



Greenhouse Gas and Climate Change Impact Analysis



Sacramento Metropolitan Air Quality
Management District Workshop
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9 AM- 4 PM



Unit 4 Project GHG Analysis Project Examples

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Project 1: Cosumnes River Interceptor Project

Construction project: replacement of an existing interceptor (sewer line) with a new interceptor in Folsom

- Project details:

- Construction occurs 08/02/2010 through 09/03/2010
 - Site Grading 08/02/2010 through 09/03/2010
 - 1 grader: 150 hp @ 4 hours/day
 - Trenching 08/16/2010 through 08/27/2010
 - 1 backhoe: 100 hp @ 6 hours/day
 - Backfill 08/30/2010 through 09/03/2010
 - 1 backhoe: 100 hp @ 6 hours/day
 - 1 roller: 85 hp @ 4 hours/day
- No net soil imported/exported

Project 2: Happy Acres

Happy Acres – large mixed use development in Sacramento County

- Project details

Land use	Units	Number of units	Trip generation rate (number trips/unit)	Acres	Electricity use (kWh/unit/yr)	Natural gas use (Cubic feet/unit/yr)
Single family residential	Residence	1,500	9.08	400	10,000	50,000
High rise apartments	Residence	1,500	6.04	20	8,500	40,000
Elementary school	Student	600	1.29	1.96	2,500	98
Department store	Square feet	50,000	54.15	2.75	750	100
Strip mall	Square feet	100,000	42.94	4.59	11,000	90
Office park	Square feet	15,000	11.00	0.55	11,000	85

- 1,500 total acre-feet water/year
- Construction phased equally over 5 years: Commence 2010; buildout 2015

Happy Acres: Project Details

- Project details:

- Construction occurs 01/01/2010 through 12/31/2015

- Equal number of units built each year
 - Each subsequent year has previously built land uses operational

Land use	2010		2011		2012		2013		2014		2015	
	Units built	Units operate	Units built	Units operate	Units built	Units operate	Units built	Units operate	Units built	Units operate	Units built	Units operate
High rise apartments	300	0	300	300	300	600	300	900	300	1,200	0	1,500
Elementary school	0	0	0	0	0	0	0	0	0	0	0	0
Department store	10,000	0	10,000	10,000	10,000	20,000	10,000	30,000	10,000	40,000	0	50,000
Strip mall	20,000	0	20,000	20,000	20,000	40,000	20,000	60,000	20,000	80,000	0	100,000
Office park	3,000	0	3,000	3,000	3,000	6,000	3,000	9,000	3,000	12,000	0	15,000

Happy Acres: Project Details

- Project details:

- Construction phasing occurs each year (2010 to 2014):

- Mass grading:
 - 01/04/201X through 02/12/201X
 - Asphalt paving
 - 02/15/201X through 02/26/201X
 - Building construction
 - 03/01/201X through 10/29/201X
 - Architectural coating
 - 11/01/201X through 12/31/201X

Project 3: Acme Industries

Acme Industries – aggregate mining project in Sacramento County

- Project details

- New aggregate mining project with a 75 year lifespan (2015 start)
- 15 haul truck trips/day, 30 miles round trip, average of 35 mph/trip
- Mining excavation rate of 250,000 cubic yards annually
- Aggregate plant capacity: 500 tons per hour
- Asphalt batch mix (natural gas) capacity: 300 tons per hour (125,000 tons per year)
- Concrete batch plant: 100 tons per hour
- Facility uses 100,000 kWh electricity/year

Acme Industries: Project Details

- Project details (continued)

- Mining activities equipment includes :

Equipment	Horsepower	Hours/day
Bulldozer	410	4
Excavator	760	8
Front-end loader	500	8
Front-end loader	500	8
Haul truck (off-highway)	525	8
Motorgrader	185	2
Service Truck	NA	1
Water truck	NA	2

Project 4: Baker Street

Baker Street – Road widening project in Sacramento

- Project details
 - Seven-mile stretch of roadway widened from 4- to 6- lanes
 - Construction to start in Spring 2012 and last 18 months
 - Project area is 61 acres and 1,000 CY soil exported/day
 - Open-to-traffic year is 2015 and design year is 2035
 - Assume Sacramento default traffic mix

Baker Street: Project Details

Traffic data: daily VMT by peak and non-peak hour periods

CT-EMFAC Speed Bin Name	2009		2015 No Project		2015 With Project		2035 No Project		2035 With Project	
	VMT	%	VMT	%	VMT	%	VMT	%	VMT	%
5	138	0.6%	56	0.2%	319	1.1%	90	0.3%	77	0.2%
10	654	2.6%	98	0.4%	405	1.4%	249	0.7%	352	0.9%
15	454	1.8%	95	0.3%	390	1.4%	249	0.7%	472	1.3%
20	304	1.2%	254	0.9%	303	1.1%	330	0.9%	769	2.1%
25	900	3.7%	409	1.5%	475	1.7%	818	2.4%	1,006	3.0%
30	1,278	5.1%	284	1.1%	679	2.4%	696	2.0%	794	2.1%
35	1,931	7.7%	794	2.9%	1,647	5.7%	1,054	3.1%	1,243	3.3%
40	1,365	5.5%	801	3.0%	1,430	5.0%	748	2.2%	1,004	2.7%
45	1,085	4.3%	1,146	4.3%	1,150	4.0%	725	2.3%	1,703	4.5%
50	540	2.2%	1,616	6.0%	2,412	8.4%	414	1.2%	1,271	3.4%
55	1,366	5.5%	2,715	10.1%	2,234	7.8%	5,889	17.1%	7,268	19.4%
60	1,178	4.7%	2,495	9.3%	4,772	16.9%	5,404	15.6%	6,869	18.3%
65	3,961	15.8%	5,327	19.8%	4,327	15.1%	5,272	15.3%	4,631	12.4%
70	9,832	39.3%	10,796	40.1%	8,148	28.3%	12,440	36.0%	9,719	26.0%
75	0	0.0%	52	0.2%	43	0.2%	101	0.3%	55	0.1%
Total	25,000	100.0%	26,935	100.0%	28,745	100.0%	34,531	100.0%	37,453	100.0%

CT-EMFAC Speed Bin Name	2009		2015 No Project		2015 With Project		2035 No Project		2035 With Project	
	VMT	%	VMT	%	VMT	%	VMT	%	VMT	%
5	414	0.6%	168	0.2%	927	1.1%	270	0.3%	320	0.2%
10	1,968	2.8%	283	0.4%	1,178	1.4%	747	0.7%	1,000	0.9%
15	1,361	1.8%	280	0.3%	1,135	1.4%	747	0.7%	1,041	1.0%
20	911	1.2%	761	0.9%	882	1.1%	961	0.9%	2,242	2.1%
25	2,760	3.7%	1,226	1.5%	1,382	1.7%	2,454	2.4%	3,426	3.2%
30	1,814	2.3%	882	1.1%	1,979	2.4%	2,088	2.0%	2,256	2.1%
35	5,792	7.7%	2,382	2.9%	4,788	5.7%	3,163	3.1%	3,532	3.3%
40	4,089	5.5%	2,404	3.0%	4,159	5.0%	2,245	2.2%	2,851	2.7%
45	3,255	4.3%	3,438	4.3%	3,343	4.0%	2,356	2.3%	4,839	4.5%
50	1,620	2.2%	4,847	6.0%	7,043	8.4%	1,243	1.2%	3,611	3.4%
55	4,097	5.5%	8,146	10.1%	6,498	7.8%	17,668	17.1%	20,658	19.4%
60	3,527	4.7%	7,484	9.3%	18,876	18.6%	16,212	15.6%	19,513	18.3%
65	11,883	15.8%	15,981	19.8%	12,583	15.1%	15,817	15.3%	11,154	12.4%
70	29,495	39.3%	32,387	40.1%	23,694	28.3%	37,330	36.0%	27,609	26.0%
75	0	0.0%	155	0.2%	126	0.2%	304	0.3%	156	0.1%
Total	75,000	100.0%	80,804	100.0%	83,587	100.0%	103,583	100.0%	108,387	100.0%