.3	0.0	3474.7
6	1.8	1.7	13.6	5.2	52.0	0.1	4991.9	0.5	0.0	5001.7
1	0.4	0.4	3.8	0.9	6.8	0.0	639.1	0.1	0.0	640.8
1	0.3	0.3	2.0	0.5	3.3	0.0	284.2	0.0	0.0	285.3
2	0.7	0.6	5.2	2.0	19.7	0.0	1896.9	0.2	0.0	1900.6
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	1.6	1.5	9.7	3.1	17.8	0.0	1292.7	0.3	0.0	1298.5
1	0.2	0.2	1.6	0.6	5.6	0.0	481.9	0.1	0.0	482.9
6	2.1	1.9	15.5	5.9	59.2	0.1	5690.7	0.5	0.0	5701.9
5	0.0	0.0	2.2	1.0	0.0	0.0	6.3	0.1	0.0	11.0
2	0.8	0.8	7.6	1.8	13.7	0.0	1249.8	0.2	0.0	1253.2
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
2	0.1	0.1	35.3	1.0	1.9	0.0	215.4	0.1	0.1	233.2
1	0.1	0.1	10.6	0.7	1.3	0.0	147.5	0.0	0.0	157.3
2	0.2	0.2	31.2	1.9	4.3	0.0	511.3	0.1	0.1	541.5
1	0.0	0.0	6.7	0.4	0.8	0.0	105.4	0.0	0.0	111.5
43.00	**11.23**	**10.33**	**169.28**	**29.42**	**221.29**	**0.25**	**#######**	**2.56**	**0.20**	**21413.28**

Month 11 Daily Emissions (lb/day)

Quantity Mo 11	PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	0.4	0.3	2.3	0.7	4.1	0.0	317.8	0.1	0.0	319.2
6	2.3	2.2	21.9	3.9	30.6	0.0	3467.4	0.3	0.0	3474.7
6	1.8	1.7	13.6	5.2	52.0	0.1	4991.9	0.5	0.0	5001.7
1	0.4	0.4	3.8	0.9	6.8	0.0	639.1	0.1	0.0	640.8
1	0.3	0.3	2.0	0.5	3.3	0.0	284.2	0.0	0.0	285.3
2	0.7	0.6	5.2	2.0	19.7	0.0	1896.9	0.2	0.0	1900.6
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	1.1	1.0	6.5	2.0	11.9	0.0	861.8	0.2	0.0	865.6
1	0.2	0.2	1.6	0.6	5.6	0.0	481.9	0.1	0.0	482.9
4	1.4	1.3	10.3	3.9	39.5	0.0	3793.8	0.4	0.0	3801.3
5	0.0	0.0	2.2	1.0	0.0	0.0	6.3	0.1	0.0	11.0
4	1.6	1.5	15.3	3.7	27.5	0.0	2499.5	0.3	0.0	2506.5
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
2	0.1	0.1	35.3	1.0	1.9	0.0	215.4	0.1	0.1	233.2
1	0.1	0.1	10.6	0.7	1.3	0.0	147.5	0.0	0.0	157.3
3	0.4	0.3	46.8	2.9	6.5	0.0	766.9	0.2	0.1	812.3
1	0.0	0.0	6.7	0.4	0.8	0.0	105.4	0.0	0.0	111.5
42.00	**10.92**	**10.05**	**184.13**	**29.22**	**211.52**	**0.25**	**#######**	**2.52**	**0.24**	**20603.82**

Month 12 Daily Emissions (lb/day)

Quantity Mo 12	PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	0.4	0.3	2.3	0.7	4.1	0.0	317.8	0.1	0.0	319.2
6	2.3	2.2	21.9	3.9	30.6	0.0	3467.4	0.3	0.0	3474.7
6	1.8	1.7	13.6	5.2	52.0	0.1	4991.9	0.5	0.0	5001.7
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
2	0.7	0.6	5.2	2.0	19.7	0.0	1896.9	0.2	0.0	1900.6
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.8	0.8	4.9	1.5	8.9	0.0	646.3	0.1	0.0	649.2
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	7.7	2.9	29.6	0.0	2845.4	0.3	0.0	2851.0
1	0.0	0.0	0.4	0.2	0.0	0.0	1.3	0.0	0.0	2.2
4	1.6	1.5	15.3	3.7	27.5	0.0	2499.5	0.3	0.0	2506.5
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
2	0.1	0.1	35.3	1.0	1.9	0.0	215.4	0.1	0.1	233.2
1	0.1	0.1	10.6	0.7	1.3	0.0	147.5	0.0	0.0	157.3
3	0.4	0.3	46.8	2.9	6.5	0.0	766.9	0.2	0.1	812.3
1	0.0	0.0	6.7	0.4	0.8	0.0	105.4	0.0	0.0	111.5
33.00	**9.37**	**8.62**	**170.72**	**24.94**	**182.87**	**0.21**	**17901.70**	**2.16**	**0.23**	**18019.31**

Month 13 Daily Emissions (lb/day)

Quantity Mo 13	PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	1.2	1.1	10.9	1.9	15.3	0.0	1733.7	0.2	0.0	1737.3
5	1.5	1.4	11.3	4.3	43.3	0.0	4159.9	0.4	0.0	4168.1
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
2	0.7	0.6	5.2	2.0	19.7	0.0	1896.9	0.2	0.0	1900.6
1	0.3	0.3	2.6	1.0	9.9	0.0	948.5	0.1	0.0	950.3
3	0.8	0.8	4.9	1.5	8.9	0.0	646.3	0.1	0.0	649.2
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	7.7	2.9	29.6	0.0	2845.4	0.3	0.0	2851.0
1	0.0	0.0	0.4	0.2	0.0	0.0	1.3	0.0	0.0	2.2
4	1.6	1.5	15.3	3.7	27.5	0.0	2499.5	0.3	0.0	2506.5
2	1.2	1.1	10.0	2.7	20.9	0.0	1589.3	0.2	0.0	1594.4
2	0.8	0.7	7.1	1.7	14.2	0.0	1210.1	0.2	0.0	1213.5
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.1	0.1	35.3	1.0	1.9	0.0	215.4	0.1	0.1	233.2
1	0.1	0.1	10.6	0.7	1.3	0.0	147.5	0.0	0.0	157.3
3	0.4	0.3	46.8	2.9	6.5	0.0	766.9	0.2	0.1	812.3
1	0.0	0.0	6.7	0.4	0.8	0.0	105.4	0.0	0.0	111.5
33.00	**9.79**	**9.01**	**174.77**	**26.84**	**199.72**	**0.22**	**18766.10**	**2.33**	**0.23**	**18887.32**

Month 14 Daily Emissions (lb/day)

Quantity Mo 14	PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	1.2	1.1	10.9	1.9	15.3	0.0	1733.7	0.2	0.0	1737.3
4	1.2	1.1	9.1	3.4	34.6	0.0	3327.9	0.3	0.0	3334.4
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
2	0.7	0.6	5.2	2.0	19.7	0.0	1896.9	0.2	0.0	1900.6
1	0.3	0.3	2.6	1.0	9.9	0.0	948.5	0.1	0.0	950.3
3	0.8	0.8	4.9	1.5	8.9	0.0	646.3	0.1	0.0	649.2
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.7	0.6	5.2	2.0	19.7	0.0	1896.9	0.2	0.0	1900.6
1	0.0	0.0	0.4	0.2	0.0	0.0	1.3	0.0	0.0	2.2
3	1.2	1.1	11.5	2.8	20.6	0.0	1874.6	0.2	0.0	1879.9
2	1.2	1.1	10.0	2.7	20.9	0.0	1589.3	0.2	0.0	1594.4
2	0.8	0.7	7.1	1.7	14.2	0.0	1210.1	0.2	0.0	1213.5
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.1	0.1	35.3	1.0	1.9	0.0	215.4	0.1	0.1	233.2
1	0.1	0.1	10.6	0.7	1.3	0.0	147.5	0.0	0.0	157.3
3	0.4	0.3	46.8	2.9	6.5	0.0	766.9	0.2	0.1	812.3
1	0.0	0.0	6.7	0.4	0.8	0.0	105.4	0.0	0.0	111.5
30.00	**8.73**	**8.03**	**166.11**	**24.08**	**174.32**	**0.19**	**16360.79**	**2.08**	**0.23**	**16476.77**

Month 15 Daily Emissions (lb/day)

Quantity Mo 15	PM10	PM2.5	CO	ROG	NOX	SOX	CO2	CH4	N2O	CO_2e
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	1.2	1.1	10.9	1.9	15.3	0.0	1733.7	0.2	0.0	1737.3
4	1.2	1.1	9.1	3.4	34.6	0.0	3327.9	0.3	0.0	3334.4
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
2	0.7	0.6	5.2	2.0	19.7	0.0	1896.9	0.2	0.0	1900.6
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.5	0.5	3.2	1.0	5.9	0.0	430.9	0.1	0.0	432.8
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.7	0.6	5.2	2.0	19.7	0.0	1896.9	0.2	0.0	1900.6
5	0.0	0.0	2.2	1.0	0.0	0.0	6.3	0.1	0.0	11.0
2	0.8	0.8	7.6	1.8	13.7	0.0	1249.8	0.2	0.0	1253.2
1	0.6	0.5	5.0	1.3	10.4	0.0	794.7	0.1	0.0	797.2
1	0.4	0.4	3.5	0.9	7.1	0.0	605.1	0.1	0.0	606.7
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
1	0.1	0.1	10.6	0.7	1.3	0.0	147.5	0.0	0.0	157.3
2	0.2	0.2	31.2	1.9	4.3	0.0	511.3	0.1	0.1	541.5
1	0.0	0.0	6.7	0.4	0.8	0.0	105.4	0.0	0.0	111.5
26.00	**6.51**	**5.99**	**100.50**	**18.31**	**133.07**	**0.16**	**12706.31**	**1.57**	**0.15**	**12784.36**

Short term Fugitive Dust Emissions

Maximum earth work activity occurs in month 6.

Bulldozing/Earth clearing

$E = 0.45 * G^{2.5} / H^{1.4} * 2.2046$ PM10 Emissions from bulldozing (lb/hr) from SCAQMD Table A9-9-F

7.5 G = Silt content (%) (from Table A9-9-F-1 for overburden)

15 H = Moisture content of surface material (%) (from Table A9-9-F-2 for moist dirt)

0.46 lb/hr of PM10

Equipment	Quantity	Hours/Day	Watering Control Efficiency	PM10 Emissions (lb/hr)	PM10 Emissions (lb/day)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (lb/day)
Scraper	2	7.2	85%	0.14	0.99	0.03	0.21
Dozer	2	6.1	85%	0.14	0.84	0.03	0.18
Grader	3	6.5	85%	0.21	1.35	0.04	0.28
			Total	**0.48**	**3.18**	**0.10**	**0.66**

22 construction days per month

8 Total months of soil movement

10 construction hours per day

Water efficiency from CEQA Table 11-4 watering 3 times daily or using chemical suppressants

Dirt Piling or Material Handling

$E = 0.00112 * (G/5)^{1.3} / (H/2)^{1.4}$ PM10 Emissions from Dirt Piling or Material Handling (lb/hr) from SCAQMD Table A9-9-G

12 G = Mean Wind speed (mph) default

15 H = Moisture content of surface material (%) (from Table A9-9-G-1 for moist dirt)

0.00021 lb/ton of PM10

Equipment	Quantity	Hours/Day	Material Handled (ton/day)	Material Handled (ton)	Watering Control Efficiency	PM10 Emissions (lb/hr)	PM10 Emissions (lb/day)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (lb/day)
Wheeled Loader	1	5.4	22264	7,836,800	85%	0.1287	0.6952	0.0268	0.1446
Excavator	1	5.7	15585	7,836,800	85%	0.0854	0.4866	0.0178	0.1012
Backhoe	1	5.5	6679	7,836,800	85%	0.0379	0.2086	0.0079	0.0434
Dump Trucks	1	5.7	44527	7,836,800	85%	0.2439	1.3904	0.0507	0.2892
					Total	**0.4959**	**2.7807**	**0.1032**	**0.5784**

Water efficiency from CEQA Table 11-4 watering 3 times daily or using chemical suppressants

Assume Loader moves 50% of dirt, Excavator moves 35% and Backhoe moves 15%

35227 yd3/day 44527 ton/day

6,200,000 yd3 7,836,800 tons 2528 density of soil (lb/yd3)

Client supplied volume of cut/fill. (USDA NRCS Physical Soil Properties from Fresno County fro Mugatu Fine Sandy Loam soil 0-30% slopes)

Cover Storage Pile

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

7.5 G = Silt content (%) (from Table A9-9-E-1 for overburden)

37 H = Mean number of days per year with at least 0.01 inches of precipitation (from WRCC for Coalinga COOP Station)

5 I = Percentage of time that the unobstructed wind speed exceeds 12 mph at mean pile height

0.5 J = Fraction of TSP that is PM10 = 0.5

1.977 lb/acre/day

wind speed percentage based on 2000-04 (5 yrs) of wind speed data (actual hours > 10 knots) as recorded at Coalinga Airport

Source	Quantity	Size of Pile (acre)	Hours/Day	Watering Control Efficiency	PM10 Emissions (lb/hr)	PM10 Emissions (lb/day)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (lb/day)
Cover Storage Pile	5	1	24	85%	0.06	1.48	0.013	0.308

Water efficiency from CEQA Table 11-4 watering 3 times daily or using chemical suppressants

pile size assumed

Travel on unpaved road

$F = 2.1 * G/12 * H/30 * (J/3)^{0.7} * (I/4)^{0.5} * (365-K)/365$ SCAQMD Table A9-9-D

Emission factor for vehicle travel on unpaved roads (lb/VMT)

16 G = Surface silt loading (%) (value for farm road)

5 H = Mean vehicle speed (mph)

value listed in table I = Mean number of wheels on vehicle

value listed in table J = Mean vehicle weight (ton)

37 K = Mean number of days per year with at least 0.01 inches of precipitation (from WRCC for Coalinga COOP Station)

Vehicle Type	No. Of Unit	Round Trips /Day/ Unit	Round Trip Distance (mile)	Daily VMT (all units)	Mean Vehicle Weight (tons)	Number of Wheels on Vehicle	PM10 EF (lbs/VMT)	Watering Control Efficiency	PM10 Emissions (lb/hr)	PM10 Emissions (lb/day)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (lb/day)
Augers	6	6	0.75	27.0	13	10	1.85	85%	0.75	7.50	0.16	1.59
Cement Trucks	7	2	0.5	7.0	30	10	3.32	85%	0.35	3.49	0.07	0.74
Water Truck	3	4	2.5	30.0	25	10	2.93	85%	1.32	13.16	0.28	2.79
Crane (20 Ton)	1	1	0.1	0.1	40	10	4.06	85%	0.01	0.06	0.00	0.01
Crane (90 Ton)	1	1	0.1	0.1	75	10	6.31	85%	0.01	0.09	0.00	0.02
Boom Truck	2	5	0.75	7.5	13	10	1.85	85%	0.21	2.08	0.04	0.44
ATVs	5	9	1.25	56.3	0.5	4	0.12	85%	0.10	1.01	0.02	0.21
Pick Up trucks (1/2 ton)	2	9	1.25	22.5	1	4	0.19	85%	0.07	0.66	0.01	0.14
Pavers	0	1	0.5	0.0	15	4	1.29	85%	0.00	0.00	0.00	0.00
Rollers	0	4	0.5	0.0	8	4	0.83	85%	0.00	0.00	0.00	0.00
Forklift	2	6	0.5	6.0	10	4	0.97	85%	0.09	0.88	0.02	0.19
Welder	1	1	0.001	0.0	0.5	2	0.08	85%	0.00	0.00	0.00	0.00
Generator	1	1	0.001	0.0	0.5	2	0.08	85%	0.00	0.00	0.00	0.00
Aerial Lift	1	2	0.5	1.0	11	4	1.04	85%	0.02	0.16	0.00	0.03
worker personal vehicles	104	1	0.6	62.4	0.5	4	0.12	85%	0.11	1.12	0.02	0.24
Delivery Truck	17	1	0.6	10.2	13	6.0	1.43	85%	0.22	2.19	0.05	0.46
								Total	**3.24**	**32.40**	**0.69**	**6.87**

Assumed maximum travel speed is 5 mph

Equipment weight from SCAQMD Table A9-9-D-3 and various websites

Water efficiency from CEQA Table 11-4 watering 3 times daily or using chemical suppressants

PM2.5 emission factors from updated CEIDARS List with PM2.5 fractions.

PM2.5 numbers obtained by multiplying the PM10 values by fraction in CEIDARS list for appropriate fugitive dust sources.

Water trucks operate at least 4 times per day.

Model Input:

Emission location	Activity	Q1 Total MODEL EMISSION RATE (lb/hr) PM10 24hr	Q1 PM2.5 24hr	Main Total MODEL EMISSION RATE (lb/hr) PM10 24hr	Main PM2.5 24hr
Various	excavation	0.235	0.049	0.026	0.005
	Travel	1.025	0.217	0.114	0.024
	TOTAL	1.260	0.266	0.140	0.030

Location	X (m)	Y (m)	AREA (m2)	percent of total area
Q1DUST	750	600	450000	0.316
Q2DUST	750	600	450000	0.316
Q3DUST	750	600	450000	0.316
MAINDUST	500	100	50000	0.035
PONDDUST	100	75	7500	0.005
WATERDUST	150	100	15000	0.011
Total Construction Area			1422500	1.000

	Q2 Total MODEL EMISSION RATE (lb/hr) PM10 24hr	Q2 PM2.5 24hr	Evaporation Pond Total MODEL EMISSION RATE (lb/hr) PM10 24hr	Evaporation Pond PM2.5 24hr
	0.235	0.049	0.004	0.001
	1.025	0.217	0.017	0.004
TOTAL	1.260	0.266	0.021	0.004

	PM10 lb/hr	PM2.5 lb/hr
travel dust	3.24	0.69

	Q3 Total MODEL EMISSION RATE (lb/hr) PM10 24hr	Q3 PM2.5 24hr	Water Treatment Total MODEL EMISSION RATE (lb/hr) PM10 24hr	Water Treatment PM2.5 24hr
	0.235	0.049	0.008	0.002
	1.025	0.217	0.034	0.007
TOTAL	1.260	0.266	0.042	0.009

CY	Equipment	Fuel	MaxHP	Class	C/R	County	Population	Activity	Consumption	PM Exhaust	CO Exhaust	ROG Exhaust	NOX Exhaust	SO2 Exhaust	CO2 Exhaust	CH4 Exhaust	N2O Exhaust	Exhaust / Activity (ton/hr) PM Exhaust/Activity	CO Exhaust/ Activity	ROG Exhaust/ Activity	NOX Exhaust/ Activity	SO2 Exhaust/ Activity	CO2 Exhaust/ Activity	CH4 Exhaust/ Activity	N2O Exhaust/ Activity
2009	Off-Road Motorcycles Inactive	G2	15	Recreation	U	Fresno	1.07E+02	3.89E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2009	Off-Road Motorcycles Inactive	G2	25	Recreation	U	Fresno	9.18E+01	3.35E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2009	Off-Road Motorcycles Inactive	G2	50	Recreation	U	Fresno	7.47E+02	2.73E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2009	Off-Road Motorcycles Inactive	G2	120	Recreation	U	Fresno	3.57E+02	1.30E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2009	Snowmobiles Inactive	G2	25	Recreation	U	Fresno	1.82E+01	2.82E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2009	Snowmobiles Inactive	G2	50	Recreation	U	Fresno	8.57E+01	1.33E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2009	Snowmobiles Inactive	G2	120	Recreation	U	Fresno	1.56E+02	2.42E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2009	All Terrain Vehicles (ATVs) Inactive	G2	15	Recreation	U	Fresno	2.32E+02	8.48E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2009	All Terrain Vehicles (ATVs) Inactive	G2	25	Recreation	U	Fresno	1.51E+02	5.52E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2009	All Terrain Vehicles (ATVs) Inactive	G2	50	Recreation	U	Fresno	1.99E+02	7.26E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2009	Off-Road Motorcycles Inactive	G4	15	Recreation	U	Fresno	2.08E+02	7.59E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2009	Off-Road Motorcycles Inactive	G4	25	Recreation	U	Fresno	3.36E+02	1.22E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2009	Off-Road Motorcycles Inactive	G4	50	Recreation	U	Fresno	3.50E+02	1.28E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2009	All Terrain Vehicles (ATVs) Inactive	G4	15	Recreation	U	Fresno	1.90E+02	6.92E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2009	All Terrain Vehicles (ATVs) Inactive	G4	25	Recreation	U	Fresno	2.64E+03	9.62E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2009	All Terrain Vehicles (ATVs) Inactive	G4	50	Recreation	U	Fresno	1.19E+02	4.34E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2009	Off-Road Motorcycles Active	G2	15	Recreation	U	Fresno	2.66E+02	9.72E+02	3.68E+01	4.50E-04	5.80E-02	3.71E-02	1.12E-05	9.97E-05	1.23E-01	2.31E-03	4.16E-05	4.63E-07	5.96E-05	3.82E-05	1.16E-08	1.03E-07	1.27E-04	2.37E-06	4.28E-08
2009	Off-Road Motorcycles Active	G2	25	Recreation	U	Fresno	2.29E+02	8.36E+02	3.17E+01	3.87E-04	4.99E-02	3.19E-02	9.67E-06	1.60E-04	1.06E-01	1.98E-03	3.58E-05	4.63E-07	5.96E-05	3.82E-05	1.16E-08	1.91E-07	1.27E-04	2.37E-06	4.28E-08
2009	Off-Road Motorcycles Active	G2	50	Recreation	U	Fresno	1.87E+03	6.81E+03	2.58E+02	3.15E-03	4.06E-01	2.60E-01	7.87E-05	2.06E-03	8.62E-01	1.61E-02	2.91E-04	4.63E-07	5.96E-05	3.82E-05	1.16E-08	3.03E-07	1.27E-04	2.37E-06	4.28E-08
2009	Off-Road Motorcycles Active	G2	120	Recreation	U	Fresno	8.92E+02	3.26E+03	1.23E+02	1.51E-03	1.94E-01	1.24E-01	3.76E-05	1.45E-03	4.12E-01	7.72E-03	1.39E-04	4.63E-07	5.96E-05	3.82E-05	1.16E-08	4.47E-07	1.27E-04	2.37E-06	4.28E-08
2009	Snowmobiles Active	G2	25	Recreation	U	Fresno	5.22E+01	8.11E+00	9.50E+00	2.23E-04	2.20E-02	8.14E-03	1.18E-04	4.55E-07	2.61E-02	5.06E-04	1.55E-05	2.75E-05	2.71E-03	1.00E-03	1.46E-05	5.61E-08	3.22E-03	6.24E-05	1.91E-06
2009	Snowmobiles Active	G2	50	Recreation	U	Fresno	2.46E+02	3.82E+01	8.51E+01	2.00E-03	1.97E-01	7.29E-02	1.06E-03	4.07E-06	2.34E-01	4.53E-03	1.03E-04	5.23E-05	5.15E-03	1.91E-03	2.77E-05	1.07E-07	6.12E-03	1.19E-04	2.69E-06
2009	Snowmobiles Active	G2	120	Recreation	U	Fresno	4.48E+02	6.95E+01	2.29E+02	5.66E-03	5.07E-01	1.80E-01	4.46E-03	1.27E-05	7.27E-01	1.12E-02	2.95E-04	8.14E-05	7.29E-03	2.59E-03	6.42E-05	1.82E-07	1.05E-02	1.61E-04	4.24E-06
2009	All Terrain Vehicles (ATVs) Active	G2	15	Recreation	U	Fresno	7.65E+02	2.79E+03	1.06E+02	1.29E-03	1.67E-01	1.07E-01	3.23E-05	3.53E-04	3.54E-01	6.62E-03	1.19E-04	4.63E-07	5.96E-05	3.82E-05	1.16E-08	1.26E-07	1.27E-04	2.37E-06	4.28E-08
2009	All Terrain Vehicles (ATVs) Active	G2	25	Recreation	U	Fresno	4.98E+02	1.82E+03	6.89E+01	8.42E-04	1.08E-01	6.94E-02	2.10E-05	3.14E-04	2.30E-01	4.31E-03	7.78E-05	4.63E-07	5.96E-05	3.82E-05	1.16E-08	1.73E-07	1.27E-04	2.37E-06	4.28E-08
2009	All Terrain Vehicles (ATVs) Active	G2	50	Recreation	U	Fresno	6.56E+02	2.39E+03	9.07E+01	1.11E-03	1.43E-01	9.13E-02	2.77E-05	5.43E-04	3.03E-01	5.67E-03	1.02E-04	4.63E-07	5.96E-05	3.82E-05	1.16E-08	2.27E-07	1.27E-04	2.37E-06	4.28E-08
2009	Golf Carts	G2	15	Recreation	U	Fresno	6.14E-01	1.83E+00	8.16E-01	1.67E-06	2.51E-03	9.11E-05	2.49E-05	1.48E-07	3.59E-03	5.66E-06	3.40E-06	9.13E-07	1.37E-03	4.97E-05	1.36E-05	8.07E-08	1.96E-03	3.09E-06	1.86E-06
2009	Specialty Vehicles Carts	G2	15	Recreation	U	Fresno	1.21E+03	2.17E+02	7.99E+01	1.57E-04	2.18E-01	3.04E-03	2.31E-03	1.72E-05	4.17E-01	1.89E-04	3.52E-04	7.22E-07	1.01E-03	1.40E-05	1.07E-05	7.92E-08	1.92E-03	8.72E-07	1.62E-06
2009	Tampers/Rammers	G2	15	Constructio	U	Fresno	7.91E+01	4.53E+01	9.15E+00	3.96E-04	2.47E-02	5.78E-04	4.41E-04	1.94E-06	4.72E-02	3.59E-05	7.04E-05	8.73E-06	5.46E-04	1.28E-05	9.74E-06	4.29E-08	1.04E-03	7.93E-07	1.55E-06
2009	Plate Compactors	G2	15	Constructio	U	Fresno	6.79E+00	4.40E+00	8.87E-01	3.84E-05	2.40E-03	5.58E-05	4.29E-05	1.89E-07	4.58E-03	3.47E-06	6.84E-06	8.73E-06	5.45E-04	1.27E-05	9.74E-06	4.29E-08	1.04E-03	7.88E-07	1.55E-06
2009	Other General Industrial Equipmen	G2	15	Industrial E	U	Fresno	1.10E+00	1.30E+00	5.11E-01	1.24E-06	1.39E-03	2.42E-05	1.82E-05	1.09E-07	2.66E-03	1.50E-06	2.44E-06	9.52E-07	1.07E-03	1.86E-05	1.40E-05	8.42E-08	2.04E-03	1.16E-06	1.88E-06
2009	Generator Sets	G2	2	Light Comr	C	Fresno	4.88E+01	1.40E+01	9.98E-01	2.03E-05	2.44E-03	3.43E-04	3.58E-05	1.85E-07	4.49E-03	2.13E-05	1.04E-05	1.45E-06	1.75E-04	2.46E-05	2.56E-06	1.33E-08	3.22E-04	1.53E-06	7.47E-07
2009	Generator Sets	G2	2	Light Comr	R	Fresno	3.83E+01	7.38E+00	5.76E-01	1.23E-05	1.44E-03	2.43E-04	1.81E-05	9.78E-08	2.37E-03	1.51E-05	5.35E-06	1.67E-06	1.95E-04	3.30E-05	2.46E-06	1.33E-08	3.22E-04	2.05E-06	7.26E-07
2009	Generator Sets	G2	15	Light Comr	C	Fresno	4.92E-01	1.41E-01	8.37E-02	3.13E-07	2.33E-04	8.91E-06	3.26E-06	1.68E-08	4.08E-04	5.54E-07	3.44E-07	2.22E-06	1.65E-03	6.33E-05	2.31E-05	1.19E-07	2.90E-03	3.93E-06	2.44E-06
2009	Generator Sets	G2	15	Light Comr	R	Fresno	3.75E-01	7.21E-02	4.74E-02	4.40E-07	1.30E-04	1.15E-05	1.48E-06	8.61E-09	2.09E-04	7.16E-07	1.62E-07	6.09E-06	1.80E-03	1.60E-04	2.06E-05	1.19E-07	2.90E-03	9.93E-06	2.25E-06
2009	Pumps	G2	2	Light Comr	C	Fresno	1.94E+02	1.07E+02	6.14E+00	1.26E-04	1.28E-02	1.16E-03	3.03E-04	1.43E-06	3.48E-02	7.20E-05	8.48E-05	1.18E-06	1.20E-04	1.09E-05	2.84E-06	1.35E-08	3.27E-04	6.75E-07	7.96E-07
2009	Pumps	G2	2	Light Comr	R	Fresno	1.52E+02	5.63E+01	3.93E+00	7.94E-05	9.44E-03	1.24E-03	1.48E-04	7.57E-07	1.84E-02	7.70E-05	4.28E-05	1.41E-06	1.68E-04	2.20E-05	2.63E-06	1.35E-08	3.27E-04	1.37E-06	7.60E-07
2009	Pumps	G2	15	Light Comr	C	Fresno	5.23E+01	2.87E+01	1.49E+01	6.29E-04	4.09E-02	1.11E-03	6.93E-04	3.09E-06	7.51E-02	6.88E-05	7.23E-05	2.19E-05	1.42E-03	3.85E-05	2.41E-05	1.08E-07	2.61E-03	2.39E-06	2.52E-06
2009	Pumps	G2	15	Light Comr	R	Fresno	4.11E+01	1.52E+01	8.51E+00	3.32E-04	2.36E-02	1.43E-03	3.29E-04	1.63E-06	3.97E-02	8.88E-05	3.56E-05	2.19E-05	1.55E-03	9.41E-05	2.17E-05	1.08E-07	2.61E-03	5.85E-06	2.35E-06
2009	Pumps	G2	25	Light Comr	C	Fresno	6.33E-01	3.48E-01	3.86E-01	1.62E-05	1.08E-03	2.59E-05	1.68E-05	7.95E-08	1.93E-03	1.61E-06	1.27E-06	4.65E-05	3.11E-03	7.46E-05	4.83E-05	2.29E-07	5.55E-03	4.64E-06	3.65E-06
2009	Pumps	G2	25	Light Comr	R	Fresno	4.92E-01	1.82E-01	2.09E-01	8.46E-06	5.91E-04	2.08E-05	8.12E-06	4.16E-08	1.01E-03	1.29E-06	6.32E-07	4.65E-05	3.25E-03	1.14E-04	4.46E-05	2.29E-07	5.55E-03	7.10E-06	3.48E-06
2009	Off-Road Motorcycles Active	G4	15	Recreation	U	Fresno	5.19E+02	1.90E+03	3.49E+01	1.25E-04	5.58E-02	2.45E-03	1.11E-03	1.94E-04	2.40E-01	1.42E-04	6.46E-04	6.61E-08	2.95E-05	1.30E-06	5.88E-07	1.03E-07	1.27E-04	7.49E-08	3.41E-07
2009	Off-Road Motorcycles Active	G4	25	Recreation	U	Fresno	8.38E+02	3.06E+03	5.64E+01	2.02E-04	9.01E-02	3.96E-03	1.80E-03	5.85E-04	3.87E-01	2.29E-04	1.04E-03	6.61E-08	2.95E-05	1.30E-06	5.88E-07	1.91E-07	1.27E-04	7.49E-08	3.41E-07
2009	Off-Road Motorcycles Active	G4	50	Recreation	U	Fresno	8.73E+02	3.19E+03	5.87E+01	2.11E-04	9.38E-02	4.13E-03	1.87E-03	9.66E-04	4.03E-01	2.39E-04	1.09E-03	6.61E-08	2.95E-05	1.30E-06	5.88E-07	3.03E-07	1.27E-04	7.49E-08	3.41E-07
2009	All Terrain Vehicles (ATVs) Active	G4	15	Recreation	U	Fresno	6.24E+02	2.28E+03	4.24E+01	1.51E-04	6.89E-02	3.11E-03	1.75E-03	2.88E-04	2.89E-01	1.80E-04	8.96E-04	6.61E-08	3.02E-05	1.36E-06	7.68E-07	1.26E-07	1.27E-04	7.89E-08	3.93E-07
2009	All Terrain Vehicles (ATVs) Active	G4	25	Recreation	U	Fresno	8.69E+03	3.17E+04	5.89E+02	2.10E-03	9.59E-01	4.32E-02	2.44E-02	5.48E-03	4.02E+00	2.50E-03	1.25E-02	6.61E-08	3.02E-05	1.36E-06	7.68E-07	1.73E-07	1.27E-04	7.89E-08	3.93E-07
2009	All Terrain Vehicles (ATVs) Active	G4	50	Recreation	U	Fresno	3.92E+02	1.43E+03	2.66E+01	9.46E-05	4.33E-02	1.95E-03	1.10E-03	3.24E-04	1.81E-01	1.13E-04	5.62E-04	6.61E-08	3.02E-05	1.36E-06	7.68E-07	2.27E-07	1.27E-04	7.89E-08	3.93E-07
2009	Minibikes	G4	5	Recreation	U	Fresno	1.89E+02	7.05E+01	1.53E+01	2.76E-04	6.40E-02	1.00E-02	2.53E-04	2.86E-06	8.93E-03	5.85E-04	6.32E-05	3.91E-06	9.07E-04	1.42E-04	3.58E-06	4.05E-08	1.27E-04	8.29E-06	8.96E-07
2009	Golf Carts	G4	15	Recreation	U	Fresno	4.81E-01	1.43E+00	7.03E-01	1.57E-06	2.28E-03	1.06E-04	2.02E-05	8.00E-08	2.81E-03	6.13E-06	2.66E-06	1.10E-06	1.59E-03	7.38E-05	1.41E-05	5.59E-08	1.96E-03	4.28E-06	1.86E-06
2009	Specialty Vehicles Carts	G4	5	Recreation	U	Fresno	3.75E+01	6.71E+00	1.75E+00	2.18E-05	4.55E-03	1.30E-04	3.33E-05	3.18E-07	9.22E-03	7.60E-06	7.10E-06	3.25E-06	6.77E-04	1.94E-05	4.97E-06	4.74E-08	1.37E-03	1.13E-06	1.06E-06
2009	Specialty Vehicles Carts	G4	15	Recreation	U	Fresno	5.08E+02	9.10E+01	3.49E+01	6.57E-05	9.96E-02	1.36E-03	1.00E-03	4.99E-06	1.75E-01	7.94E-05	1.48E-04	7.22E-07	1.09E-03	1.50E-05	1.10E-05	5.48E-08	1.92E-03	8.72E-07	1.62E-06
2009	Specialty Vehicles Carts	G4	25	Recreation	U	Fresno	2.79E+02	5.00E+01	5.35E+01	9.81E-05	1.58E-01	2.10E-03	1.42E-03	6.61E-06	2.61E-01	1.22E-04	1.35E-04	1.96E-06	3.15E-03	4.20E-05	2.84E-05	1.32E-07	5.22E-03	2.44E-06	2.69E-06
2009	Asphalt Pavers	G4	15	Constructio	U	Fresno	1.73E+00	2.15E+00	1.22E+00	5.07E-05	3.44E-03	9.15E-05	6.81E-05	1.72E-07	6.05E-03	5.33E-06	6.15E-06	2.36E-05	1.60E-03	4.25E-05	3.16E-05	8.02E-08	2.81E-03	2.48E-06	2.86E-06
2009	Asphalt Pavers	G4	25	Constructio	U	Fresno	2.95E+00	3.68E+00	5.27E+00	2.12E-04	1.53E-02	4.04E-04	2.63E-04	6.41E-07	2.53E-02	2.35E-05	1.63E-05	5.76E-05	4.16E-03	1.10E-04	7.15E-05	1.74E-07	6.87E-03	6.39E-06	4.42E-06
2009	Asphalt Pavers	G4	50	Constructio	U	Fresno	1.54E+00	1.90E+00	4.41E+00	2.65E-06	4.59E-03	1.88E-04	2.87E-04	4.21E-07	3.46E-02	1.10E-05	1.20E-05	1.40E-06	2.42E-03	9.90E-05	1.51E-04	2.22E-07	1.82E-02	5.77E-06	6.31E-06
2009	Asphalt Pavers	G4	120	Constructio	U	Fresno	8.45E-01	1.04E+00	4.11E+00	2.78E-06	2.12E-03	1.33E-04	4.25E-04	3.46E-07	3.59E-02	7.73E-06	1.09E-05	2.66E-06	2.03E-03	1.27E-04	4.07E-04	3.32E-07	3.44E-02	7.41E-06	1.04E-05
2009	Tampers/Rammers	G4	15	Constructio	U	Fresno	3.65E+00	2.09E+00	1.02E+00	4.10E-05	2.93E-03	8.61E-05	5.19E-05	1.40E-07	4.90E-03	5.02E-06	5.24E-06	1.96E-05	1.40E-03	4.12E-05	2.48E-05	6.68E-08	2.34E-03	2.40E-06	2.51E-06
2009	Plate Compactors	G4	5	Constructio	U	Fresno	1.34E+02	7.59E+01	1.36E+01	2.58E-05	2.85E-02	1.89E-03	8.52E-04	2.73E-06	7.91E-02	1.10E-04	1.25E-04	3.40E-07	3.76E-04	2.49E-05	1.12E-05	3.60E-08	1.04E-03	1.45E-06	1.65E-06
2009	Plate Compactors	G4	15	Constructio	U	Fresno	1.42E+02	9.22E+01	3.95E+01	1.61E-03	1.13E-01	3.19E-03	2.07E-03	5.47E-06	1.92E-01	1.86E-04	2.19E-04	1.75E-05	1.22E-03	3.46E-05	2.25E-05	5.94E-08	2.08E-03	2.02E-06	2.38E-06
2009	Rollers	G4	5	Constructio	U	Fresno	1.49E+01	3.90E+00	1.04E+00	1.87E-06	2.43E-03	1.23E-04	5.55E-05	1.98E-07	5.72E-03	7.16E-06	7.28E-06	4.78E-07	6.24E-04	3.15E-05	1.42E-05	5.07E-08	1.47E-03	1.84E-06	1.87E-06
2009	Rollers	G4	15	Constructio	U	Fresno	2.42E+01	2.36E+01	1.26E+01	5.22E-04	3.54E-02	9.32E-04	6.94E-04	1.78E-06	6.23E-02	5.43E-05	6.49E-05	2.21E-05	1.50E-03	3.96E-05	2.94E-05	7.53E-08	2.64E-03	2.30E-06	2.75E-06
2009	Rollers	G4	25	Constructio	U	Fresno	1.63E+01	1.59E+01	1.85E+01	7.44E-04	5.36E-02	1.40E-03	9.14E-04	2.25E-06	8.87E-02	8.18E-05	6.26E-05	4.67E-05	3.37E-03	8.82E-05	5.75E-05	1.41E-07	5.58E-03	5.14E-06	3.93E-06
2009	Rollers	G4	50	Constructio	U	Fresno	1.08E+00	2.12E+00	5.51E+00	3.21E-06	6.46E-03	2.69E-04	3.49E-04	5.10E-07	4.20E-02	1.57E-05	1.41E-05	1.52E-06	3.05E-03	1.27E-04	1.65E-04	2.41E-07	1.98E-02	7.39E-06	6.63E-06
2009	Rollers	G4	120	Constructio	U	Fresno	2.04E+00	3.98E+00	1.84E+01	1.22E-05	1.07E-02	6.90E-04	1.84E-03	1.53E-06	1.58E-01	4.01E-05	4.45E-05	3.08E-06	2.70E-03	1.73E-04	4.63E-04	3.84E-07	3.97E-02	1.01E-05	1.12E-05
2009	Paving Equipment	G4	5	Constructio	U	Fresno	1.88E+02	1.00E+02	1.93E+01	3.66E-05	4.10E-02	2.66E-03	1.20E-03	3.87E-06	1.12E-01	1.55E-04	1.71E-04	3.64E-07	4.08E-04	2.65E-05	1.20E-05	3.86E-08	1.12E-03	1.54E-06	1.70E-06
2009	Paving Equipment	G4	15	Constructio	U	Fresno	3.17E+02	2.00E+02	1.15E+02	4.68E-03	3.28E-01	9.26E-03	6.01E-03	1.59E-05	5.58E-01	5.40E-04	5.55E-04	2.34E-05	1.64E-03	4.64E-05	3.01E-05	7.96E-08	2.79E-03	2.70E-06	2.78E-06
2009	Paving Equipment	G4	25	Constructio	U	Fresno	7.05E+00	4.44E+00	5.75E+00	2.29E-04	1.68E-02	4.62E-04	2.70E-04	6.91E-07	2.73E-02	2.69E-05	1.79E-05	5.15E-05	3.79E-03	1.04E-04	6.08E-05	1.56E-07	6.14E-03	6.07E-06	4.04E-06
2009	Paving Equipment	G4	50	Constructio	U	Fresno	4.21E+00	2.32E+00	5.34E+00	3.34E-06	4.58E-03	1.68E-04	3.03E-04	5.31E-07	4.37E-02	9.76E-06	1.32E-05	1.44E-06	1.98E-03	7.23E-05	1.31E-04	2.29E-07	1.88E-02	4.21E-06	5.69E-06
2009	Paving Equipment	G4	120	Constructio	U	Fresno	1.08E+00	5.97E-01	2.22E+00	1.54E-06	8.82E-04	5.06E-05	1.95E-04	1.92E-07	1.98E-02	2.95E-06	5.31E-06	2.58E-06	1.48E-03	8.48E-05	3.26E-04	3.21E-07	3.32E-02	4.94E-06	8.89E-06

2009	Surfacing Equipment	G4	5	Constructic	U	Fresno	3.44E+01	2.17E+01	4.28E+00	8.20E-06	8.84E-03	6.09E-04	2.75E-04	8.68E-07	2.51E-02	3.55E-05	3.81E-05	3.78E-07	4.08E-04	2.81E-05	1.27E-05	4.00E-08	1.16E-03	1.64E-06	1.76E-06
2009	Surfacing Equipment	G4	15	Constructic	U	Fresno	1.02E+02	1.62E+02	6.09E+01	2.52E-03	1.71E-01	4.73E-03	3.52E-03	8.57E-06	3.01E-01	2.75E-04	3.79E-04	1.56E-05	1.06E-03	2.92E-05	2.17E-05	5.29E-08	1.86E-03	1.70E-06	2.34E-06
2009	Surfacing Equipment	G4	25	Constructic	U	Fresno	1.40E+00	2.22E+00	2.04E+00	8.19E-05	5.91E-03	1.62E-04	1.06E-04	2.48E-07	9.77E-03	9.44E-06	7.89E-06	3.69E-05	2.67E-03	7.32E-05	4.77E-05	1.12E-07	4.41E-03	4.26E-06	3.56E-06
2009	Signal Boards	G4	5	Constructic	U	Fresno	4.25E-01	1.74E-01	5.56E-02	1.02E-07	1.25E-04	7.01E-06	3.17E-06	1.08E-08	3.13E-04	4.09E-07	3.70E-07	5.86E-07	7.20E-04	4.03E-05	1.82E-05	6.21E-08	1.80E-03	2.35E-06	2.13E-06
2009	Signal Boards	G4	15	Constructic	U	Fresno	3.03E+00	2.71E+00	1.57E+00	6.53E-05	4.43E-03	1.16E-04	8.62E-05	2.22E-07	7.79E-03	6.75E-06	7.77E-06	2.41E-05	1.64E-03	4.28E-05	3.19E-05	8.21E-08	2.88E-03	2.49E-06	2.87E-06
2009	Trenchers	G4	15	Constructic	U	Fresno	2.80E+01	3.82E+01	2.42E+01	1.00E-03	6.80E-02	1.83E-03	1.36E-03	3.41E-06	1.19E-01	1.07E-04	1.17E-04	2.62E-05	1.78E-03	4.79E-05	3.57E-05	8.91E-08	3.12E-03	2.79E-06	3.05E-06
2009	Trenchers	G4	25	Constructic	U	Fresno	2.17E+01	2.96E+01	4.05E+01	1.63E-03	1.18E-01	3.15E-03	2.05E-03	4.93E-06	1.94E-01	1.83E-04	1.29E-04	5.50E-05	3.97E-03	1.06E-04	6.92E-05	1.66E-07	6.56E-03	6.19E-06	4.34E-06
2009	Trenchers	G4	50	Constructic	U	Fresno	9.86E+00	1.25E+01	2.72E+01	1.63E-05	2.84E-02	1.15E-03	1.71E-03	2.59E-06	2.13E-01	6.71E-05	7.47E-05	1.31E-06	2.28E-03	9.23E-05	1.37E-04	2.08E-07	1.71E-02	5.38E-06	5.99E-06
2009	Trenchers	G4	120	Constructic	U	Fresno	3.27E+00	4.14E+00	1.77E+01	1.19E-05	9.04E-03	5.65E-04	1.76E-03	1.49E-06	1.54E-01	3.29E-05	4.41E-05	2.88E-06	2.18E-03	1.36E-04	4.25E-04	3.59E-07	3.72E-02	7.94E-06	1.06E-05
2009	Bore/Drill Rigs	G4	15	Constructic	U	Fresno	8.00E-01	3.12E-01	2.43E-01	9.78E-06	6.98E-04	1.99E-05	1.19E-05	3.33E-08	1.17E-03	1.16E-06	9.85E-07	3.13E-05	2.23E-03	6.39E-05	3.82E-05	1.07E-07	3.74E-03	3.72E-06	3.15E-06
2009	Bore/Drill Rigs	G4	25	Constructic	U	Fresno	3.98E+00	1.55E+00	2.21E+00	8.75E-05	6.51E-03	1.79E-04	9.77E-05	2.65E-07	1.04E-02	1.04E-05	6.38E-06	5.64E-05	4.19E-03	1.15E-04	6.29E-05	1.71E-07	6.73E-03	6.71E-06	4.11E-06
2009	Bore/Drill Rigs	G4	50	Constructic	U	Fresno	4.77E-01	1.61E-01	4.29E-01	2.69E-07	3.69E-04	1.42E-05	2.69E-05	4.26E-08	3.51E-03	8.26E-07	1.06E-06	1.67E-06	2.30E-03	8.82E-05	1.67E-04	2.65E-07	2.18E-02	5.14E-06	6.58E-06
2009	Bore/Drill Rigs	G4	120	Constructic	U	Fresno	2.19E+00	7.37E-01	4.91E+00	3.39E-06	2.03E-03	1.20E-04	4.86E-04	4.23E-07	4.38E-02	6.97E-06	9.86E-06	4.60E-06	2.75E-03	1.62E-04	6.60E-04	5.73E-07	5.94E-02	9.45E-06	1.34E-05
2009	Bore/Drill Rigs	G4	175	Constructic	U	Fresno	5.42E-01	1.83E-01	1.65E+00	1.20E-06	4.55E-04	2.38E-05	1.90E-04	1.50E-07	1.51E-02	1.39E-06	3.11E-06	6.58E-06	2.49E-03	1.30E-04	1.04E-03	8.21E-07	8.26E-02	7.59E-06	1.70E-05
2009	Concrete/Industrial Saws	G4	5	Constructic	U	Fresno	1.47E+01	6.01E+00	1.58E+00	2.89E-06	3.55E-03	1.99E-04	8.98E-05	3.06E-07	8.87E-03	1.16E-05	1.15E-05	4.81E-07	5.91E-04	3.31E-05	1.49E-05	5.10E-08	1.48E-03	1.93E-06	1.92E-06
2009	Concrete/Industrial Saws	G4	15	Constructic	U	Fresno	6.60E+01	6.44E+01	4.33E+01	1.79E-03	1.22E-01	3.21E-03	2.39E-03	6.10E-06	2.14E-01	1.87E-04	2.00E-04	2.79E-05	1.89E-03	4.98E-05	3.70E-05	9.48E-08	3.32E-03	2.90E-06	3.11E-06
2009	Concrete/Industrial Saws	G4	25	Constructic	U	Fresno	2.07E+01	2.02E+01	2.63E+01	1.06E-03	7.64E-02	2.00E-03	1.30E-03	3.21E-06	1.27E-01	1.17E-04	8.44E-05	5.26E-05	3.79E-03	9.93E-05	6.47E-05	1.59E-07	6.28E-03	5.78E-06	4.19E-06
2009	Concrete/Industrial Saws	G4	50	Constructic	U	Fresno	1.78E+00	3.41E+00	9.42E+00	6.16E-06	6.43E-03	9.62E-05	1.44E-04	9.78E-07	8.05E-02	5.60E-06	1.14E-05	1.81E-06	1.89E-03	2.82E-05	4.23E-05	2.87E-07	2.36E-02	1.64E-06	3.33E-06
2009	Concrete/Industrial Saws	G4	120	Constructic	U	Fresno	1.02E+00	1.96E+00	9.21E+00	6.66E-06	1.75E-03	3.96E-05	9.43E-05	8.31E-07	8.60E-02	2.30E-06	6.96E-06	3.40E-06	8.97E-04	2.02E-05	4.82E-05	4.25E-07	4.40E-02	1.18E-06	3.56E-06
2009	Cement and Mortar Mixers	G4	5	Constructic	U	Fresno	2.67E+02	7.72E+01	1.93E+01	3.51E-05	4.42E-02	2.37E-03	1.07E-03	3.72E-06	1.08E-01	1.38E-04	1.42E-04	4.55E-07	5.73E-04	3.08E-05	1.39E-05	4.82E-08	1.40E-03	1.79E-06	1.84E-06
2009	Cement and Mortar Mixers	G4	15	Constructic	U	Fresno	4.52E+02	1.31E+02	6.65E+01	2.28E-03	2.04E-01	7.72E-03	2.59E-03	8.33E-06	2.92E-01	4.50E-04	2.90E-04	1.74E-05	1.56E-03	5.90E-05	1.98E-05	6.37E-08	2.23E-03	3.44E-06	2.22E-06
2009	Cement and Mortar Mixers	G4	25	Constructic	U	Fresno	1.90E+00	5.50E-01	8.68E-01	2.99E-05	2.66E-03	9.21E-05	3.02E-05	9.74E-08	3.84E-03	5.36E-06	2.10E-06	5.44E-05	4.83E-03	1.67E-04	5.49E-05	1.77E-07	6.98E-03	9.74E-06	3.81E-06
2009	Cranes	G4	50	Constructic	U	Fresno	5.42E-01	7.08E-01	1.36E+00	8.14E-07	1.43E-03	5.80E-05	8.56E-05	1.29E-07	1.06E-02	3.38E-06	3.96E-06	1.15E-06	2.02E-03	8.20E-05	1.21E-04	1.83E-07	1.50E-02	4.77E-06	5.60E-06
2009	Cranes	G4	120	Constructic	U	Fresno	1.08E+00	1.42E+00	4.82E+00	3.26E-06	2.49E-03	1.56E-04	4.81E-04	4.06E-07	4.20E-02	9.08E-06	1.34E-05	2.30E-06	1.76E-03	1.10E-04	3.40E-04	2.87E-07	2.97E-02	6.41E-06	9.44E-06
2009	Cranes	G4	175	Constructic	U	Fresno	4.34E-02	5.66E-02	3.03E-01	2.20E-07	9.22E-05	4.91E-06	3.64E-05	2.74E-08	2.76E-03	2.86E-07	7.51E-07	3.89E-06	1.63E-03	8.68E-05	6.42E-04	4.85E-07	4.88E-02	5.05E-06	1.33E-05
2009	Crushing/Proc. Equipment	G4	15	Constructic	U	Fresno	7.25E-01	6.60E-01	4.83E-01	2.00E-05	1.36E-03	3.56E-05	2.65E-05	6.81E-08	2.39E-03	2.07E-06	2.14E-06	3.04E-05	2.06E-03	5.39E-05	4.02E-05	1.03E-07	3.62E-03	3.14E-06	3.25E-06
2009	Crushing/Proc. Equipment	G4	25	Constructic	U	Fresno	4.75E-01	4.32E-01	5.79E-01	2.33E-05	1.68E-03	4.38E-05	2.85E-05	7.05E-08	2.78E-03	2.55E-06	1.83E-06	5.40E-05	3.89E-03	1.01E-04	6.60E-05	1.63E-07	6.44E-03	5.90E-06	4.23E-06
2009	Crushing/Proc. Equipment	G4	120	Constructic	U	Fresno	6.29E-01	4.77E-01	3.76E+00	2.57E-06	1.73E-03	1.05E-04	3.74E-04	3.21E-07	3.32E-02	6.11E-06	7.01E-06	5.40E-06	3.62E-03	2.20E-04	7.84E-04	6.73E-07	6.97E-02	1.28E-05	1.47E-05
2009	Rough Terrain Forklifts	G4	50	Constructic	U	Fresno	2.17E-01	2.82E-01	9.19E-01	5.52E-07	9.66E-04	3.93E-05	5.80E-05	8.76E-08	7.20E-03	2.29E-06	2.09E-06	1.96E-06	3.43E-03	1.39E-04	2.06E-04	3.11E-07	2.56E-02	8.11E-06	7.43E-06
2009	Rough Terrain Forklifts	G4	120	Constructic	U	Fresno	3.08E+00	4.00E+00	2.10E+01	1.42E-05	1.08E-02	6.77E-04	2.09E-03	1.77E-06	1.83E-01	3.94E-05	4.75E-05	3.54E-06	2.70E-03	1.69E-04	5.23E-04	4.42E-07	4.57E-02	9.85E-06	1.19E-05
2009	Rough Terrain Forklifts	G4	175	Constructic	U	Fresno	1.08E-01	1.41E-01	1.15E+00	8.34E-07	3.49E-04	1.86E-05	1.38E-04	1.04E-07	1.05E-02	1.08E-06	2.34E-06	5.92E-06	2.48E-03	1.32E-04	9.78E-04	7.38E-07	7.43E-02	7.69E-06	1.66E-05
2009	Rubber Tired Loaders	G4	50	Constructic	U	Fresno	5.42E-01	8.73E-01	2.11E+00	1.25E-06	2.34E-03	9.70E-05	1.36E-04	1.98E-07	1.63E-02	5.65E-06	5.61E-06	1.43E-06	2.68E-03	1.11E-04	1.55E-04	2.27E-07	1.87E-02	6.47E-06	6.42E-06
2009	Rubber Tired Loaders	G4	120	Constructic	U	Fresno	3.60E+00	5.80E+00	2.23E+01	1.49E-05	1.23E-02	7.81E-04	2.27E-03	1.86E-06	1.92E-01	4.55E-05	5.93E-05	2.57E-06	2.12E-03	1.35E-04	3.92E-04	3.21E-07	3.32E-02	7.84E-06	1.02E-05
2009	Tractors/Loaders/Backhoes	G4	120	Constructic	U	Fresno	1.91E+00	5.22E+00	1.55E+01	1.04E-05	8.40E-03	4.81E-04	1.23E-03	1.30E-06	1.35E-01	2.79E-05	3.88E-05	2.00E-06	1.61E-03	9.21E-05	2.35E-04	2.49E-07	2.58E-02	5.35E-06	7.43E-06
2009	Skid Steer Loaders	G4	15	Constructic	U	Fresno	1.43E+00	1.43E+00	1.11E+00	4.61E-05	3.14E-03	8.41E-05	6.20E-05	1.57E-07	5.50E-03	4.90E-06	4.84E-06	3.22E-05	2.19E-03	5.87E-05	4.33E-05	1.10E-07	3.84E-03	3.42E-06	3.38E-06
2009	Skid Steer Loaders	G4	25	Constructic	U	Fresno	9.53E+01	9.57E+01	1.04E+02	4.18E-03	3.02E-01	8.04E-03	5.20E-03	1.27E-05	4.99E-01	4.68E-04	3.65E-04	4.37E-05	3.16E-03	8.40E-05	5.43E-05	1.32E-07	5.22E-03	4.89E-06	3.82E-06
2009	Skid Steer Loaders	G4	50	Constructic	U	Fresno	1.48E+01	1.44E+01	2.78E+01	1.77E-05	2.20E-02	5.68E-04	9.90E-04	2.81E-06	2.31E-01	3.31E-05	5.76E-05	1.23E-06	1.53E-03	3.93E-05	6.86E-05	1.95E-07	1.60E-02	2.29E-06	3.99E-06
2009	Skid Steer Loaders	G4	120	Constructic	U	Fresno	8.84E+00	8.63E+00	3.74E+01	2.65E-05	1.11E-02	4.92E-04	1.81E-03	3.30E-06	3.42E-01	2.87E-05	5.77E-05	3.07E-06	1.28E-03	5.70E-05	2.09E-04	3.83E-07	3.96E-02	3.32E-06	6.69E-06
2009	Dumpers/Tenders	G4	5	Constructic	U	Fresno	1.36E+01	6.38E+00	8.45E-01	1.61E-06	1.75E-03	1.20E-04	5.40E-05	1.71E-07	4.95E-03	6.97E-06	9.03E-06	2.53E-07	2.74E-04	1.88E-05	8.47E-06	2.68E-08	7.76E-04	1.09E-06	1.42E-06
2009	Dumpers/Tenders	G4	15	Constructic	U	Fresno	2.90E+01	1.36E+01	5.39E+00	1.88E-04	1.65E-02	6.26E-04	2.16E-04	6.78E-07	2.38E-02	3.64E-05	2.68E-05	1.38E-05	1.21E-03	4.60E-05	1.59E-05	4.98E-08	1.75E-03	2.68E-06	1.97E-06
2009	Dumpers/Tenders	G4	25	Constructic	U	Fresno	5.38E+00	2.52E+00	2.10E+00	7.37E-05	6.41E-03	2.23E-04	7.52E-05	2.36E-07	9.30E-03	1.30E-05	6.93E-06	2.92E-05	2.54E-03	8.84E-05	2.98E-05	9.35E-08	3.69E-03	5.15E-06	2.75E-06
2009	Dumpers/Tenders	G4	120	Constructic	U	Fresno	3.90E-01	1.56E-01	4.05E-01	2.79E-07	1.70E-04	1.01E-05	4.01E-05	3.48E-08	3.60E-03	5.87E-07	1.26E-06	1.79E-06	1.09E-03	6.46E-05	2.57E-04	2.23E-07	2.31E-02	3.76E-06	8.09E-06
2009	Other Construction Equipment	G4	175	Constructic	U	Fresno	1.52E+00	1.77E+00	9.70E+00	7.09E-06	2.83E-03	5.90E-05	3.85E-04	8.84E-07	8.90E-02	3.43E-06	1.23E-05	4.00E-06	1.60E-03	3.33E-05	2.17E-04	4.99E-07	5.02E-02	1.94E-06	6.92E-06
2009	Aerial Lifts	G4	15	Industrial	E U	Fresno	2.13E-01	2.51E-01	1.44E-01	5.96E-06	4.05E-04	1.07E-05	7.93E-06	2.03E-08	7.11E-04	6.21E-07	7.18E-07	2.37E-05	1.61E-03	4.25E-05	3.16E-05	8.07E-08	2.83E-03	2.47E-06	2.86E-06
2009	Aerial Lifts	G4	25	Industrial	E U	Fresno	9.07E+00	1.07E+01	9.24E+00	3.71E-04	2.68E-02	7.21E-04	4.66E-04	1.12E-06	4.43E-02	4.20E-05	3.63E-05	3.47E-05	2.50E-03	6.73E-05	4.36E-05	1.05E-07	4.14E-03	3.92E-06	3.39E-06
2009	Aerial Lifts	G4	50	Industrial	E U	Fresno	1.11E+01	1.26E+01	2.01E+01	1.26E-05	1.72E-02	4.92E-04	8.31E-04	2.01E-06	1.65E-01	2.87E-05	4.93E-05	1.00E-06	1.37E-03	3.91E-05	6.60E-05	1.59E-07	1.31E-02	2.28E-06	3.91E-06
2009	Aerial Lifts	G4	120	Industrial	E U	Fresno	1.11E+01	1.26E+01	3.66E+01	2.57E-05	1.25E-02	6.07E-04	2.14E-03	3.20E-06	3.31E-01	3.54E-05	7.61E-05	2.04E-06	9.95E-04	4.82E-05	1.70E-04	2.54E-07	2.63E-02	2.81E-06	6.05E-06
2009	Forklifts	G4	25	Industrial	E U	Fresno	2.13E-01	6.02E-01	4.07E-01	1.10E-06	1.19E-03	2.28E-05	1.71E-05	4.99E-08	1.97E-03	1.32E-06	1.62E-06	1.83E-06	1.98E-03	3.78E-05	2.84E-05	8.28E-08	3.27E-03	2.19E-06	2.70E-06
2009	Forklifts	G4	50	Industrial	E U	Fresno	3.70E+01	2.09E+02	3.31E+02	1.70E-04	5.96E-01	9.45E-03	1.60E-02	2.70E-05	2.22E+00	5.40E-04	9.18E-04	8.14E-07	2.84E-03	4.51E-05	7.63E-05	1.29E-07	1.06E-02	2.58E-06	4.38E-06
2009	Forklifts	G4	120	Industrial	E U	Fresno	1.30E+02	7.35E+02	1.55E+03	1.02E-03	1.07E+00	3.13E-02	8.80E-02	1.27E-04	1.32E+01	1.79E-03	4.02E-03	1.39E-06	1.45E-03	4.25E-05	1.20E-04	1.73E-07	1.79E-02	2.43E-06	5.47E-06
2009	Forklifts	G4	175	Industrial	E U	Fresno	4.74E+00	2.69E+01	1.08E+02	7.78E-05	3.95E-02	1.25E-03	6.50E-03	9.70E-06	9.77E-01	7.14E-05	2.15E-04	2.90E-06	1.47E-03	4.65E-05	2.42E-04	3.61E-07	3.64E-02	2.66E-06	8.01E-06
2009	Sweepers/Scrubbers	G4	15	Industrial	E U	Fresno	6.17E+00	5.24E+00	2.83E+00	7.15E-06	8.02E-03	1.50E-04	1.09E-04	4.02E-07	1.41E-02	8.73E-06	1.19E-05	1.36E-06	1.53E-03	2.86E-05	2.07E-05	7.67E-08	2.69E-03	1.67E-06	2.27E-06
2009	Sweepers/Scrubbers	G4	25	Industrial	E U	Fresno	6.02E+00	5.11E+00	6.40E+00	1.62E-05	1.87E-02	3.83E-04	2.69E-04	7.84E-07	3.09E-02	2.23E-05	1.91E-05	3.17E-06	3.65E-03	7.49E-05	5.26E-05	1.53E-07	6.05E-03	4.36E-06	3.73E-06
2009	Sweepers/Scrubbers	G4	50	Industrial	E U	Fresno	1.03E+01	1.67E+01	4.40E+01	2.75E-05	4.00E-02	6.67E-04	1.31E-03	4.37E-06	3.59E-01	3.88E-05	7.49E-05	1.64E-06	2.39E-03	3.98E-05	7.83E-05	2.61E-07	2.15E-02	2.32E-06	4.48E-06
2009	Sweepers/Scrubbers	G4	120	Industrial	E U	Fresno	8.61E+00	1.40E+01	6.30E+01	4.46E-05	1.88E-02	5.26E-04	2.34E-03	5.57E-06	5.76E-01	3.06E-05	9.28E-05	3.19E-06	1.35E-03	3.76E-05	1.67E-04	3.98E-07	4.12E-02	2.19E-06	6.64E-06
2009	Sweepers/Scrubbers	G4	175	Industrial	E U	Fresno	5.00E-02	8.13E-02	7.32E-01	5.34E-07	2.18E-04	3.99E-06	2.94E-05	6.66E-08	6.71E-03	2.32E-07	8.18E-07	6.57E-06	2.68E-03	4.91E-05	3.62E-04	8.20E-07	8.25E-02	2.86E-06	1.01E-05
2009	Other General Industrial Equipmen	G4	15	Industrial	E U	Fresno	1.22E+01	1.44E+01	5.92E+00	1.57E-05	1.68E-02	3.28E-04	2.37E-04	8.41E-07	2.95E-02	1.91E-05	2.90E-05	1.09E-06	1.16E-03	2.28E-05	1.65E-05	5.83E-08	2.04E-03	1.33E-06	2.01E-06
2009	Other General Industrial Equipmen	G4	25	Industrial	E U	Fresno	4.00E+00	5.42E+00	5.16E+00	1.37E-05	1.51E-02	3.20E-04	2.27E-04	6.32E-07	2.49E-02	1.86E-05	1.80E-05	2.52E-06	2.78E-03	5.90E-05	4.20E-05	1.17E-07	4.60E-03	3.44E-06	3.32E-06
2009	Other General Industrial Equipmen	G4	50	Industrial	E U	Fresno	3.54E+00	7.94E+00	1.42E+01	8.51E-06	1.59E-02	2.84E-04	5.28E-04	1.35E-06	1.11E-01	1.65E-05	3.24E-05	1.07E-06	2.00E-03	3.58E-05	6.64E-05	1.70E-07	1.40E-02	2.08E-06	4.07E-06
2009	Other General Industrial Equipmen	G4	120	Industrial	E U	Fresno	1.16E+00	2.61E+00	1.06E+01	7.37E-06	4.26E-03	1.32E-04	4.94E-04	9.19E-07	9.51E-02	7.69E-06	1.83E-05	2.82E-06	1.63E-03	5.07E-05	1.89E-04	3.52E-07	3.64E-02	2.94E-06	7.00E-06
2009	Other General Industrial Equipmen	G4	175	Industrial	E U	Fresno	1.13E-01	2.53E-01	2.16E+00	1.57E-06	6.67E-04	1.60E-05	1.07E-04	1.96E-07	1.97E-02	9.33E-07	2.74E-06	6.21E-06	2.64E-03	6.35E-05	4.24E-04	7.75E-07	7.80E-02	3.69E-06	1.08E-05
2009	Other Material Handling Equipment	G4	50	Industrial	E U	Fresno	5.00E-02	6.08E-02	1.45E-01	8.74E-08	1.54E-04	5.53E-06	8.62E-06	1.39E-08	1.14E-03	3.22E-07	3.72E-07	1.44E-06	2.54E-03	9.09E-05	1.42E-04	2.28E-07	1.88E-02	5.29E-06	6.13E-06
2009	Other Material Handling Equipment	G4	120	Industrial	E U	Fresno	2.21E+00	2.69E+00	7.50E+00	5.09E-06	3.71E-03	2.14E-04	6.91E-04	6.35E-07	6.57E-02	1.24E-05	2.23E-05	1.89E-06	1.38E-03	7.94E-05	2.57E-04	2.36E-07	2.44E-02	4.62E-06	8.28E-06
2009	Generator Sets	G4	5	Light Comr	C	Fresno	6.40E+02	1.83E+02	5.06E+01	8.14E-04	1.34E-01	1.07E-02	1.99E-03	8.15E-06	2.36E-01	6.23E-04	2.93E-04	4.45E-06	7.34E-04	5.84E-05	1.09E-05	4.45E-08	1.29E-03	3.40E-06	1.60E-06
2009	Generator Sets	G4	5	Light Comr	R	Fresno	5.03E+02	9.68E+01	2.80E+01	4.27E-04	7.74E-02	6.18E-03	1.03E-03	4.30E-06	1.25E-01	3.60E-04	1.52E-04	4.41E-06	7.99E-04	6.38E-05	1.06E-05	4.45E-08	1.29E-03	3.72E-06	1.57E-06
2009	Generator Sets	G4	15	Light Comr	C	Fresno	1.76E+03	5.03E+02	3.12E+02	7.66E-04	9.18E-01	2.87E-02	1.35E-02	4.16E-05	1.46E+00	1.67E-03	1.31E-03	1.52E-06	1.82E-03	5.71E-05	2.68E-05	8.26E-08	2.90E-03	3.32E-06	2.60E-06
2009	Generator Sets	G4	15	Light Comr	R	Fresno	1.38E+03	2.66E+02	1.73E+02	4.06E-04	5.25E-01	1.93E-02	6.64E-03	2.20E-05	7.70E-01	1.12E-03	6.65E-04	1.53E-06	1.97E-03	7.25E-05	2.50E-05	8.26E-08	2.90E-03	4.23E-06	2.50E-06
2009	Generator Sets	G4	25	Light Comr	C	Fresno	9.45E+02	2.70E+02	3.57E+02	8.69E-04	1.07E+00	3.10E-02	1.40E-02	4.19E-05	1.65E+00	1.81E-03	9.95E-04	3.21E-06	3.94E-03	1.15E-04	5.17E-05	1.55E-07	6.12E-03	6.68E-06	3.68E-06
2009	Generator Sets	G4	25	Light Comr	R	Fresno	7.43E+02	1.43E+02	1.95E+02	4.61E-04	5.94E-01	1.99E-02	6.74E-03	2.21E-05	8.74E-01	1.16E-03	5.01E-04	3.23E-06	4.16E-03	1.39E-04	4.72E-05	1.55E-07	6.12E-03	8.11E-06	3.51E-06
2009	Generator Sets	G4	50	Light Comr	U	Fresno	3.15E+02	7.70E+01	1.76E+02	1.11E-04	1.49E-01	5.27E-03	1.03E-02	1.76E-05	1.45E+00	3.07E-04	4.52E-04	1.44E-06	1.93E-03	6.84E-05	1.33E-04	2.28E-07	1.88E-02	3.98E-06	5.87E-06
2009	Generator Sets	G4	120	Light Comr	U	Fresno	6.08E+01	1.49E+01	8.02E+01	5.55E-05	3.20E-02	1.74E-03	7.26E-03	6.92E-06	7.17E-01	1.01E-04	1.73E-04	3.73E-06	2.15E-03	1.17E-04	4.88E-04	4.66E-07	4.82E-02	6.82E-06	1.16E-05
2009	Generator Sets	G4	175	Light Comr	U	Fresno	5.74E+00	1.41E+00	1.26E+01	9.23E-06	3.41E-03	1.63E-04	1.31E-03	1.15E-06	1.16E-01	9.51E-06	2.30E-05	6.57E-06	2.43E-03	1.16E-04	9.32E-04	8.19E-07	8.24E-02	6.77E-06	1.64E-05
2009	Pumps	G4	5	Light Comr	C	Fresno	2.27E+02	1.25E+02	2.26E+01	2.14E-04	5.07E-02	4.20E-03	1.33E-03	4.22E-06	1.22E-01	2.45E-04	1.99E-04	1.71E-06	4.06E-04	3.37E-05	1.07E-05	3.38E-08	9.80E-04	1.96E-06	1.60E-06

2009	Pumps	G4	5	Light Comr	R	Fresno	1.79E+02	6.60E+01	1.40E+01	2.19E-04	3.73E-02	3.07E-03	6.25E-04	2.23E-06	6.46E-02	1.79E-04	9.85E-05	3.32E-06	5.65E-04	4.66E-05	9.48E-06	3.38E-08	9.80E-04	2.71E-06	1.49E-06
2009	Pumps	G4	15	Light Comr	C	Fresno	2.46E+02	1.35E+02	7.35E+01	2.96E-03	2.11E-01	6.32E-03	3.84E-03	1.01E-05	3.54E-01	3.68E-04	3.64E-04	2.19E-05	1.56E-03	4.67E-05	2.84E-05	7.45E-08	2.61E-03	2.72E-06	2.69E-06
2009	Pumps	G4	15	Light Comr	R	Fresno	1.93E+02	7.15E+01	4.08E+01	1.50E-03	1.22E-01	4.19E-03	1.84E-03	5.32E-06	1.87E-01	2.44E-04	1.82E-04	2.09E-05	1.70E-03	5.86E-05	2.57E-05	7.45E-08	2.61E-03	3.42E-06	2.55E-06
2009	Pumps	G4	25	Light Comr	C	Fresno	6.31E+01	3.47E+01	4.03E+01	1.61E-03	1.17E-01	3.18E-03	1.97E-03	4.88E-06	1.92E-01	1.85E-04	1.35E-04	4.65E-05	3.39E-03	9.18E-05	5.68E-05	1.41E-07	5.55E-03	5.35E-06	3.90E-06
2009	Pumps	G4	25	Light Comr	R	Fresno	4.95E+01	1.83E+01	2.18E+01	8.41E-04	6.48E-02	1.93E-03	9.52E-04	2.58E-06	1.02E-01	1.13E-04	6.79E-05	4.60E-05	3.54E-03	1.06E-04	5.20E-05	1.41E-07	5.55E-03	6.16E-06	3.71E-06
2009	Pumps	G4	50	Light Comr	U	Fresno	2.51E+01	1.18E+01	2.68E+01	1.67E-05	2.37E-02	8.96E-04	1.56E-03	2.66E-06	2.18E-01	5.22E-05	6.79E-05	1.41E-06	2.00E-03	7.58E-05	1.32E-04	2.25E-07	1.85E-02	4.41E-06	5.74E-06
2009	Pumps	G4	120	Light Comr	U	Fresno	3.19E+01	1.50E+01	9.22E+01	6.36E-05	3.81E-02	2.25E-03	8.28E-03	7.93E-06	8.21E-01	1.31E-04	1.78E-04	4.24E-06	2.54E-03	1.50E-04	5.53E-04	5.29E-07	5.48E-02	8.76E-06	1.19E-05
2009	Pumps	G4	175	Light Comr	U	Fresno	9.61E-01	4.52E-01	4.07E+00	2.97E-06	1.15E-03	5.56E-05	4.28E-04	3.70E-07	3.73E-02	3.24E-06	7.15E-06	6.57E-06	2.55E-03	1.23E-04	9.46E-04	8.20E-07	8.25E-02	7.17E-06	1.58E-05
2009	Air Compressors	G4	5	Light Comr	C	Fresno	8.21E+01	9.88E+01	2.14E+01	4.27E-05	3.99E-02	3.40E-03	1.53E-03	4.52E-06	1.31E-01	1.98E-04	1.93E-04	4.32E-07	4.04E-04	3.44E-05	1.55E-05	4.58E-08	1.33E-03	2.00E-06	1.96E-06
2009	Air Compressors	G4	5	Light Comr	R	Fresno	6.45E+01	5.22E+01	1.13E+01	2.26E-05	2.11E-02	1.80E-03	8.11E-04	2.39E-06	6.92E-02	1.05E-04	1.02E-04	4.32E-07	4.04E-04	3.44E-05	1.55E-05	4.58E-08	1.33E-03	2.00E-06	1.96E-06
2009	Air Compressors	G4	15	Light Comr	C	Fresno	4.16E+01	5.00E+01	1.88E+01	7.78E-04	5.28E-02	1.46E-03	1.08E-03	2.65E-06	9.28E-02	8.49E-05	1.17E-04	1.56E-05	1.06E-03	2.92E-05	2.17E-05	5.29E-08	1.86E-03	1.70E-06	2.34E-06
2009	Air Compressors	G4	15	Light Comr	R	Fresno	3.26E+01	2.64E+01	9.93E+00	4.11E-04	2.80E-02	7.58E-04	5.59E-04	1.40E-06	4.90E-02	4.41E-05	6.10E-05	1.56E-05	1.06E-03	2.87E-05	2.12E-05	5.29E-08	1.86E-03	1.67E-06	2.31E-06
2009	Air Compressors	G4	25	Light Comr	C	Fresno	5.60E+00	6.74E+00	6.34E+00	2.55E-04	1.84E-02	5.04E-04	3.28E-04	7.70E-07	3.04E-02	2.94E-05	2.43E-05	3.78E-05	2.72E-03	7.48E-05	4.87E-05	1.14E-07	4.51E-03	4.35E-06	3.60E-06
2009	Air Compressors	G4	25	Light Comr	R	Fresno	4.41E+00	3.57E+00	3.37E+00	1.35E-04	9.80E-03	2.70E-04	1.68E-04	4.07E-07	1.61E-02	1.58E-05	1.26E-05	3.78E-05	2.75E-03	7.58E-05	4.70E-05	1.14E-07	4.51E-03	4.42E-06	3.53E-06
2009	Air Compressors	G4	50	Light Comr	U	Fresno	9.56E+00	9.85E+00	2.13E+01	1.28E-05	2.26E-02	9.51E-04	1.33E-03	2.03E-06	1.67E-01	5.54E-05	5.86E-05	1.30E-06	2.30E-03	9.66E-05	1.35E-04	2.06E-07	1.69E-02	5.63E-06	5.95E-06
2009	Air Compressors	G4	120	Light Comr	U	Fresno	3.10E+01	3.19E+01	1.23E+02	8.28E-05	6.44E-02	4.15E-03	1.21E-02	1.03E-05	1.07E+00	2.42E-04	3.19E-04	2.59E-06	2.02E-03	1.30E-04	3.80E-04	3.23E-07	3.35E-02	7.57E-06	1.00E-05
2009	Air Compressors	G4	175	Light Comr	U	Fresno	2.09E+00	2.15E+00	1.47E+01	1.07E-05	4.44E-03	2.39E-04	1.75E-03	1.33E-06	1.34E-01	1.40E-05	3.23E-05	4.96E-06	2.07E-03	1.11E-04	8.16E-04	6.19E-07	6.23E-02	6.49E-06	1.50E-05
2009	Welders	G4	15	Light Comr	C	Fresno	1.61E+02	7.11E+01	4.19E+01	1.48E-03	1.26E-01	4.53E-03	1.83E-03	5.38E-06	1.89E-01	2.64E-04	1.81E-04	2.09E-05	1.77E-03	6.37E-05	2.58E-05	7.57E-08	2.66E-03	3.71E-06	2.55E-06
2009	Welders	G4	25	Light Comr	C	Fresno	5.80E+02	2.57E+02	2.29E+02	8.59E-03	6.84E-01	2.13E-02	9.74E-03	2.67E-05	1.05E+00	1.24E-03	8.04E-04	3.35E-05	2.66E-03	8.30E-05	3.79E-05	1.04E-07	4.10E-03	4.84E-06	3.13E-06
2009	Welders	G4	50	Light Comr	U	Fresno	5.00E+01	2.21E+01	5.41E+01	3.36E-05	4.87E-02	1.95E-03	3.37E-03	5.33E-06	4.38E-01	1.14E-04	1.39E-04	1.52E-06	2.20E-03	8.81E-05	1.52E-04	2.41E-07	1.98E-02	5.14E-06	6.29E-06
2009	Welders	G4	120	Light Comr	U	Fresno	5.10E+01	2.26E+01	7.76E+01	5.33E-05	3.38E-02	2.07E-03	7.61E-03	6.65E-06	6.88E-01	1.21E-04	2.11E-04	2.36E-06	1.50E-03	9.19E-05	3.37E-04	2.94E-07	3.05E-02	5.35E-06	9.34E-06
2009	Welders	G4	175	Light Comr	U	Fresno	3.52E+00	1.56E+00	9.36E+00	6.82E-06	2.60E-03	1.38E-04	1.08E-03	8.51E-07	8.57E-02	8.07E-06	2.13E-05	4.38E-06	1.67E-03	8.90E-05	6.93E-04	5.47E-07	5.50E-02	5.18E-06	1.37E-05
2009	Pressure Washers	G4	5	Light Comr	C	Fresno	1.72E+02	4.92E+01	1.89E+01	3.38E-04	4.47E-02	3.39E-03	8.58E-04	3.42E-06	9.90E-02	1.97E-04	1.01E-04	6.87E-06	9.08E-04	6.89E-05	1.74E-05	6.95E-08	2.01E-03	4.01E-06	2.05E-06
2009	Pressure Washers	G4	5	Light Comr	R	Fresno	1.35E+02	2.60E+01	1.15E+01	1.78E-04	3.13E-02	2.47E-03	4.34E-04	1.81E-06	5.23E-02	1.44E-04	5.21E-05	6.86E-06	1.20E-03	9.48E-05	1.67E-05	6.95E-08	2.01E-03	5.52E-06	2.00E-06
2009	Pressure Washers	G4	15	Light Comr	C	Fresno	1.53E+02	4.39E+01	2.64E+01	6.50E-05	7.78E-02	2.44E-03	1.14E-03	3.53E-06	1.24E-01	1.42E-04	1.12E-04	1.48E-06	1.77E-03	5.55E-05	2.61E-05	8.03E-08	2.82E-03	3.23E-06	2.56E-06
2009	Pressure Washers	G4	15	Light Comr	R	Fresno	1.21E+02	2.32E+01	1.47E+01	3.45E-05	4.45E-02	1.64E-03	5.63E-04	1.86E-06	6.54E-02	9.53E-05	5.72E-05	1.49E-06	1.92E-03	7.05E-05	2.43E-05	8.03E-08	2.82E-03	4.11E-06	2.46E-06
2009	Pressure Washers	G4	25	Light Comr	C	Fresno	2.88E+01	8.25E+00	1.28E+01	3.12E-05	3.78E-02	1.05E-03	5.20E-04	1.51E-06	5.97E-02	6.09E-05	3.38E-05	3.79E-06	4.58E-03	1.27E-04	6.31E-05	1.84E-07	7.24E-03	7.39E-06	4.09E-06
2009	Pressure Washers	G4	25	Light Comr	R	Fresno	2.26E+01	4.36E+00	7.03E+00	1.65E-05	2.14E-02	7.00E-04	2.43E-04	8.00E-07	3.15E-02	4.08E-05	1.67E-05	3.79E-06	4.91E-03	1.61E-04	5.58E-05	1.84E-07	7.24E-03	9.37E-06	3.83E-06
2009	Pressure Washers	G4	50	Light Comr	U	Fresno	2.81E+00	6.88E-01	1.78E+00	1.12E-06	1.46E-03	5.42E-05	1.03E-04	1.78E-07	1.46E-02	3.16E-06	4.21E-06	1.63E-06	2.12E-03	7.88E-05	1.49E-04	2.59E-07	2.13E-02	4.59E-06	6.12E-06
2009	Pavers	D	25	Constructic	U	Fresno	4.00E-01	1.03E+00	8.79E-01	5.17E-06	4.49E-05	1.52E-05	8.50E-05	1.22E-07	9.63E-03	1.37E-06	0.00E+00	5.01E-06	4.35E-05	1.47E-05	8.22E-05	1.18E-07	9.32E-03	1.32E-06	0.00E+00
2009	Pavers	D	50	Constructic	U	Fresno	2.32E+01	6.12E+01	8.07E+01	1.13E-03	1.21E-02	5.23E-03	9.63E-03	1.11E-05	8.56E-01	4.72E-04	0.00E+00	1.85E-05	1.97E-04	8.55E-05	1.57E-04	1.81E-07	1.40E-02	7.71E-06	0.00E+00
2009	Pavers	D	120	Constructic	U	Fresno	2.74E+01	7.22E+01	2.30E+02	3.20E-03	1.91E-02	6.23E-03	3.66E-02	2.93E-05	2.49E+00	5.62E-04	0.00E+00	4.44E-05	2.64E-04	8.63E-05	5.08E-04	4.05E-07	3.46E-02	7.79E-06	0.00E+00
2009	Pavers	D	175	Constructic	U	Fresno	1.70E+01	4.49E+01	2.63E+02	2.11E-03	1.80E-02	4.81E-03	3.77E-02	3.23E-05	2.87E+00	4.34E-04	0.00E+00	4.70E-05	4.01E-04	1.07E-04	8.41E-04	7.21E-07	6.41E-02	9.68E-06	0.00E+00
2009	Pavers	D	250	Constructic	U	Fresno	2.05E+00	5.40E+00	4.78E+01	2.72E-04	1.99E-03	6.90E-04	6.62E-03	5.91E-06	5.25E-01	6.22E-05	0.00E+00	5.03E-05	3.68E-04	1.28E-04	1.22E-03	1.09E-06	9.71E-02	1.15E-05	0.00E+00
2009	Pavers	D	500	Constructic	U	Fresno	2.11E+00	5.55E+00	5.90E+01	2.98E-04	3.51E-03	7.60E-04	7.37E-03	6.34E-06	6.46E-01	6.86E-05	0.00E+00	5.38E-05	6.32E-04	1.37E-04	1.33E-03	1.14E-06	1.17E-01	1.24E-05	0.00E+00
2009	Plate Compactors	D	15	Constructic	U	Fresno	8.58E+00	1.62E+01	3.19E+00	1.44E-05	2.13E-04	4.12E-05	2.60E-04	5.43E-07	3.49E-02	3.72E-06	0.00E+00	8.87E-07	1.32E-05	2.54E-06	1.61E-05	3.35E-08	2.15E-03	2.29E-07	0.00E+00
2009	Rollers	D	15	Constructic	U	Fresno	1.61E+01	3.53E+01	1.02E+01	4.10E-05	6.80E-04	1.30E-04	8.15E-04	1.73E-06	1.11E-01	1.17E-05	0.00E+00	1.16E-06	1.93E-05	3.68E-06	2.31E-05	4.91E-08	3.16E-03	3.32E-07	0.00E+00
2009	Rollers	D	25	Constructic	U	Fresno	6.74E+00	1.48E+01	8.96E+00	4.41E-05	4.09E-04	1.24E-04	7.97E-04	1.25E-06	9.83E-02	1.12E-05	0.00E+00	2.99E-06	2.77E-05	8.41E-06	5.40E-05	8.46E-08	6.67E-03	7.58E-07	0.00E+00
2009	Rollers	D	50	Constructic	U	Fresno	2.10E+01	4.63E+01	5.64E+01	7.11E-04	7.54E-03	3.13E-03	6.47E-03	7.77E-06	6.01E-01	2.83E-04	0.00E+00	1.54E-05	1.63E-04	6.76E-05	1.40E-04	1.68E-07	1.30E-02	6.10E-06	0.00E+00
2009	Rollers	D	120	Constructic	U	Fresno	1.13E+02	2.49E+02	6.73E+02	8.35E-03	5.24E-02	1.59E-02	9.67E-02	8.60E-05	7.33E+00	1.43E-03	0.00E+00	3.36E-05	2.11E-04	6.39E-05	3.89E-04	3.46E-07	2.95E-02	5.77E-06	0.00E+00
2009	Rollers	D	175	Constructic	U	Fresno	4.53E+01	1.00E+02	4.94E+02	3.43E-03	3.15E-02	7.81E-03	6.35E-02	6.08E-05	5.40E+00	7.04E-04	0.00E+00	3.43E-05	3.15E-04	7.81E-05	6.35E-04	6.08E-07	5.40E-02	7.04E-06	0.00E+00
2009	Rollers	D	250	Constructic	U	Fresno	6.42E+00	1.42E+01	9.86E+01	4.55E-04	3.40E-03	1.16E-03	1.22E-02	1.22E-05	1.08E+00	1.05E-04	0.00E+00	3.21E-05	2.40E-04	8.20E-05	8.58E-04	8.60E-07	7.65E-02	7.40E-06	0.00E+00
2009	Rollers	D	500	Constructic	U	Fresno	4.50E+00	9.95E+00	9.90E+01	4.12E-04	4.18E-03	1.05E-03	1.10E-02	1.07E-05	1.09E+00	9.44E-05	0.00E+00	4.15E-05	4.20E-04	1.05E-04	1.10E-03	1.07E-06	1.09E-01	9.49E-06	0.00E+00
2009	Scrapers	D	120	Constructic	U	Fresno	1.04E+00	3.66E+00	1.58E+01	2.25E-04	1.33E-03	4.32E-04	2.50E-03	2.01E-06	1.71E-01	3.90E-05	0.00E+00	6.16E-05	3.63E-04	1.18E-04	6.85E-04	5.50E-07	4.69E-02	1.07E-05	0.00E+00
2009	Scrapers	D	175	Constructic	U	Fresno	9.51E+00	3.35E+01	2.27E+02	1.84E-03	1.57E-02	4.20E-03	3.22E-02	2.79E-05	2.48E+00	3.79E-04	0.00E+00	5.50E-05	4.68E-04	1.25E-04	9.63E-04	8.32E-07	7.40E-02	1.13E-05	0.00E+00
2009	Scrapers	D	250	Constructic	U	Fresno	9.27E+00	3.26E+01	3.11E+02	1.74E-03	1.26E-02	4.48E-03	4.26E-02	3.84E-05	3.41E+00	4.04E-04	0.00E+00	5.32E-05	3.87E-04	1.37E-04	1.31E-03	1.18E-06	1.05E-01	1.24E-05	0.00E+00
2009	Scrapers	D	500	Constructic	U	Fresno	2.55E+01	8.98E+01	1.32E+03	6.55E-03	7.39E-02	1.71E-02	1.62E-01	1.42E-04	1.44E+01	1.54E-03	0.00E+00	7.29E-05	8.23E-04	1.90E-04	1.80E-03	1.58E-06	1.61E-01	1.72E-05	0.00E+00
2009	Paving Equipment	D	25	Constructic	U	Fresno	6.93E-01	1.81E+00	1.04E+00	5.12E-06	4.74E-05	1.44E-05	9.25E-05	1.45E-07	1.14E-02	1.30E-06	0.00E+00	2.83E-06	2.62E-05	7.95E-06	5.11E-05	8.00E-08	6.31E-03	7.18E-07	0.00E+00
2009	Paving Equipment	D	50	Constructic	U	Fresno	5.86E-01	1.55E+00	1.74E+00	2.44E-05	2.59E-04	1.12E-04	2.08E-04	2.39E-07	1.85E-02	1.01E-05	0.00E+00	1.58E-05	1.67E-04	7.27E-05	1.34E-04	1.55E-07	1.20E-02	6.56E-06	0.00E+00
2009	Paving Equipment	D	120	Constructic	U	Fresno	8.45E+00	2.23E+01	5.58E+01	7.74E-04	4.60E-03	1.50E-03	8.87E-03	7.12E-06	6.07E-01	1.36E-04	0.00E+00	3.47E-05	2.07E-04	6.75E-05	3.98E-04	3.19E-07	2.72E-02	6.09E-06	0.00E+00
2009	Paving Equipment	D	175	Constructic	U	Fresno	3.97E+00	1.05E+01	4.84E+01	3.83E-04	3.28E-03	8.77E-04	6.91E-03	5.95E-06	5.29E-01	7.91E-05	0.00E+00	3.66E-05	3.13E-04	8.37E-05	6.60E-04	5.68E-07	5.05E-02	7.55E-06	0.00E+00
2009	Paving Equipment	D	250	Constructic	U	Fresno	1.12E+00	2.95E+00	1.64E+01	9.25E-05	6.78E-04	2.34E-04	2.26E-03	2.03E-06	1.80E-01	2.11E-05	0.00E+00	3.13E-05	2.30E-04	7.94E-05	7.67E-04	6.87E-07	6.11E-02	7.16E-06	0.00E+00
2009	Surfacing Equipment	D	50	Constructic	U	Fresno	5.33E-01	7.61E-01	5.00E-01	5.68E-06	5.93E-05	2.39E-05	5.59E-05	6.93E-08	5.36E-03	2.16E-06	0.00E+00	7.47E-06	7.80E-05	3.14E-05	7.35E-05	9.11E-08	7.05E-03	2.83E-06	0.00E+00
2009	Surfacing Equipment	D	120	Constructic	U	Fresno	1.07E-01	1.52E-01	4.45E-01	4.98E-06	3.33E-05	9.69E-06	6.16E-05	5.69E-08	4.85E-03	8.74E-07	0.00E+00	3.27E-05	2.19E-04	6.37E-05	4.05E-04	3.74E-07	3.19E-02	5.75E-06	0.00E+00
2009	Surfacing Equipment	D	175	Constructic	U	Fresno	7.99E-02	1.14E-01	4.47E-01	2.81E-06	2.75E-05	6.48E-06	5.52E-05	5.50E-08	4.89E-03	5.85E-07	0.00E+00	2.47E-05	2.41E-04	5.68E-05	4.84E-04	4.82E-07	4.28E-02	5.12E-06	0.00E+00
2009	Surfacing Equipment	D	250	Constructic	U	Fresno	1.60E-01	2.28E-01	1.40E+00	5.97E-06	4.66E-05	1.52E-05	1.66E-04	1.73E-07	1.54E-02	1.37E-06	0.00E+00	2.62E-05	2.04E-04	6.67E-05	7.28E-04	7.58E-07	6.74E-02	6.02E-06	0.00E+00
2009	Surfacing Equipment	D	500	Constructic	U	Fresno	1.33E+00	1.90E+00	1.91E+01	7.43E-05	7.96E-04	1.87E-04	2.06E-03	2.06E-06	2.10E-01	1.69E-05	0.00E+00	3.91E-05	4.19E-04	9.83E-05	1.08E-03	1.08E-06	1.11E-01	8.87E-06	0.00E+00
2009	Signal Boards	D	15	Constructic	U	Fresno	7.50E+01	1.77E+02	4.99E+01	1.63E-04	3.33E-03	6.35E-04	3.98E-03	8.49E-06	5.46E-01	5.73E-05	0.00E+00	9.18E-07	1.88E-05	3.59E-06	2.25E-05	4.80E-08	3.08E-03	3.24E-07	0.00E+00
2009	Signal Boards	D	50	Constructic	U	Fresno	3.73E-01	6.28E-01	1.06E+00	1.19E-05	1.23E-04	4.97E-05	1.17E-04	1.47E-07	1.14E-02	4.48E-06	0.00E+00	1.90E-05	1.96E-04	7.90E-05	1.87E-04	2.34E-07	1.81E-02	7.13E-06	0.00E+00
2009	Signal Boards	D	120	Constructic	U	Fresno	6.10E+00	1.03E+01	3.78E+01	4.23E-04	2.79E-03	8.16E-04	5.10E-03	4.83E-06	4.12E-01	7.36E-05	0.00E+00	4.12E-05	2.71E-04	7.94E-05	4.96E-04	4.70E-07	4.01E-02	7.16E-06	0.00E+00
2009	Signal Boards	D	175	Constructic	U	Fresno	3.78E+00	6.37E+00	4.49E+01	2.80E-04	2.70E-03	6.42E-04	5.44E-03	5.54E-06	4.92E-01	5.79E-05	0.00E+00	4.39E-05	4.23E-04	1.01E-04	8.53E-04	8.69E-07	7.72E-02	9.08E-06	0.00E+00
2009	Signal Boards	D	250	Constructic	U	Fresno	7.99E-01	1.35E+00	1.56E+01	5.67E-05	4.38E-04	1.48E-04	1.78E-03	1.93E-06	1.72E-01	1.33E-05	0.00E+00	4.21E-05	3.26E-04	1.10E-04	1.32E-03	1.43E-06	1.28E-01	9.91E-06	0.00E+00
2009	Trenchers	D	15	Constructic	U	Fresno	2.00E+00	3.89E+00	1.50E+00	4.90E-06	1.00E-04	1.91E-05	1.20E-04	2.56E-07	1.64E-02	1.73E-06	0.00E+00	1.26E-06	2.58E-05	4.92E-06	3.08E-05	6.58E-08	4.23E-03	4.44E-07	0.00E+00
2009	Trenchers	D	25	Constructic	U	Fresno	2.11E+00	4.10E+00	6.13E+00	2.89E-05	2.77E-04	8.24E-05	5.29E-04	8.55E-07	6.73E-02	7.44E-06	0.00E+00	7.05E-06	6.77E-05	2.01E-05	1.29E-04	2.09E-07	1.64E-02	1.82E-06	0.00E+00
2009	Trenchers	D	50	Constructic	U	Fresno	8.01E+01	1.60E+02	2.48E+02	3.37E-03	3.56E-02	1.54E-02	2.93E-02	3.40E-05	2.63E+00	1.39E-03	0.00E+00	2.10E-05	2.23E-04	9.63E-05	1.83E-04	2.13E-07	1.64E-02	8.69E-06	0.00E+00
2009	Trenchers	D	120	Constructic	U	Fresno	1.09E+02	2.17E+02	6.47E+02	8.73E-03	5.30E-02	1.72E-02	1.03E-01	8.24E-05	7.02E+00	1.55E-03	0.00E+00	4.03E-05	2.45E-04	7.95E-05	4.75E-04	3.80E-07	3.24E-02	7.17E-06	0.00E+00
2009	Trenchers	D	175	Constructic	U	Fresno	1.19E+01	2.37E+01	1.56E+02	1.22E-03	1.06E-02	2.80E-03	2.23E-02	1.92E-05	1.70E+00	2.53E-04	0.00E+00	5.14E-05	4.46E-04	1.18E-04	9.42E-04	8.09E-07	7.19E-02	1.07E-05	0.00E+00
2009	Trenchers	D	250	Constructic	U	Fresno	1.07E+00	2.13E+00	2.16E+01	1.24E-04	9.11E-04	3.10E-04	2.99E-03	2.66E-06	2.37E-01	2.80E-05	0.00E+00	5.81E-05	4.28E-04	1.46E-04	1.40E-03	1.25E-06	1.11E-01	1.32E-05	0.00E+00
2009	Trenchers	D	500	Constructic	U	Fresno	1.36E+00	2.71E+00	3.85E+01	1.95E-04	2.40E-03	4.93E-04	4.84E-03	4.14E-06	4.22E-01	4.45E-05	0.00E+00	7.21E-05	8.83E-04	1.82E-04	1.78E-03	1.53E-06	1.56E-01	1.64E-05	0.00E+00
2009	Bore/Drill Rigs	D	15	Constructic	U	Fresno	2.66E-01	6.80E-01	3.21E-01	1.29E-06	2.15E-05	4.10E-06	2.57E-05	5.47E-08	3.52E-03	3.70E-07	0.00E+00	1.90E-06	3.16E-05	6.03E-06	3.78E-05	8.04E-08	5.17E-03	5.44E-07	0.00E+00
2009	Bore/Drill Rigs	D	25	Constructic	U	Fresno	7.99E-01	2.04E+00	1.49E+00	7.32E-06	6.77E-05	2.06E-05	1.32E-04	2.07E-07	1.63E-02	1.85E-06	0.00E+00	3.59E-06	3.32E-05	1.01E-05	6.48E-05	1.01E-07	7.99E-03	9.09E-07	0.00E+00
2009	Bore/Drill Rigs	D	50	Constructic	U	Fresno	3.49E+00	9.28E+00	1.32E+01	1.03E-04	1.21E-03	3.11E-04	1.32E-03	1.86E-06	1.44E-01	2.80E-05	0.00E+00	1.11E-05	1.30E-04	3.35E-05	1.43E-04	2.00E-07	1.55E-02	3.02E-06	0.00E+00
2009	Bore/Drill Rigs	D	120	Constructic	U	Fresno	1.07E+01	2.85E+01	1.00E+02	7.42E-04	6.92E-03	1.22E-03	9.68E-03	1.29E-05	1.10E+00	1.10E-04	0.00E+00	2.61E-05	2.43E-04	4.29E-05	3.40E-04	4.52E-07	3.85E-02	3.87E-06	0.00E+00

2009	Bore/Drill Rigs	D	175	Constructic	U	Fresno	2.48E+00	6.59E+00	4.23E+01	1.74E-04	2.48E-03	3.46E-04	3.36E-03	5.22E-06	4.64E-01	3.12E-05	0.00E+00	2.64E-05	3.77E-04	5.26E-05	5.10E-04	7.93E-07	7.05E-02	4.74E-06	0.00E+00
2009	Bore/Drill Rigs	D	250	Constructic	U	Fresno	2.13E+00	5.66E+00	4.82E+01	1.12E-04	9.84E-04	2.83E-04	3.71E-03	5.99E-06	5.32E-01	2.55E-05	0.00E+00	1.98E-05	1.74E-04	4.99E-05	6.55E-04	1.06E-06	9.40E-02	4.50E-06	0.00E+00
2009	Bore/Drill Rigs	D	500	Constructic	U	Fresno	4.74E+00	1.26E+01	1.77E+02	3.93E-04	3.52E-03	9.57E-04	1.16E-02	1.92E-05	1.96E+00	8.64E-05	0.00E+00	3.12E-05	2.79E-04	7.59E-05	9.23E-04	1.53E-06	1.56E-01	6.85E-06	0.00E+00
2009	Excavators	D	25	Constructic	U	Fresno	9.86E-01	4.33E+00	3.24E+00	1.44E-05	1.47E-04	4.32E-05	2.75E-04	4.52E-07	3.56E-02	3.90E-06	0.00E+00	3.32E-06	3.38E-05	9.98E-06	6.35E-05	1.04E-07	8.21E-03	9.00E-07	0.00E+00
2009	Excavators	D	50	Constructic	U	Fresno	3.71E+01	1.67E+02	1.95E+02	2.47E-03	2.72E-02	1.04E-02	2.23E-02	2.69E-05	2.08E+00	9.41E-04	0.00E+00	1.48E-05	1.63E-04	6.26E-05	1.34E-04	1.62E-07	1.25E-02	5.65E-06	0.00E+00
2009	Excavators	D	120	Constructic	U	Fresno	1.01E+02	4.52E+02	1.53E+03	1.90E-02	1.21E-01	3.43E-02	2.03E-01	1.95E-04	1.66E+01	3.10E-03	0.00E+00	4.20E-05	2.69E-04	7.59E-05	4.49E-04	4.31E-07	3.68E-02	6.85E-06	0.00E+00
2009	Excavators	D	175	Constructic	U	Fresno	1.94E+02	8.72E+02	4.47E+03	3.07E-02	2.93E-01	6.82E-02	5.23E-01	5.50E-04	4.89E+01	6.15E-03	0.00E+00	3.52E-05	3.36E-04	7.82E-05	5.99E-04	6.31E-07	5.61E-02	7.05E-06	0.00E+00
2009	Excavators	D	250	Constructic	U	Fresno	7.91E+01	3.55E+02	2.55E+03	9.84E-03	7.33E-02	2.71E-02	2.84E-01	3.16E-04	2.81E+01	2.45E-03	0.00E+00	2.77E-05	2.07E-04	7.64E-05	8.02E-04	8.92E-07	7.93E-02	6.89E-06	0.00E+00
2009	Excavators	D	500	Constructic	U	Fresno	5.71E+01	2.56E+02	2.71E+03	9.64E-03	8.43E-02	2.65E-02	2.64E-01	2.93E-04	2.99E+01	2.39E-03	0.00E+00	3.77E-05	3.29E-04	1.04E-04	1.03E-03	1.15E-06	1.17E-01	9.34E-06	0.00E+00
2009	Concrete/Industrial Saws	D	25	Constructic	U	Fresno	1.07E-01	1.99E-01	1.49E-01	7.01E-07	6.73E-06	2.00E-06	1.29E-05	2.07E-08	1.64E-03	1.81E-07	0.00E+00	3.53E-06	3.39E-05	1.01E-05	6.47E-05	1.04E-07	8.23E-03	9.09E-07	0.00E+00
2009	Concrete/Industrial Saws	D	50	Constructic	U	Fresno	9.33E-01	1.70E+00	2.40E+00	2.70E-05	2.82E-04	1.13E-04	2.66E-04	3.32E-07	2.57E-02	1.02E-05	0.00E+00	1.59E-05	1.65E-04	6.61E-05	1.56E-04	1.95E-07	1.51E-02	5.97E-06	0.00E+00
2009	Concrete/Industrial Saws	D	120	Constructic	U	Fresno	1.63E+00	2.97E+00	1.01E+01	1.12E-04	7.46E-04	2.14E-04	1.35E-03	1.29E-06	1.10E-01	1.93E-05	0.00E+00	3.77E-05	2.51E-04	7.20E-05	4.55E-04	4.35E-07	3.70E-02	6.50E-06	0.00E+00
2009	Concrete/Industrial Saws	D	175	Constructic	U	Fresno	5.33E-02	9.73E-02	7.11E-01	4.39E-06	4.29E-05	9.99E-06	8.50E-05	8.76E-08	7.79E-03	9.02E-07	0.00E+00	4.51E-05	4.41E-04	1.03E-04	8.73E-04	9.00E-07	8.00E-02	9.27E-06	0.00E+00
2009	Cement and Mortar Mixers	D	15	Constructic	U	Fresno	1.36E+01	1.29E+01	3.71E+00	2.11E-05	2.51E-04	5.30E-05	3.42E-04	6.32E-07	4.06E-02	4.78E-06	0.00E+00	1.64E-06	1.95E-05	4.12E-06	2.66E-05	4.91E-08	3.16E-03	3.72E-07	0.00E+00
2009	Cement and Mortar Mixers	D	25	Constructic	U	Fresno	1.23E+00	1.16E+00	9.30E-01	6.72E-06	5.73E-05	2.17E-05	9.71E-05	1.29E-07	1.02E-02	1.95E-06	0.00E+00	5.80E-06	4.95E-05	1.87E-05	8.38E-05	1.11E-07	8.77E-03	1.69E-06	0.00E+00
2009	Cranes	D	50	Constructic	U	Fresno	9.06E-01	3.65E+00	3.99E+00	5.55E-05	5.95E-04	2.51E-04	4.72E-04	5.47E-07	4.23E-02	2.26E-05	0.00E+00	1.52E-05	1.63E-04	6.87E-05	1.29E-04	1.50E-07	1.16E-02	6.20E-06	0.00E+00
2009	Cranes	D	120	Constructic	U	Fresno	9.94E+00	4.01E+01	9.24E+01	1.27E-03	7.53E-03	2.38E-03	1.38E-02	1.18E-05	1.00E+00	2.15E-04	0.00E+00	3.16E-05	1.88E-04	5.93E-05	3.45E-04	2.94E-07	2.51E-02	5.35E-06	0.00E+00
2009	Cranes	D	175	Constructic	U	Fresno	9.94E+00	4.01E+01	1.47E+02	1.13E-03	9.82E-03	2.56E-03	1.97E-02	1.81E-05	1.61E+00	2.31E-04	0.00E+00	2.82E-05	2.45E-04	6.38E-05	4.92E-04	4.52E-07	4.01E-02	5.75E-06	0.00E+00
2009	Cranes	D	250	Constructic	U	Fresno	1.93E+01	7.77E+01	3.96E+02	1.95E-03	1.42E-02	5.10E-03	5.09E-02	4.90E-05	4.35E+00	4.60E-04	0.00E+00	2.50E-05	1.83E-04	6.56E-05	6.55E-04	6.30E-07	5.60E-02	5.92E-06	0.00E+00
2009	Cranes	D	500	Constructic	U	Fresno	7.06E+00	2.85E+01	2.33E+02	1.03E-03	1.02E-02	2.72E-03	2.67E-02	2.51E-05	2.56E+00	2.45E-04	0.00E+00	3.63E-05	3.57E-04	9.55E-05	9.38E-04	8.83E-07	9.00E-02	8.62E-06	0.00E+00
2009	Graders	D	50	Constructic	U	Fresno	3.73E-01	1.12E+00	1.45E+00	1.92E-05	2.07E-04	8.46E-05	1.68E-04	1.99E-07	1.54E-02	7.64E-06	0.00E+00	1.71E-05	1.85E-04	7.55E-05	1.50E-04	1.78E-07	1.38E-02	6.81E-06	0.00E+00
2009	Graders	D	120	Constructic	U	Fresno	2.49E+01	7.48E+01	2.58E+02	3.36E-03	2.06E-02	6.22E-03	3.67E-02	3.29E-05	2.80E+00	5.61E-04	0.00E+00	4.49E-05	2.76E-04	8.31E-05	4.91E-04	4.39E-07	3.74E-02	7.50E-06	0.00E+00
2009	Graders	D	175	Constructic	U	Fresno	8.50E+01	2.56E+02	1.45E+03	1.05E-02	9.50E-02	2.36E-02	1.84E-01	1.78E-04	1.58E+01	2.13E-03	0.00E+00	4.11E-05	3.72E-04	9.22E-05	7.19E-04	6.97E-07	6.19E-02	8.32E-06	0.00E+00
2009	Graders	D	250	Constructic	U	Fresno	5.28E+01	1.59E+02	1.24E+03	5.58E-03	4.11E-02	1.47E-02	1.51E-01	1.53E-04	1.36E+01	1.33E-03	0.00E+00	3.52E-05	2.59E-04	9.28E-05	9.51E-04	9.67E-07	8.60E-02	8.37E-06	0.00E+00
2009	Graders	D	500	Constructic	U	Fresno	1.49E+00	4.49E+00	4.68E+01	1.91E-04	1.82E-03	5.04E-04	5.04E-03	5.05E-06	5.14E-01	4.55E-05	0.00E+00	4.26E-05	4.05E-04	1.12E-04	1.12E-03	1.13E-06	1.15E-01	1.01E-05	0.00E+00
2009	Off-Highway Trucks	D	175	Constructic	U	Fresno	1.73E+00	1.09E+01	6.21E+01	4.44E-04	4.15E-03	1.00E-03	7.46E-03	7.64E-06	6.79E-01	9.02E-05	0.00E+00	4.08E-05	3.82E-04	9.20E-05	6.87E-04	7.03E-07	6.25E-02	8.30E-06	0.00E+00
2009	Off-Highway Trucks	D	250	Constructic	U	Fresno	1.28E+01	8.02E+01	6.06E+02	2.46E-03	1.82E-02	6.91E-03	6.95E-02	7.51E-05	6.67E+00	6.24E-04	0.00E+00	3.07E-05	2.26E-04	8.62E-05	8.66E-04	9.36E-07	8.32E-02	7.77E-06	0.00E+00
2009	Off-Highway Trucks	D	500	Constructic	U	Fresno	1.80E+01	1.13E+02	1.40E+03	5.22E-03	4.57E-02	1.47E-02	1.40E-01	1.51E-04	1.54E+01	1.32E-03	0.00E+00	4.62E-05	4.05E-04	1.30E-04	1.24E-03	1.34E-06	1.36E-01	1.17E-05	0.00E+00
2009	Crushing/Proc. Equipment	D	50	Constructic	U	Fresno	4.26E+00	1.28E+01	2.65E+01	3.48E-04	3.67E-03	1.54E-03	3.05E-03	3.64E-06	2.82E-01	1.39E-04	0.00E+00	2.71E-05	2.86E-04	1.20E-04	2.38E-04	2.84E-07	2.20E-02	1.08E-05	0.00E+00
2009	Crushing/Proc. Equipment	D	120	Constructic	U	Fresno	1.20E+01	3.61E+01	1.38E+02	1.80E-03	1.08E-02	3.36E-03	1.97E-02	1.76E-05	1.50E+00	3.03E-04	0.00E+00	4.99E-05	3.00E-04	9.30E-05	5.45E-04	4.87E-07	4.15E-02	8.39E-06	0.00E+00
2009	Crushing/Proc. Equipment	D	175	Constructic	U	Fresno	5.09E+00	1.53E+01	1.17E+02	8.46E-04	7.46E-03	1.90E-03	1.50E-02	1.44E-05	1.28E+00	1.71E-04	0.00E+00	5.53E-05	4.88E-04	1.24E-04	9.80E-04	9.40E-07	8.36E-02	1.12E-05	0.00E+00
2009	Crushing/Proc. Equipment	D	250	Constructic	U	Fresno	5.06E-01	1.52E+00	1.69E+01	6.85E-05	5.03E-04	1.81E-04	2.04E-03	2.09E-06	1.86E-01	1.64E-05	0.00E+00	4.50E-05	3.30E-04	1.19E-04	1.34E-03	1.37E-06	1.22E-01	1.08E-05	0.00E+00
2009	Crushing/Proc. Equipment	D	500	Constructic	U	Fresno	2.85E+00	8.57E+00	1.45E+02	5.41E-04	4.94E-03	1.40E-03	1.56E-02	1.57E-05	1.60E+00	1.26E-04	0.00E+00	6.31E-05	5.76E-04	1.63E-04	1.82E-03	1.83E-06	1.87E-01	1.47E-05	0.00E+00
2009	Rough Terrain Forklifts	D	50	Constructic	U	Fresno	2.96E+00	1.06E+01	1.68E+01	2.12E-04	2.29E-03	9.13E-04	1.91E-03	2.31E-06	1.79E-01	8.24E-05	0.00E+00	2.01E-05	2.16E-04	8.65E-05	1.81E-04	2.19E-07	1.69E-02	7.80E-06	0.00E+00
2009	Rough Terrain Forklifts	D	120	Constructic	U	Fresno	1.42E+02	5.06E+02	1.45E+03	1.81E-02	1.14E-01	3.30E-02	1.97E-01	1.85E-04	1.58E+01	2.98E-03	0.00E+00	3.58E-05	2.24E-04	6.52E-05	3.89E-04	3.66E-07	3.12E-02	5.89E-06	0.00E+00
2009	Rough Terrain Forklifts	D	175	Constructic	U	Fresno	1.81E+01	6.48E+01	3.70E+02	2.55E-03	2.37E-02	5.65E-03	4.46E-02	4.55E-05	4.04E+00	5.10E-04	0.00E+00	3.94E-05	3.66E-04	8.72E-05	6.88E-04	7.02E-07	6.24E-02	7.87E-06	0.00E+00
2009	Rough Terrain Forklifts	D	250	Constructic	U	Fresno	1.01E+00	3.62E+00	2.80E+01	1.10E-04	8.21E-04	2.94E-04	3.21E-03	3.47E-06	3.09E-01	2.65E-05	0.00E+00	3.05E-05	2.27E-04	8.12E-05	8.88E-04	9.60E-07	8.53E-02	7.33E-06	0.00E+00
2009	Rough Terrain Forklifts	D	500	Constructic	U	Fresno	6.66E-01	2.38E+00	2.77E+01	1.00E-04	8.90E-04	2.63E-04	2.79E-03	2.99E-06	3.05E-01	2.38E-05	0.00E+00	4.21E-05	3.74E-04	1.11E-04	1.17E-03	1.26E-06	1.28E-01	9.99E-06	0.00E+00
2009	Rubber Tired Loaders	D	25	Constructic	U	Fresno	3.73E-01	1.12E+00	8.66E-01	4.07E-06	3.91E-05	1.16E-05	7.47E-05	1.21E-07	9.50E-03	1.05E-06	0.00E+00	3.62E-06	3.48E-05	1.03E-05	6.65E-05	1.07E-07	8.46E-03	9.34E-07	0.00E+00
2009	Rubber Tired Loaders	D	50	Constructic	U	Fresno	7.25E+00	2.23E+01	3.26E+01	4.27E-04	4.60E-03	1.87E-03	3.76E-03	4.48E-06	3.46E-01	1.69E-04	0.00E+00	1.92E-05	2.07E-04	8.42E-05	1.69E-04	2.01E-07	1.56E-02	7.60E-06	0.00E+00
2009	Rubber Tired Loaders	D	120	Constructic	U	Fresno	1.97E+02	6.05E+02	1.64E+03	2.11E-02	1.30E-01	3.91E-02	2.32E-01	2.09E-04	1.78E+01	3.53E-03	0.00E+00	3.49E-05	2.16E-04	6.46E-05	3.83E-04	3.45E-07	2.94E-02	5.83E-06	0.00E+00
2009	Rubber Tired Loaders	D	175	Constructic	U	Fresno	1.11E+02	3.41E+02	1.66E+03	1.19E-02	1.08E-01	2.67E-02	2.09E-01	2.04E-04	1.81E+01	2.41E-03	0.00E+00	3.49E-05	3.17E-04	7.82E-05	6.12E-04	5.98E-07	5.31E-02	7.05E-06	0.00E+00
2009	Rubber Tired Loaders	D	250	Constructic	U	Fresno	1.10E+02	3.39E+02	2.29E+03	1.02E-02	7.51E-02	2.67E-02	2.77E-01	2.84E-04	2.52E+01	2.41E-03	0.00E+00	2.99E-05	2.21E-04	7.88E-05	8.16E-04	8.37E-07	7.44E-02	7.11E-06	0.00E+00
2009	Rubber Tired Loaders	D	500	Constructic	U	Fresno	4.60E+01	1.41E+02	1.52E+03	6.11E-03	5.79E-02	1.61E-02	1.62E-01	1.64E-04	1.67E+01	1.45E-03	0.00E+00	4.33E-05	4.10E-04	1.14E-04	1.15E-03	1.16E-06	1.18E-01	1.03E-05	0.00E+00
2009	Rubber Tired Dozers	D	175	Constructic	U	Fresno	2.66E-01	1.37E+00	8.15E+00	7.39E-05	6.02E-04	1.71E-04	1.28E-03	9.99E-07	8.88E-02	1.55E-05	0.00E+00	5.38E-05	4.38E-04	1.25E-04	9.35E-04	7.28E-07	6.47E-02	1.13E-05	0.00E+00
2009	Rubber Tired Dozers	D	250	Constructic	U	Fresno	6.53E+00	3.36E+01	2.81E+02	1.89E-03	1.36E-02	4.86E-03	4.30E-02	3.47E-05	3.08E+00	4.38E-04	0.00E+00	5.61E-05	4.05E-04	1.44E-04	1.28E-03	1.03E-06	9.17E-02	1.30E-05	0.00E+00
2009	Rubber Tired Dozers	D	500	Constructic	U	Fresno	1.00E+01	5.18E+01	6.27E+02	3.70E-03	4.81E-02	9.71E-03	8.67E-02	6.72E-05	6.85E+00	8.76E-04	0.00E+00	7.15E-05	9.29E-04	1.88E-04	1.67E-03	1.30E-06	1.32E-01	1.69E-05	0.00E+00
2009	Tractors/Loaders/Backhoes	D	25	Constructic	U	Fresno	7.51E+00	2.23E+01	1.61E+01	8.80E-05	7.76E-04	2.50E-04	1.51E-03	2.24E-06	1.77E-01	2.25E-05	0.00E+00	3.95E-06	3.48E-05	1.12E-05	6.77E-05	1.01E-07	7.92E-03	1.01E-06	0.00E+00
2009	Tractors/Loaders/Backhoes	D	50	Constructic	U	Fresno	4.49E+01	1.37E+02	1.94E+02	2.30E-03	2.52E-02	9.52E-03	2.16E-02	2.68E-05	2.07E+00	8.59E-04	0.00E+00	1.68E-05	1.84E-04	6.96E-05	1.58E-04	1.96E-07	1.52E-02	6.28E-06	0.00E+00
2009	Tractors/Loaders/Backhoes	D	120	Constructic	U	Fresno	6.01E+02	1.83E+03	4.34E+03	5.07E-02	3.35E-01	9.07E-02	5.55E-01	5.54E-04	4.73E+01	8.19E-03	0.00E+00	2.77E-05	1.83E-04	4.96E-05	3.03E-04	3.03E-07	2.58E-02	4.48E-06	0.00E+00
2009	Tractors/Loaders/Backhoes	D	175	Constructic	U	Fresno	4.48E+01	1.36E+02	6.32E+02	4.07E-03	4.02E-02	8.91E-03	7.09E-02	7.78E-05	6.91E+00	8.04E-04	0.00E+00	2.98E-05	2.94E-04	6.53E-05	5.19E-04	5.70E-07	5.06E-02	5.89E-06	0.00E+00
2009	Tractors/Loaders/Backhoes	D	250	Constructic	U	Fresno	1.45E+01	4.41E+01	3.44E+02	1.23E-03	9.32E-03	3.31E-03	3.68E-02	4.26E-05	3.79E+00	2.98E-04	0.00E+00	2.79E-05	2.11E-04	7.49E-05	8.33E-04	9.65E-07	8.58E-02	6.76E-06	0.00E+00
2009	Tractors/Loaders/Backhoes	D	500	Constructic	U	Fresno	2.34E+01	7.13E+01	1.11E+03	3.69E-03	3.20E-02	9.79E-03	1.04E-01	1.38E-04	1.23E+01	8.83E-04	0.00E+00	5.18E-05	4.50E-04	1.37E-04	1.46E-03	1.94E-06	1.72E-01	1.24E-05	0.00E+00
2009	Crawler Tractors	D	50	Constructic	U	Fresno	3.73E-01	1.24E+00	1.45E+00	2.08E-05	2.24E-04	9.53E-05	1.74E-04	1.99E-07	1.54E-02	8.60E-06	0.00E+00	1.68E-05	1.81E-04	7.70E-05	1.41E-04	1.61E-07	1.24E-02	6.95E-06	0.00E+00
2009	Crawler Tractors	D	120	Constructic	U	Fresno	2.12E+02	7.02E+02	2.13E+03	3.02E-02	1.78E-01	5.77E-02	3.34E-01	2.71E-04	2.31E+01	5.21E-03	0.00E+00	4.30E-05	2.54E-04	8.22E-05	4.76E-04	3.86E-07	3.29E-02	7.41E-06	0.00E+00
2009	Crawler Tractors	D	175	Constructic	U	Fresno	7.16E+01	2.38E+02	1.32E+03	1.06E-02	9.10E-02	2.42E-02	1.85E-01	1.62E-04	1.44E+01	2.19E-03	0.00E+00	4.48E-05	3.83E-04	1.02E-04	7.80E-04	6.81E-07	6.05E-02	9.20E-06	0.00E+00
2009	Crawler Tractors	D	250	Constructic	U	Fresno	6.16E+01	2.04E+02	1.54E+03	8.47E-03	6.16E-02	2.20E-02	2.09E-01	1.91E-04	1.70E+01	1.98E-03	0.00E+00	4.15E-05	3.02E-04	1.07E-04	1.03E-03	9.34E-07	8.30E-02	9.70E-06	0.00E+00
2009	Crawler Tractors	D	500	Constructic	U	Fresno	4.22E+01	1.40E+02	1.65E+03	8.10E-03	9.04E-02	2.12E-02	2.01E-01	1.78E-04	1.81E+01	1.92E-03	0.00E+00	5.79E-05	6.46E-04	1.52E-04	1.44E-03	1.27E-06	1.29E-01	1.37E-05	0.00E+00
2009	Skid Steer Loaders	D	25	Constructic	U	Fresno	5.12E+01	1.34E+02	8.47E+01	5.76E-04	4.94E-03	1.81E-03	8.63E-03	1.17E-05	9.26E-01	1.63E-04	0.00E+00	4.29E-06	3.68E-05	1.35E-05	6.42E-05	8.74E-08	6.89E-03	1.22E-06	0.00E+00
2009	Skid Steer Loaders	D	50	Constructic	U	Fresno	4.64E+02	1.25E+03	1.48E+03	1.48E-02	1.63E-01	5.57E-02	1.56E-01	2.06E-04	1.59E+01	5.02E-03	0.00E+00	1.19E-05	1.30E-04	4.46E-05	1.25E-04	1.65E-07	1.27E-02	4.03E-06	0.00E+00
2009	Skid Steer Loaders	D	120	Constructic	U	Fresno	2.43E+02	6.54E+02	1.28E+03	1.27E-02	9.32E-02	2.22E-02	1.46E-01	1.64E-04	1.40E+01	2.00E-03	0.00E+00	1.94E-05	1.42E-04	3.39E-05	2.23E-04	2.51E-07	2.14E-02	3.06E-06	0.00E+00
2009	Off-Highway Tractors	D	120	Constructic	U	Fresno	2.66E-02	9.41E-02	4.06E-01	6.14E-06	3.54E-05	1.21E-05	6.97E-05	5.17E-08	4.41E-03	1.09E-06	0.00E+00	6.52E-05	3.76E-04	1.29E-04	7.41E-04	5.49E-07	4.68E-02	1.16E-05	0.00E+00
2009	Off-Highway Tractors	D	175	Constructic	U	Fresno	3.26E+01	1.15E+02	6.88E+02	6.06E-03	4.97E-02	1.40E-02	1.06E-01	8.44E-05	7.50E+00	1.26E-03	0.00E+00	5.27E-05	4.32E-04	1.21E-04	9.24E-04	7.33E-07	6.52E-02	1.09E-05	0.00E+00
2009	Off-Highway Tractors	D	250	Constructic	U	Fresno	3.08E+01	1.09E+02	6.47E+02	4.20E-03	3.04E-02	1.07E-02	9.70E-02	7.97E-05	7.09E+00	9.63E-04	0.00E+00	3.86E-05	2.79E-04	9.81E-05	8.92E-04	7.33E-07	6.52E-02	8.85E-06	0.00E+00
2009	Dumpers/Tenders	D	25	Constructic	U	Fresno	6.40E-01	1.33E+00	4.63E-01	2.63E-06	2.30E-05	7.57E-06	4.41E-05	6.44E-08	5.08E-03	6.83E-07	0.00E+00	1.97E-06	1.72E-05	5.68E-06	3.31E-05	4.83E-08	3.81E-03	5.12E-07	0.00E+00
2009	Other Construction Equipment	D	15	Constructic	U	Fresno	8.82E+00	1.92E+01	8.84E+00	3.56E-05	5.91E-04	1.13E-04	7.08E-04	1.51E-06	9.67E-02	1.02E-05	0.00E+00	1.86E-06	3.08E-05	5.89E-06	3.69E-05	7.86E-08	5.05E-03	5.31E-07	0.00E+00
2009	Other Construction Equipment	D	25	Constructic	U	Fresno	1.49E+00	3.24E+00	1.95E+00	9.61E-06	8.89E-05	2.70E-05	1.74E-04	2.72E-07	2.14E-02	2.44E-06	0.00E+00	2.96E-06	2.74E-05	8.33E-06	5.35E-05	8.38E-08	6.60E-03	7.51E-07	0.00E+00
2009	Other Construction Equipment	D	50	Constructic	U	Fresno	2.29E+00	5.08E+00	6.62E+00	7.18E-05	7.71E-04	2.89E-04	7.20E-04	9.19E-07	7.11E-02	2.60E-05	0.00E+00	1.41E-05	1.52E-04	5.68E-05	1.42E-04	1.81E-07	1.40E-02	5.12E-06	0.00E+00
2009	Other Construction Equipment	D	120	Constructic	U	Fresno	3.78E+00	8.40E+00	3.11E+01	3.31E-04	2.30E-03	6.04E-04	3.88E-03	3.98E-06	3.39E-01	5.45E-05	0.00E+00	3.95E-05	2.74E-04	7.20E-05	4.62E-04	4.74E-07	4.04E-02	6.49E-06	0.00E+00
2009	Other Construction Equipment	D	175	Constructic	U	Fresno	5.22E+00	1.16E+01	5.63E+01	3.32E-04	3.42E-03	7.28E-04	6.17E-03	6.94E-06	6.17E-01	6.57E-05	0.00E+00	2.86E-05	2.95E-04	6.28E-05	5.32E-04	5.99E-07	5.32E-02	5.67E-06	0.00E+00
2009	Other Construction Equipment	D	500	Constructic	U	Fresno	1.21E+01	2.69E+01	3.10E+02	9.69E-04	8.77E-03	2.44E-03	2.85E-02	3.35E-05	3.42E+00	2.20E-04	0.00E+00	3.60E-05	3.26E-04	9.06E-05	1.06E-03	1.25E-06	1.27E-01	8.18E-06	0.00E+00
2009	Aerial Lifts	D	15	Industrial E	U	Fresno	5.24E+00	6.58E+00	2.60E+00	1.38E-05	1.74E-04	3.54E-05	2.28E-04	4.43E-07	2.85E-02	3.20E-06	0.00E+00	2.09E-06	2.65E-05	5.38E-06	3.47E-05	6.73E-08	4.32E-03	4.85E-07	0.00E+00
2009	Aerial Lifts	D	25	Industrial E	U	Fresno	8.56E+00	1.07E+01	5.39E+00	3.80E-05	3.25E-04	1.21E-04	5.58E-04	7.47E-07	5.88E-02	1.10E-05	0.00E+00	3.54E-06	3.02E-05	1.13E-05	5.19E-05	6.95E-08	5.48E-03	1.02E-06	0.00E+00

2009	Aerial Lifts	D	50	Industrial E U	Fresno	3.13E+01	3.78E+01	3.44E+01	3.68E-04	3.70E-03	1.48E-03	3.78E-03	4.79E-06	3.70E-01	1.34E-04	0.00E+00	9.73E-06	9.80E-05	3.93E-05	1.00E-04	1.27E-07	9.80E-03	3.55E-06	0.00E+00
2009	Aerial Lifts	D	120	Industrial E U	Fresno	2.77E+01	3.35E+01	5.84E+01	6.22E-04	4.21E-03	1.23E-03	7.83E-03	7.47E-06	6.37E-01	1.11E-04	0.00E+00	1.86E-05	1.26E-04	3.67E-05	2.34E-04	2.23E-07	1.90E-02	3.31E-06	0.00E+00
2009	Aerial Lifts	D	500	Industrial E U	Fresno	3.55E+00	4.29E+00	4.14E+01	1.34E-04	1.34E-03	3.41E-04	4.29E-03	4.48E-06	4.57E-01	3.08E-05	0.00E+00	3.13E-05	3.11E-04	7.95E-05	1.00E-03	1.04E-06	1.06E-01	7.17E-06	0.00E+00
2009	Forklifts	D	50	Industrial E U	Fresno	9.48E+00	5.37E+01	3.69E+01	4.74E-04	5.13E-03	2.01E-03	4.19E-03	5.09E-06	3.94E-01	1.81E-04	0.00E+00	8.83E-06	9.56E-05	3.75E-05	7.80E-05	9.48E-08	7.33E-03	3.38E-06	0.00E+00
2009	Forklifts	D	120	Industrial E U	Fresno	1.49E+01	8.42E+01	1.21E+02	1.56E-03	9.55E-03	2.77E-03	1.58E-02	1.54E-05	1.31E+00	2.50E-04	0.00E+00	1.86E-05	1.13E-04	3.29E-05	1.87E-04	1.83E-07	1.56E-02	2.97E-06	0.00E+00
2009	Forklifts	D	175	Industrial E U	Fresno	1.49E+01	8.47E+01	2.17E+02	1.53E-03	1.40E-02	3.37E-03	2.53E-02	2.67E-05	2.37E+00	3.04E-04	0.00E+00	1.81E-05	1.65E-04	3.98E-05	2.99E-04	3.15E-07	2.80E-02	3.59E-06	0.00E+00
2009	Forklifts	D	250	Industrial E U	Fresno	1.48E+01	8.40E+01	2.94E+02	1.00E-03	7.35E-03	2.84E-03	3.23E-02	3.64E-05	3.24E+00	2.57E-04	0.00E+00	1.19E-05	8.75E-05	3.38E-05	3.84E-04	4.33E-07	3.85E-02	3.05E-06	0.00E+00
2009	Forklifts	D	500	Industrial E U	Fresno	6.35E+00	3.60E+01	1.81E+02	5.75E-04	4.36E-03	1.61E-03	1.72E-02	1.96E-05	1.99E+00	1.45E-04	0.00E+00	1.60E-05	1.21E-04	4.47E-05	4.78E-04	5.44E-07	5.54E-02	4.03E-06	0.00E+00
2009	Sweepers/Scrubbers	D	15	Industrial E U	Fresno	6.95E-01	1.42E+00	7.75E-01	2.53E-06	5.18E-05	8.80E-06	6.19E-05	1.32E-07	8.49E-03	7.94E-07	0.00E+00	1.78E-06	3.64E-05	6.18E-06	4.35E-05	9.28E-08	5.96E-03	5.58E-07	0.00E+00
2009	Sweepers/Scrubbers	D	25	Industrial E U	Fresno	6.95E-01	1.42E+00	1.27E+00	6.00E-06	5.74E-05	1.71E-05	1.10E-04	1.77E-07	1.39E-02	1.54E-06	0.00E+00	4.22E-06	4.03E-05	1.20E-05	7.71E-05	1.24E-07	9.80E-03	1.08E-06	0.00E+00
2009	Sweepers/Scrubbers	D	50	Industrial E U	Fresno	1.35E+01	5.20E+01	7.70E+01	9.88E-04	1.05E-02	4.30E-03	8.74E-03	1.06E-05	8.20E-01	3.88E-04	0.00E+00	1.90E-05	2.02E-04	8.25E-05	1.68E-04	2.04E-07	1.58E-02	7.45E-06	0.00E+00
2009	Sweepers/Scrubbers	D	120	Industrial E U	Fresno	2.24E+01	8.61E+01	2.96E+02	3.85E-03	2.32E-02	6.93E-03	3.98E-02	3.79E-05	3.23E+00	6.25E-04	0.00E+00	4.47E-05	2.69E-04	8.04E-05	4.62E-04	4.40E-07	3.75E-02	7.26E-06	0.00E+00
2009	Sweepers/Scrubbers	D	175	Industrial E U	Fresno	1.03E+01	3.96E+01	2.52E+02	1.79E-03	1.60E-02	3.93E-03	3.02E-02	3.10E-05	2.75E+00	3.55E-04	0.00E+00	4.51E-05	4.03E-04	9.92E-05	7.62E-04	7.81E-07	6.94E-02	8.95E-06	0.00E+00
2009	Sweepers/Scrubbers	D	250	Industrial E U	Fresno	1.65E+00	6.34E+00	4.66E+01	1.62E-04	1.19E-03	4.45E-04	5.26E-03	5.78E-06	5.13E-01	4.02E-05	0.00E+00	2.56E-05	1.87E-04	7.02E-05	8.29E-04	9.11E-07	8.09E-02	6.33E-06	0.00E+00
2009	Other General Industrial Equipmen	D	15	Industrial E U	Fresno	1.83E+00	8.19E+00	2.39E+00	7.81E-06	1.60E-04	2.71E-05	1.91E-04	4.07E-07	2.62E-02	2.45E-06	0.00E+00	9.54E-07	1.95E-05	3.31E-06	2.33E-05	4.97E-08	3.19E-03	2.99E-07	0.00E+00
2009	Other General Industrial Equipmen	D	25	Industrial E U	Fresno	2.45E+00	1.10E+01	7.66E+00	3.41E-05	3.46E-04	1.02E-04	6.52E-04	1.07E-06	8.41E-02	9.23E-06	0.00E+00	3.11E-06	3.16E-05	9.32E-06	5.94E-05	9.73E-08	7.67E-03	8.41E-07	0.00E+00
2009	Other General Industrial Equipmen	D	50	Industrial E U	Fresno	3.03E+00	1.36E+01	1.39E+01	2.01E-04	2.12E-03	9.11E-04	1.65E-03	1.91E-06	1.48E-01	8.22E-05	0.00E+00	1.48E-05	1.56E-04	6.70E-05	1.22E-04	1.40E-07	1.09E-02	6.05E-06	0.00E+00
2009	Other General Industrial Equipmen	D	120	Industrial E U	Fresno	1.21E+01	5.44E+01	1.55E+02	2.23E-03	1.27E-02	4.13E-03	2.32E-02	1.98E-05	1.68E+00	3.73E-04	0.00E+00	4.10E-05	2.34E-04	7.61E-05	4.27E-04	3.64E-07	3.10E-02	6.86E-06	0.00E+00
2009	Other General Industrial Equipmen	D	175	Industrial E U	Fresno	1.22E+01	5.45E+01	2.39E+02	1.90E-03	1.59E-02	4.28E-03	3.23E-02	2.94E-05	2.61E+00	3.86E-04	0.00E+00	3.48E-05	2.91E-04	7.84E-05	5.92E-04	5.39E-07	4.79E-02	7.07E-06	0.00E+00
2009	Other General Industrial Equipmen	D	250	Industrial E U	Fresno	1.21E+01	5.43E+01	3.34E+02	1.46E-03	1.05E-02	3.97E-03	4.26E-02	4.14E-05	3.68E+00	3.58E-04	0.00E+00	2.69E-05	1.93E-04	7.30E-05	7.84E-04	7.62E-07	6.77E-02	6.59E-06	0.00E+00
2009	Other General Industrial Equipmen	D	500	Industrial E U	Fresno	1.21E+01	5.42E+01	6.53E+02	2.61E-03	2.35E-02	7.02E-03	7.36E-02	7.05E-05	7.19E+00	6.34E-04	0.00E+00	4.82E-05	4.33E-04	1.30E-04	1.36E-03	1.30E-06	1.33E-01	1.17E-05	0.00E+00
2009	Other Material Handling Equipment	D	50	Industrial E U	Fresno	8.69E-02	3.61E-01	5.16E-01	7.36E-06	7.78E-05	3.34E-05	6.10E-05	7.07E-08	5.47E-03	3.01E-06	0.00E+00	2.04E-05	2.16E-04	9.25E-05	1.69E-04	1.96E-07	1.52E-02	8.35E-06	0.00E+00
2009	Other Material Handling Equipment	D	120	Industrial E U	Fresno	5.22E-01	2.16E+00	6.04E+00	8.60E-05	4.92E-04	1.60E-04	9.02E-04	7.69E-07	6.56E-02	1.44E-05	0.00E+00	3.98E-05	2.27E-04	7.38E-05	4.17E-04	3.56E-07	3.03E-02	6.66E-06	0.00E+00
2009	Other Material Handling Equipment	D	175	Industrial E U	Fresno	5.59E-01	2.32E+00	1.29E+01	1.02E-04	8.55E-04	2.29E-04	1.74E-03	1.59E-06	1.41E-01	2.07E-05	0.00E+00	4.40E-05	3.69E-04	9.89E-05	7.51E-04	6.86E-07	6.10E-02	8.92E-06	0.00E+00
2009	Other Material Handling Equipment	D	250	Industrial E U	Fresno	1.33E+00	5.51E+00	3.63E+01	1.58E-04	1.14E-03	4.26E-04	4.61E-03	4.49E-06	3.99E-01	3.85E-05	0.00E+00	2.86E-05	2.06E-04	7.73E-05	8.36E-04	8.15E-07	7.24E-02	6.98E-06	0.00E+00
2009	Other Material Handling Equipment	D	500	Industrial E U	Fresno	2.48E-01	1.03E+00	8.96E+00	3.57E-05	3.22E-04	9.52E-05	1.01E-03	9.68E-07	9.86E-02	8.59E-06	0.00E+00	3.46E-05	3.12E-04	9.24E-05	9.78E-04	9.40E-07	9.57E-02	8.34E-06	0.00E+00
2009	Generator Sets	D	15	Light Comr U	Fresno	1.18E+02	8.51E+01	3.98E+01	3.09E-04	3.13E-03	7.65E-04	5.06E-03	6.76E-06	4.34E-01	6.90E-05	0.00E+00	3.63E-06	3.67E-05	8.99E-06	5.94E-05	7.93E-08	5.10E-03	8.11E-07	0.00E+00
2009	Generator Sets	D	25	Light Comr U	Fresno	8.66E+01	6.23E+01	5.02E+01	3.48E-04	3.31E-03	9.77E-04	5.39E-03	6.96E-06	5.48E-01	8.82E-05	0.00E+00	5.60E-06	5.31E-05	1.57E-05	8.65E-05	1.12E-07	8.81E-03	1.42E-06	0.00E+00
2009	Generator Sets	D	50	Light Comr U	Fresno	1.06E+02	7.60E+01	1.08E+02	1.12E-03	1.12E-02	4.44E-03	1.18E-02	1.50E-05	1.16E+00	4.01E-04	0.00E+00	1.47E-05	1.47E-04	5.84E-05	1.55E-04	1.98E-07	1.53E-02	5.27E-06	0.00E+00
2009	Generator Sets	D	120	Light Comr U	Fresno	1.61E+02	1.16E+02	4.13E+02	4.26E-03	2.94E-02	8.47E-03	5.46E-02	5.28E-05	4.50E+00	7.64E-04	0.00E+00	3.68E-05	2.54E-04	7.33E-05	4.73E-04	4.57E-07	3.89E-02	6.62E-06	0.00E+00
2009	Generator Sets	D	175	Light Comr U	Fresno	9.49E+00	6.83E+00	4.42E+01	2.53E-04	2.56E-03	5.97E-04	5.27E-03	5.45E-06	4.84E-01	5.39E-05	0.00E+00	3.71E-05	3.74E-04	8.75E-05	7.71E-04	7.98E-07	7.09E-02	7.89E-06	0.00E+00
2009	Generator Sets	D	250	Light Comr U	Fresno	5.31E+00	3.82E+00	3.67E+01	1.24E-04	1.01E-03	3.29E-04	4.13E-03	4.56E-06	4.05E-01	2.96E-05	0.00E+00	3.26E-05	2.65E-04	8.61E-05	1.08E-03	1.19E-06	1.06E-01	7.77E-06	0.00E+00
2009	Generator Sets	D	500	Light Comr U	Fresno	1.18E+01	8.49E+00	1.30E+02	4.09E-04	4.04E-03	1.04E-03	1.33E-02	1.40E-05	1.43E+00	9.38E-05	0.00E+00	4.82E-05	4.76E-04	1.22E-04	1.57E-03	1.65E-06	1.68E-01	1.10E-05	0.00E+00
2009	Pumps	D	15	Light Comr U	Fresno	8.89E+01	7.62E+01	2.60E+01	2.50E-04	2.04E-03	5.85E-04	3.38E-03	4.40E-06	2.83E-01	5.28E-05	0.00E+00	3.28E-06	2.67E-05	7.68E-06	4.44E-05	5.77E-08	3.71E-03	6.93E-07	0.00E+00
2009	Pumps	D	25	Light Comr U	Fresno	2.65E+01	2.28E+01	2.03E+01	1.58E-04	1.34E-03	5.21E-04	2.18E-03	2.81E-06	2.22E-01	4.70E-05	0.00E+00	6.93E-06	5.87E-05	2.29E-05	9.57E-05	1.24E-07	9.73E-03	2.06E-06	0.00E+00
2009	Pumps	D	50	Light Comr U	Fresno	4.63E+01	3.97E+01	6.33E+01	6.83E-04	6.90E-03	2.78E-03	6.98E-03	8.80E-06	6.81E-01	2.50E-04	0.00E+00	1.72E-05	1.74E-04	6.99E-05	1.76E-04	2.22E-07	1.72E-02	6.31E-06	0.00E+00
2009	Pumps	D	120	Light Comr U	Fresno	9.07E+01	7.78E+01	2.78E+02	2.99E-03	2.01E-02	5.89E-03	3.73E-02	3.56E-05	3.03E+00	5.31E-04	0.00E+00	3.84E-05	2.58E-04	7.57E-05	4.80E-04	4.57E-07	3.89E-02	6.83E-06	0.00E+00
2009	Pumps	D	175	Light Comr U	Fresno	9.82E+00	8.42E+00	5.38E+01	3.21E-04	3.16E-03	7.51E-04	6.51E-03	6.63E-06	5.90E-01	6.78E-05	0.00E+00	3.81E-05	3.75E-04	8.92E-05	7.72E-04	7.88E-07	7.00E-02	8.05E-06	0.00E+00
2009	Pumps	D	250	Light Comr U	Fresno	7.07E+00	6.07E+00	5.54E+01	1.95E-04	1.55E-03	5.13E-04	6.32E-03	6.87E-06	6.10E-01	4.63E-05	0.00E+00	3.21E-05	2.55E-04	8.46E-05	1.04E-03	1.13E-06	1.01E-01	7.63E-06	0.00E+00
2009	Pumps	D	500	Light Comr U	Fresno	1.40E-01	1.20E-01	1.87E+00	6.12E-06	6.07E-05	1.55E-05	1.95E-04	2.03E-07	2.06E-02	1.40E-06	0.00E+00	5.11E-05	5.07E-04	1.30E-04	1.62E-03	1.69E-06	1.72E-01	1.17E-05	0.00E+00
2009	Air Compressors	D	15	Light Comr U	Fresno	1.21E+00	2.10E+00	6.96E-01	6.70E-06	5.46E-05	1.57E-05	9.06E-05	1.18E-07	7.57E-03	1.41E-06	0.00E+00	3.19E-06	2.60E-05	7.47E-06	4.32E-05	5.61E-08	3.61E-03	6.74E-07	0.00E+00
2009	Air Compressors	D	25	Light Comr U	Fresno	2.40E+00	4.16E+00	2.75E+00	2.13E-05	1.81E-04	7.05E-05	2.95E-04	3.81E-07	3.00E-02	6.36E-06	0.00E+00	5.14E-06	4.35E-05	1.70E-05	7.09E-05	9.16E-08	7.22E-03	1.53E-06	0.00E+00
2009	Air Compressors	D	50	Light Comr U	Fresno	2.18E+01	3.78E+01	3.95E+01	5.14E-04	5.37E-03	2.28E-03	4.55E-03	5.43E-06	4.20E-01	2.06E-04	0.00E+00	1.36E-05	1.42E-04	6.03E-05	1.20E-04	1.44E-07	1.11E-02	5.44E-06	0.00E+00
2009	Air Compressors	D	120	Light Comr U	Fresno	1.45E+02	2.52E+02	5.42E+02	7.03E-03	4.23E-02	1.33E-02	7.82E-02	6.92E-05	5.90E+00	1.20E-03	0.00E+00	2.79E-05	1.68E-04	5.28E-05	3.11E-04	2.75E-07	2.35E-02	4.77E-06	0.00E+00
2009	Air Compressors	D	175	Light Comr U	Fresno	5.49E+00	9.53E+00	3.85E+01	2.77E-04	2.43E-03	6.28E-04	5.00E-03	4.74E-06	4.21E-01	5.66E-05	0.00E+00	2.90E-05	2.56E-04	6.59E-05	5.25E-04	4.97E-07	4.42E-02	5.95E-06	0.00E+00
2009	Air Compressors	D	250	Light Comr U	Fresno	7.73E+00	1.34E+01	7.98E+01	3.28E-04	2.41E-03	8.65E-04	9.77E-03	9.88E-06	8.78E-01	7.81E-05	0.00E+00	2.45E-05	1.80E-04	6.46E-05	7.29E-04	7.38E-07	6.56E-02	5.83E-06	0.00E+00
2009	Air Compressors	D	500	Light Comr U	Fresno	1.01E+01	1.75E+01	1.84E+02	6.92E-04	6.42E-03	1.78E-03	2.01E-02	1.99E-05	2.02E+00	1.61E-04	0.00E+00	3.96E-05	3.67E-04	1.02E-04	1.15E-03	1.14E-06	1.16E-01	9.19E-06	0.00E+00
2009	Welders	D	15	Light Comr U	Fresno	4.02E+01	5.50E+01	1.57E+01	1.51E-04	1.23E-03	3.53E-04	2.04E-03	2.65E-06	1.71E-01	3.19E-05	0.00E+00	2.74E-06	2.23E-05	6.42E-06	3.71E-05	4.83E-08	3.10E-03	5.79E-07	0.00E+00
2009	Welders	D	25	Light Comr U	Fresno	3.54E+01	4.84E+01	2.50E+01	1.94E-04	1.65E-03	6.41E-04	2.68E-03	3.46E-06	2.73E-01	5.79E-05	0.00E+00	4.01E-06	3.40E-05	1.32E-05	5.54E-05	7.15E-08	5.64E-03	1.20E-06	0.00E+00
2009	Welders	D	50	Light Comr U	Fresno	1.09E+02	1.49E+02	1.81E+02	2.21E-03	2.28E-02	9.51E-03	2.05E-02	2.50E-05	1.93E+00	8.58E-04	0.00E+00	1.48E-05	1.53E-04	6.39E-05	1.37E-04	1.68E-07	1.30E-02	5.76E-06	0.00E+00
2009	Welders	D	120	Light Comr U	Fresno	8.45E+01	1.16E+02	2.10E+02	2.54E-03	1.59E-02	4.88E-03	2.95E-02	2.68E-05	2.28E+00	4.40E-04	0.00E+00	2.20E-05	1.38E-04	4.22E-05	2.55E-04	2.31E-07	1.97E-02	3.80E-06	0.00E+00
2009	Welders	D	175	Light Comr U	Fresno	4.19E-01	5.73E-01	2.57E+00	1.73E-05	1.58E-04	3.96E-05	3.25E-04	3.16E-07	2.81E-02	3.58E-06	0.00E+00	3.02E-05	2.76E-04	6.92E-05	5.67E-04	5.52E-07	4.91E-02	6.24E-06	0.00E+00
2009	Welders	D	250	Light Comr U	Fresno	9.31E-02	1.27E-01	6.88E-01	2.70E-06	2.03E-05	7.08E-06	8.22E-05	8.52E-08	7.58E-03	6.39E-07	0.00E+00	2.12E-05	1.59E-04	5.56E-05	6.45E-04	6.69E-07	5.95E-02	5.01E-06	0.00E+00
2009	Welders	D	500	Light Comr U	Fresno	2.33E-01	3.18E-01	2.42E+00	8.71E-06	8.32E-05	2.22E-05	2.60E-04	2.62E-07	2.67E-02	2.01E-06	0.00E+00	2.73E-05	2.61E-04	6.98E-05	8.17E-04	8.22E-07	8.37E-02	6.30E-06	0.00E+00
2009	Pressure Washers	D	15	Light Comr U	Fresno	5.49E+00	1.69E+00	3.80E-01	2.95E-06	2.98E-05	7.30E-06	4.83E-05	6.44E-08	4.14E-03	6.58E-07	0.00E+00	1.74E-06	1.76E-05	4.31E-06	2.85E-05	3.80E-08	2.44E-03	3.88E-07	0.00E+00
2009	Pressure Washers	D	25	Light Comr U	Fresno	1.28E+00	3.95E-01	1.29E-01	8.96E-07	8.50E-06	2.51E-06	1.39E-05	1.79E-08	1.41E-03	2.27E-07	0.00E+00	2.27E-06	2.15E-05	6.36E-06	3.51E-05	4.53E-08	3.57E-03	5.74E-07	0.00E+00
2009	Pressure Washers	D	50	Light Comr U	Fresno	2.54E+00	7.83E-01	5.16E-01	4.68E-06	4.56E-05	1.71E-05	5.50E-05	7.23E-08	5.59E-03	1.54E-06	0.00E+00	5.98E-06	5.83E-05	2.18E-05	7.02E-05	9.23E-08	7.14E-03	1.97E-06	0.00E+00
2009	Pressure Washers	D	120	Light Comr U	Fresno	1.05E+00	3.23E-01	3.56E-01	3.23E-06	2.42E-05	6.63E-06	4.51E-05	4.56E-08	3.89E-03	5.98E-07	0.00E+00	9.99E-06	7.49E-05	2.05E-05	1.39E-04	1.41E-07	1.20E-02	1.85E-06	0.00E+00
																	5.37E-06	7.33E-04	3.92E-05	8.31E-05	1.43E-07	1.15E-02	2.91E-06	1.96E-06

Title : SJS1n2-construction
Version : Emfac2007V2.3 Nov 1 2006
Run Date : 10/13/2008 10:08:12
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
Season : Annual
Area : Fresno
****

Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Fresno County Average

Table 1:00 Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperatu 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
5	20.143	0.355	0.514	0.519	20.695	0.386	0.222	0.816	20.142	0.502	0.439	0.67	26.374	0.602	0.211	0.848	20.737	1.652	0.427	1.47	20.475	1.412	0.62	1.103	30.984	3.48	0.675	1.254	98.308	11.935	11.241	11.267	31.036	3.27	0.615	1.975	37.297	3.693	2.193	2.858	6.154	3.713	0	5.369	30.762	10.416	0.886	2.928	30.837	2.589	0.311	3.719	15.596	0.508	8.315	1.819

Pollutant Name: Carbon Monoxide Temperatu 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
5	175.172	4.673	3.002	6.084	176.319	6.339	2.256	9.789	170.693	6.865	2.955	8.257	314.567	6.788	2.191	9.728	383.048	16.302	3.043	15.436	380.309	14.789	3.55	10.971	572.782	39.562	8.347	16.352	2521.824	141.04	18.043	20.053	573.32	39.952	7.653	25.175	638.58	35.039	14.573	24.229	46.306	17.596	0	37.069	570.464	102.474	11.024	40.452	571.245	56.224	3.988	75.442	150.409	6.502	14.765	9.78

Pollutant Name: Oxides of Nitrogen Temperatu 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
5	3.752	0.495	2.185	0.525	3.723	0.611	2.206	0.764	3.628	1.048	2.124	1.073	6.052	1.21	2.222	1.259	1.986	0.752	7.358	2.454	1.962	0.78	9.173	5.244	2.964	2.251	14.651	12.938	19.872	7.532	43.478	43.032	2.968	3	13.539	8.693	3.559	3	41.22	27.734	1.146	1.336	0	1.207	2.943	3.515	21.86	19.322	2.95	1.807	15.666	3.665	2.868	0.773	34.721	5.534

Pollutant Name: Carbon Dioxide Temperatu 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
5	1313.986	958.677	361.91	960.552	1315.578	1187.563	346.915	1145.269	1316.637	1185.256	356.12	1184.352	1650.02	1626.256	347.171	1623.147	2513.51	2513.51	521.82	2002.924	2513.51	2513.51	533.639	1462.153	2513.51	2513.51	1505	1644.714	2513.51	2513.51	3845.36	3828.756	2513.51	2513.51	1505	1968.675	2513.51	2513.51	2690.311	2627.915	226.66	263.644	0	238.559	2513.51	2513.51	1505	1643.413	2513.51	2513.511	1505	2382.527	961.226	1179.887	3080.641	1441.496

Pollutant Name: Sulfur Dioxide Temperatu 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
5	0.016	0.009	0.003	0.009	0.016	0.012	0.003	0.011	0.016	0.011	0.003	0.012	0.021	0.016	0.003	0.016	0.031	0.024	0.005	0.019	0.03	0.024	0.005	0.014	0.034	0.025	0.014	0.016	0.065	0.027	0.037	0.037	0.034	0.025	0.014	0.019	0.035	0.025	0.026	0.025	0.003	0.003	0	0.003	0.034	0.026	0.014	0.016	0.034	0.025	0.014	0.024	0.012	0.011	0.029	0.014

Pollutant Name: PM10 Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
5	0.104	0.06	0.39	0.061	0.102	0.06	0.145	0.066	0.105	0.13	0.322	0.13	0.106	0.12	0.139	0.12	0.101	0.039	0.117	0.059	0.101	0.042	0.15	0.1	0.101	0.054	0.824	0.717	0.101	0.09	2.652	2.62	0.101	0.06	0.756	0.436	0.101	0.089	1.061	0.718	0.08	0.005	0	0.056	0.101	0.078	1.252	1.091	0.101	0.02	0.552	0.094	0.095	0.084	2.071	0.361

Pollutant Name: PM10 - Tire Wear Temperatu 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
5	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.036	0.036	0.012	0.012	0.012	0.012	0.012	0.012	0.008	0.009	0.004	0.004	0	0.004	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.007	0.008	0.029	0.011

Pollutant Name: PM10 - Break Wear Temperatu 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
5	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.028	0.028	0.028	0.028	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.006	0.006	0	0.006	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.01	0.013	0.024	0.014

Summary

	Emission Factors (g/mile)									
	PM_{10}	$PM_{2.5}$	CO	ROG	NO_x	SO_x	CO_2	CH4	N2O	CO_2e
LDA-ALL	0.0820	0.0605	6.08	0.52	0.53	0.01	960.55	0.04	0.04	973.792
LDT1-ALL	0.0870	0.0649	9.79	0.82	0.76	0.01	1145.27	0.05	0.06	1164.919
LHD1-DSL	0.1420	0.1101	3.04	0.43	7.36	0.01	521.82	0.01	0.03	531.33
LHD2-DSL	0.1750	0.1388	3.55	0.62	9.17	0.01	533.64	0.01	0.03	543.149
MHD-DSL	0.8490	0.7238	8.35	0.68	14.65	0.01	1505.00	0.06	0.05	1521.76
HHD-DSL	2.7160	2.3229	18.04	11.24	43.48	0.04	3845.36	0.06	0.05	3862.12

Assumptions for CH4 and N2O from Reference sources TAB
Passenger Cars - Gasoline - Model Year 2000 - Present
Light Duty Truck (<5750 GVWR) - gasoline - Model Year 2000 - Present
Light Duty Truck - Alternative Fuels and Diesel - Diesel all model years
Light Duty Truck - Alternative Fuels and Diesel - Diesel all model years
Heavy Duty Trucks - Diesel and Alternative Fuels - Model Year 1996 - Present
Heavy Duty Trucks - Diesel and Alternative Fuels - Model Year 1996 - Present

Note:

$PM_{2.5}$ emission factors determined using guidance from SCAQMD "Final - Methodology to Calculate PM2.5 and PM2.5 Significance Thresholds", 10/1/2006, Appendix A - Updated CEIDARS Table with PM2.5 Fractions

On-road vehicles

- $PM_{2.5}$ Fraction of PM_{10}, Brake wear: 0.429
- $PM_{2.5}$ Fraction of PM_{10}, Diesel: 0.920
- $PM_{2.5}$ Fraction of PM_{10}, Gasoline-catalyst: 0.928
- $PM_{2.5}$ Fraction of PM_{10}, Gasoline-non-catalyst: 0.756
- $PM_{2.5}$ Fraction of PM_{10}, heavy, medium, light duty trucks and vehicles, motorhomes, buses, motorcycles: 0.964
- $PM_{2.5}$ Fraction of PM_{10}, Tire wear: 0.250

humidity reference from http://www.wrcc.dri.edu/narratives/CALIFORNIA.htm

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

Title : SJS1n2-construction
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 10/13/2008 10:08:12
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
Season : Annual
Area : Fresno
****

Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Fresno County Average

Table 2:00 Starting Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperatu 60F Relative Humidity: ALL

Time LDA min	LDA NCAT	LDA CAT	LDA DSL	LDT1 ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV ALL	MDV NCAT	MDV CAT	MDV DSL
5	4.531	0.088	0	0.141	4.533	0.081	0	0.199	4.306	0.107	0	0.153	5.422	0.126	0
10	4.492	0.172	0	0.224	4.494	0.158	0	0.269	4.269	0.21	0	0.254	5.375	0.246	0
20	4.535	0.328	0	0.378	4.537	0.302	0	0.401	4.31	0.4	0	0.442	5.426	0.469	0
30	4.739	0.467	0	0.518	4.741	0.432	0	0.525	4.504	0.571	0	0.613	5.67	0.671	0
40	5.104	0.591	0	0.644	5.105	0.547	0	0.64	4.85	0.723	0	0.766	6.107	0.85	0
50	5.63	0.699	0	0.757	5.631	0.648	0	0.747	5.35	0.854	0	0.901	6.736	1.008	0
60	5.853	0.791	0	0.85	5.854	0.734	0	0.831	5.562	0.966	0	1.014	7.003	1.143	0
120	4.702	0.981	0	1.023	4.704	0.866	0	0.92	4.469	1.15	0	1.182	5.626	1.404	0
180	5.119	0.779	0	0.829	5.12	0.72	0	0.798	4.864	0.945	0	0.985	6.125	1.144	0
240	5.535	0.824	0	0.879	5.537	0.762	0	0.848	5.26	1	0	1.043	6.623	1.211	0
300	5.952	0.868	0	0.927	5.953	0.803	0	0.897	5.656	1.053	0	1.1	7.121	1.276	0
360	6.368	0.911	0	0.975	6.37	0.843	0	0.945	6.052	1.105	0	1.156	7.619	1.34	0
420	6.785	0.953	0	1.021	6.787	0.882	0	0.992	6.447	1.156	0	1.21	8.118	1.403	0
480	7.201	0.994	0	1.066	7.203	0.92	0	1.038	6.843	1.205	0	1.263	8.616	1.464	0
540	7.618	1.033	0	1.11	7.62	0.957	0	1.084	7.239	1.253	0	1.315	9.114	1.523	0
600	8.034	1.072	0	1.153	8.036	0.993	0	1.128	7.635	1.3	0	1.365	9.612	1.581	0
660	8.45	1.109	0	1.195	8.453	1.028	0	1.172	8.031	1.345	0	1.414	10.111	1.638	0
720	8.867	1.146	0	1.236	8.869	1.062	0	1.214	8.426	1.389	0	1.462	10.609	1.693	0

LDA min	LHD1 ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD ALL	MHD NCAT	MHD CAT	MHD DSL	HHD ALL	HHD NCAT	HHD CAT	HHD DSL	OBUS ALL	OBUS NCAT	OBUS CAT	OBUS DSL
5	0.186	7.213	0.288	0	0.364	7.112	0.29	0	0.316	10.746	0.711	0	0.875	19.954	1.409	0	0.559	10.763	0.639	0
10	0.304	7.151	0.563	0	0.604	7.051	0.566	0	0.503	10.654	1.386	0	1.028	19.783	2.746	0	0.716	10.671	1.246	0
20	0.525	7.219	1.071	0	1.051	7.119	1.077	0	0.852	10.755	2.627	0	1.328	19.972	5.205	0	1.014	10.773	2.362	0
30	0.726	7.544	1.524	0	1.454	7.439	1.531	0	1.167	11.239	3.725	0	1.619	20.869	7.379	0	1.292	11.257	3.348	0
40	0.908	8.124	1.923	0	1.813	8.011	1.93	0	1.448	12.103	4.677	0	1.9	22.475	9.266	0	1.55	12.123	4.205	0
50	1.07	8.961	2.268	0	2.128	8.836	2.273	0	1.695	13.35	5.486	0	2.173	24.79	10.868	0	1.787	13.372	4.931	0
60	1.207	9.316	2.557	0	2.388	9.186	2.56	0	1.897	13.879	6.15	0	2.365	25.773	12.183	0	1.964	13.902	5.528	0
120	1.449	7.485	2.507	0	2.316	7.381	2.504	0	1.828	11.151	5.065	0	1.929	20.707	11.171	0	1.744	11.17	4.964	0
180	1.198	8.148	2.548	0	2.362	8.034	2.569	0	1.883	12.139	5.374	0	2.067	22.541	11.853	0	1.861	12.159	5.267	0
240	1.269	8.811	2.694	0	2.501	8.688	2.715	0	1.994	13.126	5.674	0	2.203	24.375	12.514	0	1.976	13.148	5.56	0
300	1.34	9.474	2.837	0	2.636	9.342	2.858	0	2.102	14.114	5.964	0	2.336	26.209	13.152	0	2.089	14.137	5.844	0
360	1.408	10.137	2.975	0	2.767	9.995	2.996	0	2.207	15.101	6.243	0	2.467	28.042	13.77	0	2.198	15.126	6.119	0
420	1.476	10.8	3.109	0	2.895	10.649	3.13	0	2.309	16.089	6.513	0	2.596	29.876	14.365	0	2.306	16.116	6.383	0
480	1.542	11.463	3.239	0	3.02	11.303	3.26	0	2.408	17.077	6.774	0	2.722	31.71	14.939	0	2.41	17.105	6.638	0
540	1.606	12.126	3.366	0	3.141	11.956	3.385	0	2.505	18.064	7.024	0	2.846	33.544	15.491	0	2.512	18.094	6.884	0
600	1.669	12.789	3.489	0	3.259	12.61	3.507	0	2.598	19.052	7.265	0	2.968	35.378	16.022	0	2.612	19.083	7.119	0
660	1.73	13.451	3.607	0	3.373	13.264	3.625	0	2.689	20.039	7.495	0	3.088	37.212	16.531	0	2.709	20.072	7.346	0
720	1.79	14.114	3.722	0	3.484	13.917	3.738	0	2.777	21.027	7.716	0	3.205	39.046	17.018	0	2.803	21.062	7.562	0

LDA min	UBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY ALL	MCY NCAT	MCY CAT	MCY DSL	SBUS ALL	SBUS NCAT	SBUS CAT	SBUS DSL	MH ALL	MH NCAT	MH CAT	MH DSL	ALL ALL	ALL NCAT	ALL CAT	ALL DSL	ALL
5	0.811	12.927	0.609	0	0.265	2.107	0.372	0	1.627	10.668	0.857	0	0.471	10.696	0.543	0	1.105	5.374	0.133	0	0.25
10	1.172	12.817	1.188	0	0.466	2.089	0.725	0	1.712	10.577	1.67	0	0.55	10.604	1.059	0	1.52	5.328	0.26	0	0.361
20	1.846	12.939	2.251	0	0.838	2.109	1.375	0	1.906	10.678	3.166	0	0.705	10.705	2.008	0	2.3	5.379	0.496	0	0.572
30	2.457	13.52	3.191	0	1.168	2.204	1.949	0	2.133	11.158	4.488	0	0.856	11.186	2.847	0	3.013	5.62	0.707	0	0.765
40	3.006	14.561	4.008	0	1.457	2.374	2.448	0	2.394	12.016	5.636	0	1.004	12.047	3.575	0	3.66	6.053	0.893	0	0.941
50	3.492	16.06	4.701	0	1.705	2.618	2.871	0	2.688	13.254	6.61	0	1.147	13.288	4.193	0	4.241	6.676	1.054	0	1.099
60	3.871	16.697	5.269	0	1.906	2.722	3.218	0	2.859	13.779	7.41	0	1.247	13.814	4.7	0	4.687	6.941	1.191	0	1.227
120	3.424	13.415	4.97	0	1.788	2.187	2.781	0	2.351	11.071	6.036	0	1.01	11.099	3.473	0	3.519	5.577	1.328	0	1.316
180	3.645	14.603	5.274	0	1.899	2.381	2.538	0	2.424	12.051	6.405	0	1.083	12.082	3.686	0	3.752	6.071	1.162	0	1.18
240	3.861	15.792	5.567	0	2.006	2.574	2.679	0	2.603	13.032	6.762	0	1.154	13.065	3.891	0	3.981	6.564	1.229	0	1.252
300	4.07	16.98	5.852	0	2.11	2.768	2.816	0	2.781	14.012	7.107	0	1.224	14.048	4.09	0	4.204	7.058	1.294	0	1.322
360	4.274	18.168	6.126	0	2.211	2.962	2.948	0	2.958	14.993	7.44	0	1.293	15.031	4.281	0	4.421	7.552	1.358	0	1.39
420	4.473	19.356	6.391	0	2.308	3.155	3.076	0	3.133	15.973	7.762	0	1.361	16.014	4.467	0	4.633	8.046	1.42	0	1.457
480	4.665	20.544	6.647	0	2.402	3.349	3.199	0	3.307	16.954	8.072	0	1.428	16.997	4.645	0	4.839	8.54	1.48	0	1.523
540	4.852	21.732	6.892	0	2.492	3.543	3.317	0	3.48	17.934	8.371	0	1.494	17.98	4.817	0	5.04	9.034	1.538	0	1.586
600	5.032	22.92	7.128	0	2.579	3.736	3.431	0	3.652	18.915	8.657	0	1.558	18.963	4.982	0	5.235	9.528	1.595	0	1.649
660	5.207	24.108	7.355	0	2.663	3.93	3.54	0	3.822	19.895	8.932	0	1.621	19.946	5.14	0	5.425	10.022	1.65	0	1.71
720	5.377	25.296	7.572	0	2.744	4.124	3.644	0	3.991	20.876	9.196	0	1.683	20.929	5.292	0	5.609	10.515	1.703	0	1.769

Pollutant Name: Carbon Monoxide Temperatu 60F Relative Humidity: ALL

Time LDA min	LDA NCAT	LDA CAT	LDA DSL	LDT1 ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV ALL	MDV NCAT	MDV CAT	MDV DSL
5	24.809	0.956	0	1.242	25.033	1.098	0	1.694	24.319	1.266	0	1.516	47.038	1.388	0
10	21.969	1.878	0	2.117	22.168	2.157	0	2.581	21.535	2.488	0	2.689	41.654	2.726	0
20	16.959	3.623	0	3.776	17.112	4.159	0	4.266	16.624	4.795	0	4.91	32.154	5.253	0
30	12.842	5.235	0	5.314	12.958	6.007	0	5.836	12.588	6.923	0	6.964	24.348	7.582	0
40	9.618	6.713	0	6.732	9.705	7.701	0	7.291	9.428	8.87	0	8.849	18.236	9.711	0
50	7.288	8.059	0	8.03	7.354	9.24	0	8.629	7.144	10.637	0	10.566	13.818	11.641	0
60	5.85	9.271	0	9.207	5.903	10.625	0	9.852	5.735	12.224	0	12.115	11.093	13.372	0
120	18.705	12.413	0	12.459	18.875	13.196	0	12.556	18.336	15.535	0	15.518	35.466	17.021	0
180	29.556	8.978	0	9.205	29.824	10.146	0	10.078	28.973	11.683	0	11.837	56.039	12.689	0
240	39.257	9.456	0	9.793	39.612	10.678	0	10.834	38.482	12.275	0	12.526	74.432	13.32	0
300	47.807	9.901	0	10.335	48.24	11.173	0	11.524	46.863	12.83	0	13.165	90.645	13.912	0
360	55.208	10.312	0	10.83	55.708	11.632	0	12.15	54.118	13.347	0	13.754	104.677	14.465	0
420	61.459	10.689	0	11.277	62.015	12.055	0	12.71	60.245	13.826	0	14.293	116.528	14.98	0
480	66.559	11.033	0	11.677	67.162	12.441	0	13.205	65.245	14.266	0	14.783	126.199	15.455	0
540	70.51	11.342	0	12.031	71.149	12.791	0	13.634	69.118	14.669	0	15.222	133.69	15.893	0
600	73.311	11.619	0	12.337	73.975	13.105	0	13.999	71.864	15.034	0	15.612	139.001	16.291	0
660	74.962	11.861	0	12.596	75.64	13.382	0	14.298	73.482	15.36	0	15.952	142.13	16.651	0
720	75.462	12.07	0	12.808	76.146	13.624	0	14.532	73.973	15.649	0	16.242	143.08	16.972	0

LDA min	LHD1 ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD ALL	MHD NCAT	MHD CAT	MHD DSL	HHD ALL	HHD NCAT	HHD CAT	HHD DSL	OBUS ALL	OBUS NCAT	OBUS CAT	OBUS DSL
5	1.907	43.021	4.155	0	4.309	42.68	3.99	0	3.428	64.281	12.821	0	7.256	293.717	24.055	0	8.621	64.341	11.562	0
10	3.164	38.096	8.15	0	7.74	37.794	7.825	0	5.958	56.922	25.121	0	9.675	260.093	47.132	0	10.731	56.975	22.654	0
20	5.547	29.408	15.662	0	14.2	29.175	15.03	0	10.721	43.941	48.158	0	14.258	200.776	90.354	0	14.753	43.982	43.428	0
30	7.752	22.269	22.536	0	20.124	22.092	21.616	0	15.088	33.273	69.112	0	18.502	152.035	129.667	0	18.514	33.304	62.324	0
40	9.781	16.678	28.771	0	25.511	16.546	27.582	0	19.058	24.921	87.982	0	22.406	113.87	165.07	0	22.012	24.944	79.34	0
50	11.633	12.637	34.368	0	30.362	12.537	32.928	0	22.632	18.882	104.768	0	25.971	86.279	196.564	0	25.249	18.9	94.478	0
60	13.308	10.145	39.327	0	34.676	10.065	37.655	0	25.809	15.159	119.47	0	29.196	69.264	224.148	0	28.223	15.173	107.736	0
120	17.183	32.437	34.4	0	30.694	32.18	32.872	0	22.921	48.467	88.796	0	24.147	221.458	181.775	0	26.117	48.512	86.499	0
180	13.149	51.253	32.841	0	29.615	50.847	31.832	0	22.524	76.581	91.391	0	26.61	349.921	187.089	0	29.263	76.653	89.028	0
240	13.982	68.075	34.157	0	31.029	67.535	33.041	0	23.626	101.716	94.073	0	28.897	464.769	192.578	0	32.165	101.811	91.64	0
300	14.751	82.902	35.435	0	32.38	82.245	34.227	0	24.678	123.872	96.84	0	31.008	566.002	198.242	0	34.821	123.987	94.335	0
360	15.457	95.736	36.675	0	33.666	94.977	35.388	0	25.681	143.047	99.692	0	32.943	653.62	204.081	0	37.233	143.181	97.114	0
420	16.1	106.575	37.877	0	34.887	105.73	36.525	0	26.634	159.243	102.63	0	34.702	727.624	210.096	0	39.399	159.392	99.976	0
480	16.68	115.42	39.04	0	36.044	114.505	37.638	0	27.538	172.459	105.654	0	36.285	788.012	216.285	0	41.321	172.62	102.921	0
540	17.196	122.271	40.164	0	37.137	121.302	38.726	0	28.393	182.696	108.763	0	37.692	834.786	222.65	0	42.998	182.866	105.95	0
600	17.65	127.128	41.251	0	38.165	126.12	39.791	0	29.198	189.953	111.957	0	38.924	867.945	229.19	0	44.429	190.13	109.062	0
660	18.04	129.99	42.299	0	39.129	128.96	40.831	0	29.954	194.23	115.238	0	39.98	887.488	235.905	0	45.616	194.411	112.257	0
720	18.368	130.859	43.308	0	40.028	129.822	41.848	0	30.66	195.528	118.603	0	40.859	893.417	242.795	0	46.558	195.71	115.536	0

LDA min	UBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY ALL	MCY NCAT	MCY CAT	MCY DSL	SBUS ALL	SBUS NCAT	SBUS CAT	SBUS DSL	MH ALL	MH NCAT	MH CAT	MH DSL	ALL ALL	ALL NCAT	ALL CAT	ALL DSL	ALL
5	9.495	71.664	8.55	0	3.272	6.444	2.371	0	5.316	64.019	14.76	0	3.802	64.111	10.656	0	12.655	33.028	1.715	0	2.329
10	15.864	63.46	16.752	0	6.101	5.707	4.646	0	5.413	56.691	28.92	0	4.971	56.772	20.879	0	20.535	29.247	3.366	0	3.703
20	27.824	48.987	32.115	0	11.402	4.405	8.907	0	5.652	43.762	55.442	0	7.188	43.825	40.025	0	35.342	22.577	6.477	0	6.303
30	38.747	37.095	46.088	0	16.229	3.336	12.783	0	5.952	33.138	79.564	0	9.246	33.186	57.44	0	48.881	17.096	9.334	0	8.707
40	48.634	27.783	58.672	0	20.582	2.498	16.273	0	6.314	24.819	101.288	0	11.144	24.855	73.123	0	61.15	12.805	11.937	0	10.913
50	57.485	21.051	69.866	0	24.46	1.893	19.378	0	6.736	18.806	120.613	0	12.882	18.833	87.075	0	72.151	9.702	14.286	0	12.923
60	65.299	16.9	79.671	0	27.864	1.52	22.097	0	7.219	15.097	137.539	0	14.461	15.119	99.294	0	81.882	7.789	16.38	0	14.736
120	53.868	54.033	66.768	0	23.512	4.859	20.221	0	9.114	48.27	100.561	0	11.916	48.339	68.139	0	58.541	24.903	17.951	0	16.549
180	56.503	85.377	68.72	0	24.32	7.678	15.701	0	9.9	76.27	103.501	0	13.223	76.379	70.131	0	61.9	39.348	14.7	0	14.015
240	59.07	113.399	70.736	0	25.136	10.197	16.162	0	11.849	101.303	106.538	0	14.433	101.448	72.189	0	65.129	52.263	15.368	0	14.923
300	61.568	138.099	72.817	0	25.962	12.419	16.637	0	13.587	123.368	109.671	0	15.546	123.545	74.312	0	68.228	63.646	16.004	0	15.766
360	63.998	159.477	74.962	0	26.796	14.341	17.127	0	15.113	142.465	112.901	0	16.561	142.67	76.501	0	71.196	73.499	16.606	0	16.541
420	66.36	177.533	77.171	0	27.64	15.965	17.632	0	16.427	158.595	116.229	0	17.48	158.823	78.755	0	74.034	81.821	17.177	0	17.251
480	68.653	192.267	79.444	0	28.492	17.29	18.151	0	17.528	171.758	119.653	0	18.301	172.004	81.075	0	76.742	88.611	17.714	0	17.894
540	70.879	203.679	81.782	0	29.354	18.316	18.685	0	18.418	181.953	123.174	0	19.025	182.214	83.461	0	79.319	93.871	18.219	0	18.471
600	73.036	211.769	84.184	0	30.225	19.044	19.234	0	19.096	189.18	126.792	0	19.651	189.451	85.913	0	81.765	97.6	18.692	0	18.982
660	75.124	216.538	86.651	0	31.104	19.472	19.798	0	19.563	193.44	130.507	0	20.181	193.717	88.43	0	84.081	99.797	19.132	0	19.426
720	77.145	217.984	89.182	0	31.993	19.602	20.376	0	19.817	194.732	134.318	0	20.613	195.011	91.013	0	86.267	100.464	19.539	0	19.804

Pollutant Name: Oxides of Nitrogen Temperatu 60F Relative Humidity: ALL

Time LDA min	LDA NCAT	LDA CAT	LDA DSL	LDT1 ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV ALL	MDV NCAT	MDV CAT	MDV DSL
5	1.185	0.278	0	0.288	1.181	0.279	0	0.287	1.157	0.482	0	0.488	1.952	0.547	0
10	1.289	0.327	0	0.338	1.284	0.321	0	0.329	1.258	0.565	0	0.57	2.121	0.636	0
20	1.476	0.414	0	0.426	1.471	0.397	0	0.403	1.441	0.71	0	0.716	2.43	0.793	0
30	1.639	0.485	0	0.498	1.633	0.46	0	0.465	1.599	0.83	0	0.836	2.698	0.923	0
40	1.776	0.542	0	0.555	1.77	0.51	0	0.514	1.733	0.924	0	0.93	2.924	1.026	0
50	1.889	0.583	0	0.597	1.882	0.546	0	0.55	1.843	0.994	0	1	3.109	1.102	0
60	1.976	0.609	0	0.624	1.969	0.57	0	0.574	1.928	1.038	0	1.045	3.253	1.15	0
120	2.022	0.637	0	0.653	2.015	0.602	0	0.605	1.974	1.091	0	1.097	3.329	1.212	0
180	1.974	0.66	0	0.674	1.967	0.621	0	0.62	1.926	1.126	0	1.131	3.25	1.25	0
240	1.91	0.655	0	0.669	1.903	0.616	0	0.615	1.864	1.119	0	1.123	3.144	1.241	0
300	1.83	0.649	0	0.662	1.824	0.61	0	0.607	1.786	1.107	0	1.111	3.013	1.229	0
360	1.735	0.64	0	0.652	1.729	0.601	0	0.596	1.693	1.092	0	1.095	2.856	1.212	0
420	1.624	0.629	0	0.64	1.618	0.591	0	0.583	1.585	1.073	0	1.075	2.674	1.19	0
480	1.498	0.616	0	0.625	1.492	0.578	0	0.568	1.462	1.05	0	1.051	2.466	1.164	0
540	1.356	0.6	0	0.608	1.351	0.562	0	0.55	1.323	1.023	0	1.023	2.232	1.134	0
600	1.198	0.582	0	0.589	1.193	0.545	0	0.53	1.169	0.993	0	0.991	1.972	1.1	0
660	1.024	0.563	0	0.567	1.021	0.525	0	0.507	1	0.958	0	0.956	1.686	1.061	0
720	0.835	0.54	0	0.543	0.832	0.503	0	0.482	0.815	0.92	0	0.916	1.375	1.017	0

LDA min	LHD1 ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD ALL	MHD NCAT	MHD CAT	MHD DSL	HHD ALL	HHD NCAT	HHD CAT	HHD DSL	OBUS ALL	OBUS NCAT	OBUS CAT	OBUS DSL
5	0.561	0.621	1.438	0	1.272	0.613	1.396	0	0.961	0.926	1.837	0	0.495	4.187	4.278	0	0.595	0.927	2.006	0
10	0.651	0.676	1.805	0	1.595	0.666	1.82	0	1.25	1.006	2.768	0	0.72	4.551	6.446	0	0.862	1.008	3.022	0
20	0.81	0.774	2.453	0	2.165	0.763	2.567	0	1.761	1.153	4.403	0	1.115	5.213	10.253	0	1.331	1.155	4.807	0
30	0.941	0.859	2.984	0	2.633	0.847	3.178	0	2.178	1.28	5.735	0	1.438	5.787	13.355	0	1.714	1.282	6.261	0
40	1.045	0.931	3.399	0	2.998	0.918	3.654	0	2.504	1.387	6.764	0	1.688	6.273	15.752	0	2.011	1.389	7.385	0
50	1.122	0.99	3.698	0	3.261	0.976	3.995	0	2.737	1.475	7.491	0	1.865	6.67	17.445	0	2.222	1.477	8.179	0
60	1.171	1.036	3.881	0	3.422	1.021	4.2	0	2.877	1.543	7.915	0	1.97	6.978	18.432	0	2.346	1.546	8.642	0
120	1.233	1.06	4.024	0	3.548	1.045	4.329	0	2.965	1.579	8.036	0	2.001	7.142	18.709	0	2.382	1.582	8.772	0
180	1.269	1.035	4.021	0	3.545	1.02	4.323	0	2.961	1.542	8.007	0	1.991	6.972	18.641	0	2.371	1.544	8.74	0
240	1.26	1.001	3.996	0	3.523	0.987	4.296	0	2.942	1.492	7.962	0	1.977	6.746	18.536	0	2.354	1.494	8.69	0
300	1.246	0.96	3.959	0	3.49	0.946	4.259	0	2.916	1.43	7.901	0	1.959	6.465	18.394	0	2.331	1.432	8.624	0
360	1.227	0.91	3.911	0	3.447	0.897	4.21	0	2.882	1.355	7.825	0	1.936	6.128	18.217	0	2.303	1.357	8.541	0
420	1.204	0.851	3.852	0	3.394	0.84	4.15	0	2.84	1.269	7.733	0	1.909	5.737	18.003	0	2.27	1.271	8.441	0
480	1.176	0.785	3.781	0	3.331	0.774	4.079	0	2.791	1.17	7.625	0	1.877	5.29	17.752	0	2.231	1.172	8.323	0
540	1.143	0.711	3.699	0	3.257	0.701	3.996	0	2.733	1.059	7.502	0	1.84	4.788	17.466	0	2.187	1.06	8.189	0
600	1.106	0.628	3.605	0	3.174	0.619	3.903	0	2.668	0.936	7.363	0	1.8	4.23	17.143	0	2.138	0.937	8.038	0
660	1.065	0.537	3.5	0	3.08	0.53	3.798	0	2.595	0.8	7.209	0	1.754	3.618	16.784	0	2.083	0.801	7.869	0
720	1.019	0.438	3.383	0	2.976	0.432	3.682	0	2.514	0.652	7.039	0	1.704	2.95	16.389	0	2.022	0.653	7.684	0

LDA min	UBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY ALL	MCY NCAT	MCY CAT	MCY DSL	SBUS ALL	SBUS NCAT	SBUS CAT	SBUS DSL	MH ALL	MH NCAT	MH CAT	MH DSL	ALL ALL	ALL NCAT	ALL CAT	ALL DSL	ALL
5	1.241	1.112	2.446	0	0.858	0.287	0.08	0	0.23	0.919	1.899	0	0.225	0.922	1.204	0	1.039	0.918	0.515	0	0.48
10	1.855	1.208	3.686	0	1.291	0.312	0.12	0	0.259	0.999	2.861	0	0.325	1.002	1.814	0	1.541	0.997	0.633	0	0.586
20	2.932	1.384	5.863	0	2.051	0.358	0.192	0	0.312	1.145	4.55	0	0.502	1.148	2.886	0	2.423	1.143	0.841	0	0.774
30	3.811	1.537	7.637	0	2.671	0.397	0.25	0	0.356	1.271	5.927	0	0.646	1.274	3.759	0	3.143	1.268	1.012	0	0.929
40	4.49	1.666	9.008	0	3.15	0.43	0.294	0	0.393	1.377	6.991	0	0.757	1.381	4.433	0	3.7	1.375	1.145	0	1.051
50	4.97	1.771	9.976	0	3.488	0.457	0.326	0	0.421	1.464	7.742	0	0.836	1.468	4.91	0	4.093	1.462	1.242	0	1.139
60	5.251	1.853	10.541	0	3.685	0.479	0.344	0	0.441	1.532	8.181	0	0.883	1.536	5.188	0	4.324	1.529	1.302	0	1.193
120	5.33	1.897	10.699	0	3.74	0.49	0.347	0	0.45	1.568	8.306	0	0.897	1.572	5.269	0	4.393	1.565	1.354	0	1.241
180	5.31	1.851	10.659	0	3.726	0.478	0.348	0	0.442	1.531	8.276	0	0.893	1.535	5.25	0	4.375	1.528	1.377	0	1.26
240	5.278	1.791	10.599	0	3.705	0.463	0.347	0	0.43	1.481	8.229	0	0.886	1.485	5.22	0	4.348	1.478	1.368	0	1.251
300	5.236	1.717	10.518	0	3.677	0.443	0.344	0	0.416	1.419	8.167	0	0.878	1.423	5.181	0	4.311	1.417	1.355	0	1.238
360	5.183	1.627	10.417	0	3.641	0.42	0.341	0	0.398	1.346	8.088	0	0.867	1.349	5.131	0	4.266	1.343	1.338	0	1.221
420	5.119	1.523	10.295	0	3.598	0.393	0.337	0	0.378	1.26	7.993	0	0.854	1.263	5.07	0	4.212	1.257	1.317	0	1.2
480	5.045	1.405	10.151	0	3.547	0.363	0.332	0	0.354	1.161	7.882	0	0.839	1.164	5	0	4.148	1.159	1.291	0	1.175
540	4.96	1.271	9.988	0	3.49	0.328	0.327	0	0.328	1.051	7.754	0	0.823	1.054	4.919	0	4.075	1.049	1.262	0	1.146
600	4.864	1.123	9.803	0	3.425	0.29	0.32	0	0.299	0.929	7.611	0	0.804	0.931	4.828	0	3.994	0.927	1.228	0	1.113
660	4.757	0.961	9.598	0	3.352	0.248	0.314	0	0.266	0.794	7.452	0	0.783	0.796	4.727	0	3.903	0.793	1.191	0	1.077
720	4.64	0.783	9.372	0	3.273	0.202	0.306	0	0.231	0.648	7.276	0	0.76	0.649	4.616	0	3.803	0.647	1.149	0	1.036

Pollutant Name: Carbon Dioxide Temperatu 60F Relative Humidity: ALL

Time LDA min	LDA NCAT	LDA CAT	LDA DSL	LDT1 ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV ALL	MDV NCAT	MDV CAT	MDV DSL
5	111.902	9.818	0	11.028	112.038	12.734	0	14.715	112.129	12.263	0	13.322	140.649	16.718	0
10	121.432	12.364	0	13.653	121.58	15.63	0	17.62	121.678	15.318	0	16.439	152.626	20.972	0
20	139.927	17.769	0	19.203	140.097	21.857	0	23.811	140.211	21.829	0	23.063	175.873	30.019	0
30	157.671	23.593	0	25.157	157.863	28.661	0	30.507	157.991	28.873	0	30.203	198.175	39.785	0
40	174.663	29.834	0	31.514	174.876	36.043	0	37.71	175.017	36.451	0	37.861	219.532	50.27	0
50	190.904	36.494	0	38.273	191.136	44.004	0	45.42	191.291	44.561	0	46.036	239.945	61.474	0
60	206.393	43.572	0	45.435	206.644	52.542	0	53.635	206.811	53.205	0	54.728	259.413	73.397	0
120	279.289	90.261	0	92.33	279.629	111.223	0	109.166	279.856	110.945	0	112.459	351.036	152.523	0
180	279.509	103.865	0	105.74	279.849	127.652	0	124.154	280.076	127.564	0	128.848	351.312	175.445	0
240	279.728	117.131	0	118.816	280.069	143.74	0	138.829	280.296	143.791	0	144.848	351.588	197.809	0
300	279.948	130.058	0	131.558	280.289	159.485	0	153.193	280.515	159.623	0	160.461	351.863	219.616	0
360	280.167	142.645	0	143.966	280.508	174.888	0	167.245	280.735	175.063	0	175.685	352.139	240.865	0
420	280.387	154.894	0	156.039	280.728	189.95	0	180.986	280.955	190.108	0	190.522	352.415	261.556	0
480	280.606	166.803	0	167.779	280.948	204.67	0	194.414	281.175	204.761	0	204.97	352.691	281.69	0
540	280.826	178.374	0	179.185	281.168	219.048	0	207.531	281.395	219.019	0	219.031	352.967	301.266	0
600	281.045	189.605	0	190.256	281.387	233.084	0	220.336	281.615	232.885	0	232.704	353.243	320.285	0
660	281.265	200.498	0	200.993	281.607	246.778	0	232.83	281.835	246.357	0	245.989	353.519	338.746	0
720	281.484	211.051	0	211.396	281.827	260.131	0	245.012	282.055	259.435	0	258.886	353.795	356.649	0

LDA min	LHD1 ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD ALL	MHD NCAT	MHD CAT	MHD DSL	HHD ALL	HHD NCAT	HHD CAT	HHD DSL	OBUS ALL	OBUS NCAT	OBUS CAT	OBUS DSL
5	18.09	170.667	17.232	0	17.752	170.667	15.562	0	13.442	170.667	9.546	0	13.483	170.667	9.546	0	4.478	170.667	9.546	0
10	22.42	185.2	23.804	0	23.744	185.2	22.769	0	18.591	185.2	19.039	0	16.68	185.2	19.039	0	5.9	185.2	19.039	0
20	31.603	213.408	37.359	0	36.077	213.408	37.469	0	29.072	213.408	37.866	0	22.98	213.408	37.866	0	8.708	213.408	37.866	0
30	41.485	240.47	51.463	0	48.873	240.47	52.553	0	39.795	240.47	56.482	0	29.154	240.47	56.482	0	11.468	240.47	56.482	0
40	52.064	266.386	66.116	0	62.134	266.386	68.02	0	50.759	266.386	74.887	0	35.204	266.386	74.887	0	14.181	266.386	74.887	0
50	63.342	291.155	81.317	0	75.858	291.155	83.871	0	61.966	291.155	93.081	0	41.128	291.155	93.081	0	16.846	291.155	93.081	0
60	75.317	314.778	97.067	0	90.046	314.778	100.106	0	73.415	314.778	111.063	0	46.926	314.778	111.063	0	19.463	314.778	111.063	0
120	154.359	425.955	188.736	0	172.22	425.955	188.771	0	135.646	425.955	188.899	0	72.613	425.955	188.899	0	30.965	425.955	188.899	0
180	176.955	426.29	218.922	0	198.721	426.29	219.844	0	156.811	426.29	223.17	0	80.724	426.29	223.17	0	35.08	426.29	223.17	0
240	199.002	426.625	248.005	0	224.254	426.625	249.615	0	177.089	426.625	255.419	0	88.358	426.625	255.419	0	38.953	426.625	255.419	0
300	220.5	426.96	275.985	0	248.819	426.96	278.083	0	196.48	426.96	285.644	0	95.514	426.96	285.644	0	42.582	426.96	285.644	0
360	241.447	427.294	302.863	0	272.416	427.294	305.249	0	214.985	427.294	313.847	0	102.193	427.294	313.847	0	45.97	427.294	313.847	0
420	261.845	427.629	328.639	0	295.046	427.629	331.112	0	232.602	427.629	340.027	0	108.394	427.629	340.027	0	49.115	427.629	340.027	0
480	281.693	427.964	353.312	0	316.708	427.964	355.673	0	249.333	427.964	364.184	0	114.118	427.964	364.184	0	52.017	427.964	364.184	0
540	300.992	428.299	376.882	0	337.402	428.299	378.931	0	265.176	428.299	386.318	0	119.364	428.299	386.319	0	54.677	428.299	386.319	0
600	319.741	428.633	399.35	0	357.128	428.633	400.888	0	280.133	428.633	406.43	0	124.133	428.633	406.43	0	57.095	428.633	406.43	0
660	337.94	428.968	420.715	0	375.887	428.968	421.541	0	294.203	428.968	424.519	0	128.425	428.968	424.519	0	59.27	428.968	424.519	0
720	355.59	429.303	440.978	0	393.678	429.303	440.893	0	307.387	429.303	440.585	0	132.239	429.303	440.586	0	61.202	429.303	440.585	0

LDA min	UBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY ALL	MCY NCAT	MCY CAT	MCY DSL	SBUS ALL	SBUS NCAT	SBUS CAT	SBUS DSL	MH ALL	MH NCAT	MH CAT	MH DSL	ALL ALL	ALL NCAT	ALL CAT	ALL DSL	ALL
5	12.503	170.667	9.546	0	4.019	34.563	1.801	0	25.489	170.667	9.546	0	7.12	170.667	9.546	0	18.347	106.029	12.152	0	13.38
10	18.78	185.2	19.039	0	7.389	37.507	3.592	0	28.113	185.2	19.039	0	8.605	185.2	19.039	0	26.985	115.059	15.629	0	16.689
20	31.205	213.408	37.866	0	14.071	43.219	7.144	0	33.227	213.408	37.866	0	11.527	213.408	37.866	0	44.08	132.584	22.95	0	23.618
30	43.458	240.47	56.482	0	20.675	48.7	10.656	0	38.163	240.47	56.482	0	14.387	240.47	56.482	0	60.931	149.396	30.76	0	30.964
40	55.539	266.386	74.887	0	27.201	53.948	14.129	0	42.919	266.386	74.887	0	17.184	266.386	74.887	0	77.539	165.497	39.059	0	38.726
50	67.447	291.155	93.081	0	33.648	58.964	17.561	0	47.497	291.155	93.081	0	19.918	291.155	93.081	0	93.904	180.885	47.846	0	46.905
60	79.183	314.778	111.063	0	40.017	63.749	20.954	0	51.895	314.778	111.063	0	22.589	314.778	111.063	0	110.026	195.561	57.122	0	55.501
120	130.335	425.955	188.899	0	67.622	86.264	35.639	0	72.242	425.955	188.899	0	34.474	425.955	188.899	0	180.362	264.632	116.419	0	109.845
180	150.928	426.29	223.17	0	79.579	86.332	42.105	0	74.082	426.29	223.17	0	37.954	426.29	223.17	0	208.321	264.84	134.236	0	125.671
240	170.307	426.625	255.419	0	90.832	86.4	48.189	0	75.816	426.625	255.419	0	41.229	426.625	255.419	0	234.631	265.048	151.554	0	141.055
300	188.471	426.96	285.644	0	101.378	86.468	53.891	0	77.445	426.96	285.644	0	44.299	426.96	285.644	0	259.293	265.256	168.374	0	155.997
360	205.42	427.295	313.847	0	111.219	86.535	59.212	0	78.968	427.294	313.847	0	47.165	427.294	313.847	0	282.305	265.464	184.696	0	170.497
420	221.155	427.629	340.027	0	120.354	86.603	64.152	0	80.385	427.629	340.027	0	49.826	427.629	340.027	0	303.668	265.672	200.52	0	184.553
480	235.675	427.964	364.184	0	128.784	86.671	68.709	0	81.696	427.964	364.184	0	52.282	427.964	364.184	0	323.382	265.88	215.845	0	198.168
540	248.98	428.299	386.319	0	136.507	86.739	72.885	0	82.902	428.299	386.319	0	54.534	428.299	386.318	0	341.447	266.088	230.672	0	211.34
600	261.071	428.633	406.43	0	143.525	86.807	76.68	0	84.002	428.633	406.43	0	56.581	428.633	406.43	0	357.864	266.296	245.001	0	224.069
660	271.947	428.968	424.519	0	149.838	86.874	80.092	0	84.996	428.968	424.519	0	58.424	428.968	424.519	0	372.631	266.504	258.831	0	236.356
720	281.608	429.303	440.586	0	155.444	86.942	83.124	0	85.885	429.303	440.586	0	60.061	429.303	440.586	0	385.749	266.712	272.164	0	248.201

Pollutant Name: Sulfur Dioxide Temperatu 60F Relative Humidity: ALL

Time min	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
5	0.002	0	0	0	0.002	0	0	0	0.002	0	0	0	0.002	0	0	0	0.003	0	0	0	0.003	0	0	0	0.003	0	0	0	0.007	0	0	0	0.003	0	0	0	0.003	0	0	0	0	0	0.015	0	0.003	0	0	0	0.003	0	0	0	0.002	0	0	0
10	0.002	0	0	0	0.002	0	0	0	0.002	0	0	0	0.002	0	0	0	0.003	0	0	0	0.003	0	0	0	0.003	0	0	0	0.006	0.001	0	0	0.003	0.001	0	0	0.003	0	0	0	0.001	0	0.015	0	0.003	0.001	0	0	0.003	0.001	0	0.001	0.002	0	0	0
20	0.002	0	0	0	0.002	0	0	0	0.002	0	0	0	0.002	0	0	0	0.003	0.001	0	0.001	0.003	0.001	0	0	0.003	0.001	0	0	0.006	0.002	0	0	0.003	0.001	0	0	0.003	0.001	0	0	0	0	0.015	0	0.003	0.001	0	0	0.003	0.001	0	0.001	0.002	0	0	0
30	0.002	0	0	0	0.002	0	0	0	0.002	0	0	0	0.002	0.001	0	0.001	0.003	0.001	0	0.001	0.003	0.001	0	0.001	0.003	0.002	0	0.001	0.005	0.003	0	0	0.003	0.002	0	0.001	0.003	0.001	0	0	0	0	0.015	0.001	0.003	0.002	0	0	0.003	0.001	0	0.001	0.002	0	0	0
40	0.002	0	0	0	0.002	0	0	0	0.002	0.001	0	0.001	0.003	0.001	0	0.001	0.003	0.001	0	0.001	0.003	0.001	0	0.001	0.003	0.002	0	0.001	0.005	0.003	0	0	0.003	0.002	0	0.001	0.003	0.002	0	0.001	0.001	0	0.015	0.001	0.003	0.002	0	0	0.003	0.002	0	0.002	0.002	0.001	0	0.001
50	0.002	0	0	0.001	0.002	0.001	0	0.001	0.002	0.001	0	0.001	0.003	0.001	0	0.001	0.003	0.001	0	0.001	0.003	0.001	0	0.001	0.003	0.002	0	0.001	0.005	0.004	0	0.001	0.003	0.002	0	0.002	0.004	0.002	0	0.001	0.001	0.001	0.015	0.001	0.003	0.003	0	0	0.003	0.002	0	0.002	0.002	0.001	0	0.001
60	0.002	0.001	0	0.001	0.002	0.001	0	0.001	0.002	0.001	0	0.001	0.003	0.001	0	0.001	0.003	0.002	0	0.001	0.003	0.002	0	0.001	0.004	0.003	0	0.001	0.005	0.005	0	0.001	0.004	0.003	0	0.002	0.004	0.002	0	0.001	0.001	0.001	0.015	0.001	0.004	0.003	0	0	0.004	0.003	0	0.002	0.002	0.001	0	0.001
120	0.003	0.001	0	0.001	0.003	0.001	0	0.001	0.003	0.001	0	0.001	0.004	0.002	0	0.002	0.005	0.002	0	0.002	0.005	0.002	0	0.002	0.005	0.003	0	0.001	0.008	0.005	0	0.001	0.005	0.003	0	0.002	0.005	0.003	0	0.001	0.001	0.001	0.015	0.001	0.005	0.004	0	0.001	0.005	0.003	0	0.003	0.003	0.001	0	0.001
180	0.003	0.001	0	0.001	0.003	0.001	0	0.001	0.003	0.001	0	0.001	0.004	0.002	0	0.002	0.005	0.003	0	0.002	0.005	0.003	0	0.002	0.006	0.004	0	0.001	0.01	0.005	0	0.001	0.006	0.004	0	0.002	0.006	0.003	0	0.001	0.001	0.001	0.015	0.001	0.006	0.004	0	0.001	0.006	0.003	0	0.003	0.003	0.002	0	0.001
240	0.003	0.001	0	0.001	0.003	0.002	0	0.002	0.003	0.002	0	0.002	0.005	0.002	0	0.002	0.005	0.003	0	0.003	0.005	0.003	0	0.002	0.006	0.004	0	0.001	0.012	0.006	0	0.001	0.006	0.004	0	0.003	0.006	0.004	0	0.001	0.001	0.001	0.015	0.001	0.006	0.004	0	0.001	0.006	0.004	0	0.003	0.004	0.002	0	0.002
300	0.004	0.001	0	0.001	0.004	0.002	0	0.002	0.004	0.002	0	0.002	0.005	0.002	0	0.002	0.006	0.003	0	0.003	0.006	0.003	0	0.002	0.006	0.004	0	0.001	0.013	0.006	0	0.001	0.006	0.004	0	0.003	0.007	0.004	0	0.001	0.001	0.001	0.015	0.001	0.006	0.005	0	0.001	0.006	0.004	0	0.004	0.004	0.002	0	0.002
360	0.004	0.002	0	0.002	0.004	0.002	0	0.002	0.004	0.002	0	0.002	0.005	0.003	0	0.003	0.006	0.004	0	0.003	0.006	0.004	0	0.003	0.007	0.005	0	0.002	0.015	0.007	0	0.001	0.007	0.005	0	0.003	0.007	0.005	0	0.001	0.001	0.001	0.015	0.001	0.007	0.005	0	0.001	0.007	0.004	0	0.004	0.004	0.002	0	0.002
420	0.004	0.002	0	0.002	0.004	0.002	0	0.002	0.004	0.002	0	0.002	0.005	0.003	0	0.003	0.006	0.004	0	0.003	0.006	0.004	0	0.003	0.007	0.005	0	0.002	0.016	0.007	0	0.001	0.007	0.005	0	0.003	0.007	0.005	0	0.002	0.001	0.001	0.015	0.001	0.007	0.005	0	0.001	0.007	0.005	0	0.004	0.004	0.002	0	0.002
480	0.004	0.002	0	0.002	0.004	0.002	0	0.002	0.004	0.002	0	0.002	0.006	0.003	0	0.003	0.006	0.004	0	0.004	0.006	0.004	0	0.003	0.007	0.005	0	0.002	0.017	0.007	0	0.001	0.007	0.005	0	0.003	0.008	0.005	0	0.002	0.001	0.001	0.015	0.001	0.007	0.006	0	0.001	0.007	0.005	0	0.004	0.004	0.002	0	0.002
540	0.004	0.002	0	0.002	0.004	0.002	0	0.002	0.004	0.002	0	0.002	0.006	0.003	0	0.003	0.006	0.004	0	0.004	0.006	0.004	0	0.003	0.007	0.006	0	0.002	0.018	0.008	0	0.001	0.007	0.006	0	0.004	0.008	0.005	0	0.002	0.001	0.001	0.015	0.001	0.007	0.006	0	0.001	0.007	0.006	0	0.004	0.005	0.003	0	0.002
600	0.004	0.002	0	0.002	0.004	0.002	0	0.002	0.004	0.003	0	0.003	0.006	0.003	0	0.003	0.006	0.005	0	0.004	0.006	0.005	0	0.003	0.008	0.006	0	0.002	0.018	0.008	0	0.001	0.008	0.006	0	0.004	0.008	0.005	0	0.002	0.001	0.001	0.015	0.001	0.008	0.006	0	0.001	0.008	0.005	0	0.005	0.004	0.003	0	0.002
660	0.004	0.002	0	0.002	0.004	0.003	0	0.002	0.004	0.003	0	0.003	0.006	0.004	0	0.004	0.006	0.005	0	0.004	0.006	0.005	0	0.003	0.008	0.006	0	0.002	0.019	0.008	0	0.001	0.008	0.006	0	0.004	0.008	0.006	0	0.002	0.001	0.001	0.015	0.001	0.008	0.006	0	0.001	0.008	0.006	0	0.005	0.004	0.003	0	0.003
720	0.004	0.002	0	0.002	0.004	0.003	0	0.003	0.004	0.003	0	0.003	0.006	0.004	0	0.004	0.007	0.005	0	0.004	0.007	0.005	0	0.003	0.008	0.006	0	0.002	0.019	0.008	0	0.001	0.008	0.006	0	0.004	0.008	0.006	0	0.002	0.001	0.001	0.015	0.001	0.008	0.007	0	0.001	0.008	0.006	0	0.005	0.004	0.003	0	0.003

Pollutant Name: PM10 Temperature: 60F Relative Humidity: ALL

Time min	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
5	0.011	0.001	0	0.001	0.011	0.001	0	0.001	0.011	0.002	0	0.002	0.012	0.002	0	0.002	0.011	0.001	0	0.001	0.011	0.001	0	0.001	0.011	0.001	0	0.001	0.011	0.002	0	0	0.011	0.001	0	0.001	0.011	0.002	0	0.001	0.02	0	0	0.014	0.011	0.001	0	0.001	0.011	0	0	0.001	0.014	0.001	0	0.001
10	0.01	0.002	0	0.002	0.01	0.002	0	0.002	0.01	0.004	0	0.004	0.01	0.003	0	0.003	0.01	0.002	0	0.002	0.01	0.002	0	0.001	0.01	0.003	0	0.001	0.01	0.003	0	0.001	0.01	0.003	0	0.002	0.01	0.003	0	0.001	0.017	0	0	0.013	0.01	0.003	0	0.001	0.01	0.001	0	0.001	0.012	0.002	0	0.002
20	0.008	0.003	0	0.003	0.008	0.003	0	0.003	0.008	0.007	0	0.007	0.008	0.006	0	0.006	0.008	0.003	0	0.003	0.008	0.004	0	0.003	0.008	0.005	0	0.002	0.008	0.005	0	0.001	0.008	0.005	0	0.002	0.008	0.006	0	0.002	0.013	0.001	0	0.01	0.008	0.005	0	0.001	0.008	0.001	0	0.002	0.009	0.004	0	0.004
30	0.006	0.005	0	0.005	0.006	0.004	0	0.004	0.006	0.01	0	0.01	0.006	0.009	0	0.009	0.006	0.005	0	0.004	0.006	0.005	0	0.004	0.006	0.007	0	0.002	0.006	0.009	0	0.001	0.006	0.008	0	0.005	0.006	0.009	0	0.003	0.01	0.001	0	0.008	0.006	0.008	0	0.001	0.006	0.002	0	0.002	0.007	0.006	0	0.006
40	0.004	0.006	0	0.006	0.004	0.006	0	0.005	0.004	0.013	0	0.012	0.004	0.011	0	0.011	0.004	0.006	0	0.005	0.004	0.007	0	0.005	0.004	0.009	0	0.002	0.004	0.012	0	0.001	0.004	0.01	0	0.006	0.004	0.01	0	0.004	0.008	0.001	0	0.006	0.004	0.01	0	0.001	0.004	0.002	0	0.002	0.005	0.008	0	0.007
50	0.003	0.007	0	0.007	0.003	0.007	0	0.006	0.003	0.015	0	0.015	0.003	0.014	0	0.013	0.003	0.007	0	0.006	0.003	0.008	0	0.006	0.003	0.011	0	0.003	0.003	0.014	0	0.002	0.003	0.011	0	0.007	0.003	0.013	0	0.005	0.006	0.002	0	0.005	0.003	0.011	0	0.001	0.003	0.003	0	0.003	0.004	0.01	0	0.009
60	0.003	0.008	0	0.008	0.003	0.008	0	0.007	0.003	0.017	0	0.017	0.003	0.016	0	0.015	0.003	0.008	0	0.007	0.003	0.009	0	0.006	0.003	0.012	0	0.003	0.003	0.016	0	0.002	0.003	0.013	0	0.008	0.003	0.015	0	0.005	0.005	0.002	0	0.004	0.003	0.013	0	0.001	0.003	0.003	0	0.003	0.003	0.011	0	0.01
120	0.007	0.012	0	0.012	0.007	0.012	0	0.011	0.007	0.026	0	0.025	0.007	0.023	0	0.023	0.007	0.012	0	0.01	0.007	0.013	0	0.009	0.007	0.017	0	0.004	0.007	0.022	0	0.003	0.007	0.018	0	0.011	0.007	0.021	0	0.007	0.013	0.002	0	0.01	0.007	0.018	0	0.002	0.007	0.004	0	0.004	0.009	0.016	0	0.015
180	0.011	0.013	0	0.013	0.011	0.012	0	0.012	0.011	0.027	0	0.027	0.012	0.024	0	0.024	0.011	0.012	0	0.011	0.011	0.013	0	0.009	0.011	0.017	0	0.005	0.011	0.022	0	0.003	0.011	0.018	0	0.012	0.011	0.021	0	0.007	0.02	0.002	0	0.015	0.011	0.018	0	0.002	0.011	0.005	0	0.004	0.014	0.017	0	0.016
240	0.015	0.013	0	0.013	0.015	0.013	0	0.012	0.015	0.029	0	0.028	0.015	0.026	0	0.025	0.015	0.012	0	0.011	0.015	0.014	0	0.01	0.015	0.018	0	0.005	0.015	0.023	0	0.003	0.015	0.019	0	0.012	0.015	0.022	0	0.008	0.026	0.002	0	0.02	0.015	0.019	0	0.002	0.015	0.005	0	0.005	0.018	0.018	0	0.017
300	0.018	0.014	0	0.014	0.018	0.014	0	0.013	0.018	0.03	0	0.03	0.019	0.027	0	0.027	0.018	0.013	0	0.012	0.018	0.014	0	0.01	0.018	0.018	0	0.006	0.018	0.024	0	0.003	0.018	0.02	0	0.012	0.018	0.022	0	0.008	0.032	0.003	0	0.024	0.018	0.019	0	0.003	0.018	0.005	0	0.005	0.022	0.019	0	0.017
360	0.021	0.015	0	0.015	0.021	0.014	0	0.014	0.021	0.031	0	0.031	0.022	0.028	0	0.028	0.021	0.013	0	0.012	0.021	0.015	0	0.01	0.021	0.019	0	0.006	0.021	0.024	0	0.003	0.021	0.02	0	0.013	0.021	0.023	0	0.008	0.037	0.003	0	0.028	0.021	0.02	0	0.003	0.021	0.005	0	0.005	0.026	0.02	0	0.018
420	0.023	0.015	0	0.015	0.023	0.015	0	0.014	0.024	0.033	0	0.032	0.024	0.029	0	0.029	0.023	0.014	0	0.012	0.023	0.015	0	0.011	0.023	0.019	0	0.006	0.023	0.025	0	0.003	0.023	0.021	0	0.013	0.023	0.024	0	0.008	0.041	0.003	0	0.031	0.023	0.021	0	0.003	0.023	0.005	0	0.006	0.029	0.02	0	0.019
480	0.025	0.016	0	0.016	0.025	0.015	0	0.015	0.026	0.034	0	0.033	0.026	0.03	0	0.03	0.025	0.014	0	0.013	0.025	0.016	0	0.011	0.025	0.02	0	0.006	0.025	0.026	0	0.004	0.025	0.021	0	0.014	0.025	0.025	0	0.009	0.045	0.003	0	0.033	0.025	0.021	0	0.003	0.025	0.005	0	0.006	0.031	0.021	0	0.02
540	0.027	0.016	0	0.016	0.027	0.016	0	0.015	0.027	0.035	0	0.034	0.028	0.031	0	0.031	0.027	0.015	0	0.013	0.027	0.016	0	0.011	0.027	0.021	0	0.007	0.027	0.026	0	0.004	0.027	0.022	0	0.014	0.027	0.025	0	0.009	0.047	0.003	0	0.035	0.027	0.022	0	0.003	0.027	0.005	0	0.006	0.033	0.022	0	0.02
600	0.028	0.016	0	0.017	0.028	0.016	0	0.016	0.028	0.035	0	0.035	0.029	0.031	0	0.031	0.028	0.015	0	0.014	0.028	0.017	0	0.012	0.028	0.021	0	0.007	0.028	0.027	0	0.004	0.028	0.023	0	0.015	0.028	0.026	0	0.009	0.049	0.003	0	0.036	0.028	0.023	0	0.003	0.028	0.006	0	0.006	0.034	0.022	0	0.021
660	0.029	0.017	0	0.017	0.028	0.017	0	0.016	0.029	0.036	0	0.036	0.029	0.032	0	0.032	0.029	0.015	0	0.014	0.029	0.017	0	0.012	0.029	0.022	0	0.007	0.029	0.028	0	0.004	0.029	0.023	0	0.015	0.029	0.027	0	0.009	0.05	0.003	0	0.037	0.029	0.023	0	0.003	0.029	0.006	0	0.006	0.035	0.023	0	0.021
720	0.029	0.017	0	0.017	0.029	0.017	0	0.016	0.029	0.037	0	0.036	0.03	0.033	0	0.033	0.029	0.016	0	0.014	0.029	0.018	0	0.012	0.029	0.022	0	0.007	0.029	0.029	0	0.004	0.029	0.024	0	0.016	0.029	0.028	0	0.01	0.051	0.003	0	0.037	0.029	0.024	0	0.003	0.029	0.006	0	0.007	0.035	0.023	0	0.021

Title : SJS1n2-construction
Version : Emfac2007V2.3 Nov 1 2006
Run Date : 10/13/2008 10:08:12
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
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Area : Fresno
****
Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Fresno County Average

Table 4:0 Hot Soak Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperatu 60F Relative Humidity: ALL

Time	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	UBUS	MCY	MCY	MCY	MCY	SBUS	SBUS	SBUS	SBUS	MH	MH	MH	MH	ALL	ALL	ALL	ALL
min	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
5	0.87	0.051	0	0.061	0.885	0.048	0	0.068	0.878	0.052	0	0.061	0.291	0.046	0	0.048	0.371	0.028	0	0.03	0.374	0.031	0	0.027	0.215	0.019	0	0.019	0.216	0.012	0	0.006	0.215	0.012	0	0.016	0.904	0.056	0	0.023	0.09	0.166	0	0.111	0.215	0.04	0	0.012	0.215	0.065	0	0.066	0.451	0.048	0	0.053
10	1.603	0.095	0	0.113	1.63	0.089	0	0.126	1.617	0.097	0	0.113	0.537	0.085	0	0.089	0.683	0.052	0	0.057	0.689	0.057	0	0.05	0.396	0.035	0	0.034	0.398	0.023	0	0.011	0.397	0.022	0	0.029	1.665	0.104	0	0.043	0.165	0.309	0	0.205	0.396	0.074	0	0.022	0.396	0.12	0	0.122	0.831	0.089	0	0.099
20	2.721	0.163	0	0.193	2.766	0.153	0	0.216	2.745	0.166	0	0.194	0.911	0.145	0	0.154	1.16	0.091	0	0.098	1.17	0.098	0	0.086	0.673	0.061	0	0.059	0.675	0.041	0	0.018	0.674	0.039	0	0.05	2.825	0.178	0	0.073	0.281	0.539	0	0.353	0.673	0.129	0	0.037	0.672	0.204	0	0.208	1.41	0.152	0	0.169
30	3.475	0.21	0	0.249	3.531	0.198	0	0.279	3.504	0.215	0	0.251	1.163	0.189	0	0.199	1.481	0.119	0	0.127	1.494	0.128	0	0.112	0.859	0.081	0	0.076	0.862	0.054	0	0.023	0.86	0.051	0	0.065	3.607	0.228	0	0.094	0.36	0.71	0	0.457	0.859	0.168	0	0.049	0.858	0.262	0	0.267	1.801	0.197	0	0.219
40	3.749	0.228	0	0.27	3.809	0.215	0	0.302	3.78	0.234	0	0.272	1.255	0.205	0	0.216	1.598	0.13	0	0.139	1.612	0.14	0	0.122	0.927	0.09	0	0.082	0.93	0.06	0	0.025	0.928	0.056	0	0.07	3.89	0.247	0	0.102	0.388	0.779	0	0.496	0.926	0.184	0	0.052	0.926	0.284	0	0.289	1.943	0.214	0	0.237

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title : SJS1n2-construction
Version : Emfac2007V2.3 Nov 1 2006
Run Date : 10/13/2008 10:08:12
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
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Area : Fresno
****
Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Fresno County Average

Table 5a: Partial Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperatu ALL Relative Humidity: ALL

Temp	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	UBUS	MCY	MCY	MCY	MCY	SBUS	SBUS	SBUS	SBUS	MH	MH	MH	MH	ALL	ALL	ALL	ALL
degF	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
60	0.469	0.072	0	0.08	0.465	0.069	0	0.082	0.466	0.075	0	0.081	0.161	0.068	0	0.069	0.024	0.005	0	0.004	0.024	0.005	0	0.003	0.023	0.007	0	0.002	0.025	0.003	0	0	0.023	0.004	0	0.003	0.02	0.002	0	0.001	0.051	0.338	0	0.131	0.024	0.011	0	0.002	0.026	0.012	0	0.011	0.206	0.073	0	0.075

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Run Date : 10/13/2008 10:08:12
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Area : Fresno
****
Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Fresno County Average

Table 5b: Multi-Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperatu ALL Relative Humidity: ALL

Temp	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	UBUS	MCY	MCY	MCY	MCY	SBUS	SBUS	SBUS	SBUS	MH	MH	MH	MH	ALL	ALL	ALL	ALL
degF	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
60	0.028	0.006	0	0.006	0.028	0.006	0	0.006	0.028	0.006	0	0.007	0.01	0.005	0	0.005	0.001	0	0	0	0.001	0	0	0	0.001	0	0	0	0.001	0	0	0	0.001	0	0	0	0.005	0.001	0	0	0.003	0.032	0	0.011	0.001	0	0	0	0.001	0.001	0	0.001	0.012	0.006	0	0.006

Title : SJS1n2-construction
Version : Emfac2007V2.3 Nov 1 2006
Run Date : 10/13/2008 10:08:12
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
Season : Annual
Area : Fresno
****
Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Fresno County Average

Table 6a: Partial Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperatu ALL Relative Humidity: ALL

Temp	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	UBUS	MCY	MCY	MCY	MCY	SBUS	SBUS	SBUS	SBUS	MH	MH	MH	MH	ALL	ALL	ALL	ALL
degF	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
60	0.269	0.029	0	0.034	0.268	0.031	0	0.039	0.271	0.031	0	0.035	0.097	0.03	0	0.031	0.016	0.003	0	0.002	0.015	0.002	0	0.001	0.014	0.004	0	0.001	0.015	0.002	0	0	0.014	0.002	0	0.002	0.012	0.001	0	0	0.029	0.109	0	0.051	0.015	0.006	0	0.001	0.016	0.006	0	0.006	0.119	0.03	0	0.032

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Run Date : 10/13/2008 10:08:12
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****
Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Fresno County Average

Table 6b: Multi-Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperatu ALL Relative Humidity: ALL

Temp	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	UBUS	MCY	MCY	MCY	MCY	SBUS	SBUS	SBUS	SBUS	MH	MH	MH	MH	ALL	ALL	ALL	ALL
degF	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
60	0.017	0.002	0	0.003	0.017	0.002	0	0.003	0.017	0.003	0	0.003	0.006	0.002	0	0.002	0.001	0	0	0	0.001	0	0	0	0.001	0	0	0	0.001	0	0	0	0.001	0	0	0	0.003	0	0	0	0.002	0.011	0	0.004	0.001	0	0	0	0.001	0	0	0	0.007	0.002	0	0.003

Title : SJS1n2-construction
Version : Emfac2007V2.3 Nov 1 2006
Run Date : 10/13/2008 10:08:12
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
Season : Annual
Area : Fresno
****

Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Fresno County Average

Table 7:00 Estimated Travel Fractions

Pollutant Name: Temperatu ALL Relative Humidity: ALL

	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
%VMT	0.003	0.4	0.001	0.405	0.002	0.093	0.005	0.101	0.002	0.205	0.001	0.208	0.001	0.116	0	0.118	0	0.017	0.006	0.023	0	0.004	0.004	0.008	0	0.003	0.017	0.02	0	0.001	0.101	0.102	0	0.001	0.001	0.001	0	0.001	0.001	0.002	0.006	0.003	0	0.009	0	0	0.002	0.002	0	0.002	0	0.002	0.015	0.846	0.139	1
%TRIP	0.005	0.389	0	0.395	0.003	0.086	0.006	0.094	0.002	0.192	0.001	0.195	0.001	0.106	0	0.108	0.001	0.073	0.009	0.084	0	0.018	0.008	0.026	0.004	0.015	0.043	0.062	0	0.002	0.017	0.02	0	0.003	0.002	0.005	0	0	0	0	0.007	0.003	0	0.01	0	0	0.001	0.001	0	0	0	0	0.024	0.888	0.088	1
%VEH	0.008	0.433	0.001	0.443	0.005	0.096	0.006	0.107	0.004	0.214	0.001	0.218	0.002	0.118	0	0.12	0	0.016	0.005	0.021	0	0.004	0.004	0.008	0.001	0.002	0.011	0.014	0	0	0.024	0.024	0	0	0	0.001	0	0	0	0	0.025	0.01	0	0.035	0	0	0.001	0.001	0.001	0.007	0.001	0.008	0.045	0.899	0.055	1

Title : SJS1n2-construction
Version : Emfac2007V2.3 Nov 1 2006
Run Date : 10/13/2008 10:08:12
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Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Fresno County Average

Table 8:00 Evaporative Running Loss Emissions (grams/minute)

Pollutant Name: Reactive Org Gases Temperatu 60F Relative Humidity: ALL

Time	LDA min	LDA NCAT	LDA CAT	LDA DSL	LDT1 ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV ALL	MDV NCAT	MDV CAT	MDV DSL	LHD1 ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD ALL	MHD NCAT	MHD CAT	MHD DSL	HHD ALL	HHD NCAT	HHD CAT	HHD DSL	OBUS ALL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY ALL	MCY NCAT	MCY CAT	MCY DSL	SBUS ALL	SBUS NCAT	SBUS CAT	SBUS DSL	MH ALL	MH NCAT	MH CAT	MH DSL	ALL ALL	ALL NCAT	ALL CAT	ALL DSL	ALL
	1	1.585	0.022	0	0.034	1.616	0.383	0	0.389	1.603	0.48	0	0.488	0.523	0.39	0	0.391	1.611	0.509	0	0.386	1.611	0.615	0	0.294	1.727	0.492	0	0.077	2.898	0.366	0	0.005	1.716	0.238	0	0.117	4.465	0.287	0	0.118	0.124	0.001	0	0.084	1.968	1.165	0	0.189	1.076	2.466	0	2.076	0.941	0.244	0	0.22
	2	1.466	0.026	0	0.038	1.22	0.198	0	0.21	1.142	0.247	0	0.254	0.334	0.202	0	0.203	1.078	0.276	0	0.211	1.118	0.329	0	0.159	1.226	0.276	0	0.045	1.845	0.201	0	0.003	1.254	0.133	0	0.067	2.478	0.148	0	0.062	0.125	0.112	0	0.121	1.425	0.65	0	0.117	0.817	1.317	0	1.121	0.768	0.134	0	0.125
	3	1.427	0.03	0	0.042	1.088	0.139	0	0.152	0.989	0.172	0	0.179	0.271	0.142	0	0.143	0.9	0.2	0	0.153	0.954	0.236	0	0.115	1.059	0.205	0	0.034	1.495	0.147	0	0.002	1.1	0.1	0	0.051	1.815	0.105	0	0.044	0.126	0.167	0	0.139	1.245	0.479	0	0.093	0.733	0.936	0	0.804	0.71	0.1	0	0.095
	4	1.408	0.034	0	0.045	1.023	0.111	0	0.125	0.912	0.136	0	0.142	0.24	0.113	0	0.114	0.812	0.162	0	0.125	0.872	0.19	0	0.093	0.976	0.17	0	0.029	1.32	0.121	0	0.002	1.023	0.085	0	0.044	1.484	0.085	0	0.036	0.127	0.198	0	0.15	1.154	0.394	0	0.081	0.695	0.749	0	0.649	0.682	0.084	0	0.081
	5	1.396	0.036	0	0.047	0.984	0.094	0	0.109	0.867	0.115	0	0.121	0.221	0.096	0	0.097	0.759	0.14	0	0.108	0.823	0.163	0	0.081	0.926	0.15	0	0.026	1.215	0.105	0	0.002	0.978	0.076	0	0.04	1.286	0.074	0	0.031	0.129	0.219	0	0.158	1.101	0.343	0	0.074	0.674	0.637	0	0.556	0.666	0.075	0	0.073
	10	1.377	0.041	0	0.052	0.907	0.065	0	0.08	0.776	0.076	0	0.082	0.184	0.065	0	0.066	0.654	0.099	0	0.077	0.727	0.113	0	0.056	0.828	0.111	0	0.02	1.007	0.075	0	0.001	0.888	0.06	0	0.032	0.89	0.054	0	0.023	0.136	0.262	0	0.176	0.995	0.244	0	0.061	0.633	0.418	0	0.375	0.635	0.059	0	0.059
	15	1.373	0.043	0	0.054	0.883	0.058	0	0.073	0.748	0.068	0	0.073	0.172	0.059	0	0.06	0.62	0.088	0	0.069	0.696	0.099	0	0.05	0.797	0.101	0	0.019	0.94	0.066	0	0.001	0.859	0.057	0	0.03	0.759	0.051	0	0.021	0.142	0.276	0	0.185	0.961	0.212	0	0.056	0.62	0.349	0	0.317	0.628	0.056	0	0.056
	20	1.372	0.044	0	0.055	0.872	0.057	0	0.072	0.734	0.066	0	0.072	0.166	0.058	0	0.059	0.603	0.085	0	0.066	0.681	0.096	0	0.048	0.782	0.098	0	0.018	0.907	0.062	0	0.001	0.846	0.056	0	0.03	0.694	0.053	0	0.021	0.148	0.284	0	0.192	0.945	0.197	0	0.054	0.615	0.318	0	0.291	0.626	0.055	0	0.056
	25	1.373	0.045	0	0.055	0.867	0.059	0	0.073	0.727	0.068	0	0.073	0.162	0.06	0	0.061	0.594	0.084	0	0.066	0.673	0.095	0	0.048	0.774	0.098	0	0.018	0.888	0.06	0	0.001	0.839	0.057	0	0.03	0.656	0.055	0	0.022	0.155	0.289	0	0.198	0.937	0.189	0	0.053	0.612	0.301	0	0.278	0.626	0.057	0	0.057
	30	1.377	0.045	0	0.056	0.869	0.059	0	0.073	0.729	0.068	0	0.074	0.163	0.06	0	0.061	0.596	0.084	0	0.066	0.675	0.096	0	0.048	0.776	0.098	0	0.018	0.89	0.06	0	0.001	0.841	0.057	0	0.03	0.658	0.055	0	0.022	0.155	0.289	0	0.198	0.939	0.19	0	0.053	0.614	0.302	0	0.279	0.628	0.057	0	0.057
	35	1.38	0.045	0	0.056	0.871	0.059	0	0.073	0.731	0.068	0	0.074	0.163	0.06	0	0.061	0.597	0.085	0	0.066	0.676	0.096	0	0.048	0.778	0.098	0	0.018	0.893	0.06	0	0.001	0.843	0.057	0	0.03	0.659	0.055	0	0.022	0.155	0.29	0	0.199	0.942	0.19	0	0.053	0.616	0.303	0	0.279	0.629	0.057	0	0.057
	40	1.383	0.045	0	0.056	0.873	0.059	0	0.073	0.733	0.068	0	0.074	0.164	0.06	0	0.061	0.599	0.085	0	0.067	0.678	0.096	0	0.048	0.78	0.098	0	0.018	0.895	0.061	0	0.001	0.845	0.057	0	0.03	0.661	0.055	0	0.022	0.156	0.29	0	0.199	0.944	0.191	0	0.053	0.617	0.304	0	0.28	0.631	0.057	0	0.057
	45	1.386	0.045	0	0.056	0.875	0.059	0	0.073	0.734	0.068	0	0.074	0.164	0.06	0	0.061	0.6	0.085	0	0.067	0.68	0.096	0	0.049	0.782	0.098	0	0.018	0.897	0.061	0	0.001	0.847	0.057	0	0.03	0.663	0.055	0	0.022	0.156	0.291	0	0.199	0.946	0.191	0	0.053	0.619	0.304	0	0.281	0.632	0.057	0	0.057
	50	1.36	0.044	0	0.055	0.867	0.059	0	0.073	0.729	0.069	0	0.074	0.163	0.06	0	0.061	0.596	0.085	0	0.067	0.676	0.096	0	0.049	0.776	0.099	0	0.018	0.89	0.061	0	0.001	0.84	0.057	0	0.03	0.665	0.056	0	0.022	0.153	0.291	0	0.197	0.936	0.192	0	0.053	0.617	0.305	0	0.281	0.623	0.057	0	0.057
	55	1.324	0.044	0	0.054	0.856	0.059	0	0.073	0.721	0.069	0	0.074	0.162	0.06	0	0.061	0.589	0.085	0	0.067	0.67	0.096	0	0.049	0.766	0.099	0	0.018	0.879	0.061	0	0.001	0.828	0.057	0	0.03	0.666	0.056	0	0.022	0.148	0.291	0	0.194	0.921	0.192	0	0.053	0.615	0.306	0	0.282	0.61	0.057	0	0.057
	60	1.293	0.043	0	0.054	0.846	0.059	0	0.073	0.714	0.069	0	0.074	0.161	0.06	0	0.061	0.584	0.085	0	0.067	0.666	0.097	0	0.049	0.758	0.099	0	0.018	0.871	0.061	0	0.001	0.819	0.057	0	0.03	0.668	0.056	0	0.022	0.145	0.292	0	0.192	0.908	0.192	0	0.052	0.613	0.307	0	0.282	0.599	0.056	0	0.056

Reference source 1: Table C.5, California Climate Action Registry General Reporting Protocol Version 3.0, April 2008

Table C.5: Methane and Nitrous Oxide Emission Factors for Mobile Sources by Vehicle and Fuel Type

Vehicle Types/Model Years	CH_4 (g/mile)	N_2O (g/mile)
Passenger Cars - Gasoline		
Model Year 1966-1972	0.22	0.02
Model Year 1973-1974	0.19	0.02
Model Year 1975-1979	0.11	0.05
Model Year 1980-1983	0.07	0.08
Model Year 1984-1991	0.06	0.08
Model Year 1992	0.06	0.07
Model Year 1993	0.05	0.05
Model Year 1994-1999	0.05	0.04
Model Year 2000– present	0.04	0.04
Passenger Cars - Alternative Fuels and Diesel		
CNG Model Year 2000– present	0.04	0.04
LPG Model Year 2000– present	0.04	0.04
E85 Model Year 2000– present	0.04	0.04
Diesel all model years	0.01	0.02
Light Duty Truck (<5750 GVWR*) - Gasoline		
Model Year 1966-1972	0.22	0.02
Model Year 1973-1974	0.23	0.02
Model Year 1975-1979	0.14	0.07
Model Year 1980-1983	0.12	0.13
Model Year 1984-1991	0.11	0.14
Model Year 1992	0.09	0.11
Model Year 1993	0.07	0.08
Model Year 1994-1999	0.06	0.06
Model Year 2000– present	0.05	0.06

Table C.5: Methane and Nitrous Oxide Emission Factors for Mobile Sources by Vehicle and Fuel Type (continued)

Vehicle Types/Model Years	CH_4 (g/mile)	N_2O (g/mile)
Light Duty Truck - Alternative Fuels and Diesel		
CNG Model Year 2000– present	0.05	0.06
LPG Model Year 2000– present	0.05	0.06
E85 Model Year 2000– present	0.05	0.06
Diesel all model years	0.01	0.03
Heavy-Duty Vehicle (>5751 GVWR) - Gasoline		
Model Year 1981 and older	0.43	0.04
Model Year 1982-1984	0.42	0.05
Model Year 1985-1986	0.20	0.05
Model Year 1987	0.18	0.09
Model Year 1988-1989	0.17	0.09
Model Year 1990-present	0.12	0.20
Heavy Duty Trucks - Diesel and Alternative Fuels		
Model Year 1966-1982	0.10	0.05
Model Year 1983-1995	0.08	0.05
Model Year 1996 to present	0.06	0.05
CNG, LNG	3.48	0.05
FTD, Biodiesel	0.06	0.05
Motorcycles		
Model Year 1966-1995	0.42	0.01
Model Year 1996-present	0.09	0.01
Off-Road Vehicles/Construction Equipment by Fuel Type		
	CH_4 (kg/gallon)	N_2O (kg/gallon)
Butane	9.1×10^{-6}	4.1×10^{-4}
Distillate Fuel	.0014	.0001
Liquefied Petroleum Gas (LPG)	.0010	.0001
Motor Gasoline	.0013	.0001
Propane	9.1×10^{-6}	4.1×10^{-4}

OPERATIONAL EMISSION CALCULATIONS

San Joaquin 1&2 Solar Hybrid Project Total Operational Emissions

	Annual Emission Rate (ton/yr)					
	NO_X	CO	VOC	SO_2	PM_{10}	$PM_{2.5}$
Onsite Emission Sources						
Stationary Sources						
Combustion Emissions						
Fluidized Bed Combustors	47.91	81.58	12.90	49.48	102.03	102.03
Emergency Generators	0.169	0.093	0.026	0.0001	0.005	0.005
Fire Water Pumps	0.141	0.075	0.021	0.0001	0.004	0.004
Natural Gas Burners	0.159	0.128	0.004	0.007	0.019	0.019
Cooling Towers					1.61	1.61
Fugitive Emissions						
Biomass, Limestone and Ash Handling Fugitive Dust					7.31E-04	1.11E-04
Total Onsite Stationary Source Emissions	*48.38*	*81.88*	*12.95*	*49.49*	*103.67*	*103.67*
Mobile Sources						
Combustion Emissions						
Biomass Handling Equipment	0.10	0.07	0.01	0.0001	0.01	0.01
Trucks Cleaning Solar Mirrors	0.01	0.01	0.001	1.03E-05	0.0006	0.0005
Delivery Trucks - Travel & Idling Onsite	2.56	1.12	0.529	0.002	0.107	0.101
Fugitive Emissions						
Trucks Cleaning Solar Mirrors					0.06	0.01
Delivery Trucks - Travel Onsite					4.53	0.77
Total Onsite Mobile Source Emissions	*2.66*	*1.20*	*0.54*	*0.00*	*4.71*	*0.89*
Total Onsite Emissions	***51.05***	***83.08***	***13.50***	***49.49***	***108.38***	***104.55***
Offsite Emission Sources						
Mobile Sources						
Combustion Emissions						
Delivery Trucks - Offsite Travel	138.59	60.54	37.21	0.15	8.09	7.64
Commuter Vehicles	0.72	2.69	0.24	0.01	0.12	0.10
Fugitive Emissions						
Delivery Trucks - Offsite Travel					270.74	45.75
Commuter Vehicles					2.34	0.39
Total Offsite Mobile Source Emissions	*139.31*	*63.22*	*37.45*	*0.15*	*281.29*	*53.89*
Total Offsite Emissions	***139.31***	***63.22***	***37.45***	***0.15***	***281.29***	***53.89***
Total Project Operational Emissions (ton/yr)	**190.36**	**146.30**	**50.94**	**49.65**	**389.67**	**158.45**

San Joaquin 1&2 Solar Hybrid Project Total Operational Emissions

	Daily Emission Rate (pound/day)					
	NO_X	**CO**	**VOC**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Onsite Emission Sources						
Stationary Sources						
Combustion Emissions						
Fluidized Bed Combustors	1316.26	2241.31	354.45	1359.40	2803.08	2803.08
Emergency Generators	4.65	2.54	0.73	0.00	0.15	0.14
Fire Water Pumps	3.88	2.06	0.59	0.00	0.12	0.12
Natural Gas Burners	4.36	3.52	0.10	0.20	0.52	0.52
Cooling Towers					44.10	44.10
Fugitive Emissions						
Biomass, Limestone and Ash Handling Fugitive Dust					0.02	0.00
Total Onsite Stationary Source Emissions	*1329.15*	*2249.42*	*355.86*	*1359.60*	*2847.98*	*2847.96*
Mobile Sources						
Combustion Emissions						
Biomass Handling Equipment	2.74	1.99	0.39	0.00	0.23	0.21
Trucks Cleaning Solar Mirrors	0.21	0.21	0.02	0.00	0.02	0.01
Delivery Trucks - Travel & Idle Onsite	70.25	30.67	14.52	0.06	2.93	2.78
Fugitive Emissions						
Trucks Cleaning Solar Mirrors					1.74	0.37
Delivery Trucks - Travel Onsite					124.52	21.04
Total Onsite Mobile Source Emissions	*73.19*	*32.87*	*14.93*	*0.07*	*129.45*	*24.42*
Total Onsite Emissions	***1402.34***	***2282.30***	***370.79***	***1359.67***	***2977.43***	***2872.38***
Offsite Emission Sources						
Mobile Sources						
Combustion Emissions						
Delivery Trucks - Offsite Travel	3807.40	1663.12	1022.26	4.07	222.38	209.90
Commuter Vehicles	19.91	73.83	6.52	0.16	3.31	2.79
Fugitive Emissions						
Delivery Trucks - Offsite Travel					7437.81	1256.99
Commuter Vehicles					64.18	10.85
Total Offsite Mobile Source Emissions	*3827.31*	*1736.95*	*1028.78*	*4.23*	*7727.67*	*1480.53*
Total Offsite Emissions	***3827.31***	***1736.95***	***1028.78***	***4.23***	***7727.67***	***1480.53***
Total Project Operational Emissions (pound/day)	**5229.65**	**4019.25**	**1399.57**	**1363.90**	**10705.10**	**4352.91**

San Joaquin 1&2 Solar Hybrid Project Total Operational Emissions

	Annual Emission Rate (tonnes/yr)				
	CO_2	CH_4	N_20	SF_6	CO_2e
Onsite Emission Sources					
Stationary Sources					
Fluidized Bed Combustor	1,094,241				1,094,241.4
Emergency Generator	16.9	2.34E-03	1.67E-04		17.0
Fire Water Pump	14.8	2.04E-03	1.46E-04		14.9
Natural Gas Burners	273.2	5.24E-03	1.46E-03		273.7
Circuit breakers				1.22E-03	29.3
Total Onsite Stationary Source CO_2e Emissions					*1,094,576.3*
Mobile Sources					
Biomass Handling Equipment	10.1	1.15E-03	0.00E+00		10.1
Trucks Cleaning Solar Mirrors	1.1	3.12E-04	1.56E-04		1.1
Delivery Trucks - Travel & Idling Onsite	212.3	4.24E-03	2.12E-03		213.1
Total Onsite Mobile Source CO_2e Emissions					*224.3*
Total Onsite CO_2e Emissions					***1,094,800.6***
Offsite Emission Sources					
Mobile Sources					
Delivery Trucks - Offsite Travel	13,962.4	3.63E-01	1.82E-01		14,026.3
Commuter Vehicles	565.1	3.80E-02	4.53E-02		579.9
Total Offsite Mobile Source CO_2e Emissions					*14,606.2*
Total Offsite CO_2e Emissions					***14,606.2***
Total Project Operational CO_2e Emissions (tonne/yr)					**1,109,407**

EPI EMISSION PREDICTIONS

Maximum emissions from combustors operating at 100% load with 100% wood waste fuel

Pollutants	Chemical Abstract Number	Emission Factors (lb/MMBtu)	Hourly Emissions per combustor (lb/hr)	Hourly Emissions Total Project (lb/hr)	Annual Emission Rate with Startups and normal operations per combustor train (tons/yr)	Annual Emission Rate with Startups and normal operations Total Project (tons/yr)
CO		0.020	6.20	24.80	20.43	81.71
SO_2		0.012	3.74	14.96	12.37	49.49
NO_X		0.012	3.63	14.52	12.02	48.07
PM_{10}		0.025	7.764	31.06	25.51	102.05
$PM_{2.5}$		0.025	7.764	31.06	25.51	102.05
VOC (total)		0.003	0.98	3.92	3.23	12.91

Notes:

1. Operation schedule and heat input:
   6570 Annual operations based on 75% capacity (not including startup hours)
   310.57 Full load operation HHV (MMBtu/hr)
2. EPI boiler model data from 22-Oct-08 (EPI reference 1587) for 100% load, 100% wood waste
3. Assumes all PM_{10} = $PM_{2.5}$
4. HCl has 97% control efficiency.

Stack Parameters

Scenario	Stack Height (m)	Exit Temperature (K)	Exit Velocity (m/s)	Stack Diameter (m)	Stack Height (ft)	Exit Temperature (F)	Exit Velocity (acfm)	Stack Diameter (ft)
100% load, 100% wood waste	30.48	383.15	24.916	2.0828	100	230	179,877	6.83
50% load, ag & wood waste	30.48	383.15	10.525	2.0828	100	230	75,979	6.83

Notes:

1. Stack diameter was provided by EPI.

Emissions from combustors operating at 50% load with 100% wood waste fuel

Pollutants	Hourly Emissions per combustor (lb/hr)	Hourly Emissions Total Project (lb/hr)
CO	3.10	12.40
SO_2	1.87	7.48
NO_X	1.82	7.26
PM_{10}	3.88	15.53
$PM_{2.5}$	3.88	15.53
VOC (total)	0.49	1.96

Startup Emissions **For modeling max startup emissions for each combustor train**

Pollutants	Hour 7 Emissions per combustor (lb/hr)	Total Hour 7 Emissions (per combustor + burners) (lb/hr)	Hour 8 Emissions per combustor (lb/hr)	Annual startup Emissions for each combustor train (one combustor + 3 burners) (ton/yr)	Max 1-Hour Emission Rate during Startup per combustor + burner (lb/hr)	Max 3-Hour Emission Rate during Startup per combustor + burner (lb/hr)	Max 8-Hour Emission Rate during Startup per combustor + burner (lb/hr)	Max 24-Hour Emission Rate during Startup per combustor + burner (lb/hr)
CO	5.63	11.38	23.25	0.06	23.25		8.98	
SO_2	38.14	38.46	46.50	0.09	46.50	29.57		6.97
NO_X	27.39	34.52	26.04	0.09	34.52			
PM_{10}	0.53	1.39	2.17	0.01	2.17			
$PM_{2.5}$	0.53	1.39	2.17	0.01	2.17			
VOC (total)	1.20	1.36	4.96	0.01	4.96			

Notes:

Note: There is only 1 hour of overlap during startup with the burners and the combustors, that is hour 7

Cooling Tower Drift Calculation

Two 2-cell cooling towers

Cooling Towers
Total Project SJS 1&2

Annual average design circulating water rate	61,000	gallons/min		
Maximum daily design circulating water rate	70,000	gallons/min		
Cycles of concentration	4			
TDS	600	mg/liter		
	5.01	lb/1000 gallons		
Drift Eliminator Control	0.000005	=	0.0005	%
Operating hours per year	8760	hr/yr		
Number of cells in each cooling tower	2			

	Total SJS 1&2	**Each cooling tower**	**per cell**	**per cell (g/s)**
Annual PM emissions (ton/year)	1.61	0.80	0.401	0.01155
Maximum daily PM emissions (lb/day)	10.09	5.05	2.523	0.01326

Emissions from each Fire Pump Engine (there is one fire pump per plant)

Max Engine Power	186.4	Kw	
Power rating	250	hp	
Testing duration	1	hr/week	
Expected non-emergency usage	52	hr/yr	
Diesel Fuel Fired	Emision Factor	Hourly Emission Rate	Yearly Emission Rate
	g/Kw/Hr	lb/hr	lb/yr
NO_X	6.600	2.71	141.06
CO	3.500	1.44	74.80
VOC (Total Hydrocarbons)	1.000	0.41	21.37
SO_2		0.001	0.08
PM_{10}	0.200	0.08	4.27
$PM_{2.5}$	0.198	0.08	4.24
	kg/gal		
CO_2	10.15	313.27	16290.23
CH_4	0.0014	0.04	2.25
N_20	0.0001	0.003	0.16

Note:

1. Emission rates based on EPA Tier 2 emission limits (most conserverative)
2. NO_x emission rate = maximum NO_x + HC emission limit
3. PM_{10} emission rate includes filterable and condensable emissions.
4. SO_2 emission rate calculation based on sulfur content in the fuel.
5. Greenhouse gas emission factors from CCAR General Reporting Protocol April 2008 Tables C.6 and C.7
6. Diesel sulfur content (ppm) 15
7. Diesel density (lb/gal) 7.1

Engine parameters

Flow Rate (acfm)	1,200	from CARB data (conserverative)
fuel rate (gal/hr)	14.0	from CARB data (conserverative)
Stack Diameter (feet)	0.4	from CARB data (conserverative)
Stack diameter (m)	0.12	from CARB data (conserverative)
Stack height (feet)	10	
Stack height (m)	3.048	
Exhaust Temp (K)	622	from CARB data
Exit velocity (m/s)	50.075	

Reference:

1. CARB Table 1 of "Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines", Oct 2000.

2. $PM_{2.5}$ emission factors from updated CEIDARS List with $PM_{2.5}$ fractions. $PM_{2.5}$ numbers obtained by multiplying the PM_{10} values by fraction in CEIDARS list for Internal Combustion DISTILLATE AND DIESEL-EXCEPT ELECTRIC GENERATION sources.

Emissions from each Emergency Generator (there is one generator per plant)

Max Engine Power	1000	Kw	
Power rating	1341	hp	
Testing duration	1	hr/week	
Expected non-emergency usage	12	hr/yr	
Diesel Fuel Fired	Emision Factor	Hourly Emission Rate	Yearly Emission Rate
	g/Kw/Hr	lb/hr	lb/yr
NO_X	6.400	14.11	169.32
CO	3.500	7.72	92.59
VOC (Total Hydrocarbons)	1.000	2.20	26.46
SO_2		0.01	0.09
PM_{10}	0.200	0.44	5.29
$PM_{2.5}$	0.198	0.44	5.24
	kg/gal		
CO_2	10.15	1555.90	18670.75
CH_4	0.0014	0.21	2.58
N_20	0.0001	0.02	0.18

Note:

1. Emission rates based on EPA Tier 2 emission limits (most conserverative)
2. NO_x emission rate = maximum NO_x + HC emission limit
3. PM_{10} emission rate includes filterable and condensable emissions.
4. SO_2 emission rate calculation based on sulfur content in the fuel.
5. Greenhouse gas emission factors from CCAR General Reporting Protocol April 2008 Tables C.6 and C.7
6. Diesel Sulfur content (ppm) 15
7. Diesel density (lb/gal) 7.1

Engine parameters

Flow Rate (acfm)	6,800	from CARB data (conserverative)
fuel rate (gal/hr)	69.5	from CARB data (conserverative)
Stack Diameter (feet)	0.984	from CARB data (conserverative)
Stack diameter (m)	0.300	from CARB data (conserverative)
Stack height (feet)	10	
Stack height (m)	3.048	
Exhaust Temp (K)	622	from CARB data
Exit velocity (m/s)	45.401	

Reference:

1. CARB Table 1 of "Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines", Oct 2000.
2. $PM_{2.5}$ emission factors from updated CEIDARS List with $PM_{2.5}$ fractions. $PM_{2.5}$ numbers obtained by multiplying the PM_{10} values by fraction in CEIDARS list for Internal Combustion DISTILLATE AND DIESEL-EXCEPT ELECTRIC GENERATION sources.

Natural gas Burners

3 burners per fluidized bed combustor used for startup, one 15 MMBtu/hr and two 50 MMBtu/hr burners

Total power rating (3 burners) 115 MMBtu/hr

	Number of startups per year per combustor	Duration of each startup (hours)	Total MMBtu per startup event	
Cold start	2	7	640	7 hrs/start with power rating as shown in the table provided by EPI
Annual operations	14	hrs/yr		
Max daily operations	7	hrs/day		

Emissions for the 3 burners for EACH COMBUSTOR

	Emision Factor	Emision Factor	Max Hourly Emission Rate Per Combustor	Max Daily Emission Rate Per Combustor	Annual Emission Rate Per Combustor	Max Hourly Emission Rate Total Project	Max Daily Emission Rate Total Project	Annual Emission Rate Total Project
	lb/10^6 scf	lb/MMBtu	lb/hr	lb/day	ton/yr	lb/hr	lb/day	ton/yr
NO_X	na	0.062	7.13	39.68	0.04	28.52	158.72	0.16
CO	na	0.050	5.75	32.00	0.03	23.00	128.00	0.13
VOC (TOC)	na	0.0014	0.16	0.90	0.00	0.64	3.58	0.00
SO_2	2.85	0.003	0.32	1.79	0.00	1.29	7.16	0.01
PM_{10}	7.6	0.007	0.86	4.77	0.00	3.43	19.07	0.02
$PM_{2.5}$	7.6	0.007	0.86	4.77	0.00	3.43	19.07	0.02
CO_2	120000	117.647	13529	75294	75.29	54118	301176	301
CH_4	2.3	0.002	0.26	1.44	0.00	1.04	5.77	0.01
N_20	0.64	0.001	0.07	0.40	0.00	0.29	1.61	0.00

Note:

1. Emission factors for NOx, CO and VOC from vendor (EPI)
2. Emission factors for PM10, CO2, CH4 & N2O from AP-42 Table 1.4-2 for Natural Gas Combustion
3. Emission factor for SO_2 from mass balance and sulfur content of the natural gas
4. Assume all of the PM_{10}=$PM_{2.5}$
5. Sulfur content 1 gr/100 scf
6. Thermal equivalent 1020 Btu/scf from AP-42 Appendix A
7. Emissions exhausted through the combustor stack.
8. The combustors can stay warm for up to 48 hours.

Table #-#. BFB Cold Start-up Sequence

Startup time (hrs)	1	2	3	4	5	6	7	8	NOTES
Parameters									
Main steam flow (%MCR)	16%	24%	26%	29%	37%	37%	61%	100%	Ratio calculated based on total heat input.
Wood flow (pph)	0	0	0	0	0	0	13,028	53,847	Maximum wood firing rate from short-term emission calcs.
heat (MMBtu/hr) (HHV)	50	75	80	90	115	115	115	0	
Wood heat input (MMBtu/hr) (HHV)	0	0	0	0	0	0	75	310	
Total heat input (MMBtu/hr) (HHV)	50	75	80	90	115	115	190	310	Calculated as the sum of nat gas startup and wood MMBtu.
Bed temperature (degrees F)	0	300	500	650	725	725	1,200	1,300	
Stack exit flow (scfm)									
Controls:									
NOx Removal Efficiency - (%)	0	0	0	0	0	0	0	77	Not until SNCR is activated
SO2 Removal Efficiency - (%)	0	0	0	0	0	0	0	71	No acid gas scrubbing till hour 7
HCL Removal Efficiency (%)	0	0	0	0	0	0	0	96	No acid gas scrubbing till hour 7
Emission Factors	B-100	(B-100 & Wood Blends) (weighted average for now)						Wood	
NOx Emissions (lb/MMBtu)	0.062	0.062	0.062	0.062	0.062	0.062	0.182	0.084	0 for Nat gas
SO2 Emissions (lb/MMBtu)	0.000	0.000	0.000	0.000	0.000	0.000	0.201	0.150	0 for Nat Gas
PM/PM10 Emissions (lb/MMBtu)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0026	0.007	0 for Nat Gas
CO Emissions (lb/MMBtu)	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0599	0.075	assume 0.05 for gas burner
VOC Emissions (lb/MMBtu)	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0072	0.016	use 0.014 for Nat Gas
Emission Rates									
NOx Emissions (lb/hr)	3.10	4.65	4.96	5.58	7.13	7.13	34.52	26.04	
SO2 Emissions (lb/hr)	0.00	0.00	0.00	0.00	0.00	0.00	38.14	46.50	
PM/PM10 Emissions (lb/hr)	0.00	0.00	0.00	0.00	0.00	0.00	0.53	2.17	
CO Emissions (lb/hr)	2.50	3.75	4.00	4.50	5.75	5.75	11.38	23.25	
VOC Emissions (lb/hr)	0.07	0.11	0.11	0.13	0.16	0.16	1.36	4.96	
								0.93	
								0.01	
								3.01	
								0.24	
								3.70	

Total Project SJS 1&2
Estimated SF_6 emissions from total project

Breaker	Qty	SF_6 Lbs/Bkr	Leakage Rate	Leakage All Breakers Lbs/Yr	SF_6 emissions (tonnes/Yr)	CO_2e emissions (tonnes/Yr)
230kV Breaker	2	135	1%	2.7	0.00122	29.27
				Total Annual Emissions	0.00122	29.27

Note:

1. Greenhouse Gas Global Warming Potentials (GWPs) - Intergovernmental Panel on Climate Change, Second Assessment Report (1996)

Greenhouse Gas	GWP (SAR, 1996)
SF_6	23,900

2. Leakage rate assumed same as another similar solar project

Total Project SJS 1&2

Calculation of CO_2 emissions from burning wood waste in each fluidized bed combustor

Quantity of wood waste burned per year	709,000	tons/yr
Quantity of ash created per year	35,450	tons/yr
Wood - ash	673,550	tons/yr
Carbon fraction of fuel from wood waste (as received value)	0.4885	by weight

Assume all fuel carbon is converted to CO_2

CO_2 annual emissions (tonnes per year) = 1,094,241

Calculation of CO_2 emissions from burning agricultural prunings in each fluidized bed combustor

Quantity of agricultural prunings burned per year	534,929	tons/yr
Quantity of ash created per year	26,746	tons/yr
Wood - ash	508,183	tons/yr
Carbon fraction of fuel from agricultural prunings (as received value	0.5027	by weight

Assume all fuel carbon is converted to CO_2

CO_2 annual emissions (tonnes per year) = 849,587

Note:

1. Assumes all the carbon in ash does not convert to CO_2
2. Data from EPI Emissions Predictions stm 9 26 08.pdf

Total Project SJS 1&2
Fugitive Emissions from Material Handling

	Usage (lb/hr)	Usage (ton/hr)	M = material moisture content (%)	PM_{10} Emission Factor (lb/ton)	$PM_{2.5}$ Emission Factor (lb/ton)	Emissions Without Controls		Control Efficiency		Emissions With Controls		Emissions With Controls	
						PM_{10} Emission Rate (lb/hr)	$PM_{2.5}$ Emission Rate (lb/hr)	PM_{10} Control (%)	$PM_{2.5}$ Control (%)	PM_{10} Emission Rate (lb/hr)	$PM_{2.5}$ Emission Rate (lb/hr)	PM_{10} Annual Emission Rate (ton/yr)	$PM_{2.5}$ Annual Emission Rate (ton/yr)
Biomass unloading & handling	215,804	107.9	27	3.61E-06	5.47E-07	3.90E-04	5.91E-05	98%	98%	7.80E-06	1.18E-06	2.56E-05	3.88E-06
Limestone unloading & handling	1232	0.6	1	3.42E-03	5.19E-04	2.11E-03	3.19E-04	99%	99%	2.11E-05	3.19E-06	6.93E-05	1.05E-05
Hydrated Lime unloading & handling	512	0.3	1	3.42E-03	5.19E-04	8.77E-04	1.33E-04	99%	99%	8.77E-06	1.33E-06	2.88E-05	4.36E-06
Fly ash handling & truck loading	10790	5.4	1	3.42E-03	5.19E-04	1.85E-02	2.80E-03	99%	99%	1.85E-04	2.80E-05	6.07E-04	9.19E-05
									Total	**2.22E-04**	**3.37E-05**	**7.31E-04**	**1.11E-04**

Note:

1. The unloading of the limestone, lime and fly ash is done with a pneumatic system.

6570 Annual hours of operations
75% annual capacity factor

Calculation of Fugitve Dust Emission Factor

Unloading & Handling Emission Factors
AP-42 Section 13.2.4 Aggregate Handling and Storage Piles (11/06) Equation 1

$$E = \frac{k\,(0.0032)\,(U/5)^{1.3}}{(M/2)^{1.4}}$$

	PM_{10}	$PM_{2.5}$
k =	0.35	0.053
U = mean wind speed (mph) =	1	Inside building
U = mean wind speed (mph) =	5.6	Annual average from 2000-2004 Hanford airport data

Total Project SJS 1&2

Biomass Unloading Combustion Exhaust Emissions

Emissions for both plants combined

Diesel Fired Offroad Equipment

							Emission factors (lb/hr)									
Equipment	**Quantity**	**Percent of time operating (%)**	**Hours /Day**	**Days/ Week**	**Hours/year**	**Horsepower**	**ROG**	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Front end loader	1	50	4	5	1040	100	0.0542	0.3832	0.2791	0.0005	0.0325	0.0299	42.7234	0.0049	0.0000	42.8261

Hourly Emissions (lb/hr)									
ROG	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
0.03	0.19	0.14	0.00	0.02	0.01	21.36	0.00	0.00	21.41

Daily Emissions (lb/day)									
ROG	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
0.11	0.77	0.56	0.00	0.06	0.06	85.45	0.01	0.00	85.65

Annual Emissions (ton/year)									
ROG	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
0.01	0.10	0.07	0.00	0.01	0.01	11.11	0.00	0.00	11.13

Notes:

1. Emission factors from CARB Off-road 2007 application. (calendar year: 2011) used the 120hp emission factor for Skid steer loader from OFFROAD2007.
2. PM emission factors determined using guidance from SCAQMD Final - Methodology to Calculate PM_{10} and $PM_{2.5}$ Significance Thresholds 10/1/2006, Appendix A - Updated CEIDARS Table with $PM_{2.5}$ Fractio Off-road equipment
   - $PM_{2.5}$ Fraction of total PM, Diesel: 0.920
   - PM_{10} Fraction of total PM, Diesel: 1.000
3. CO_2, CH_4 and N_2O emission factors for diesel fuel off-road vehicle and equipment are from OFFROAD2007 model
4. Fugitive dust emissions from the moving of the biomass are calculated in the biomass fugitive tab
5. All of the biomass fuel handling equipment will be electric powered conveyors, stackers and reclaimers.
6. Hydraulic unloaders will be used for unloading the biomass delivery trucks.
7. One- 100hp front end loader will be used part time for spill clean-up for approximately 4hrs/day, 5days/week.

Total Project SJS 1&2
Mirror cleaning truck emissions

Pollutant	Emission factor (lb/mile)	Max Hourly Emissions (lb/hr)	Max Daily Emissions (lb/day)	Annual Emissions (ton/yr)	CO_2e Annual Emissions (tonne/yr)
CO	4.90E-03	0.005	0.059	0.008	
NO_X	4.87E-03	0.005	0.058	0.008	
VOC	4.70E-04	0.000	0.006	0.001	
SO_2	6.61E-06	0.000	0.000	0.000	
PM_{10}	3.53E-04	0.000	0.004	0.001	
$PM_{2.5}$	3.12E-04	0.000	0.004	0.000	
CO_2	7.65E-01	0.765	9.174	1.193	1.08
CH_4	2.20E-04	0.000	0.003	0.000	0.01
N_20	1.10E-04	0.000	0.001	0.000	0.05
				Total CO_2e	1.14

NOTE:

1. All emission factors (except for CH_4 and N_2O) for on-road 8500 lb truck (Light-Heavy-Duty Diesel Truck, LHDT1) are from EMFAC2007 model (calendar year = 2011; model year = 1980-2011).
2. CH_4 and N_2O emission factors for on-road vehicle are from Reference source 1: Table C.5, California Climate Action Registry General Reporting Protocol Version 3.0, April 2008.
3. $PM_{2.5}$ emission factors determined using guidance from SCAQMD "Final - Methodology to Calculate $PM_{2.5}$ and $PM_{2.5}$ Significance Thresholds", 10/1/2006, Appendix A - Updated CEIDARS Table with $PM_{2.5}$ Fractions
   - $PM_{2.5}$ Fraction of PM_{10}, Brake wear: 0.429
   - $PM_{2.5}$ Fraction of PM_{10}, light heavy duty trucks: 0.964
   - $PM_{2.5}$ Fraction of PM_{10}, Tire wear: 0.250
4. Humidity reference from http://www.wrcc.dri.edu/narratives/CALIFORNIA.htm
5. Operational schedule assumptions:
   - 260 Annual days of operation
   - 6 Average total trip miles
   - 2 Number of trucks cleaning per day
   - 12 miles/day all cleaning vehicles
   - 12 hours/day cleaning schedule

Travel on unpaved road

$F = 2.1 * G/12 * H/30 * (J/3)^{0.7} * (I/4)^{0.5} * (365-K)/365$ SCAQMD CEQA Handbook Table A9-9-D

Emission factor for vehicle travel on unpaved roads (lb/VMT)

- 16 G = Surface silt loading (%) (from Table A9-9-D-1 for farm road)
- 1 H = Mean vehicle speed (mph)
- 4 I = Mean number of wheels on vehicle
- 16 J = Mean vehicle weight (ton)
- 37 K = Mean number of days per with at least 0.01 inches of precipitation (from WRCC for Coalinga COOP Station)
- 0.271 PM_{10} lb/VMT uncontrolled

Equipment	Quantity	Hours/Day	Days/yr	Miles travelled per day	Watering Control Efficiency	PM_{10} Emissions (lb/hr)	PM_{10} Emissions (lb/day)	PM_{10} Emissions (tons/yr)	$PM_{2.5}$ Emissions (lb/hr)	$PM_{2.5}$ Emissions (lb/day)	$PM_{2.5}$ Emissions (tons/yr)
Water Truck	2	12	260	12	85%	0.04	0.49	0.06	0.01	0.10	0.01

Total Project SJS 1&2

Emissions from Workers Commuting Trips During Normal Operations

Pollutant	Emission factor (lb/mile)	Max Hourly Emissions (lb/hr)	Max Daily Emissions (lb/day)	Annual Emissions (ton/yr)	CO_2e Annual Emissions (tonne/yr)
CO	7.36E-03	3.68	14.73	2.69	
NO_X	1.99E-03	0.99	3.97	0.72	
VOC	6.50E-04	0.32	1.30	0.24	
SO_2	1.59E-05	0.01	0.03	0.01	
PM_{10}	3.30E-04	0.17	0.66	0.12	
$PM_{2.5}$	2.79E-04	0.14	0.56	0.10	
CO_2	1.71E+00	853.49	3413.97	623.05	565.11
CH_4	1.15E-04	0.06	0.23	0.04	0.80
N_20	1.37E-04	0.07	0.27	0.05	14.03
				Total CO_2e	579.93

NOTE:

1. All emission factors (except for CH_4 and N_2O) for on-road On-Road Passenger Vehicles (LDA, diesel/gasoline) are from EMFAC2007 model (calendar year = 2011; model year = 1980-2011).
2. Assume On-Road Passenger Vehicles: 30% burn diesel and 70% burn gasoline (catalyst).
3. CH_4 and N_2O emission factors for on-road vehicle are from Reference source 1: Table C.5, California Climate Action Registry General Reporting Protocol Version 3.0, April 2008.
4. $PM_{2.5}$ emission factors determined using guidance from SCAQMD "Final - Methodology to Calculate $PM_{2.5}$ and $PM_{2.5}$ Significance Thresholds", 10/1/2006, Appendix A - Updated CEIDARS Table with $PM_{2.5}$ Fractions
   - $PM_{2.5}$ Fraction of PM_{10}, Brake wear: 0.429
   - $PM_{2.5}$ Fraction of PM_{10}, Diesel: 0.920
   - $PM_{2.5}$ Fraction of PM_{10}, Gasoline-catalyst: 0.928
   - $PM_{2.5}$ Fraction of PM_{10}, Tire wear: 0.250
5. Humidity reference from http://www.wrcc.dri.edu/narratives/CALIFORNIA.htm
6. Operational schedule assumptions:

365	Annual days of operation
50	Average round trip miles (based on the distance to Fresno)
60	Number of workers per day
2,000	miles/day all worker vehicles
4	hours of driving per day
1.5	Carpooling assumes 1.5 employees per vehicle

Fugitive emissions from Passenger vehicle travel on paved roads

0.0064 PM_{10} lb/VMT (from Table A9-9-B-1 for major streets/highways) CEQA Table A9-9-B

Equipment	Daily Number of Employee Vehicles	Hours/Day	Days/year	Miles travelled per round trip	Total miles travelled per day	PM_{10} Emissions (lb/hr)	PM_{10} Emissions (lb/day)	PM_{10} Emissions (tons/yr)	$PM_{2.5}$ Emissions (lb/hr)	$PM_{2.5}$ Emissions (lb/day)	$PM_{2.5}$ Emissions (tons/yr)
All Employee Vehicles	40	4	365	50	2000	3.20	12.80	2.34	0.54	2.16	0.39

NOTE:

1. Approximate distance to Fresno times 2 for return trip
2. Assumes all workers arrive and leave in a 2 hour window in both morning and evening for a total of 4 hours/day of driving

Emissions from Offsite Heavy Duty Truck Trips (Biomass, Limestone, Lime and Ammonia Deliveries and Ash Removal)
Total Project SJS 1&2

Pollutant	Emission factor (lb/mile)	Max Hourly Emissions (lb/hr)	Max Daily Emissions (lb/day)	Annual Emissions (ton/yr)	CO_2e Annual Emissions (tonne/yr)
CO	3.33E-02	38.81	465.67	60.54	
NO_X	7.63E-02	88.84	1066.07	138.59	
VOC	2.05E-02	23.85	286.23	37.21	
SO_2	8.16E-05	0.09	1.14	0.15	
PM_{10}	4.46E-03	5.19	62.27	8.09	
$PM_{2.5}$	4.21E-03	4.90	58.77	7.64	
CO_2	8.48E+00	9867.96	118415.56	15394.02	13962.38
CH_4	2.20E-04	0.26	3.08	0.40	7.63
N_20	1.10E-04	0.13	1.54	0.20	56.28
				Total CO_2e	14026.28

NOTE:

1. All emission factors (except for CH_4 and N_2O) for on-road Heavy-Heavy-Duty Diesel Truck (HHDT) are from EMFAC2007 model (calendar year = 2011; model year = 1980-2011).
2. CH_4 and N_2O emission factors for on-road vehicle are from Reference source 1: Table C.5, California Climate Action Registry General Reporting Protocol Version 3.0, April 2008.
3. $PM_{2.5}$ emission factors determined using guidance from SCAQMD "Final - Methodology to Calculate $PM_{2.5}$ and $PM_{2.5}$ Significance Thresholds", 10/1/2006, Appendix A - Updated CEIDARS Table with $PM_{2.5}$ Fractions
   - $PM_{2.5}$ Fraction of PM_{10}, Brake wear: 0.429
   - $PM_{2.5}$ Fraction of PM_{10}, heavy heavy duty trucks: 0.964
   - $PM_{2.5}$ Fraction of PM_{10}, Tire wear: 0.250
4. Humidity reference from http://www.wrcc.dri.edu/narratives/CALIFORNIA.htm
5. Operational schedule assumptions:
   5 days/week delivery schedule
   12 hours/day delivery schedule

Total Offsite Project Truck Trips

Source	Max Hourly Usage (lb/hr)	Annual Usage (tons/yr)	Trucks per year	Round trip miles	Annual miles
Biomass Delivery Trips	215,804	709,000	28,360	120	3,403,200
Limestone Deliveries	1,232	4,047	162	120	19,426
Lime Deliveries	512	1,682	67	120	8,073
Aqueous Ammonia Deliveries	2,492	8,186	257	120	30,846
Ash Removal	10,790	35,450	1,418	120	170,160
Total Project Truck Trips		**758,365**	**30,264**		**3,631,706**

NOTE:

1. Delivery vehicle size 25 tons/truck
2. Density of 19% aqueous ammonia 7.962 lb/gal
3. Ammonia delivery vehicle size 8000 gallons/truck

Fugitive emissions from truck travel on paved roads

$F = 0.77 * (G * 0.35)^{0.3}$ SCAQMD Table A9-9-C

0.012 G = Surface silt loading (oz/yd2) (from Table A9-9-C-1 for major streets/highways)

0.1491 PM_{10} lb/VMT

Equipment	Hours/Day	Days/year	Total miles travelled per year	PM_{10} Emissions (lb/hr)	PM_{10} Emissions (lb/day)	PM_{10} Emissions (tons/yr)	$PM_{2.5}$ Emissions (lb/hr)	$PM_{2.5}$ Emissions (lb/day)	$PM_{2.5}$ Emissions (tons/yr)
Delivery Trucks	12	260	3,631,706	173.55	2082.59	270.74	29.33	351.96	45.75

Emissions from Onsite Heavy Duty Truck Trips (Biomass, Limestone, Lime and Ammonia Deliveries and Ash Removal)
Total Project SJS 1&2

Pollutant	Traveling Emission Factor (lb/mile)	Idling Emission Factor (g/hour)	Max Hourly Emissions (lb/hr)	Max Daily Emissions (lb/day)	Annual Emissions (ton/yr)	CO_2e Annual Emissions (tonne/yr)
CO	3.33E-02	4.92E+01	0.72	8.59	1.12	
NO_X	7.63E-02	1.13E+02	1.64	19.67	2.56	
VOC	2.05E-02	1.14E+01	0.34	4.07	0.53	
SO_2	8.16E-05	6.20E-02	0.00	0.02	0.00	
PM_{10}	4.46E-03	1.48E+00	0.07	0.82	0.11	
$PM_{2.5}$	4.21E-03	1.43E+00	0.06	0.78	0.10	
CO_2	8.48E+00	6.54E+03	150.07	1800.82	234.11	212.33
CH_4	2.20E-04	neg	0.00	0.04	0.00	0.09
N_20	1.10E-04	neg	0.00	0.02	0.00	0.66
					Total CO_2e	213.08

NOTE:

1. All emission factors (except for CH_4 and N_2O) for on-road Heavy-Heavy-Duty Diesel Truck (HHDT) are from EMFAC2007 model (calendar year = 2011; model year = 1980-2011).
2. CH_4 and N_2O emission factors for on-road vehicle are from Reference source 1: Table C.5, California Climate Action Registry General Reporting Protocol Version 3.0, April 2008.
3. CH_4 and N_2O emission factors for on-road vehicle (idling) are negligible
4. $PM_{2.5}$ emission factors determined using guidance from SCAQMD "Final - Methodology to Calculate $PM_{2.5}$ and $PM_{2.5}$ Significance Thresholds", 10/1/2006, Appendix A - Updated CEIDARS Table with $PM_{2.5}$ Fractions
   - $PM_{2.5}$ Fraction of PM_{10}, Brake wear: 0.429
   - $PM_{2.5}$ Fraction of PM_{10}, heavy heavy duty trucks: 0.964
   - $PM_{2.5}$ Fraction of PM_{10}, Tire wear: 0.250
5. Humidity reference from http://www.wrcc.dri.edu/narratives/CALIFORNIA.htm
6. Operational schedule assumptions:
   5 days/week delivery schedule
   12 hours/day delivery schedule
   15 minutes per truck maximum idling time

Total Onsite Project Truck Trips

Source	Max Hourly Usage (lb/hr)	Annual Usage (tons/yr)	Trucks per year	Total onsite trip miles	Annual miles
Biomass Delivery Trips	215,804	709,000	28,360	1.4	39,704
Limestone Deliveries	1,232	4,047	162	1.4	227
Lime Deliveries	512	1,682	67	1.4	94
Aqueous Ammonia Deliveries	2,492	8,186	257	1.4	360
Ash Removal	10,790	35,450	1,418	1.4	1,985
Total Project Truck Trips		**758,365**	**30,264**		**42,370**

NOTE:

1. Delivery vehicle size 25 tons/truck
2. Density of 19% aqueous ammonia 7.962 lb/gal
3. Ammonia delivery vehicle size 8000 gallons/truck

Fugitive emissions from truck travel on paved roads

$F = 0.77 * (G * 0.35)^{0.3}$ SCAQMD Table A9-9-C

0.04 G = Surface silt loading (oz/yd2) (from Table A9-9-C-1 for local streets)

0.2140 PM_{10} lb/VMT

Equipment	Hours/Day	Days/year	Total miles travelled per year	PM_{10} Emissions (lb/hr)	PM_{10} Emissions (lb/day)	PM_{10} Emissions (tons/yr)	$PM_{2.5}$ Emissions (lb/hr)	$PM_{2.5}$ Emissions (lb/day)	$PM_{2.5}$ Emissions (tons/yr)
Delivery Trucks	12	260	42,370	2.91	34.87	4.53	0.49	5.89	0.77

Title : SJS1n2- operational
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 10/22/2008 11:04:51
Scen Year: 2011 -- All model years in the range 1980 to 2011 selected
Season : Annual
Area : Fresno

****

Year: 2011 -- Model Years 1980 to 2011 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Fresno County Average

Table 1:00 Running Exhaust Emissions (grams/mile; grams/idle-hour)

Pollutant Name: Reactive Org Gases Temperature 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11.35	11.21	0	22.419	3.173	10.974	0	0	0	0	0	0	0	0	0	22.472	3.173	5.193	0	0	0	0	0	0.657	9.047	1.815
5	0	0.257	0.383	0.257	4.107	0.279	0.213	0.277	5.03	0.394	0.367	0.395	0	9.804	9.295	9.301	0	3.029	0.506	1.528	0	2.767	2.089	2.348	6.132	3.916	0	5.186	0	8.532	0.84	1.645	0	1.733	0.302	1.53	6.132	0.389	6.998	1.332
10	0	0.163	0.301	0.163	2.897	0.181	0.167	0.18	3.554	0.256	0.288	0.256	0	6.392	5.165	5.18	0	1.963	0.397	1.032	0	1.804	1.515	1.626	4.822	2.876	0	3.992	0	5.565	0.659	1.173	0	1.121	0.237	0.996	4.816	0.252	3.921	0.782

Pollutant Name: Carbon Monoxide Temperature 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49.222	48.615	0	137.949	26.3	71.553	0	0	0	0	0	0	0	0	0	138.142	26.3	38.009	0	0	0	0	0	3.992	41.923	9.221
5	0	3.563	2.819	3.562	75.84	4.543	2.224	4.452	75.85	5.415	2.818	5.416	0	132.135	15.122	16.565	0	37.712	6.526	19.166	0	32.534	12.867	20.386	45.909	15.561	0	32.961	0	85.623	10.143	18.045	0	35.355	3.861	30.885	46.517	5.006	12.666	6.27
10	0	3.193	1.944	3.192	55.277	3.998	1.534	3.897	55.285	4.787	1.943	4.786	0	87.911	10.884	11.834	0	25.09	4.5	12.845	0	21.646	8.098	13.278	37.652	13.646	0	27.41	0	56.966	6.994	12.225	0	23.522	2.663	20.561	38.043	4.289	9.065	5.117

Pollutant Name: Oxides of Nitrogen Temperature 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	112.815	111.425	0	1.463	75.051	45.225	0	0	0	0	0	0	0	0	0	1.467	75.051	67.347	0	0	0	0	0	0.043	99.253	13.772
5	0	0.38	2.116	0.382	1.738	0.479	2.209	0.555	2.316	0.855	2.1	0.857	0	6.517	34.619	34.272	0	2.889	9.968	7.099	0	2.88	37.581	24.315	1.152	1.368	0	1.244	0	3.127	19.898	18.142	0	1.383	14.521	3.248	1.166	0.62	28.152	4.433
10	0	0.328	1.755	0.33	1.827	0.408	1.833	0.47	2.435	0.729	1.742	0.731	0	6.847	23.961	23.75	0	3.035	8.27	6.148	0	3.026	28.746	18.913	1.208	1.283	0	1.24	0	3.286	16.508	15.124	0	1.453	12.048	2.957	1.222	0.538	19.83	3.211

Pollutant Name: Carbon Dioxide Temperature 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6541.716	6461.059	0	4776.899	4098	4373.167	0	0	0	0	0	0	0	0	0	4776.9	4098	4169.074	0	0	0	0	0	135.647	5700.851	905.125
5	0	952.893	357.5	952.198	1335.581	1187.48	346.782	1150.851	1335.581	1185.937	354.814	1184.416	0	2513.51	3845.361	3828.94	0	2513.51	1505	1913.764	0	2513.51	2628.087	2584.285	228.218	272.619	0	247.162	0	2513.511	1505	1610.581	0	2513.51	1505	2370.358	245.125	1173.168	3122.512	1438.357
10	0	720.057	357.5	719.635	1009.238	897.324	346.782	873.34	1009.238	896.158	354.814	895.169	0	1672.267	3165.446	3147.036	0	1672.267	1505	1572.796	0	1672.267	2628.087	2262.678	195.249	226.031	0	208.382	0	1672.267	1505	1522.511	0	1672.268	1505	1648.525	207.742	879.137	2621.26	1116.914

Pollutant Name: Sulfur Dioxide Temperature 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.062	0.062	0	0.049	0.039	0.043	0	0	0	0	0	0	0	0	0	0.049	0.039	0.04	0	0	0	0	0	0.001	0.054	0.009
5	0	0.009	0.003	0.009	0.014	0.011	0.003	0.011	0.014	0.011	0.003	0.011	0	0.026	0.037	0.037	0	0.025	0.014	0.019	0	0.025	0.025	0.025	0.003	0.003	0	0.003	0	0.026	0.014	0.016	0	0.025	0.014	0.023	0.003	0.011	0.03	0.014
10	0	0.007	0.003	0.007	0.011	0.009	0.003	0.008	0.011	0.009	0.003	0.009	0	0.018	0.03	0.03	0	0.016	0.014	0.015	0	0.016	0.025	0.022	0.003	0.002	0	0.003	0	0.017	0.014	0.015	0	0.016	0.014	0.016	0.003	0.009	0.025	0.011

Pollutant Name: PM10 Temperature 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.483	1.464	0	0	0.961	0.572	0	0	0	0	0	0	0	0	0	0	0.98	0.878	0	0	0	0	0	0	1.294	0.179
5	0	0.058	0.294	0.059	0.074	0.06	0.139	0.064	0.115	0.133	0.274	0.133	0	0.088	1.958	1.934	0	0.065	0.604	0.385	0	0.092	1.009	0.659	0.08	0.005	0	0.048	0	0.076	1.101	0.993	0	0.019	0.514	0.089	0.081	0.085	1.571	0.291
10	0	0.038	0.231	0.038	0.053	0.039	0.109	0.042	0.082	0.087	0.215	0.087	0	0.057	1.331	1.315	0	0.042	0.474	0.299	0	0.06	0.732	0.475	0.063	0.004	0	0.038	0	0.05	0.864	0.779	0	0.012	0.404	0.068	0.064	0.056	1.081	0.198

Pollutant Name: PM10 - Tire Wear Temperature 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0	0.012	0.036	0.036	0	0.012	0.012	0.012	0	0.012	0.008	0.01	0.004	0.004	0	0.004	0	0.012	0.012	0.012	0	0.012	0.012	0.012	0.004	0.008	0.03	0.011
10	0	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0	0.012	0.036	0.036	0	0.012	0.012	0.012	0	0.012	0.008	0.01	0.004	0.004	0	0.004	0	0.012	0.012	0.012	0	0.012	0.012	0.012	0.004	0.008	0.03	0.011

Pollutant Name: PM10 - Break Wear Temperature 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0	0.028	0.028	0.028	0	0.013	0.013	0.013	0	0.013	0.013	0.013	0.006	0.006	0	0.006	0	0.013	0.013	0.013	0	0.013	0.013	0.013	0.006	0.013	0.024	0.014
10	0	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0	0.028	0.028	0.028	0	0.013	0.013	0.013	0	0.013	0.013	0.013	0.006	0.006	0	0.006	0	0.013	0.013	0.013	0	0.013	0.013	0.013	0.006	0.013	0.024	0.014

Pollutant Name: Gasoline - mi/gal Temperature 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	9.236	0	9.236	6.036	7.411	0	7.411	6.024	7.41	0	7.41	0	3.22	0	3.22	0	3.431	0	3.431	0	3.443	0	3.443	27.691	28.61	0	28.083	0	3.312	0	3.312	0	3.442	0	3.442	27.411	7.976	0	8.088
10	0	12.211	0	12.211	8.015	9.799	0	9.799	8	9.795	0	9.795	0	4.84	0	4.84	0	5.158	0	5.158	0	5.176	0	5.176	32.828	34.5	0	33.542	0	4.979	0	4.979	0	5.173	0	5.173	32.506	10.552	0	10.678

Pollutant Name: Diesel - mi/gal Temperature 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	28.195	28.195	0	0	29.067	29.067	0	0	28.409	28.409	0	0	2.621	2.621	0	0	6.698	6.698	0	0	3.835	3.835	0	0	0	0	0	0	6.698	6.698	0	0	6.698	6.698	0	0	5.44	5.44
10	0	0	28.195	28.195	0	0	29.067	29.067	0	0	28.409	28.409	0	0	3.184	3.184	0	0	6.698	6.698	0	0	3.835	3.835	0	0	0	0	0	0	6.698	6.698	0	0	6.698	6.698	0	0	5.855	5.855

CY	Season	AvgDays	Code	Equipment	Fuel	MaxHP	Class	County	Air Basin	Air Dist.	Population	Activity	Consumption	ROG Exhaust/Activity	CO Exhaust/Activity	NOX Exhaust/Activity	CO2 Exhaust/Activity	SO2 Exhaust/Activity	PM Exhaust/Activity	N2O Exhaust/Activity	CH4 Exhaust/Activity
2011	Annual	Mon-Fri	2270002072	Skid Steer Loaders	D	120	Construction and Mining Equipment	Fresno	SJV	SJU	2.51E+02	6.74E+02	1.32E+03	2.71E-05	1.40E-04	1.92E-04	2.14E-02	2.51E-07	1.62E-05	0.00E+00	2.44E-06

Reference source 1: Table C.5, California Climate Action Registry General Reporting Protocol Version 3.0, April 2008

Table C.5: Methane and Nitrous Oxide Emission Factors for Mobile Sources by Vehicle and Fuel Type

Vehicle Types/Model Years	CH_4 (g/mile)	N_2O (g/mile)
Passenger Cars - Gasoline		
Model Year 1966-1972	0.22	0.02
Model Year 1973-1974	0.19	0.02
Model Year 1975-1979	0.11	0.05
Model Year 1980-1983	0.07	0.08
Model Year 1984-1991	0.06	0.08
Model Year 1992	0.06	0.07
Model Year 1993	0.05	0.05
Model Year 1994-1999	0.05	0.04
Model Year 2000– present	0.04	0.04
Passenger Cars - Alternative Fuels and Diesel		
CNG Model Year 2000– present	0.04	0.04
LPG Model Year 2000– present	0.04	0.04
E85 Model Year 2000– present	0.04	0.04
Diesel all model years	0.01	0.02
Light Duty Truck (<5750 GVWR*) - Gasoline		
Model Year 1966-1972	0.22	0.02
Model Year 1973-1974	0.23	0.02
Model Year 1975-1979	0.14	0.07
Model Year 1980-1983	0.12	0.13
Model Year 1984-1991	0.11	0.14
Model Year 1992	0.09	0.11
Model Year 1993	0.07	0.08
Model Year 1994-1999	0.06	0.06
Model Year 2000– present	0.05	0.06

Table C.5: Methane and Nitrous Oxide Emission Factors for Mobile Sources by Vehicle and Fuel Type (continued)

Vehicle Types/Model Years	CH_4 (g/mile)	N_2O (g/mile)
Light Duty Truck - Alternative Fuels and Diesel		
CNG Model Year 2000– present	0.05	0.06
LPG Model Year 2000– present	0.05	0.06
E85 Model Year 2000– present	0.05	0.06
Diesel all model years	0.01	0.03
Heavy-Duty Vehicle (>5751 GVWR) - Gasoline		
Model Year 1981 and older	0.43	0.04
Model Year 1982-1984	0.42	0.05
Model Year 1985-1986	0.20	0.05
Model Year 1987	0.18	0.09
Model Year 1988-1989	0.17	0.09
Model Year 1990-present	0.12	0.20
Heavy Duty Trucks - Diesel and Alternative Fuels		
Model Year 1966-1982	0.10	0.05
Model Year 1983-1995	0.08	0.05
Model Year 1996 to present	0.06	0.05
CNG, LNG	3.48	0.05
FTD, Biodiesel	0.06	0.05
Motorcycles		
Model Year 1966-1995	0.42	0.01
Model Year 1996-present	0.09	0.01
Off-Road Vehicles/Construction Equipment by Fuel Type		
	CH_4 (kg/gallon)	N_2O (kg/gallon)
Butane	9.1×10^{-5}	4.1×10^{-4}
Distillate Fuel	.0014	.0001
Liquefied Petroleum Gas (LPG)	.0010	.0001
Motor Gasoline	.0013	.0001
Propane	9.1×10^{-5}	4.1×10^{-4}

Greenhouse Gas Global Warming Potential (GWP) - Intergovernmental Panel on Climate Change, Second Assessment Report (1996)

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

COMMISSIONING DATA

Fluid Bed Commissioning Schedule - Emissions Projection

					Emissions								Total Emissions			
					(Lb/MM Btu)				lb/hr				tons			
Commissioning Phase	Duration of test (hours/day)	How many days for this test?	Biomass Fuel loading (based on 310 MMBtu/hr HHV)1	Nat. gas loading (3 burners @ 150 MM Btu/hr) 1	NOx	SOx	PM10	CO	NOx	SOx	PM10	CO	NOx	SOx	PM10	CO
Stabilize combustor and boiler (include limestone feed)	10	3	186	30	0.35	0.07	1.7	0.1	75.6	13.0	316.2	21.6	1.1	0.2	4.7	0.3
Start spray dryer and Baghouse	20	24	217.0	0.0	0.15	0.02	0.10	0.08	33.5	4.3	21.7	17.4	8.0	1.0	5.2	4.2
commission the CEMS	included above															
Start SNCR	included above															
Start SCR	24	4	248.0	0.0	0.03	0.02	0.1	0.08	7.4	5.0	24.8	19.8	0.4	0.2	1.2	1.0
Start Wet Scrubber	24	4	248.0	0.0	0.04	0.012	0.05	0.08	9.9	3.0	12.4	19.8	0.5	0.1	0.6	1.0
Stabilize	24	10	248.0	0.0	0.012	0.012	0.025	0.02	3.0	3.0	6.2	5.0	0.4	0.4	0.7	0.6
Stabilize at full load	24	7	310.0	0.0	0.012	0.012	0.025	0.02	3.7	3.7	7.8	6.2	0.3	0.3	0.7	0.5
Total commissioning		52											10.68	2.29	13.13	7.51

1 all heat rates are estimated averages over the duration of the testing.

non-SNCR time 0.15

Commissioning Total (for 4 combustors)

Source	% of emissions from commissioning each combustor relative to the first combustor	Total Emissions (tons/yr)			
		NOx	SOx	PM10	CO
Combustor 1	100%	10.68	2.29	13.13	7.51
Combustor 2	75%	8.01	1.72	9.85	5.63
Combustor 3	50%	5.34	1.14	6.57	3.76
Combustor 4	50%	5.34	1.14	6.57	3.76
Total SJS1&2 Commissioning Emissions		**29.38**	**6.29**	**36.11**	**20.66**
Total SJS1&2 Routine Operations Emissions		**48.38**	**49.49**	**103.27**	**81.88**
Total SJS1&2 Commissioning + Operating Emissions		**77.76**	**55.78**	**139.38**	**102.54**

Note the commissioning time decreases with each combustor

GREENHOUSE GAS EMISSION CALCULATIONS

Note: The detailed calculations for the Greenhouse Gas Emissions are located in Appendix B-2 and B-3.

San Joaquin 1&2 Solar Hybrid Project Total Operational Emissions

	Annual Emission Rate (tonnes/yr)				
	CO_2	CH_4	N_20	SF_6	CO_2e
Onsite Emission Sources					
Stationary Sources					
Fluidized Bed Combustor	1,094,241				1,094,241.4
Emergency Generator	16.9	2.34E-03	1.67E-04		17.0
Fire Water Pump	14.8	2.04E-03	1.46E-04		14.9
Natural Gas Burners	273.2	5.24E-03	1.46E-03		273.7
Circuit breakers				1.22E-03	29.3
Total Onsite Stationary Source CO_2e Emissions					*1,094,576.3*
Mobile Sources					
Biomass Handling Equipment	10.1	1.15E-03	0.00E+00		10.1
Trucks Cleaning Solar Mirrors	1.1	3.12E-04	1.56E-04		1.1
Delivery Trucks - Travel & Idling Onsite	212.3	4.24E-03	2.12E-03		213.1
Total Onsite Mobile Source CO_2e Emissions					*224.3*
Total Onsite CO_2e Emissions					***1,094,800.6***
Offsite Emission Sources					
Mobile Sources					
Delivery Trucks - Offsite Travel	13,962.4	3.63E-01	1.82E-01		14,026.3
Commuter Vehicles	565.1	3.80E-02	4.53E-02		579.9
Total Offsite Mobile Source CO_2e Emissions					*14,606.2*
Total Offsite CO_2e Emissions					***14,606.2***
Total Project Operational CO_2e Emissions (tonne/yr)					**1,109,407**

AIR QUALITY MODELING PROTOCOL

MODELING PROTOCOL FOR THE SAN JOAQUIN 1&2 SOLAR HYBRID PROJECT FRESNO COUNTY, CALIFORNIA

Prepared for

San Joaquin Valley Air Pollution Control District

and

California Energy Commission

URS Project No. 27658031.00605

October 7, 2008

URS

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TABLE OF CONTENTS

Section 1 Introduction 1-2

1.1 Background 1-2
1.2 Purpose 1-2

Section 2 Project Description 2-2

2.1 Project Location 2-2
2.2 Description Of The Proposed Sources 2-2

Section 3 Regulatory Setting 3-2

3.1 California Energy Commission Requirements 3-2
3.2 San Joaquin Valley Air Pollution Control District Requirements 3-2
3.3 U.S. Environmental Protection Agency Requirements 3-2

Section 4 Models Proposed and Modeling Techniques 4-2

4.1 Air Quality Dispersion Modeling 4-2
4.2 Modeling Emissions Inventory 4-2
4.3 Health Risk Assessment Analysis 4-2
4.4 Fumigation Modeling 4-2

Section 5 Presentation of Modeling Results 5-2

5.1 NAAQS and CAAQS Analysis 5-2
5.2 Health Risk Assessment Analysis 5-2
5.3 Data Submittal 5-2

Section 6 References 6-2

Tables

Table 2-1 Gross Biomass Resource Potential in Fresno County, 2010
Table 3-1 Relevant Ambient Air Quality Standards and Significance Levels
Table 4-1 Preliminary Estimated Emissions for SJS 1&2 Facility (tpy)

Figures

Figure 1-1 General Location of the San Joaquin 1&2 Solar Hybrid Project
Figure 2-1 Plot Plan for the San Joaquin 1&2 Solar Hybrid Project

Appendices

Appendix A Annual Average Windrose for the Hanford Meteorological Station for 2000-2004

$\mu g/m^3$	Micrograms per cubic meter
μm	Micrometers or microns
AAQS	Ambient Air Quality Standards
ARB	Air Resources Board
ARM	Ambient ratio method
ATC	Authority to construct
BACT	Best available control technology
BDT	Bone dry tons
BPIP	Building profile input program
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CEC	California Energy Commission
CO	Carbon monoxide
°C	degrees Celsius
°F	degrees Fahrenheit
g/s	Gram per second
GEP	Good engineering practice
HARP	Hotspots analysis and reporting program
HCE	Heat collection element
Hp	Horsepower
HRA	Health risk assessment
HTF	Heat transfer fluid
ISCST3	Industrial Source Complex Short Term 3rd version
km	Kilometers
kW	Kilowatt
LORS	Laws, ordinances, regulations, and standards
MEI	Maximally exposed individual
mm	Millimeter
MW	Megawatt
NAAQS	National Ambient Air Quality Standards
NNSR	Non-attainment New Source Review
NO_2	Nitrogen dioxide
NO_x	Nitrogen oxides
NSR	New source review
O_3	Ozone
OEHHA	Office of Environmental Health Hazard Assessment
Pb	Lead
$PM_{2.5}$	Particulate matter less than 2.5 μm in diameter
PM_{10}	Particulate matter less than 10 μm in diameter
ppm	Parts per million
PSD	Prevention of Significant Deterioration

ROC	Reactive organic compound
SJVAPCD	San Joaquin Valley Air Pollution Control District
SJS 1&2	San Joaquin 1&2 Solar Hybrid Project
SO_2	Sulfur dioxide
STG	Steam turbine generator
TAC	Toxic air contaminants
T-BACT	Best available control technology for toxics
tpy	Tons per year
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UTM	Universal Transverse Mercator

SECTION 1 INTRODUCTION

1.1 BACKGROUND

The San Joaquin 1&2 Solar Hybrid Project (Project) will consist of two (2) hybrid-design solar thermal electric generating plants (the Plants). Each Plant will be comprised of a solar field, a biomass power generation facility and ancillary facilities. The two Plants will each produce up to a nominal 53.4 megawatts (MW) net of qualified renewable energy, 53.4 MW net from solar generation, complemented by 40 MW net from biomass generated production. The biomass energy production is subordinate to production from the solar field, supplementing solar production during non-solar periods and shoulder solar hours. Each Plant will consist of a solar field, two biomass trains (including a biomass combustor, heat recovery equipment, and emission controls), one steam turbine generator, one cooling tower and six natural gas heaters (along with the associated auxiliary equipment required for a power plant). There will also be a diesel-fired emergency generator and a firewater pump for each Plant.

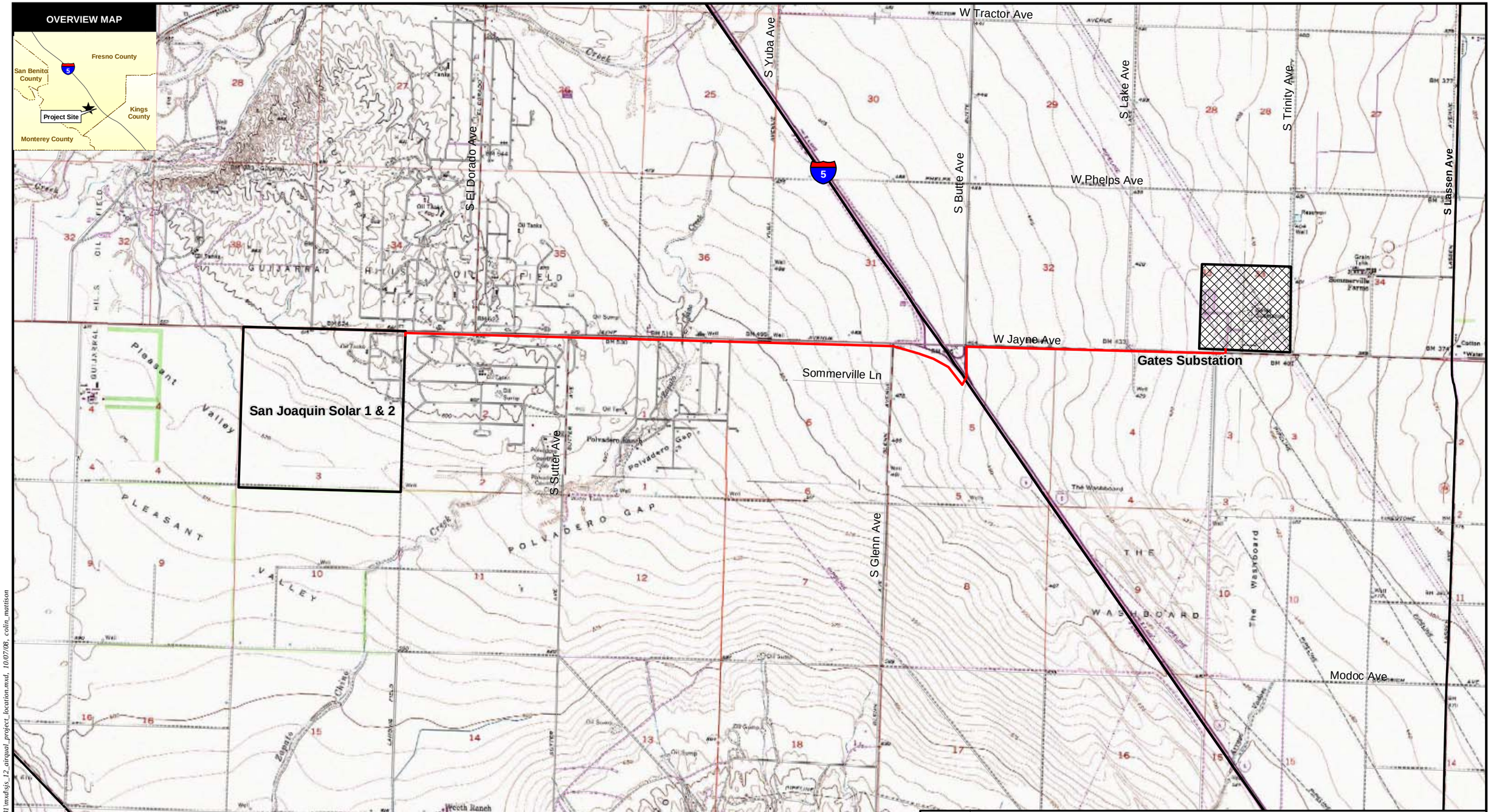
The San Joaquin Solar 1&2 (SJS 1&2) site is in far western Fresno County in the San Joaquin Valley on West Jayne Avenue about 3 miles (5 kilometers [km]) west of Interstate 5 and approximately 6 miles (10.0 km) east of the town of Coalinga (Figure 1-1). The project is subject to the site licensing requirements of the California Energy Commission (CEC). The CEC will coordinate its independent air quality evaluations with the San Joaquin Valley Air Pollution Control District (SJVAPCD) through the Determination of Compliance (DOC) process. Total Project annual emissions of all criteria pollutants will be below the emission level thresholds specified by the United States Environmental Protection Agency's (USEPA) Prevention of Significant Deterioration (PSD) review for Major Sources. Specifically, the SJS 1&2 facilities will emit less than 250 tons per year (tpy) of nitrogen oxides (NO_x), carbon monoxide (CO), reactive organic compounds (ROC), sulfur dioxide (SO_2), and less than 0.6 tons per year of lead (Pb).

State and local new source review (NSR) and non-attainment NSR (NNSR) regulations potentially apply to all criteria pollutants, depending on the quantity of pollutants emitted. The area around the SJS 1&2 Facility is classified as attainment with respect to the national ambient standards for nitrogen dioxide (NO_2), CO, and SO_2, and non-attainment for ozone (O_3), particulate matter less than 2.5 micrometers in diameter ($PM_{2.5}$), and PM_{10}. With respect to the California Ambient Air Quality Standards (CAAQS), the area around the SJS 1&2 Facility is classified as attainment for NO_2, CO, sulfates, Pb, and SO_2, and non-attainment for O_3, $PM_{2.5}$, and PM_{10}, and unclassified for hydrogen sulfide. NO_2 and SO_2 are regulated as PM_{10} precursors, and NO_2 and ROC as O_3 precursors. Project emissions of non-attainment pollutants and their precursors will be offset to satisfy state and local Nonattainment New Source Review (NNSR) regulations.

1.2 PURPOSE

The CEC and SJVAPCD require the use of atmospheric dispersion modeling to demonstrate compliance with applicable air quality standards and both agencies also require modeling to determine the potential impacts on human health from toxic air contaminants (TACs). CEC siting regulations also require that the cumulative impacts of the proposed project and reasonably foreseeable projects within 10 km of the project site be assessed via modeling.

This document summarizes the procedures proposed by URS for the air dispersion modeling for project certification and permitting. Modeling of both operation and construction emissions will be performed in accordance with CEC guidance (CEC, 1997). This protocol is being submitted to the CEC and SJVAPCD for their review and comment prior to completion of the applicable permit applications. The proposed model selection and modeling approach is based on review of applicable regulations and agency guidance documents.



SOURCES:
TOPO 24K(various dates);
ESRI (roads).

GENERAL LOCATION OFTHE SAN JOAQUIN 1&2 SOLAR HYBRID PROJECT

URS

1500 0 1500 3000 Feet

SCALE: 1" = 3000' (1:36,000)
SCALE CORRECT WHEN PRINTED AT 11X17

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SECTION 2 PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The proposed Project will be constructed in southwestern Fresno County, about 6 miles east of Coalinga, California. The SJS 1&2 site is approximately 3 miles west of the intersection of Interstate 5 and West Jayne Avenue. The Project footprint will occupy the entire 640-acre area of Section 3, Township 21 South, Range 16 East (see Figure 1-1). The Project Site is presently zoned agricultural and is in active agricultural use, which includes plowing, growing, and cultivation of a variety of crops. The surrounding area is devoted almost exclusively to agricultural uses, including farming and rangeland activities. Recent developments include the construction of the Pleasant Valley State Prison and the Coalinga State Hospital, both located on the section of land immediately west of the project site. The proposed new generation units will be located approximately in the center of the 640 acre parcel surrounded by the solar array field (see Figure 2-1).

2.2 DESCRIPTION OF THE PROPOSED SOURCES

Each Plant has a dedicated solar field, biomass facilities, and power block. The northern third of the Project site is comprised of the solar field for SJS 1; similarly, the southern third of the Project site is comprised of the solar field for SJS 2. In between the solar fields are the biomass facilities and power blocks for both SJS 1&2, in addition to shared facilities including:

- Biomass storage and handling;
- Water facilities and evaporation ponds;
- Substation and transformers;
- Interconnection;
- Roads; and,
- Control, maintenance and storage buildings.

Each biomass train will have an exhaust stack with a height of approximately 100 feet. Each biomass train will have three associated natural gas heaters, one 15 MMBtu/hr and two 50 MMBtu/hr heaters, necessary to startup the biomass combustors, for a Project total of twelve heaters. There will be two 2-cell cooling towers (one for each Plant). There will be two 240-horsepower (Hp) diesel engines that will act as the emergency firewater pump driver (one for each Plant), and two 1,000 kilowatt (kW) (1,341 Hp) diesel fired emergency generators (one for each Plant).

2.2.1 Solar Process Description

SJS 1&2 will employ a conventional Steam Turbine Generator (STG), fueled by energy from the two renewable sources - solar thermal and biomass. During the hours between sunrise and sunset, the solar fields will produce the majority of heat for steam production. A field of parabolically-shaped mirrors called Solar Collector Assemblies (SCA) will collect the sun's radiation and reflect and concentrate that radiation onto a series of Heat Collection Elements (HCE) containing hot circulating oil. The HCE consist of a steel tube annulus encased in vacuum-sealed glass tube. Sunlight passes through the glass tube and insulating vacuum, is absorbed by the interior steel tube, and heats the circulating oil, or Heat Transfer Fluid (HTF), inside the steel tube. The HTF passes over a series of mirrors with a total length of about

2,000 feet, and exits the solar field at a temperature of about 740 °F. The hot HTF is utilized to create superheated steam (700 °F, 1400-1500 pounds per square inch [psi]), which is then sent to the steam turbine for electricity generation. The HTF is cooled as heat is transferred to produce steam and returns to the HCE in the solar field at about 550 °F. At any given time, the hot circulating oil in the solar field retains enough heat (thermal inertia) to continue to operate the steam turbine cycle for 30 to 60 minutes, even if sunlight is interrupted. There are no emissions of air pollutants associated with the generation of power from solar energy.

During daytime solar hours, each Plant will generate 53.4 MW of net electric power production from the solar fields. When solar radiation is less intense, solar generation can be supplemented with biomass generation up to the rated capacity of the steam turbine. During nighttime hours, biomass combustion will provide up to 40 MW net from each Plant without any solar input, and will maintain the solar field in a hot-standby condition such that quick transfer to solar production can be accomplished when solar radiation again becomes available.

2.2.2 Biomass Facilities

The proposed SJS 1&2 Plants provide a unique opportunity for hybrid generation, because the thermal-based steam generating system can be fueled by either solar energy or recovered energy from biomass combustion. Each plant will include biomass combustion facilities able to produce up to 40 MW as a supplement to solar production when the steam cycle is not fully charged by solar input. Each Plant consists of two 20 MW biomass combustor trains. Each train can be operated independently providing optimum operating flexibility and turndown ratio.

The biomass energy generation will be subordinate to the solar thermal generation. The biomass facilities will operate at night and during hours of reduced solar intensity. In the winter months it is anticipated the biomass facilities will run 24 hours per day and during the summer will be shutdown for a period of time everyday. The biomass facilities will operate at an annual average capacity factor of approximately 75%.

2.2.2.1 Biomass supply

SJS 1&2 are each expected to utilize approximately 250,000 bone dry tons (BDT) of biomass fuel per year (including all sources) in the biomass combustor. According to the *An Assessment of Biomass Resources in California* (California Energy Commission, 2004), Fresno County is a leading source of biomass fuel.

Table 2-1
Gross Biomass Resource Potential in Fresno County, 2010

Orchard and vineyard biomass	528,822 BDT/year
Field and seed-crop biomass	417,002 BDT/year
Vegetable Crop biomass	297,218 BDT/year
Total Forestry biomass	365,532 BDT/year
Total agricultural biomass from Fresno County	1,608,574 BDT/year

The local biomass quantities identified above will be complemented by nearly 600,000 BDT/year of municipal green waste and urban wood waste produced in Fresno County and adjacent counties that are expected to be diverted from landfills by 2010 (CEC, 2004).

The SJS 1&2 Projects will burn a combination of locally available biomass. The anticipated mix of fuels for the project is:

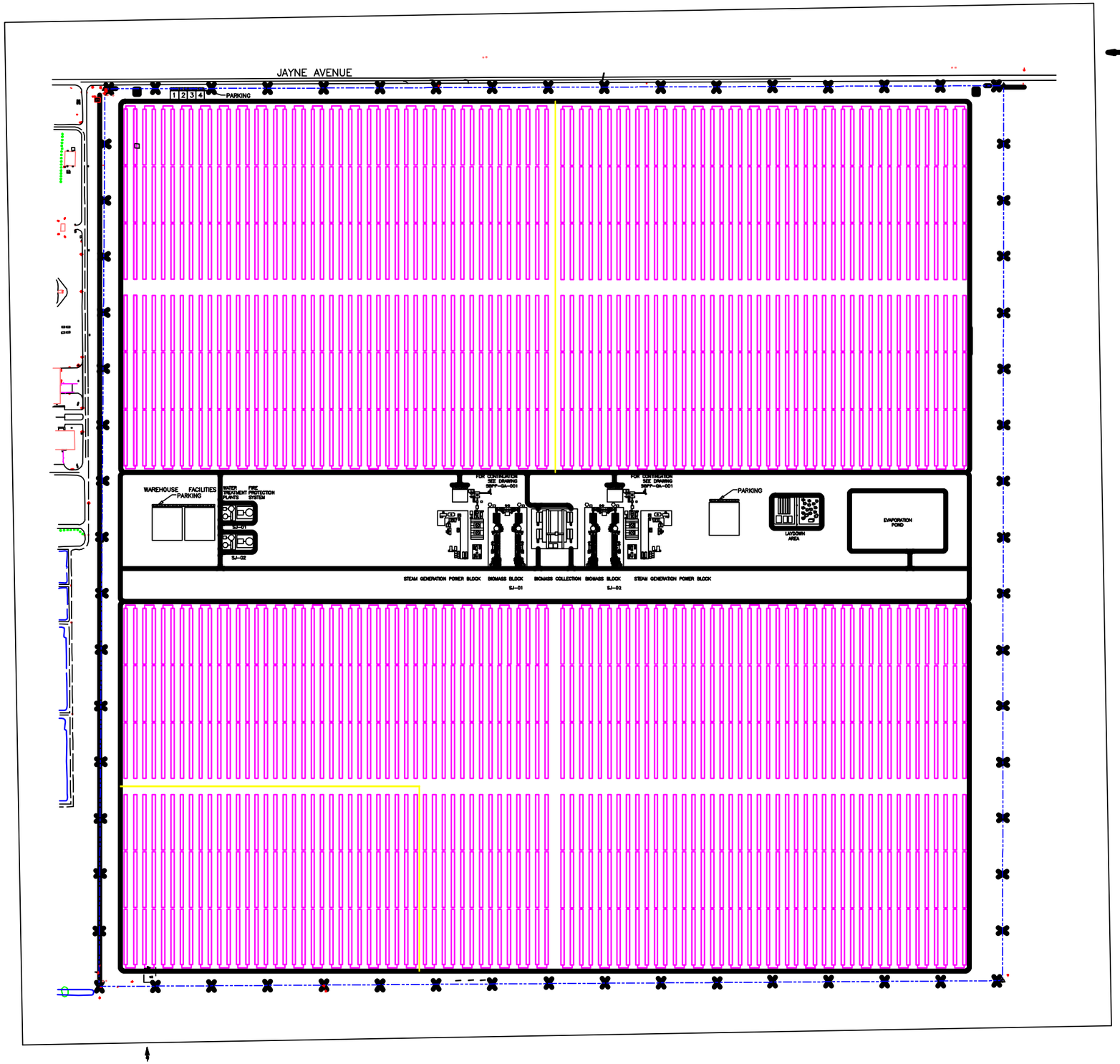
- 50% Agricultural Wood Waste, comprised primarily of wastes collected during clearing or pruning of local orchards. These wood wastes are comprised largely of pistachio trees, walnut trees and citrus trees, and will include some leafy material as well as a small amount of dirt resulting from the collection process; and,
- 50% Municipal Green Wastes, comprised primarily of clippings and collected wood materials from local municipalities.

2.2.2.2 Material Storage and Handling

Biomass will be delivered to the site in self unloading tractor trailers. A large covered storage area common to both SJS 1 and SJS 2 is located in the center of the project site. Both ends of the building will be open to maintain air flow and a comfortable temperature for operators. Combustion air for the fluidized beds will be drawn from the fuel storage building creating a negative pressure within the storage area. Four to six wedge floor biomass feed systems will be located at one end of the storage area using a conveyer system to feed the combustor beds. Wood and green waste will be pre-sized by the fuel aggregators. Only wood and green waste will be stored on site in a storage pile with approximately 14-28 days supply to assure continuous fuel for power generation. Diesel powered equipment will be used to move the biomass on site.

2.2.3 Steam Turbine-Generator (STG)

The HTF from the solar field (which is supplementarily heated using biomass to fire the heaters) enters a reboiler where the thermal energy in the oil is used to create steam at 1,400 psig (gas) superheated to 725°F. Steam produced in the reboiler is admitted at the inlet to the high-pressure turbine section where the initial pressure drop occurs. Steam exits the turbine and is reheated to 725°F before re-entering the low pressure turbine. This expansion converts the incoming energy of the steam into mechanical energy in the turbine. The steam turbine provides the driving force to spin the generator, which converts the mechanical energy into electrical output. The STGs are equipped with all accessories necessary to provide safe, reliable, and efficient operation.



PLOT PLAN FOR THE
SAN JOAQUIN 1 & 2 SOLAR HYBRID PROJECT

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SECTION 3 REGULATORY SETTING

3.1 CALIFORNIA ENERGY COMMISSION REQUIREMENTS

Applicants for projects with net electrical power generation capacity of greater than 50 MW within California are required to prepare and submit to the CEC a comprehensive Application for Certification (AFC) document addressing the proposed project's environmental and engineering features. An AFC must include the following air quality information (CEC, 1997):

- A description of the project, including project emissions, fuel type(s), control technologies and stack characteristics;
- The basis for all emission estimates and/or calculations;
- An analysis of Best Available Control Technology (BACT) according to SJVAPCD Rules;
- Existing baseline air quality data for all regulated pollutants;
- Existing meteorological data, including temperature, wind speed and direction and mixing height;
- A listing of applicable laws, ordinances, regulations and standards (LORS) and a determination of compliance with all applicable LORS;
- An emissions offsets strategy;
- An air quality impact assessment (i.e., national and state ambient air quality standards [AAQS]) and a protocol for the assessment of cumulative impacts of the proposed project along with permitted and under construction projects within a 10 km radius; and
- An analysis of human exposure to air toxics (i.e., health risk assessment [HRA]).

For the SJS 1&2 Project, the air quality impact assessment, the cumulative impacts assessment, and the HRA will be performed using dispersion models.

3.2 SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT REQUIREMENTS

The SJVAPCD has promulgated NSR requirements under Rule 2201. In general, all equipment with the potential to emit air pollutants is subject to NSR requirements. NSR has four major requirements that potentially apply to new sources:

- Installation of BACT;
- Ambient air quality impact modeling to demonstrate compliance with NAAQS and CAAQS as outlined in Table 3-1;
- Emission offsets; and
- Certification of statewide compliance with air quality requirements.

Assembly Bill 2588, California Air Toxics Hot Spots Program and SJVAPCD allows a predicted incremental cancer risk from toxic air contaminants (TAC) at any receptor up to ten in one million, prior to public notification, if best available control technology for toxics (T-BACT) is implemented, or up to one in one million, prior to public notification, if T-BACT is not implemented. An air toxics health risk analysis should include TAC emission estimates and a modeling analysis to identify the health risks at the Point of Maximum Impact (PMI).

3.3 U.S. ENVIRONMENTAL PROTECTION AGENCY REQUIREMENTS

USEPA PSD regulations for major sources are not applicable to this Project, since the total Project emissions of any one regulated pollutant are less than 250 tons per year.

USEPA, in response to the federal CAA of 1970, established federal NAAQS in 40 CFR Part 50. The federal NAAQS include both primary and secondary standards for six "criteria" pollutants, O3, CO, NO2, SO2, PM10, and Pb. Ambient air quality impact modeling will be conducted to demonstrate compliance with NAAQS.

The Federal 40 CFR Part 51 establishes the criteria for siting new and modified emission sources and this rule is applicable to the project. SJVAPCD has been delegated authority for NSR rule development and enforcement according to the terms of Rule 2201. The analyses outlined in Section 3.2 for the SJVAPCD, will fulfill the USEPA requirements.

Table 3-1
Relevant Ambient Air Quality Standards and Significance Levels

Pollutant	Averaging Time	CAAQS(a,c)	NAAQS(b,c)	PSD Significant Emission Rates (TPY)
CO	8-hour	9.0 ppm (10,000 μg/m³)	9.0 ppm (10,000 μg/m³)	250
	1-hour	20 ppm (23,000 μg/m³)	35 ppm (40,000 μg/m³)	
NO_2	Annual	0.030 ppm (57 μg/m³)	0.053 ppm (100 μg/m³)	250
	1-hour	0.18 ppm (339 μg/m³)	-	
SO_2	Annual	-	0.03 ppm (80 μg/m³)	250
	24-hour	0.04 ppm (105 μg/m³)	0.14 ppm (365 μg/m³)	
	3-hour	-	0.5 ppm (1,300 μg/m³)	
	1-hour	0.25 ppm (655 μg/m³)	-	
PM_{10}	Annual	20 μg/m³	See footnote[(d)]	250
	24-hour	50 μg/m³	150 μg/m³	
$PM_{2.5}$	Annual	12 μg/m³	15 μg/m³	250
	24-hour	-	35 μg/m³	
O_3	8-hour	0.07 ppm (137 μg/m³)	0.075 ppm (147 μg/m³)	250 (of ROCs)
	1-hour	0.09 ppm (180 μg/m³)	See footnote[(e)]	-

a. California standards for ozone (as volatile organic compound), carbon monoxide, sulfur dioxide (1-hour), nitrogen dioxide, and PM_{10}, are values that are not to be exceeded. The visibility standard is not to be equaled or exceeded.
b. National standards, other than those for ozone, particulate matter, and those based on annual averages, are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 μg/m3 is equal to or less than one. For $PM_{2.5}$, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.
c. Concentrations are expressed first in units in which they were promulgated. Equivalent units are given in parentheses and based on a reference temperature of 25° Celsius (C) and a reference pressure of 760 millimeters (mm) of mercury (1,013.2 millibar).
d. The federal annual PM_{10} standard was revoked by USEPA on October 17, 2006.
e. The federal 1-hour ozone standard was revoked by USEPA on June 15, 2005.

-	=	Not applicable
CAAQS	=	California Ambient Air Quality Standard
NAAQS	=	National Ambient Air Quality Standard
ppm	=	parts per million by volume, or micromoles of pollutant per mole of gas
TPY	=	ton per year
μg/m³	=	micrograms per cubic meter

SECTION 4 MODELS PROPOSED AND MODELING TECHNIQUES

This section describes the dispersion models and modeling techniques to be used in performing the air quality analysis for the SJS 1&2. The objectives of the modeling are to demonstrate that air emissions from the SJS 1&2 will not cause or contribute significantly to an exceedance of the ambient air quality standards, and will not cause a significant risk to human health.

In November 2005, the USEPA officially recognized the American Meteorological Society/ Environmental Protection Agency Regulatory Model (AERMOD) as the preferred dispersion model for regulatory applications, replacing the Industrial Source Complex Short Term 3 (ISCST3) model. Accordingly, the most recent version (07026) of AERMOD will be used for the permitting analyses associated with the SJS 1&2 facility.

4.1 AIR QUALITY DISPERSION MODELING

The purpose of the air quality dispersion modeling analysis is to demonstrate that air emissions from the SJS 1&2 will not cause or contribute to an AAQS violation; and will not cause a significant health risk impact. Compliance with the SJVAPCD Rule 2201 modeling requirements for attainment pollutants will be demonstrated by determining the maximum impact of the proposed Project at any receptor and adding a conservative background concentration, based on recent data from the SJVAPCD air quality monitoring stations determined to be most representative of pre-project conditions in the project area. The SJS 1&2 facility will not be considered to cause or contribute to a near-field ambient air quality violation unless impacts from these sources combined with the background concentration exceed the most stringent ambient air quality standard. Emissions of pollutants for which the project area is designated nonattainment must be offset at more than a 1 to 1 ratio to ensure no net degradation of air quality.

Table 3-1 shows the regulatory criteria that will be used to evaluate the significance of predicted pollutant concentrations. Air quality modeling using AERMOD will be conducted to evaluate the criteria pollutant impacts from both the construction and operational phases of the Project.

The most recent version (07026) of the AERMOD model will be used for the operational modeling of criteria pollutants and the TAC for the HRA. Specific modeling techniques used in the AERMOD analyses for the required AAQS analysis and HRA are discussed below.

Analysis of land uses adjacent to the Project was conducted in accordance with Section 7.2.3 of the Guideline on Air Quality Models (EPA 40 CFR Part 51); Correlation of Land Use and Cover with Meteorological Anomalies, August Auer (1978); and AERMOD implementation guide (EPA 2008). Based on the Auer land use procedure, more than 50 percent of the area within a 3-km radius of the Project is classified as rural, thus the rural mode will be used in the AERMOD modeling analyses.

All regulatory default options will be used, including building and stack tip downwash, default wind speed profiles, exclusion of deposition and gravitational settling, consideration of buoyant plume rise, and complex terrain.

NO_2 modeling will use the AERMOD option to employ the USEPA ozone limiting method (OLM) to account for the role of ambient ozone concentrations in controlling the conversion of emitted nitric oxide (NO) to nitrogen dioxide NO. A record of hourly ozone concentrations corresponding to the same period as the meteorological input data to the model will be obtained from the SJVAPCD for the air quality monitoring station in Hanford. This station was judged to be most representative of the SJS 1&2 site, and the AERMOD-OLM version of the model will be run for both the one-hour and annual averaging times.

4.1.1 Building Wake Effects

The effect of building wakes (i.e., downwash) upon the stack plumes of the SJS 1&2 emission sources will be evaluated in accordance with USEPA guidance (USEPA, 1985). Direction-specific building data will be generated for stacks below good engineering practice (GEP) stack height using the most recent version of USEPA Building Parameter Input Program – Prime (BPIP-Prime). Appropriate information will be provided in the AFC and other permit applications that describe the input assumptions and output results from the BPIP-Prime model. The AERMOD model considers direction-specific downwash using both the Huber Snyder and Schulman-Scire algorithms as evaluated in the BPIP-Prime program.

4.1.2 Receptor Grid

The model receptor grid for the AERMOD simulations described in this protocol for operational sources will be configured as follows:

- 25-meter spacing along the property line and extending from the property line out to 100 meters beyond the property line;
- 100-meter spacing from 100 m to 500 m of the project fence line;
- 500-meter spacing within 500 m to 5,000 m of the project fence line and
- 1,000-meter spacing within 5,000 m to 10,000 m of the project fence line.

During the air quality modeling analysis for operational Project emissions, if a maximum predicted concentration for a particular pollutant and averaging time is located within a portion of the receptor grid with spacing greater than 25 meters, a supplemental dense receptor grid will be placed around the original maximum concentration point and the model will be rerun. The dense grid will use 25-meter spacing and will extend to the next grid point in all directions from the original point of maximum concentration.

Because construction emission sources release pollutants to the atmosphere from small equipment exhaust stacks or from soil disturbances at ground level, maximum predicted construction impacts for all pollutants and averaging times will occur within the first kilometer from the Project boundary. Accordingly, only the portion of the above grid out to a distance of 1 km will be used for the construction modeling.

The HRA modeling will use the same fence line and grid receptors as the criteria pollutant operational modeling. HARP will also include the census receptors out to 10 km. Census receptors will include the population locations in and around the proposed SJS 1&2 location. Additional receptors will be placed at all sensitive locations (e.g., schools, hospitals, etc.) out to 3 miles from the project site, and at the nearest residential locations.

4.1.3 Meteorological Data

Meteorological data suitable for direct input to AERMOD were obtained from the SJVAPCD for the Hanford Municipal Airport meteorological station, in the town of Hanford, located approximately 30 miles northeast of the SJS 1&2. All meteorological data were processed by the SJVAPCD and obtained from their website, www.valleyair.org. The five years of meteorological data to be used in the SJS 1&2 modeling analysis represent the period from 2000 through 2004.

The meteorological data recorded at Hanford Municipal Airport are acceptable for use at SJS 1&2 for two reasons, proximity and terrain similarity. The Hanford Municipal Airport is the closest SJVAPCD meteorological station to the SJS 1&2 site, thus meteorological conditions at the sites are similar. The terrain immediately surrounding the Project site can be categorized as flat or gradually sloping irrigated farm lands, with very few inhabited lands. The terrain around the Hanford Municipal Airport is also relatively flat and the area outside the urban area is flat irrigated farm land. There are no significant terrain features in the area between the Hanford Municipal Airport and SJS 1&2 that would cause significant differences in wind or temperature conditions in these areas. The meteorological data used in this analysis were recommended and provided by the San Joaquin Valley Air Pollution Control District and determined to be representative of conditions at the Project site.

The upper air station providing data for the modeling analysis came is the Oakland airport, located approximately 140 miles northwest of SJS 1&2. This is the closest National Weather Service upper air data and is appropriate for use in all of central and northern California for modeling purposes.

The annual average windrose developed from the Hanford data for 2000-2004 is provided in Appendix A.

4.1.4 Air Quality Monitoring Data

Ambient air quality in Fresno County is monitored at a number of permanent air quality monitoring stations operated by the SJVAPCD and California Air Resources Board (CARB). The closest monitoring station to the Project Site is the Hanford-S Irwin Street Station, located about 34.5 miles northeast of the Project Site in the Kings County. This station measures ozone (O_3), PM_{10}, and NO_2. The nearest CO monitoring station to the Project Site is the Fresno-Drummond Street Station, located about 48 miles northeast of the Project Site. The nearest $PM_{2.5}$ monitoring stations to the Project Site is the Corcoran- Patterson Station, located about 36.5 miles east of the Project Site. The closest SO_2 monitoring station to the Project Site is the Fresno 1st Street Station, located about 51 miles northeast of the Project Site. The closest lead monitoring station to the Project Site is the Fresno-Parlier Station, located about 49.5 miles northeast of the Project Site. The other monitoring stations near to the Project Site are: Hanford-NWS/NOAA (35 miles to the northeast), Red Hills (35.5 miles to the south), Paso Robles-Santa Fe Ave (42 miles to the southwest), Atascadero-Lewis Ave (49 miles to the southwest), Fresno-Hamilton and Winery (49.5 miles to the northeast), and Fresno-Sierra Skypark #2 (52.5 miles to the northeast).

Available SJVAPCD/CARB air quality data from 2005 through 2007 will be used to characterize background air pollutant concentrations at the SJS 1&2 site. Data from these monitoring stations will be evaluated as potentially representative of the proposed project site conditions. To the extent these monitoring data would be used to characterize ambient pollution conditions at the project site, this

practice would almost certainly overestimate pollutant levels at SJS 1&2 because of the much lower population and level of development of the SJS 1&2 area compared with the urban monitoring locations.

Maximum measured pollutant concentrations from the selected air monitoring sites over the last three years will be used to represent background air quality for the modeling analyses and will be added to the modeled peak impacts due to SJS 1&2 emission sources. The convention of assuming that the peak concentration resulting from project emission sources will occur at the same time and location as the highest recorded concentration at the nearest monitoring station is extremely conservative and will ensure that the modeling analysis will error on the side of overestimation with regard to the comparison of predicted impacts with applicable ambient standards.

4.2 MODELING EMISSIONS INVENTORY

4.2.1.1 Operational Project Sources

Operational emissions from the project will be dominated by the fluidized bed combustors burning biomass. Table 4-1 summarizes preliminary annual total Project emission estimates for the SJS 1&2 Plants. Conceptual plant design includes pollutant controls that will match or surpass recent BACT determinations for similar projects.

Table 4-1
Preliminary Estimated Emissions for SJS 1&2 Facility
(tpy)

NO_x	CO	SO_2	ROC	PM_{10} / $PM_{2.5}$
65	110	45	20	65

Modeling will be conducted for the normal operation of the four biomass combustors using the stack parameters associated with 100% load operations. Startup and shutdown scenarios will be addressed in the evaluation of normal worst-case operations. The modeling emission inventory for the proposed facility will include the maximum expected emission rate for each source for each appropriate averaging time. Emissions data for the criteria pollutants for the combustors is provided by the vendor.

The modeling analyses conducted for the AFC and SJVAPCD permit applications will be based on the refined emissions estimates. Where applicable, emissions estimates will be provided in both parts per million (ppm) and pounds per hour values.

Emissions from the natural gas preheaters will be estimated using vendor when provided or USEPA emission factors. The new cooling tower will incorporate drift eliminators. Drift emissions (as particulates) will be reduced with the addition of the drift eliminators. The PM_{10} and $PM_{2.5}$ emission rates from the cooling tower will incorporate this control measure. Emissions from the diesel emergency generators and emergency firewater pumps will be estimated using vendor when provided or USEPA emission factors.

4.2.2 Project Construction Sources

Temporary construction emissions will result from heavy equipment exhaust (primarily NO_x and diesel particulate emissions) and fugitive dust (PM_{10}) from earthmoving activities and vehicle traffic on paved and unpaved surfaces. For the SJS 1&2, the equipment exhaust and fugitive dust emissions from construction activities will be estimated using an Excel spreadsheet, taking into account the effects of implementing control measures for reducing fugitive dust generation. Construction schedules and equipment inventories for each month of the construction effort will be reviewed to characterize a worst-case month for construction equipment and fugitive dust emissions. Probable maximum construction emissions scenarios for all averaging times from 1 to 24 hours will be developed from the data for the worst month. Ultra low sulfur diesel fuel will be assumed in any emission calculations for construction equipment used at the SJS 1&2 site.

AERMOD will be used to estimate the worst-case short- and long-term air quality impacts from construction of SJS 1&2. The same meteorological input data used for the modeling of the Project's operational emissions will be used for the construction modeling. All fugitive dust sources will be modeled as area sources and all combustion sources will be modeled as point sources distributed over the site to reflect the areas of most concentrated equipment usage. Stack parameters for the combustion point sources will be obtained from the CARB document *Risk Management Guidance for the Permitting of New Stationary Source Diesel-Fueled Engines* (2000). The OLM method will be applied to calculate NO_2 impacts.

4.2.3 Toxic Air Contaminant Sources

Air toxics, or TACs, will also be emitted from the SJS 1&2 project due to combustion of biomass, natural gas and diesel fuel and from organic TACs and metals contained in the circulating water through the evaporative cooling towers. Emission estimates for TACs from the combustors will be based on emission factors or destruction efficiencies provided by EPI, the combustor manufacturer, augmented with SJVAPCD and EPA emission factors, when available. TAC emissions estimates for the other sources will be based on emission factors and/or speciation profiles available from CARB CATEF database and the USEPA AP-42 compendium.

4.2.4 Cumulative Impact Analysis Using Off-Property Sources

A cumulative modeling analysis will be performed using AERMOD to evaluate the combined impacts of the Project emissions increases with those of any other new sources within 6 miles from the Project that are currently either under construction, undergoing permitting or expected to be permitted in the near future. A request will be made to SJVAPCD for a list of all new and planned emission sources located within six miles of the existing SJS 1&2 site. This list will be forwarded onto CEC for review. Based on this information, and the CEC response, additional sources may be included with SJS 1&2 project emissions in the cumulative source modeling analysis.

4.3 HEALTH RISK ASSESSMENT ANALYSIS

The CEC and SJVAPCD require a HRA to evaluate potential health risk impacts of TAC emissions from the operation of the project. Contaminants with potential carcinogenic, as well as chronic and acute non-cancer effects will be considered. This health risk assessment will be performed following the Office of Environmental Health Hazard Assessment (OEHHA), Air Toxics Hot Spots Program Risk Assessment Guidelines (OEHHA, 2003) and SJVAPCD Guidance for Air Dispersion Modeling (2006). As recommended by the OEHHA and SJVAPCD guidelines, the California Air Resources Board (CARB) Hotspots Analysis and Reporting Program (HARP) (CARB, 2005) will be used to perform a refined health risk assessment for the project. HARP includes two modules: a dispersion module and a risk module. Although HARP was created with the ISCST3 model as the dispersion module, new software has been created (the HARP AERMOD On-Ramp program) to convert AERMOD dispersion modeling results into the form required for input to the HARP risk module. The risk module implements the latest Risk Assessment Guidelines developed by OEHHA.

First, ground-level impacts from the SJS 1&2 will be estimated using the AERMOD atmospheric dispersion model using unit emission rates for each project source This AERMOD analysis will be consistent with the modeling approach described in this protocol for criteria pollutants, and will use similar modeling input parameters. The predicted impacts obtained from AERMOD will be processed for input to the HARP risk module using the AERMOD On-Ramp program. The same five-year meteorological data set that will be used for the criteria pollutant air quality impact assessment will be used in the HRA (see meteorological discussion in Section 4.2.3). The maximum 1-hour and annual impacts determined by AERMOD will be used in the HARP model to estimate the corresponding health risks.

Incremental cancer risk will be estimated using the “Derived (Adjusted)” calculation method. For the calculation of cancer risk, the default duration of exposure to project emissions will be assumed to be 24 hours per day, 350 days per year, for 70 years, at all receptors. Chronic non-cancer risks will be calculated by means of the “Derived (OEHHA)” method. No drinking water reservoirs or fishing rivers are near the Project; thus the drinking water and fish consumption pathways will not be included in this analysis. All other pathways including cattle/dairy consumption will be included in the HRA and the selection of these pathway parameters will be discussed in the AFC. Default rural values for home grown produce, local pig, chicken and egg consumption, dermal absorption, soil ingestion and mother’s milk will be used in the HRA

The HRA will be performed using HARP and will follow the following steps:

- Define the location of the MEI (i.e., the location where the highest carcinogenic risk may occur);
- Define the locations of the maximum chronic non-carcinogenic adverse health effects and the maximum acute adverse health effects; and
- Calculate concentrations and adverse health effects at locations of maximum impact for each pollutant.

4.4 FUMIGATION MODELING

Fumigation can occur when a stable layer of air lies a short distance above the release point of a plume and unstable air lies below. Especially on sunny mornings with light winds, the heating of the earth's surface causes a layer of turbulence, which grows in depth over time and may intersect an elevated exhaust plume. The transition from stable to unstable surroundings can rapidly draw a plume down to ground level and create relatively high pollutant concentrations for a short period. Typically, a fumigation analysis is conducted using SCREEN3 when the project site is rural and the stack height is greater than 10 meters.

A fumigation analysis will be performed using the USEPA model SCREEN3. The SCREEN3 model will be used to calculate concentrations from an inversion breakup fumigation. No shoreline fumigation will be analyzed since the SJS 1&2 site is not near a large body of water. A unit emission rate will be used (1 gram per second) in the fumigation modeling to represent the project emissions and the model results will be scaled to reflect expected plant emissions for each pollutant. Since SCREEN3 only models the impacts from one source, the entire project emissions will be emitted from a single representative stack with the same stack parameters as each combustor, per USEPA guidance (USEPA, 1992).

Fumigation concentrations will be calculated for 1- and 3-hour averaging times using USEPA-approved conversion factors. These multiple-hour model predictions are conservative since fumigation is a transitory condition that would most likely affect a given receptor location for only a few minutes at a time.

SECTION 5 PRESENTATION OF MODELING RESULTS

5.1 NAAQS AND CAAQS ANALYSIS

The results of the AAQS compliance analyses for the SJS 1&2 will be presented in a summary table. A figure indicating the locations of the maximum pollutant concentrations will be provided. For CO, PM_{10}, $PM_{2.5}$, NO_2, and SO_2, the maximum predicted short-term and annual concentrations due to project emissions plus conservatively estimated background levels will be reported and compared with California and National Ambient Air Quality Standards.

5.2 HEALTH RISK ASSESSMENT ANALYSIS

Maps will depict the following information produced by the HRA:

- Locations of sensitive receptors, including schools, pre-schools, hospitals, etc., within a 3-mile radius of the project and nearby residences included in the HRA;
- Isopleths showing areas where exposures to air toxics lead to an estimated carcinogenic risk equal to or exceeding one in one million (if any); and
- Isopleths of any areas where predicted exposures to air toxics result in estimated chronic non-cancer impacts or acute impacts equal to or exceeding a hazard index of 1 (if any).

Health risk assessment modeling results will be summarized to include maximum annual (chronic both carcinogenic and non-carcinogenic) and hourly (acute) adverse health effects from toxic air contaminant emissions. Health risk values will be calculated and presented in a summary table for the points of maximum impact and the sensitive receptors with the maximum risk values.

5.3 DATA SUBMITTAL

Electronic copies of the modeling input and output files for all the analyses described in this protocol will be provided to SJVAPCD and the CEC.

SECTION 6 REFERENCES

American Meteorological Society. *Journal of Applied Meteorology*, 17(5): 636-643. "Correlation of Land Use and Cover with Meteorological Anomalies", August Auer Jr., May 1978.

ARB 2003. *HARP User Guide – Software for Emission Inventory Database Management, Air Dispersion Modeling Analyses, and Health Risk Assessment version 1.3*, Air Resources, Board, California Environmental Protection Agency. December 2003.

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California Air Resources Board (CARB), 2005. HARP (Hotspots Analysis and Reporting Program), Version 1.1 (Build 23.02.21), April 2005.

CEC, 1997. "Regulations Pertaining to the Rules of Practice and Procedure and Plant Site Certification". Title 20, California Code of Regulations. Chapter 1, 2, 5.

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United States Environmental Protection Agency, 1985. *Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations)*, EPA-450/4-85-023R, June 1985.

United States Environmental Protection Agency, 1992. *Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised*, EPA-454/R-92-019. October 1992.

United States Environmental Protection Agency, 2004. *User's Guide for the AMS/EPA Regulatory Model-AERMOD.* EPA-454/B-03-001, September 2004.

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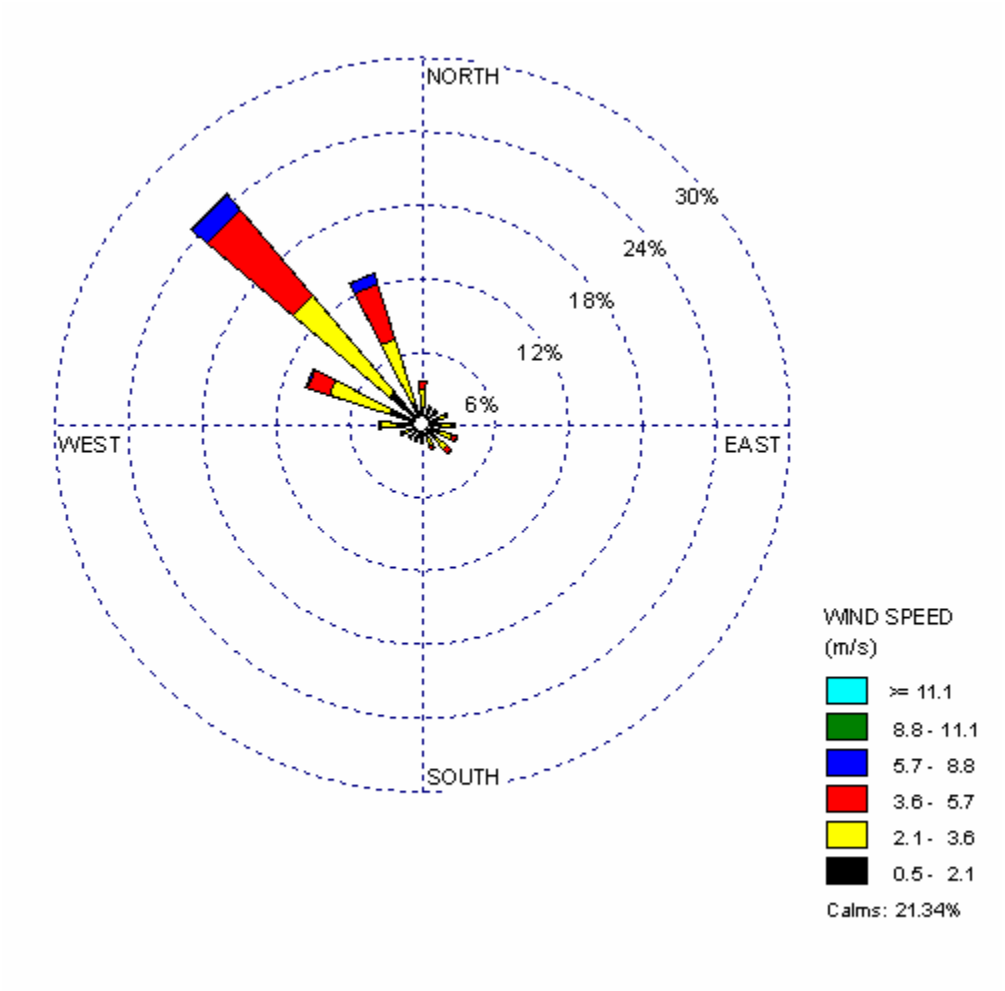
United States Environmental Protection Agency, 2007. *AERMOD Implementation Guide*. October 2007.

United States Environmental Protection Agency, 2008. *AERMOD Implementation Guide*. January 2008.

Annual Average Windrose for the Hanford Meteorological Station for 2000-2004



Annual Average Windrose for Hanford Municipal Airport
For 2000-2004 for all months.

Displays wind speed, direction (blowing from)

Oct. 18, 2008

Staff Comments for the

Modeling Protocol for the San Joaquin 1&2 Solar Hybrid Project

Modeling Protocol for the West Valley Energy Center

Issues Identified:

- There is no mention in the protocols for the modeling of commissioning activities.
- The years for the meteorological data and air quality data do not match, which will tend to cause difficulties if the applicant uses the ozone limiting option in AERMOD.
- Reminder that the following emissions will need to be estimated and were not found in the protocol:
    - Operational GHG emissions
    - Construction criteria and GHG emissions.

COMMENTS FROM SJVAPCD
October 27 2008

Subject: San Joaquin 1 & 2 Solar Hybrid Projects located in Fresno County

Reference: Modeling Protocol

The San Joaquin Valley Unified Air Pollution Control District (District) has reviewed the modeling protocol for the proposed San Joaquin 1 & 2 Solar Hybrid Projects located on West Jayne Avenue approximately 6 miles east of Coalinga and 3 miles west of Interstate 5 (I-5), Fresno County. The Project footprint will occupy the entire 640-acre area of Section 3, Township 21 South, Range 16 East. The Project consists of 2 plants with each plant having a dedicated solar field, biomass facilities, and power block. The District offers the following comments:

District Comments

Meteorological Data:

To streamline modeling runs, the District recommends that one year of worst-case meteorological data be used. The District had determined that the 2004 Hanford met data would be the worst case year for this modeling run.

Commissioning:

If commissioning is to be conducted, a worst-case modeling run should be conducted which includes the commissioning, startup/shut down, and normal operating emissions.

Emission Factors:

If using CATEF emission factors, maximum values for each pollutant must be used. Additionally, fugitive emissions, not limited to fly ash generated from the combustion of biomass material, should be addressed.

HARP:

In HARP, if other than the default endpoints and default percentages are included, please provide justification on endpoints and values used in any modeling run.

Default (dermal, soil, mother's milk, home grown garden, inhalation)

The District does not recommend the following endpoints be included in the HRA: pig, chicken and egg, as OEHHA considers these to be non standard options.

In addition to the equipment identified in the protocol, the District recommends truck travel, truck idling and any diesel equipment on-site be included when conducting the CEQA Health Risk Assessment (HRA).

District staff is available to meet with you and/or the applicant to further discuss this project. If you have any questions or require further information, please call Georgia Stewart at (559) 230-5937.