Appendix C
Air Quality Modeling Output

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Table B.9 Arterial Classification According to Their Functional and Design Categories

	FUNCTIONAL CATEGORY	
DESIGN CATEGORY	PRINCIPAL ARTERIAL	MINOR ARTERIAL
Typical suburban	I	II
Intermediate	II	II or III
Typical Urban	II or III	III

Source: Highway Capacity Manual (TRB, 1994)

Table B.10 Average Cruise Speed as a Function of Arterial Classification and Free-Flow Speed

ARTERIAL CLASSIFICATION	I			II		III		
FREE-FLOW SPEED (MPH)	45	40	35	35	30	35	30	25
AVERAGE CRUISE SPEED (MPH)	33	31	29	28	27	28	24	22

Derived from Table 11-4 of the Highway Capacity Manual (TRB, 1994)

NOTE: It is best to have an estimate of free-flow speed. If one is lacking, however, use the above table assuming the following default values:

For Classification	Free-Flow Speed (mph)
I	40
II	35
III	30

B.4 Calculating 1-Hour CO Concentrations

Microscale dispersion models are used to calculate 1-hour CO concentrations. The protocol recommends the use of CALINE4, a model that has been widely used in California[1]. There is one restriction to the use of CALINE4. The *intersection link* option of CALINE4 should not be used because it calculates modal emissions based on an algorithm developed for an outdated vehicle fleet. Guidance on the input parameters required by CALINE4 is presented in the remainder of this section, including guidance on how to set up the link network for intersection analyses (see Sections B.4.4 and B.4.5).

B.4.1 Present Background Concentration

Background concentration is a very important element in a microscale CO analysis. The background concentration is added to the project contribution to assess the impact of the project on the air quality. The methodology shown in Figure B.1 should be used to

[1] The recommendation to use CALINE4 does not preclude the use of other models approved by EPA such as CAL3QHC.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 89. Glassell and Walnut
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 175. CM ALT= 0. (M)
BRG= WORST CASE VD= .0 CM/S
CLAS= 7 (G) VS= .0 CM/S
MIXH= 1000. M AMB= 5.8 PPM
SIGTH= 5. DEGREES TEMP= 15.0 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. NF	*	4	-450	4	-150	* AG	1550	1.0	.0	9.6
B. NA	*	5	-150	5	0	* AG	1410	1.4	.0	9.9
C. ND	*	5	0	5	150	* AG	1660	1.1	.0	9.9
D. NE	*	4	150	4	450	* AG	1660	1.0	.0	9.6
E. SF	*	-4	450	-4	150	* AG	1400	1.0	.0	9.6
F. SA	*	-5	150	-5	0	* AG	1300	1.4	.0	9.9
G. SD	*	-5	0	-5	-150	* AG	1240	1.1	.0	9.9
H. SE	*	-4	-150	-4	-450	* AG	1240	1.0	.0	9.6
I. WF	*	450	4	150	4	* AG	400	1.0	.0	9.6
J. WA	*	150	4	0	4	* AG	310	1.6	.0	9.9
K. WD	*	0	4	-150	4	* AG	620	1.7	.0	9.9
L. WE	*	-150	4	-450	4	* AG	620	1.0	.0	9.6
M. EF	*	-450	-4	-150	-4	* AG	780	1.0	.0	9.6
N. EA	*	-150	-5	0	-5	* AG	450	1.6	.0	9.9
O. ED	*	0	-5	150	-5	* AG	610	1.7	.0	9.9
P. EE	*	150	-4	450	-4	* AG	610	1.0	.0	9.6
Q. NL	*	0	-150	0	0	* AG	140	1.2	.0	9.9
R. SL	*	0	150	0	0	* AG	100	1.2	.0	9.9
S. WL	*	150	0	0	0	* AG	90	1.6	.0	9.9
T. EL	*	-150	0	0	0	* AG	330	1.6	.0	9.9

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: 89. Glassell and Walnut
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. NE	12	8	1.8
2. SE	12	-12	1.8
3. SW	-12	-12	1.8
4. NW	-12	8	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. NE	265.	6.1	.0	.0	.0	.0	.0	.0	.0	.0
2. SE	353.	6.1	.0	.0	.1	.0	.0	.0	.0	.0
3. SW	6.	6.1	.0	.0	.0	.0	.0	.2	.0	.0
4. NW	174.	6.1	.0	.0	.0	.0	.0	.0	.1	.0

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R	S	T
1. NE	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
2. SE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3. SW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4. NW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   1

               JOB: 24. Haster & Gene Autry
               RUN: Hour 1           (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide
```

I. SITE VARIABLES

```
         U=   1.0 M/S              Z0= 175. CM             ALT=     0. (M)
       BRG= WORST CASE             VD=   .0 CM/S
      CLAS=     7 (G)              VS=   .0 CM/S
      MIXH= 1000. M               AMB=  5.8 PPM
     SIGTH=    5. DEGREES        TEMP= 15.0 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. NF	*	9	-450	9	-150	* AG	2270	1.0	.0	16.8
B. NA	*	14	-150	14	0	* AG	2010	1.4	.0	21.6
C. ND	*	14	0	14	150	* AG	1950	1.2	.0	10.8
D. NE	*	9	150	9	450	* AG	1950	1.0	.0	16.8
E. SF	*	-9	450	-9	150	* AG	1590	1.0	.0	16.8
F. SA	*	-14	150	-14	0	* AG	1340	1.4	.0	21.6
G. SD	*	-14	0	-14	-150	* AG	2020	1.2	.0	10.8
H. SE	*	-9	-150	-9	-450	* AG	2020	1.0	.0	16.8
I. WF	*	450	9	150	9	* AG	2010	.9	.0	16.8
J. WA	*	150	14	0	14	* AG	1280	1.4	.0	21.6
K. WD	*	0	14	-150	14	* AG	1680	1.1	.0	10.8
L. WE	*	-150	9	-450	9	* AG	1680	.9	.0	16.8
M. EF	*	-450	-11	-150	-11	* AG	1510	.9	.0	20.4
N. EA	*	-150	-14	0	-14	* AG	1200	1.4	.0	21.6
O. ED	*	0	-14	150	-14	* AG	1730	1.1	.0	14.4
P. EE	*	150	-11	450	-11	* AG	1730	.9	.0	20.4
Q. NL	*	0	-150	0	0	* AG	260	1.4	.0	9.9
R. SL	*	0	150	0	0	* AG	250	1.4	.0	9.9
S. WL	*	150	0	0	0	* AG	730	1.4	.0	9.9
T. EL	*	-150	0	0	0	* AG	310	1.4	.0	9.9

□□

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: 24. Haster & Gene Autry
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. NE	28	28	1.8
2. SE	28	-28	1.8
3. SW	-28	-28	1.8
4. NW	-28	28	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. NE	187.	6.1	.0	.1	.0	.0	.0	.0	.0	.0
2. SE	344.	6.1	.0	.0	.0	.0	.0	.0	.0	.0
3. SW	79.	6.1	.0	.0	.0	.0	.0	.0	.0	.0
4. NW	164.	6.1	.0	.0	.0	.0	.0	.0	.0	.0

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R	S	T
1. NE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2. SE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3. SW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4. NW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   1

              JOB: 33. Lewis and Katella
              RUN: Hour 1           (WORST CASE ANGLE)
       POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

         U=   1.0 M/S              Z0= 175. CM            ALT=     0. (M)
       BRG= WORST CASE             VD=   .0 CM/S
      CLAS=     7 (G)              VS=   .0 CM/S
      MIXH= 1000. M               AMB=  5.8 PPM
     SIGTH=    5. DEGREES        TEMP= 15.0 DEGREE (C)


  II.  LINK VARIABLES

      LINK       *  LINK COORDINATES (M)   *                EF     H     W
   DESCRIPTION   *   X1    Y1    X2    Y2   * TYPE  VPH   (G/MI)  (M)   (M)
----------------*-------------------------*-------------------------------
A. NF            *    4  -450     4  -150 *  AG   1440    .9     .0   9.6
B. NA            *    4  -150     4     0 *  AG   1190   1.8     .0   9.9
C. ND            *    4     0     4   150 *  AG   1280   1.8     .0   9.9
D. NE            *    4   150     4   450 *  AG   1280    .9     .0   9.6
E. SF            *   -4   450    -4   150 *  AG   1610    .9     .0   9.6
F. SA            *   -4   150    -4     0 *  AG   1230   1.8     .0   9.9
G. SD            *   -4     0    -4  -150 *  AG   1050   1.8     .0   9.9
H. SE            *   -4  -150    -4  -450 *  AG   1050    .9     .0   9.6
I. WF            *  450     7   150     7 *  AG   3370    .9     .0  16.8
J. WA            *  150     9     0     9 *  AG   2890   1.4     .0  14.4
K. WD            *    0     9  -150     9 *  AG   3720   1.2     .0  10.8
L. WE            * -150     7  -450     7 *  AG   3720    .9     .0  16.8
M. EF            * -450    -7  -150    -7 *  AG   2630    .9     .0  16.8
N. EA            * -150    -9     0    -9 *  AG   2210   1.3     .0  14.4
O. ED            *    0    -9   150    -9 *  AG   3000   1.2     .0  10.8
P. EE            *  150    -7   450    -7 *  AG   3000    .9     .0  16.8
Q. NL            *    0  -150     0     0 *  AG    250   1.6     .0   9.9
R. SL            *    0   150     0     0 *  AG    380   1.6     .0   9.9
S. WL            *  150     0     0     0 *  AG    480   1.3     .0   9.9
T. EL            * -150     0     0     0 *  AG    420   1.3     .0   9.9

□□

          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   2
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JOB: 33. Lewis and Katella
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. NE	8	19	1.8
2. SE	8	-19	1.8
3. SW	-8	-19	1.8
4. NW	-8	19	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. NE	185.	6.5	.0	.2	.1	.0	.0	.0	.0	.0
2. SE	355.	6.5	.0	.1	.2	.0	.0	.0	.0	.0
3. SW	5.	6.4	.0	.0	.0	.0	.0	.2	.1	.0
4. NW	175.	6.4	.0	.0	.0	.0	.0	.1	.2	.0

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R	S	T
1. NE	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2. SE	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0
3. SW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4. NW	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0

Amendment to the Platinum Triangle MLUP
Caline Results
Ambient CO For Source Receptor Area 17

	AQMD Projected CO Concentrations			
	Year	**One Hour**	**Year**	**Eight Hour**
	2015	5.8	**2015**	3.9
Ambient	**2020**	5.8	**2020**	3.9
	2030	5.8	**2030**	3.9

1 hr/8hr deterioration 70%

33. Lewis and Katella	6.5	4.6
50. State College and Gateway Center	6.3	4.4
89. Glassell and Walnut	6.1	4.3
24. Haster & Gene Autry	6.1	4.3

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 50. State College and Gateway Center
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	1.0 M/S	Z0=	175. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	1000. M	AMB=	5.8 PPM		
SIGTH=	5. DEGREES	TEMP=	15.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. NF	*	7	-450	7	-150	* AG	1590	.9	.0	16.8
B. NA	*	7	-150	7	0	* AG	1510	1.3	.0	10.8
C. ND	*	7	0	7	150	* AG	1620	1.0	.0	10.8
D. NE	*	7	150	7	450	* AG	1620	.9	.0	16.8
E. SF	*	-9	450	-9	150	* AG	1570	.9	.0	16.8
F. SA	*	-13	150	-13	0	* AG	1170	1.3	.0	18.0
G. SD	*	-13	0	-13	-150	* AG	2240	1.1	.0	10.8
H. SE	*	-9	-150	-9	-450	* AG	2240	.9	.0	16.8
I. WF	*	450	4	150	4	* AG	1780	1.0	.0	9.6
J. WA	*	150	4	0	4	* AG	620	1.8	.0	9.9
K. WD	*	0	4	-150	4	* AG	280	1.1	.0	9.9
L. WE	*	-150	4	-450	4	* AG	280	1.0	.0	9.6
M. EF	*	-450	-4	-150	-4	* AG	140	1.0	.0	9.6
N. EA	*	-150	-4	0	-4	* AG	80	1.5	.0	9.9
O. ED	*	0	-4	150	-4	* AG	940	1.8	.0	9.9
P. EE	*	150	-4	450	-4	* AG	940	1.0	.0	9.6
Q. NL	*	0	-150	0	0	* AG	80	1.3	.0	9.9
R. SL	*	0	150	0	0	* AG	400	1.3	.0	9.9
S. WL	*	150	0	0	0	* AG	1160	1.8	.0	9.9
T. EL	*	-150	0	0	0	* AG	60	1.5	.0	9.9

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
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JOB: 50. State College and Gateway Center
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. NE	16	8	1.8
2. SE	16	-8	1.8
3. SW	-25	-8	1.8
4. NW	-25	8	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. NE	186.	6.2	.0	.1	.0	.0	.0	.0	.0	.0
2. SE	84.	6.3	.0	.0	.0	.0	.0	.0	.0	.0
3. SW	85.	6.3	.0	.0	.0	.0	.0	.0	.0	.0
4. NW	95.	6.2	.0	.0	.0	.0	.0	.0	.0	.0

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R	S	T
1. NE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2. SE	.0	.0	.0	.0	.0	.0	.2	.0	.0	.0	.1	.0
3. SW	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.1	.0
4. NW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0

Table 2

Projected Future Year 1-hour CO Concentrations (ppm)

		Y E A R				
Monitoring Site Location		**1999**	**2000**	**2010**	**2015**	**2020**
1	Central LA	7	6.7	5.1	5.1	5.1
2	West LA	6	5.8	4.4	4.4	4.4
3	Hawthorne	10	9.6	7.3	7.3	7.3
4	Long Beach	7	6.7	5.1	5.1	5.1
6	Reseda	9	8.6	6.5	6.6	6.6
7	Burbank	9	8.6	6.5	6.6	6.6
8	Pasadena	9	8.6	6.5	6.6	6.6
9	Azusa	5	4.8	3.6	3.6	3.6
10	Pomona	10	9.6	7.3	7.3	7.3
11	Pico Rivera	7	6.7	5.1	5.1	5.1
12	Lynwood	19	18.2	13.8	13.8	13.9
12	Compton	19	18.2	13.8	13.8	13.9
13	Santa Clarita	7	6.7	5.1	5.1	5.1
16	La Habra	11	10.5	8.0	8.0	8.0
17	Anaheim*	8	7.7	5.8	5.8	5.8
18	Costa Mesa	8	7.7	5.8	5.8	5.8
19	El Toro	4	3.8	2.9	2.9	2.9
23	Rubidoux	7	6.7	5.1	5.1	5.1
23	Banning AP**	7	6.7	5.1	5.1	5.1
30	Palm Springs	3	2.9	2.2	2.2	2.2
34	San Bernardino	5	4.8	3.6	3.6	3.6

*Anaheim data recovery rate: 33.7%
**Banning AP data recovery rate: 82.2%

Table 3

Projected Future Year 8-hour CO Concentrations (ppm)

		Y E A R				
Monitoring Site Location		**1999**	**2000**	**2010**	**2015**	**2020**
1	Central LA	6.3	6.0	4.6	4.6	4.6
2	West LA	3.8	3.6	2.8	2.8	2.8
3	Hawthorne	8.4	8.1	6.1	6.1	6.1
4	Long Beach	5.4	5.2	3.9	3.9	3.9
6	Reseda	7.6	7.3	5.5	5.5	5.5
7	Burbank	9	8.6	6.5	6.6	6.6
8	Pasadena	6.6	6.3	4.8	4.8	4.8
9	Azusa	3.9	3.7	2.8	2.8	2.8
10	Pomona	6.7	6.4	4.9	4.9	4.9
11	Pico Rivera	5.6	5.4	4.1	4.1	4.1
12	Lynwood	11	10.5	8.0	8.0	8.0
12	Compton	11.7	11.2	8.5	8.5	8.5
13	Santa Clarita	3.6	3.5	2.6	2.6	2.6
16	La Habra	5.3	5.1	3.9	3.9	3.9
17	Anaheim*	5.3	5.1	3.9	3.9	3.9
18	Costa Mesa	6.4	6.1	4.7	4.7	4.7
19	El Toro	2.5	2.4	1.8	1.8	1.8
23	Rubidoux	4.4	4.2	3.2	3.2	3.2
23	Banning AP**	4.1	3.9	3.0	3.0	3.0
30	Palm Springs	1.8	1.7	1.3	1.3	1.3
34	San Bernardino	4	3.8	2.9	2.9	2.9

*Anaheim data recovery rate: 33.7%

**Banning AP data recovery rate: 82.2%

Title: Orange County - 2030
Version: Emfac2007 V2.3 Nov, 1 2006
Run Date: 9/4/2009
Scen Year: 2030- All Model years in the range 1986 to 2030 selected
Season: Annual
Area: Orange County

Running Emissions (grams/mile)

Pollutant Name: Carbon Monoxide (CO) **Temperature: 60F** **Relative Humidity: 70%**

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
25	0.667	1.126	1.367	1.364	4.983	15.485	**1.038**

Pollutant Name: PM10 **Temperature: 60F** **Relative Humidity: 70%**

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
25	0.013	0.031	0.033	0.099	0.158	0.015	**0.026**

Pollutant Name: PM10 (Tire Wear) **Temperature: 60F** **Relative Humidity: 70%**

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
25	0.008	0.008	0.009	0.022	0.009	0.004	**0.009**

Pollutant Name: PM10 (Break Wear) **Temperature: 60F** **Relative Humidity: 70%**

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
25	0.013	0.013	0.013	0.019	0.013	0.006	**0.013**

Pollutant Name: Oxides of Nitrogen (NOx) **Temperature: 70F** **Relative Humidity: 70%**

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
25	0.04	0.078	0.153	1.866	7.809	0.914	**0.155**

Pollutant Name: **Total Organic Gases (ROG)** **Temperature:** **85F** **Relative Humidity:** **70%**

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
25	0.023	0.041	0.058	0.241	0.675	2.247	**0.056**

Pollutant Name: **Carbon Dioxide (CO2)** **Temperature:** **77F** **Relative Humidity:** **70%**

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
25	428.294	538.105	715.147	1587.306	1867.583	153.723	**552.148**

Pollutant Name: **Sulfur Dioxide (SO2)** **Temperature:** **85F** **Relative Humidity:** **70%**

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
25	0.005	0.006	0.007	0.015	0.018	0.002	**0.006**

Starting Emissions (grams/trip)

Pollutant Name: **Carbon Monoxide (CO)** **Temperature:** **60F** **Relative Humidity:** **All**

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.13	0.224	0.622	1.133	3.147	3.365	0.335
10	0.258	0.443	1.229	2.22	6.166	4.329	0.644
20	0.502	0.865	2.395	4.255	11.82	6.162	1.235
30	0.733	1.265	3.501	6.107	16.963	7.866	1.791
40	0.952	1.643	4.544	7.774	21.595	9.443	2.311
50	1.157	2	5.527	9.257	25.715	10.89	2.795
60	1.349	2.335	6.447	10.556	29.323	12.209	3.244
120	2.103	3.647	9.594	8.945	24.847	16.315	4.539
180	1.485	2.595	7.023	9.206	25.574	12.254	3.424
240	1.607	2.815	7.607	9.476	26.324	13.364	3.683
300	1.716	3.008	8.124	9.755	27.098	14.385	3.914
360	1.81	3.177	8.574	10.042	27.896	15.318	4.118
420	1.89	3.319	8.956	10.338	28.718	16.162	4.295
480	1.956	3.436	9.27	10.643	29.565	16.918	**4.444**
540	2.009	3.527	9.517	10.956	30.435	17.585	4.565
600	2.047	3.593	9.696	11.278	31.328	18.163	4.659
660	2.071	3.633	9.808	11.608	32.246	18.653	4.726
720	2.081	3.648	9.852	11.947	33.188	19.055	4.765

Pollutant Name: **PM10** **Temperature:** **60F** **Relative Humidity:** **All**

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.001	0.001	0.001	0	0.001	0.007	0.001
10	0.001	0.002	0.002	0.001	0.001	0.006	0.002
20	0.002	0.005	0.004	0.001	0.002	0.005	0.003
30	0.003	0.007	0.006	0.002	0.003	0.004	0.005
40	0.004	0.009	0.008	0.003	0.003	0.003	0.006
50	0.005	0.011	0.009	0.003	0.004	0.003	0.008
60	0.006	0.013	0.011	0.004	0.005	0.003	0.009
120	0.01	0.021	0.018	0.005	0.006	0.006	0.014
180	0.011	0.024	0.02	0.005	0.007	0.008	0.016
240	0.012	0.026	0.022	0.005	0.007	0.011	0.018
300	0.013	0.028	0.024	0.005	0.007	0.013	0.019
360	0.013	0.029	0.025	0.006	0.007	0.014	0.02
420	0.014	0.031	0.026	0.006	0.007	0.016	0.021
480	0.014	0.032	0.027	0.006	0.008	0.017	**0.022**
540	0.015	0.033	0.028	0.006	0.008	0.018	0.022
600	0.015	0.033	0.028	0.006	0.008	0.019	0.023
660	0.015	0.034	0.029	0.006	0.008	0.019	0.023
720	0.015	0.034	0.029	0.007	0.009	0.019	0.023

Pollutant Name: **Oxides of Nitrogen (NOx)** **Temperature:** **70F** **Relative Humidity:** **All**

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.042	0.099	0.597	0.205	0.835	0.154	0.181
10	0.045	0.105	0.634	0.309	1.258	0.193	0.197
20	0.051	0.115	0.7	0.492	2.001	0.263	0.226
30	0.056	0.124	0.757	0.641	2.606	0.32	0.251
40	0.059	0.132	0.804	0.756	3.074	0.365	0.271
50	0.062	0.138	0.842	0.837	3.404	0.398	0.287
60	0.065	0.142	0.87	0.884	3.597	0.419	0.297
120	0.07	0.154	0.943	0.891	3.623	0.422	0.318
180	0.07	0.155	0.943	0.888	3.609	0.418	0.319
240	0.069	0.154	0.936	0.883	3.589	0.411	0.316
300	0.069	0.152	0.925	0.876	3.562	0.403	0.313
360	0.067	0.149	0.909	0.867	3.527	0.393	0.307
420	0.066	0.146	0.888	0.857	3.486	0.382	0.301
480	0.064	0.142	0.863	0.845	3.437	0.368	**0.293**
540	0.062	0.137	0.834	0.832	3.382	0.353	0.284
600	0.06	0.131	0.8	0.816	3.319	0.337	0.274
660	0.057	0.125	0.762	0.799	3.25	0.318	0.262
720	0.054	0.118	0.719	0.78	3.173	0.298	0.248
	0	0	0	0	0	0	0

Pollutant Name: **Total Organic Gases (ROG)** **Temperature:** **85F** **Relative Humidity:** **All**

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.005	0.009	0.033	0.054	0.163	0.637	0.019
10	0.01	0.017	0.065	0.104	0.319	0.783	0.034
20	0.02	0.033	0.127	0.198	0.604	1.064	0.063
30	0.029	0.048	0.185	0.281	0.856	1.33	0.089
40	0.037	0.062	0.24	0.353	1.075	1.581	0.114
50	0.044	0.076	0.291	0.413	1.261	1.817	0.136
60	0.051	0.088	0.339	0.463	1.414	1.988	0.157
120	0.08	0.144	0.55	0.561	1.711	2.371	0.237
180	0.092	0.165	0.593	0.595	1.815	2.52	0.259
240	0.098	0.175	0.63	0.628	1.916	2.68	0.275
300	0.103	0.186	0.667	0.66	2.014	2.837	0.291
360	0.109	0.196	0.704	0.691	2.108	2.99	0.307
420	0.114	0.206	0.74	0.721	2.2	3.141	0.322
480	0.12	0.216	0.776	0.75	2.288	3.288	**0.337**
540	0.125	0.226	0.812	0.778	2.372	3.432	0.352
600	0.13	0.236	0.847	0.804	2.453	3.572	0.367
660	0.136	0.246	0.883	0.83	2.531	3.71	0.382
720	0.141	0.255	0.917	0.854	2.606	3.844	0.397

Pollutant Name: **Carbon Dioxide (CO2)** **Temperature:** **77F** **Relative Humidity:** **70%**

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	12.21	15.367	21.663	2.852	3.038	13.326	14.537
10	13.709	17.262	24.532	5.688	6.06	15.525	16.504
20	17.207	21.681	31.144	11.312	12.053	19.843	21.019
30	21.372	26.939	38.921	16.874	17.978	24.053	26.305
40	26.203	33.035	47.862	22.372	23.836	28.156	32.363
50	31.701	39.969	57.967	27.807	29.627	32.151	39.193
60	37.866	47.742	69.237	33.179	35.351	36.039	46.796
120	88.224	111.159	159.552	56.432	60.126	53.502	107.307
180	100.144	126.187	181.329	66.67	71.034	57.729	121.972
240	112.044	141.189	203.022	76.304	81.298	61.707	136.569
300	123.925	156.164	224.629	85.333	90.919	65.437	151.098
360	135.787	171.112	246.152	93.758	99.896	68.92	165.559
420	147.629	186.034	267.59	101.579	108.228	72.154	179.952
480	159.452	200.93	288.942	108.796	115.918	75.14	**194.278**
540	171.256	215.799	310.21	115.409	122.963	77.878	208.535
600	183.041	230.641	331.392	121.417	129.364	80.368	222.725
660	194.806	245.457	352.49	126.821	135.122	82.611	236.847
720	206.551	260.246	373.503	131.62	140.236	84.605	250.901

Pollutant Name: **Sulfur Dioxide (SO2)** **Temperature:** **85F** **Relative Humidity:** **70%**

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0
40	0	0	0.001	0	0	0	0
50	0	0	0.001	0	0.001	0	0
60	0	0	0.001	0	0.001	0.001	0
120	0.001	0.001	0.002	0.001	0.001	0.001	0.001
180	0.001	0.001	0.002	0.001	0.001	0.001	0.001
240	0.001	0.001	0.002	0.001	0.001	0.001	0.001
300	0.001	0.002	0.002	0.001	0.001	0.001	0.002
360	0.001	0.002	0.003	0.001	0.001	0.001	0.002
420	0.001	0.002	0.003	0.001	0.002	0.001	0.002
480	0.002	0.002	0.003	0.001	0.002	0.001	**0.002**
540	0.002	0.002	0.003	0.001	0.002	0.001	0.002
600	0.002	0.002	0.003	0.001	0.002	0.001	0.002
660	0.002	0.002	0.004	0.001	0.002	0.001	0.002
720	0.002	0.003	0.004	0.001	0.002	0.001	0.002

Hot Soak Emissions (grams/trip)

Pollutant Name: **Total Organic Gases (ROG)** **Temperature:** **85F** **Relative Humidity:** **All**

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.026	0.046	0.035	0.004	0.044	0.185	0.034
10	0.048	0.085	0.066	0.007	0.081	0.345	0.062
20	0.083	0.147	0.113	0.012	0.138	0.602	**0.107**
30	0.106	0.19	0.147	0.015	0.178	0.792	0.139
40	0.115	0.206	0.159	0.017	0.193	0.868	0.151

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

Partial Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: **Total Organic Gases (ROG)** **Temperature:** **All** **Relative Humidity:** **All**

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.02	0.039	0.038	0.001	0.001	0.138	0.031
70	0.031	0.059	0.057	0.002	0.002	0.306	0.049
77	0.039	0.074	0.072	0.002	0.003	0.407	0.063
85	0.056	0.103	0.1	0.003	0.004	0.563	**0.088**

Partial Day Resting Loss Emissions (grams/hour)

Pollutant Name: **Total Organic Gases (ROG)** **Temperature:** **All** **Relative Humidity:** **All**

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.012	0.026	0.026	0.001	0.001	0.054	0.019
70	0.014	0.04	0.041	0.001	0.001	0.104	0.028
77	0.017	0.049	0.05	0.002	0.001	0.165	0.035
85	0.025	0.069	0.071	0.002	0.002	0.3	**0.052**

Evaporative Running Loss Emissions (grams/minute)

Pollutant Name: **Total Organic Gases (ROG)** **Temperature:** **85F** **Relative Humidity:** **All**

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
1	0.009	0.23	0.253	0.071	0.753	0.005	0.123
2	0.007	0.118	0.13	0.036	0.385	0.038	0.064
3	0.008	0.083	0.092	0.025	0.263	0.055	0.047
4	0.009	0.067	0.074	0.02	0.203	0.066	0.039
5	0.01	0.058	0.063	0.017	0.167	0.073	0.035
10	0.012	0.04	0.043	0.011	0.095	0.088	0.027
15	0.013	0.035	0.038	0.01	0.073	0.093	0.025
20	0.013	0.034	0.036	0.009	0.063	0.097	0.024
25	0.014	0.033	0.036	0.009	0.057	0.099	0.024
30	0.014	0.033	0.036	0.009	0.058	0.1	0.024
35	0.014	0.033	0.036	0.009	0.058	0.101	0.024
40	0.014	0.034	0.036	0.009	0.058	0.101	0.024
45	0.014	0.034	0.036	0.009	0.059	0.102	0.024
50	0.014	0.034	0.037	0.009	0.059	0.103	0.024
55	0.014	0.034	0.037	0.009	0.059	0.103	0.025
60	0.014	0.034	0.037	0.009	0.06	0.104	**0.025**

Summary of Emission Rates

	Running Emissions (lbs/mile)	Starting Emissions (lbs/trip)	Hot Soak Emissions (lbs/trip)	Partial Day Diurnal Loss Emissions (lbs/hour)	Partial Day Resting Loss Emissions (lbs/hour)	Evaporative Resting Loss Emissions (lbs/minute)
Carbon Monoxide (CO)	0.002	0.010				
Particulate Matter (PM10)	0.000	0.000				
Oxides of Nitrogen (NOx)	0.000	0.001				
Reactive Organic Gases (ROG)	0.000	0.001	0.000	0.003	0.001	0.000
Carbon Dioxide (CO2)	1.217	0.428				
Sulfur Oxide (SO2)	0.000	0.000				

Hot Soak:	Assumes 20 minutes
Diurnal Loss	Assumes 16 hours for partial day diurnal loss based on 16 hours between work end and next day start
Resting Loss	Assumes 8 hours for partial day resting loss, based on an 8-hour workday
Evaportative	Assumes 60 minutes for evaportative running loss emissions

1 gram = 0.0022046 lbs

0.0022046

Greenhouse Gas Emissions

		Existing	Future No Project	Platinum Triangle MLUP	Difference
	Trips/day	**84,416**	**243,060**	**443,263**	**200,203**
	VMT/day	**655,113**	**1,715,669**	**3,135,398**	**1,419,729**
	average trip length	**7.76**	**7.06**	**7.07**	**0.01**
	Running Emission Rate (lbs/mile)		**Emissions (lbs/day)**		
CO	2.29E-03	1,499	3,926	7,175	3,249
PM10	1.06E-04	69	182	332	150
NOx	3.42E-04	224	586	1,071	485
ROG	1.23E-04	81	212	387	175
CO2	1.22E+00	797,446	2,088,425	3,816,612	1,728,187
SO2	1.32E-05	9	23	41	19
			Emissions (lbs/day)		
	Starting Emissions (lbs/trip)				
CO	9.80E-03	827	2,381	4,343	1,961
PM10	4.85E-05	4	12	21	10
NOx	6.46E-04	55	157	286	129
ROG	7.43E-04	63	181	329	149
CO2	4.28E-01	36,156	104,104	189,852	85,748
SO2	4.41E-06	0	1	2	1
	Evaporative Emissions		**Emissions (lbs/day)**		
VOC (HS)	2.36E-04	20	57	105	47
VOC (Dirunal)	3.10E-03	262	754	1,376	621
VOC (Resting)	9.17E-04	77	223	407	184
VOC (Running)	5.51E-05	5	13	24	11
Total ROG		364	1,048	1,911	863

Greenhouse Gas Emissions

Total Emissions		Emissions (lbs/day)			
CO		2,326	6,307	11,518	5,210
PM10		73	193	353	160
PM2.5		73	191	350	158
NOx		278	743	1,358	614
ROG		508	1,441	2,628	1,187
CO2		833,602	2,192,529	4,006,464	1,813,935
SO2		9	24	43	20
assumes PM2.5 is 99 percent of PM10 for mobile sources					
1 Ton = 2,000 lbs		**Emissions (tons/year)**			
CO		425	1,151	2,102	951
PM10		13	35	64	29
PM2.5		13	35	64	29
NOx		51	136	248	112
ROG		93	263	480	217
CO2		152,132	400,136	731,180	331,043
SO2		2	4	8	4
1 Ton = 0.9071847 Mtons		**Emissions (Mtons/year)**			
CO		385	1,044	1,907	863
PM10		12	32	58	26
PM2.5		12	32	58	26
NOx		46	123	225	102
ROG		84	238	435	197
CO2		138,012	362,998	663,315	300,317
SO2		1	4	7	3
convert to MMTons		**0.14**	**0.36**	**0.66**	**0.30**

Assumptions

SCAQMD. CEQA Air Quality Handbook. Appendix Table A9-5-F, Input Assumptions to Determine Speed by Trip Type.

County Average Speeds (miles per hour)

	1987	2010	2030
Orange County	27.0	26.0	25.1

Based on SCAQMD. 1993. CEQA Air Quality Handbook. Table A9-5-I, Estimating Temperatures Needed to Choose Composite

Orange County (Area 1)	
CO	60
NOx	70
ROG/VOC	85

Greenhouse Gas Emissions

	CO2	77 Based on annual average temperature (WRRC)
Starting emissions:	assumes that cars rest for an average of 480 minutes between trips, based on an 8 hour workday (60 minutes/hour * 8 hours = 480 minutes)	
Hot Soak:	Assumes 20 minutes	
Diurnal Loss	Assumes 16 hours for partial day diurnal loss based on 16 hours between work end and next day start	
Resting Loss	Assumes 8 hours for partial day resting loss, based on an 8-hour workday	
Evaportative	Assumes 60 minutes for evaportative running loss emissions	

INSTITUTE FOR LOCAL GOVERNMENT

CALIFORNIA CLIMATE ACTION NETWORK

BEST PRACTICES FRAMEWORK
VERSION 5.0 – MAY 9, 2008

THE FRAMEWORK SUPPORTS YOUR EFFORTS NOW

This Best Practices Framework offers suggestions for local action in ten Climate Leadership Opportunity Areas (*see right*), both in agency operations and the community at large. An agency can use specific best practice suggestions for stand-alone programs or as part of a broad-based climate action plan to reduce greenhouse gas emissions. The suggestions are designed to reflect the variation among cities and counties and offer a variety of options ranging from simple steps to more complex undertakings.

Climate Leadership Opportunity Areas

1. Energy Efficiency and Conservation
2. Water and Wastewater Systems
3. Green Building
4. Waste Reduction and Recycling
5. Climate-Friendly Purchasing
6. Renewable Energy and Low-Carbon Fuels
7. Efficient Transportation
8. Land Use and Community Design
9. Storing and Offsetting Carbon Emissions
10. Promoting Community and Individual Action

YOU CAN START NOW

We encourage you to review the Framework and get started on those actions that make sense for your agency. Many ideas in the Framework can be implemented immediately, even if you don't have a climate action plan. For example, you can audit agency buildings and operations to find ways to save energy and money, such as by replacing lights, inefficient HVAC systems or water pumps. Buying climate-friendly products are another option. Check the Framework for ideas you haven't thought of – if it fits your agency or community, you can start today.

DEVELOP A BROAD-BASED CLIMATE ACTION PLAN

Strategies for reducing greenhouse gases often overlap more than one program area. For example, many practices that improve energy efficiency also can apply to green building and water conservation. Strategies to promote efficient transportation are related to land use and community design. You can use the Framework to help identify these overlaps and start developing a broad-based climate action plan for your community.

SEND US YOUR FEEDBACK

The Best Practices Framework is an evolving resource document. Over time, we will include new actions that reflect innovation at the local level. If your city or county has additional suggestions for best practices to share, please send them to us, along with any background information available. Email: climatechange@ca-ilg.org

If you would like to receive information about climate change resources and updates from CCAN, please visit www.ca-ilg.org/climatelistserve to be added to the CCAN listserve.

The California Climate Action Network provides information, tools and resources in support of local governments' efforts to reduce greenhouse gas emissions in their communities. The California Climate Action Network is a program of the Institute for Local Government, the non-profit research and education affiliate of the League of California Cities and the California State Association of Counties. Visit the California Climate Action Network Web site at www.ca-ilg.org/climatechange.

Energy Efficiency and Conservation

GOAL	BEST PRACTICE
Energy conservation and efficiency in agency buildings and equipment. *See also Green Building section for additional energy options.*	*Audit/evaluation* • Audit major agency buildings and facilities to quantify energy use and identify opportunities for energy savings through efficiency and conservation measures. • Conduct retro-commissioning studies of major agency building HVAC and lighting systems. • Benchmark energy use of major agency buildings. *Building retrofitting and retro-commissioning* • Develop an implementation schedule to implement no cost/low cost opportunities. • Develop implementation plan for capital intensive energy retrofits. • Develop implementation plan to achieve facility Energy Star rating of 60-75 or greater, where feasible. • Implement retro-commissioning improvements as recommended in studies. *Operations/protocols* • Establish energy efficiency protocols for building custodial and cleaning services. • Establish facility energy efficiency policy for employees that provides guidelines, instructions and requirements for efficient use of the facility such as by turning lights and computers off, thermostat use, etc. • Implement off-peak scheduling of pumps, motors and other energy intensive machinery where feasible. • Incorporate energy management software or other methods to monitor energy use in agency buildings. *Standards/commissioning* • Develop commissioning and retro-commissioning standards for new and renovated buildings. • Develop and implement shading requirements for agency and community parking lots, buildings and other facilities to reduce the urban heat island effect. • Develop and implement a continuous commissioning plan. • Integrate energy efficiency, conservation, solar and other renewable energy technologies into new agency facilities. *Work with energy provider* • Work with energy provider to access utility's technical assistance and financial incentives.

Energy Efficiency and Conservation

GOAL	BEST PRACTICE
Reduce energy use for traffic signal and street lighting system.	• Replace incandescent traffic and crosswalk lights with energy-efficient light-emitting diodes (LEDs). • Replace incandescent and mercury vapor street and parking lot lights with energy efficient alternatives.
Outreach to business and residents to promote energy efficiency in the community.	• Encourage community businesses to conduct energy audits. • Work with energy provider to encourage commercial sector to install energy efficient exterior lighting that is appropriate for the location and use, considering security versus decorative lighting. • Require energy audits and/or retrofits, such as at time of sale of commercial and residential properties. • Work with energy provider to promote use of financial incentives to assist residential and commercial customers improve energy efficiency. • Promote and reward energy efficiency efforts of local retail businesses. • Collaborate with local retail businesses to encourage residents to purchase energy efficient products.

Water and Wastewater Systems

GOAL	BEST PRACTICE
Reduce energy use in water, irrigation and waste water systems (either operated by agency or by another agency or private company). *See also Green Buildings section for additional options.*	• Audit agency's water and waste-water pumps and motors to identify most and least efficient equipment. • Develop and implement a motor/pump efficiency cycling schedule to use most efficient water or waste-water motors/pumps first and least efficient ones last. • Replace least efficient water/wastewater motors and pumps with more efficient units. • Work with agency or company that provides water and waste water service to implement an audit, cycling and equipment replacement program for water and waste water pumps and motors. • Implement methane capture for energy production at wastewater treatment plants. • Use recycled water for agency facilities and operations, including parks and medians, where appropriate. • Retrofit existing agency buildings and facilities to meet standards for the LEED Standards Rating Systems for Existing Buildings (EB) or Commercial Interiors (CI). • Require dual plumbing for use of recycled water for new commercial and/or residential developments.
Reduce water use in agency operations and in the community. *See also Green Building section for additional options.*	*Agency operations* • Assess, maintain and repair existing plumbing fixtures, pipes, and irrigation systems in all agency buildings and facilities to minimize water use, including building and parking lot landscaping, public rest rooms and parks, golf courses and other recreational facilities. • Upgrade and retrofit agency plumbing and irrigation systems with state-of-the-art water conserving technology. • Implement all feasible water efficiency strategies included in the Ahwahnee Water Principles for Resource Efficient Land Use in all agency parks, landscaping and in new developments. *Community at large* • Adopt water efficiency principles similar to the Ahwahnee Water Principles for Resource Efficient Land Use for new and existing residential and commercial developments. • Implement water conservation and reclamation programs to reduce energy use associated with water delivery. • Require water efficiency audits at point of sale for commercial and residential properties. • Adopt retrofit program to encourage or require installation of water conservation measures in existing businesses and homes. • Partner with water provider to adopt water conservation measures.

Green Building

GOAL	BEST PRACTICE
Establish minimum levels of energy efficiency and green building standards for agency buildings and facilities. *See also Energy Efficiency and Conservation section for more options.*	• Require that agency buildings have a performance equivalent to an Energy Star rating of at least 60-75 (as described in the LEED-E3 reference guide), where feasible. • Require all new agency buildings and facilities to meet at least LEED Silver certification standards. • Require renovated agency buildings and facilities and those using agency funds or other financial support to meet at least LEED Silver certification standards.
Establish and implement minimum levels of energy efficiency and green building standards for commercial and residential buildings. *See also Energy Efficiency and Conservation section for more options.*	• Require new residential and commercial construction to exceed Title 24 energy efficiency standards to extent permitted by law. • Provide technical assistance, financial assistance, and other significant incentives to private development projects that meet or exceed LEED Silver certification standards for commercial buildings. • Adopt and implement a local green building ordinance or program setting minimum standards of LEED Silver certification for new commercial, industrial and high-rise residential building projects. • Adopt and implement a local green building ordinance or program to require new low-rise residential construction to meet minimum green building standards, such as Build It Green, California Green Builder, LEED, or a similar program. • Provide technical assistance, financial assistance, and other significant incentives to private development projects that meet or exceed specified standards under green building programs such as Build It Green, California Green Builder, LEED, or a similar program. • Work with commercial developers to incorporate materials and furnishings made from recycled content.
Implement sustainable landscaping. *See also Water and Wastewater section for more options.*	• Develop and implement sustainable landscaping standards for public agency facilities to reduce water consumption. • Develop and implement sustainable landscaping standards for new commercial construction and renovation to reduce water consumption. • Develop and implement sustainable landscaping standards for new residential construction and renovation to reduce water consumption.

Waste Reduction and Recycling

GOAL	BEST PRACTICE
Enhance existing waste reduction and recycling activities at agency buildings and in the community.	• Institute a comprehensive waste reduction and recycling program in agency offices and facilities. • Institute a partnership with other public agency offices located within the jurisdiction for waste reduction and recycling at those facilities. • Adopt a partnership with local schools for waste reduction and recycling. • Increase opportunities for e-waste and hazardous waste recycling by residents and businesses. • Educate the community about "buy recycled" opportunities. • Evaluate current community recycling infrastructure relative to future population growth and waste generation. • Include provisions and incentives for new recycling infrastructure and facilities to accommodate growth, in land use planning and zoning.
Implement source reduction, recycling and resource recovery programs for waste organic material. Produce compost, mulch, energy and fuels from organic waste stream.	• Audit agency facilities to identify opportunities to increase material recovery and beneficial use of organic material. • Establish an organic material recovery program for green waste from agency parks and facility landscaping. • Establish a program to use the maximum amount as possible of organic waste generated within the jurisdiction to produce compost and/or biofuel, including use on agency parks and landscaping. • Establish incentives for residents to participate in green waste recycling programs. • Adopt a restaurant food waste collection program or ordinance. • Approve siting of composting facility within jurisdiction.
Reduce office and commercial waste and increase recycling.	• Adopt a program or ordinance to encourage or require recycling at multi-family apartments. • Adopt a program or ordinance to encourage or require recycling in the commercial/industrial sectors. • Adopt a program or ordinance to encourage or require waste audits and waste reduction plans for existing and/or new commercial developments. • Audit major waste generators and recommend strategies to reduce waste and increase recycling. • In partnership with the waste hauler(s) serving the commercial sector, institute a comprehensive waste reduction and recycling program with financial and other incentives to promote waste reduction and recycling for commercial/industrial waste generators. • Partner with the California Integrated Waste Management Board to encourage businesses and residents to participate in CalMax (California Materials Exchange) or a similar program.

Waste Reduction and Recycling

GOAL	BEST PRACTICE
Source reduction, recycling and resource recovery programs for construction and demolition material.	• Require all agency demolition projects to incorporate de-construction and construction and demolition waste recycling or recovery practices. • Adopt a program or ordinance to reduce, reuse and recycle community construction and demolition waste. • Adopt a "deconstruction" program or ordinance to salvage and reuse materials in all community remodeling projects. • Adopt and implement a policy to require use of rubberized asphalt concrete (RAC) for streets and roads. • Adopt and implement a policy to require use recycled asphalt pavement (RAP) for streets and roads. • Implement a policy to use RAP for commercial and community parking lots, where feasible. • Encourage schools and other public agencies to use RAP for parking lots, where feasible. • Establish a program or ordinance that results in 100 percent in-place recycling of asphalt concrete. • Establish a program or ordinance that results in recycling of 100 percent of all Portland cement and asphalt concrete.
Decrease carbon footprint of jurisdiction's waste and recycling collection system.	• Work with solid waste and recycling collection providers to calculate carbon footprint of collection system. • Work with solid waste and recycling collection providers to reduce collection system footprint.

Climate-Friendly Purchasing

GOAL	BEST PRACTICE
Commit to purchasing specific products and goods that are climate-friendly. *See also Waste Reduction and Recycling and Green Building sections.*	• Adopt and implement a procurement policy that establishes standards for climate-friendly products and requires agency purchases to meet such standards as: o New equipment meets Energy Star or comparable energy efficiency standards. o Computer purchases meet the highest feasible EPEAT certification level. o Office paper purchases (copy paper, printer paper, writing pads, stationery, envelopes and business cards) contain a minimum specified percentage of post consumer recycled content. o Other paper purchases (paper towels, toilet paper, napkins and similar items) contain a minimum percentage of post consumer recycled content. o Carpeting and other furnishings contain a minimum percentage of recycled content. o Plastic items (refuse and recycling receptacles, decking, parking lot barriers, furniture, etc.) contain recycled content. o Oil and oil-related products contain recycled content. o Products certified by either GreenSeal or EcoLogo, as long as they cost no more than an agency-determined percentage above the price of non-certified products. • Create an interdepartmental team to 1) promote policy implementation, 2) track policy adherence, and 3) suggest additional items to be included in the agency's climate-friendly purchasing program, including such tasks as: o Reviewing and analyzing current (baseline) purchasing by major product categories. o Prioritizing product categories in terms of greenhouse gas emissions implications and improvement potential. o Reviewing policies, procedures, organization/staffing for implementation barriers. o Developing multi-year implementation schedule based on priorities, difficulty, upcoming solicitations. o Reporting achievements under the policy to policy makers and the public annually.

Climate-Friendly Purchasing

GOAL	BEST PRACTICE
Purchase services that are climate-friendly.	• Require service providers to follow climate-friendly practices, or provide a preference in selecting and contracting with service providers to those that follow climate-friendly practices. • Provide incentives for the use of alternative fuel vehicles for agency contracts for services involving vehicles (buses, waste hauling and recycling, construction, etc.). • Ensure that the highest feasible percentage of annual expenditures for contract services is with companies registered with the California Climate Action Registry or its successor.
Give a preference to climate-friendly vendors.	• Provide a price preference to product vendors that follow climate-friendly practices, including use of recycled content materials, Energy Star and EPEAT materials and equipment, as well as alternative fuel vehicles. • Provide a price preference to product vendors that inventory and register their greenhouse gas emissions with the California Climate Action Registry or its successor and that report their verified greenhouse gas emissions within the jurisdiction.
Community education about climate friendly procurement.	• Educate the public about climate friendly procurement opportunities. • Work with the business community to educate them about climate friendly procurement opportunities.

Renewable Energy and Low-Carbon Fuels

GOAL	BEST PRACTICE
Promote agency use of fuel efficient and alternative fuel vehicles to reduce reliance on fossil fuels. *See also Efficient Transportation section*	• Convert vehicles owned, leased or operated by the agency to run on alternative fuels or other non-fossil fuel based technology that significantly reduces greenhouse gas emissions. • Install bicycle racks, showers and other amenities at agency facilities to promote bicycle use by agency employees and visitors.
Promote methane recovery programs and projects. *See also Waste Reduction and Recycling section.*	• For jurisdictions that own or operate one or more landfills, recover and use the maximum feasible amount of recoverable methane gas from the landfill to produce electricity, fuel co-generation facilities, and/or produce CNG for use in alternative fuel vehicles. • For jurisdictions that do not own or operate landfills, calculate the methane emissions associated with the disposal of waste generated within the community. • For jurisdictions that do not own or operate landfills, enter into partnerships or agreements with waste disposal agencies or companies to ensure that the maximum feasible amount of methane is recovered for waste-to-energy purposes. • Install digesters and other technologies at wastewater treatment facilities to produce methane and other biofuels.
Promote the use of renewable sources of energy.	• Install photovoltaic systems or other renewable sources of energy on agency facilities OR enter into power purchasing agreements to meet at least 10-25 percent of the electrical energy requirements of facilities owned, leased or operated by the agency. • Adopt policy or program that offers incentives, such as streamlined permitting system or fee waivers, to encourage installation of photovoltaic systems on new or existing residential and commercial buildings.

Efficient Transportation

GOAL	BEST PRACTICE
Implement transportation planning processes that reduce automobile dependency.	• Update transportation models and surveys to capture data for and accurately reflect all modes of transportation. • Make reductions in vehicle-miles traveled (VMT) a high-priority criteria in evaluation of policy, program and project alternatives. • Implement transportation planning procedures that consider demand management solutions equally with strategies to increase capacity. • Include all significant impacts (costs and benefits) in benefit-cost assessment of alternatives, including non-market or indirect impacts, such as improving mobility options or reducing air pollution and greenhouse gas emissions.
Improve infrastructure and Transportation Systems Management (TSM). *See also Land Use and Community Design section.*	• Implement Intelligent Transportation Systems (ITS) for surveillance and traffic control, such as synchronized signals, transit and emergency signal priority, and other traffic flow management techniques, to improve traffic flow and reduce vehicle idling. • Implement programs to reduce "incident-based" traffic congestion, such as expedited clearing of accidents from major traffic arteries, airport traffic mitigation, etc. • Develop infrastructure improvements such as HOV/HOT lanes and dedicated bus rapid transit right-of-ways.
Reduce Idling.	• Adopt and implement a policy requiring limitations on idling for commercial vehicles, construction vehicles, buses and other similar vehicles, beyond state law, where feasible.

Efficient Transportation

GOAL	BEST PRACTICE
Promote alternatives to single-occupant auto commuting. *See also Land Use and Community Design section.*	*Agency operations* • Provide agency employees with incentives to use alternatives to single-occupant auto commuting, such as parking cash-out, flexible schedules, transit incentives, bicycle facilities, ridesharing services and subsidies, and telecommuting. • Reduce greenhouse gas emissions from municipal fleet operations by purchasing or leasing high MPG, low carbon fuel or hybrid vehicles, or by using an external car sharing program in lieu of city/county fleet. *Community* • Work with major employers in the community to offer incentives and services to increase the use of alternatives to single-occupant auto commuting (voluntary commute trip reduction programs). • Encourage and facilitate the development of car-sharing and other services that reduce the need to own a personal motor vehicle. • Develop and implement voluntary agreements for commute trip reduction programs for new commercial developments. • Provide parking preferences in public lots, garages and on-street spaces for residents who rideshare or use low-carbon fuel vehicles. • Implement variable ("congestion") pricing and other pricing mechanisms for parking facilities, to provide incentives and discourage single-occupant-vehicle and peak travel. • Dedicate revenues from fees and tolls to promote alternative transportation modes.

Land Use and Community Design

GOAL	BEST PRACTICE
Create communities and neighborhoods that are attractive, safe and convenient for walkers and bicyclists. *See also Efficient Transportation section.*	• Assess and report on pedestrian and bicycle conditions in existing communities and neighborhoods. • Develop a community-wide pedestrian and bicycle plan and capital program that maximizes the potential for residents to walk or bicycle within and between neighborhoods. • Require new commercial developments to install bicycle parking facilities and other cyclist amenities at a level commensurate with the number of employees or square footage. • Adopt and implement a community-wide pedestrian and bicycle plan. • Provide bicycle access to transit services on major transit corridors and other routes that may attract bicyclists, such as routes serving schools and colleges. • Install traffic calming devices and other measures to reduce traffic speeds and volumes and increase the safety and feasibility of bicycling and walking. • Implement design standards that require streets and sidewalks to be designed for multi-modal mobility and access, including walking and bicycling, to ensure that new development is designed, sited and oriented to facilitate pedestrian, bicycle and other mobility and access.
Orient new development to capitalize on transit system investments and services. *See also Efficient Transportation section.*	• Provide incentives and remove zoning and other barriers to mixed-use and higher intensity development at transit nodes and along transit corridors (existing and planned). • Require new development at transit nodes and along transit corridors to meet planning and design standards to generate, attract, and facilitate transit ridership as a condition of approval. • Integrate park-and-ride lots with multi-use facilities.
Adopt policies that promote compact and efficient development in new and existing communities. *See also Efficient Transportation and Green Building sections.*	• Inventory infill development sites. Plan, zone and provide incentives for new development and renovation of existing uses in identified infill areas. • Adopt and enforce land use ordinances and regulations that reduce greenhouse gas emissions. Examples include prioritizing mixed uses and infill development, and providing more transportation and housing choices. • Require new housing and mixed use developments be built to the LEED for Neighborhood Development (LEED-ND) standard or its equivalent. • Provide expedited application processing for development projects that meet climate change response policies.

Land Use and Community Design

GOAL	BEST PRACTICE
Incorporate greenhouse gas emissions considerations into the General Plan and environmental review process. *See also Efficient Transportation section.*	• Include a greenhouse gas reduction plan in the General Plan, or include within the General Plan a requirement for development and adoption of a greenhouse gas reduction plan. • Analyze impact of greenhouse gas emissions from land use and transportation sectors in the EIR prepared in connection with general plan updates. • Amend local CEQA guidelines to explain how analysis of greenhouse gas emissions will be treated, such as thresholds of significance. [*NOTE: the California Air Pollution Control Officers Association has published recommendations at www.capcoa.org.]* • Analyze impacts of development projects on safety, availability and use of alternative transportation in CEQA documents.
Establish planning processes that encourage reducing greenhouse gas emissions. *See also Efficient Transportation section.*	• Develop and adopt a preferred "climate-friendly" land use and transportation scenario for future development to reduce vehicle miles traveled (VMT) through software tools such as the PLACE^{3}S system developed by the California Energy Commission. • Incorporate land use and transportation policies in the General Plan, capital improvement program and other planning and spending documents, codes and ordinances to reflect the preferred "climate-friendly" land use and transportation scenario. • Implement a regional blueprint or other long-range, regional planning process to assess the climate impacts of future growth and develop a preferred regional climate-friendly growth scenario. • Involve emergency responders early and consistently in development of growth plans.
Increase transportation choices. *See also Efficient Transportation section.*	• Establish land use policies that support multimodal transportation systems and connection of modes to each other. • Require sidewalks in all new developments. • Plan and permit road networks of neighborhood-scaled streets (generally 2 or 4 lanes) with high levels of connectivity and short blocks. • Zone for concentrated activity centers around transit service. • Coordinate planning and project approval procedures to increase collaboration between land use and transportation planning staff. • Cluster freight facilities near ports, airports and rail terminals. • Coordinate with regional efforts and neighboring jurisdictions to plan for and accommodate alternate modes.

Storing and Offsetting Carbon Emissions

GOAL	BEST PRACTICE
Preserve and enhance forests, parks, street trees, open space and other natural systems that act as carbon "sinks."	• Inventory existing trees on property owned or managed by the agency and implement a management system to preserve and enhance the existing urban forest. • Manage parks, open space, recreational facilities and other natural areas owned or operated by the agency to ensure the long-term health and viability of trees and other vegetation. • Develop and implement a community-wide urban forestry management and reforestation program to significantly increase the carbon storage potential of trees and other vegetation in the community. • Steer new development away from open space and agricultural lands that provide natural carbon storage. • Partner with other agencies and non-profit organizations to protect natural lands in and adjacent to the community through acquisition, conservation easements or other long-term mechanisms.
Promote local sustainable agriculture to reduce carbon emissions associated with food production, processing, and transport.	• Promote the purchase of local and organic produce through farmers markets and other measures. • Enact a local food purchase policy for agency food purchases. • Promote conservation tillage and other agricultural practices to retain carbon fixed in soils.
Offset carbon emissions through carbon credits or allowances.	• Audit agency-sponsored events and activities to determine greenhouse gas emissions associated with the event/activity. • Achieve carbon neutrality at agency-sponsored events and activities through conservation, efficiency, alternative transportation, and the purchase of third-party verified emission reductions to offset carbon emissions. • Achieve carbon neutrality for major agency operations through conservation, efficiency, alternative transportation, and the purchase of third-party verified emission reductions to offset carbon emissions. • Create incentives for community organizations and residents to reduce their carbon use including the purchase of third-party verified emission reductions. • Purchase and retire third-party verified emission reductions to offset community-wide carbon emissions.

Promoting Community and Individual Actions

GOAL	BEST PRACTICE
Promote individual actions to reduce greenhouse gas emissions and conserve natural systems that store carbon.	• Survey businesses and residents to understand attitudes and behaviors related to climate change. • Include information on actions that individuals can take to address climate change in local agency mailings, websites, and other communications. • Develop a community climate change education initiative that enlists participation from schools, museums, service groups, business organizations (such as local Chambers of Commerce), neighborhood and homeowner associations, and other community partners. • Identify and allocate resources to implement a community climate change education initiative, and establish an implementation timeline not to exceed five years. • Initiate implementation of the education and action plan. • Provide programs and/or incentives to individuals, groups, and businesses that adopt practices that reduce their carbon footprint.
Promote cooperation among agencies and communities to reduce greenhouse gas emissions and conserve natural systems that store carbon.	• Participate in inter-agency and inter-jurisdictional meetings to share information about climate change and best practices to reduce carbon emissions. • Create an inter-agency local or regional climate action partnership and/or action plan with one or more sister agencies or neighboring jurisdictions. • Initiate the regional action plan. • Participate in the development of a regional blueprint or other long-range planning process to assess the climate impacts of future growth and develop a preferred climate-friendly growth scenario. • Initiate a Community Climate Action Partnership with a Global Sister Agency.
Provide opportunities for public engagement that will support successful implementation of climate change actions.	• Organize and promote community dialogues that educate residents about climate change and its possible impacts on the community. • Develop informational material for residents about climate change and opportunities for individual action to reduce greenhouse gas emissions. • Use public involvement processes to develop recommendations from residents and businesses about the city or county's climate change action plan and actions the agency is taking to respond to climate change, such as through green building, energy conservation, efficient transportation, and other actions. • Provide opportunities for interested residents to stay engaged after the initial planning to help monitor and assess ongoing efforts and recommend plan adaptations as needed.

Construction GHG Emissions Summary

From Urbemis2007

Year	Adopted	Amended	Increase
2010	13,152	31,406	
2011	22,202	53,014	
2012	22,285	53,212	
2013	22,284	53,209	
2014	22,283	53,206	
2015	22,282	53,204	
2016	22,281	53,200	
2017	22,194	52,994	
2018	22,279	53,196	
2019	22,279	53,195	
2020	22,364	53,398	
2021	22,276	53,188	
2022	22,191	52,984	
2023	22,191	52,984	
2024	22,362	53,392	
2025	22,276	53,188	
2026	22,275	53,185	
2027	22,275	53,185	
2028	22,190	52,982	
2029	22,275	53,185	
2030	9,303	22,212	
	445,499	**1,063,719**	**0**

Conversion to CO2e

Year	Adopted	Amended	Increase
	0	0	0
2010	13,191	31,500	0
2011	22,269	53,173	0
2012	22,352	53,372	0
2013	22,351	53,369	0
2014	22,350	53,366	0
2015	22,349	53,364	0
2016	22,348	53,360	0
2017	22,261	53,153	0
2018	22,346	53,356	0
2019	22,346	53,355	0
2020	22,431	53,558	0
2021	22,343	53,348	0
2022	22,258	53,143	0
2023	22,258	53,143	0
2024	22,429	53,552	0
2025	22,343	53,348	0
2026	22,342	53,345	0
2027	22,342	53,345	0
2028	22,257	53,141	0
2029	22,342	53,345	0
2030	9,331	22,279	0
Total By Phase	**446,835**	**1,066,910**	**620,075**
Average Annual Construction	22,342	53,346	31,004

Construction GHG Emissions Summary

Conversion to MTons of CO2e

Year	Adopted	Amended	Increase
	0	0	0
2010	11,967	28,577	0
2011	20,202	48,238	0
2012	20,277	48,418	0
2013	20,276	48,415	0
2014	20,275	48,412	0
2015	20,275	48,411	0
2016	20,274	48,407	0
2017	20,194	48,220	0
2018	20,272	48,403	0
2019	20,272	48,402	0
2020	20,349	48,587	0
2021	20,269	48,396	0
2022	20,192	48,210	0
2023	20,192	48,210	0
2024	20,347	48,582	0
2025	20,269	48,396	0
2026	20,268	48,393	0
2027	20,268	48,393	0
2028	20,191	48,209	0
2029	20,268	48,393	0
2030	8,465	20,211	0
Total By Phase	**405,362**	**967,885**	**562,522**
Average Annual Construction	20,268	48,394	28,126

1 short ton (Ton) equals 0.9071847 metric tons (Mton)

URBEMIS2007, Version 9.2.4. Assumes CO_2 represents 99.6 percent of total CO_{2e} emissions from motorgasoline and 99.7 percent of total from diesel CO2e while CH_4, N_2O, and Fluorinated Gases comprise the remaining percent (BAAQMD 2008).

Construction GHG Emissions Summary - With Industrial

From Urbemis2007

Year				Total
				0
2010	32,436			**32,436**
2011	54,754			**54,754**
2012	54,959			**54,959**
2013	54,953			**54,953**
2014	54,951			**54,951**
2015	54,947			**54,947**
2016	54,734			**54,734**
2017	54,942			**54,942**
2018	54,942			**54,942**
2019	54,942			**54,942**
2020	55,151			**55,151**
2021	54,934			**54,934**
2022	54,724			**54,724**
2023	54,724			**54,724**
2024	55,145			**55,145**
2025	54,934			**54,934**
2026	54,932			**54,932**
2027	54,932			**54,932**
2028	54,721			**54,721**
2029	54,932			**54,932**
2030	22,941			**22,941**
	1,098,629	**0**	**0**	**1,098,629**

Conversion to CO2e

Year	0	0	0	Total
	0	0	0	**0**
2010	32,533	0	0	**32,533**
2011	54,918	0	0	**54,918**
2012	55,124	0	0	**55,124**
2013	55,118	0	0	**55,118**
2014	55,116	0	0	**55,116**
2015	55,112	0	0	**55,112**
2016	54,898	0	0	**54,898**
2017	55,107	0	0	**55,107**
2018	55,107	0	0	**55,107**
2019	55,106	0	0	**55,106**
2020	55,316	0	0	**55,316**
2021	55,099	0	0	**55,099**
2022	54,888	0	0	**54,888**
2023	54,888	0	0	**54,888**
2024	55,310	0	0	**55,310**
2025	55,099	0	0	**55,099**
2026	55,097	0	0	**55,097**
2027	55,097	0	0	**55,097**
2028	54,885	0	0	**54,885**
2029	55,097	0	0	**55,097**
2030	23,010	0	0	**23,010**
Total By Phase	**1,101,925**	**0**	**0**	**1,101,925**

Construction GHG Emissions Summary - With Industrial

Conversion to MTons of CO2e				
Year	0	0	0	**Total**
	0	0	0	**0**
2010	29,514	0	0	**29,514**
2011	49,821	0	0	**49,821**
2012	50,008	0	0	**50,008**
2013	50,002	0	0	**50,002**
2014	50,000	0	0	**50,000**
2015	49,997	0	0	**49,997**
2016	49,803	0	0	**49,803**
2017	49,992	0	0	**49,992**
2018	49,992	0	0	**49,992**
2019	49,992	0	0	**49,992**
2020	50,182	0	0	**50,182**
2021	49,985	0	0	**49,985**
2022	49,794	0	0	**49,794**
2023	49,794	0	0	**49,794**
2024	50,177	0	0	**50,177**
2025	49,985	0	0	**49,985**
2026	49,983	0	0	**49,983**
2027	49,983	0	0	**49,983**
2028	49,791	0	0	**49,791**
2029	49,983	0	0	**49,983**
2030	20,874	0	0	**20,874**
Total By Phase	**999,650**	**0**	**0**	**999,650**

1 short ton (Ton) equals 0.9071847 metric tons (Mton)

URBEMIS2007, Version 9.2.4. Assumes CO_2 represents 99.6 percent of total CO_{2e} emissions from motorgasoline and 99.7 percent of total from diesel CO2e while CH_4, N_2O, and Fluorinated Gases comprise the remaining percent (BAAQMD 2008).

Energy Use and Greenhouse Gases Emission from Energy Use - Future PTMLUP

Commercial - Climate Zone 4 (Coastal California)

Land Use	Area (ft^2)	Energy Consumption (kWh/ft^2/Year)	Energy Consumption KWH/Year	lbs of CO_2e/Year
Retail (Other Than Mall)	4,909,682	11.3	55,479,407	35,080,322
Office	14,340,522	16.8	240,920,770	152,337,214
Public Assembly	1,500,000	19.7	29,550,000	18,684,834
Mercantile	0	17.3	0	0
Total Commercial	**20,750,204**	**65.1**	**325,950,176**	**206,102,371**
			Tons/year	**103,051**
			lbs/day	**564,664**

Residential

Land Use	Area (ft^2)	Energy Consumption (BTU/1000ft^2/Year)	Energy Consumption KWH/Year	lbs of CO_2e/Year
Residential	27,720,594	41.7	338,692,990	214,159,811
Total Residential	**27,720,594**	**83.4**	**338,692,990**	**214,159,811**
			Tons/year	**107,080**
			lbs/day	**586,739**

Total		Annual Electricity Use			CO2e
	KWH/Year	664,643,166		lbs/Year	420,262,182
	GWH/Year	665		MTons/year	190,628
				Tons/Year	210,131
				lbs/day	1,151,403

Sources

Note: New structures would be constructed to meet newer California Building Code energy efficiency requirements

[1] Commercial energy use based on Table C20 and C14 (where climate specific information was not available) US Energy Information Administration www.eia.doe.gov/emeu/cbecs/

[1] Residential energy use based on US Energy Information Administration www.eia.doe.gov Table US1. Total Energy Consumption, Expenditures, and Intensities, 2005. Part 1: Housing Unit Characteristics and Energy Usage Indicators Released January 2009.

California Energy Emission Factors

0.631	lbs of CO2/kwh	Southern California Edison*
0.0000067	lbs of CH4/kwh	For California
0.00000378	lbs of N20/kwh	For California

US EUA http://www.eia.doe.gov/oiaf/1605/ee-factors.html

GHG Potential - Coversion to CO2e	CH4	N20
	21	310

lbs of CO2e/kwh	0.632

* As reported to California Climate Action Registry (CCAR)

Conversion Factors

0.0005	lbs in a ton
0.9071847	Metric Tons
0.000293	BTU (British Thermal Units) in a kwh
471,000,000	tons of CO2e in 1990 and Goal for 2020:

Based on CARB emissions inventory of GHG emissions for the State of California in 1990 of 471 million short tons of CO2e (427 million metric tons of CO2e) of in state emissions adopted in December 2007.

Assumptions

Assumes residential units are for sale units and are 1,466 sqft. Based on average sqft for units in the western United States (US Census).

Energy Use and Greenhouse Gases Emission from Energy Use - Existing

Commercial - Climate Zone 4 (Coastal California)

Land Use	Area (ft^2)	Energy Consumption (kWh/ft^2/Year)	Energy Consumption KWH/Year	lbs of CO_2e/Year
Retail (Other Than Mall)	605,676	11.3	6,844,139	4,327,635
Office	6,805,412	16.8	114,330,922	72,292,871
Public Assembly		19.7	0	0
Mercantile	0	17.3	0	0
Total Commercial	**7,411,088**	**65.1**	**121,175,060**	**76,620,505**
			Tons/year	**38,310**
			lbs/day	**209,919**

Residential

Land Use	Area (ft^2)	Energy Consumption (BTU/1000ft^2/Year)	Energy Consumption KWH/Year	lbs of CO_2e/Year
Residential	571,740	41.7	6,985,576	4,417,067
Total Residential	**571,740**	**83.4**	**6,985,576**	**4,417,067**
			Tons/year	**2,209**
			lbs/day	**12,102**

Total		Annual Electricity Use			CO2e
	KWH/Year	128,160,637		lbs/Year	81,037,573
	GWH/Year	128		MTons/year	36,758
				Tons/Year	40,519
				lbs/day	222,021

Sources

Note: New structures would be constructed to meet newer California Building Code energy efficiency requirements

[1] Commercial energy use based on Table C20 and C14 (where climate specific information was not available) US Energy Information Administration www.eia.doe.gov/emeu/cbecs/

[1] Residential energy use based on US Energy Information Administration www.eia.doe.gov Table US1. Total Energy Consumption, Expenditures, and Intensities, 2005. Part 1: Housing Unit Characteristics and Energy Usage Indicators Released January 2009.

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US EUA http://www.eia.doe.gov/oiaf/1605/ee-factors.html

GHG Potential - Coversion to CO2e	CH4	N20
	21	310

lbs of CO2e/kwh	0.632

* As reported to California Climate Action Registry (CCAR)

Conversion Factors

0.0005	lbs in a ton
0.9071847	Metric Tons
0.000293	BTU (British Thermal Units) in a kwh
471,000,000	tons of CO2e in 1990 and Goal for 2020:

Based on CARB emissions inventory of GHG emissions for the State of California in 1990 of 471 million short tons of CO2e (427 million metric tons of CO2e) of in state emissions adopted in December 2007.

Assumptions

Assumes residential units are for sale units and are 1,466 sqft. Based on average sqft for units in the western United States (US Census).

Energy Use and Greenhouse Gases Emission from Energy Use - Future No Project

Commercial - Climate Zone 4 (Coastal California)

Land Use	Area (ft^2)	Energy Consumption (kWh/ft^2/Year)	Energy Consumption KWH/Year	lbs of CO_2e/Year
Retail (Other Than Mall)	2,264,400	11.3	25,587,720	16,179,435
Office	5,055,550	16.8	84,933,240	53,704,349
Public Assembly		19.7	0	0
Mercantile	0	17.3	0	0
Total Commercial	**7,319,950**	**65.1**	**110,520,960**	**69,883,785**
			Tons/year	**34,942**
			lbs/day	**191,462**

Residential

Land Use	Area (ft^2)	Energy Consumption (BTU/1000ft^2/Year)	Energy Consumption KWH/Year	lbs of CO_2e/Year
Residential	15,049,956	41.7	183,881,867	116,270,803
Total Residential	**15,049,956**	**83.4**	**183,881,867**	**116,270,803**
			Tons/year	**58,135**
			lbs/day	**318,550**

Total		Annual Electricity Use			CO2e
	KWH/Year	294,402,827		lbs/Year	186,154,588
	GWH/Year	294		MTons/year	84,438
				Tons/Year	93,077
				lbs/day	510,013

Sources

Note: New structures would be constructed to meet newer California Building Code energy efficiency requirements

[1] Commercial energy use based on Table C20 and C14 (where climate specific information was not available) US Energy Information Administration www.eia.doe.gov/emeu/cbecs/

[1] Residential energy use based on US Energy Information Administration www.eia.doe.gov Table US1. Total Energy Consumption, Expenditures, and Intensities, 2005. Part 1: Housing Unit Characteristics and Energy Usage Indicators Released January 2009.

California Energy Emission Factors

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US EUA http://www.eia.doe.gov/oiaf/1605/ee-factors.html

GHG Potential - Coversion to CO2e	CH4	N20
	21	310

lbs of CO2e/kwh	0.632

* As reported to California Climate Action Registry (CCAR)

Conversion Factors

0.0005	lbs in a ton
0.9071847	Metric Tons
0.000293	BTU (British Thermal Units) in a kwh
471,000,000	tons of CO2e in 1990 and Goal for 2020:

Based on CARB emissions inventory of GHG emissions for the State of California in 1990 of 471 million short tons of CO2e (427 million metric tons of CO2e) of in state emissions adopted in December 2007.

Assumptions

Assumes residential units are for sale units and are 1,466 sqft. Based on average sqft for units in the western United States (US Census).

2007 Annual Entity Emissions: Electric Power Generation/Electric Utility Sector

Southern California Edison

2244 Walnut Grove Ave
Rosemead Ca 91770
Website: www.sce.com

Legend	
Blue	= required
Green	= required
Orange	= optional

Reporting Year: 2007
Direct Baseline Year: 2002
Indirect Baseline Year: 0
Reporting Scope: CA and US
Reporting Boundaries: Equity Share
Reporting Protocols: General Reporting Protocol Version 3.0 (April 2008)
Power/Utility Reporting Protocol Version 1.0 (April 2005)

Contact: Howard Gollay
Title: Manager
Telephone: 626 302 4122
Email: howard.gollay@sce.com
Industry Type: Electric Power Producer
Entity NAICS Code: 2211 Electric Power Generation, Transmission and Distribution
Facility NAICS Code:
Entity Description: Southern California Edison is one of the largest electric utilities in the U.S., and the largest subsidiary of Edison International. On an average day, SCE provides power for 13 million individuals, 430 communities and cities, 5,000 large businesses, and 280,000 small businesses. in Central and Southern California. Delivering that power across a 50,000 mile service area takes 16 utility interconnections, 4,900 transmission and distribution circuits, 365 transmission and distribution crews, the days and nights of 12,642 employees, and over a century of experience.

POWER/UTILITY ENTITY EMISSIONS

Direct Emissions from Owned Facilities	CO_2e	CO_2	CH_4	N_2O	HFCs*	PFCs*	SF_6	Unit
Mobile Combustion	**51,326.00**	51,326.00	0.00	0.00	n.a.	n.a.	n.a.	metric tons
Total Stationary Combustion	**6,868,412.00**	6,827,012.00	820.00	78.00	n.a.	n.a.	n.a.	metric tons
from Electric Power Generation, Transmission & Distributic	6,868,412.00	6,827,012.00	820.00	78.00	n.a.	n.a.	n.a.	metric tons
from Natural Gas-Related Activities	0.00	0.00	0.00	0.00	n.a.	n.a.	n.a.	metric tons
from Other On-Site Combustion	0.00	0.00	0.00	0.00	n.a.	n.a.	n.a.	metric tons
Process Emissions	**0.00**	0.00	0.00	0.00	0.00	0.00	n.a.	metric tons
Fugitive Emissions	**269,329.10**	0.00	0.00	0.00	0.00	0.00	11.27	metric tons
TOTAL DIRECT EMISSIONS	**7,189,067**	6,878,338.00	820.00	78.00	0.00	0.00	11.27	metric tons
% of Net Generation Delivered to CA	100							
% of Net Generation Delivered Outside of CA	0							
Total Direct Emissions from Deliveries to CA	**7,189,067**	6,878,338.00	820.00	78.00	0.00	0.00	11.27	metric tons
Total Direct Emissions from Deliveries outside of CA	**0**	0.00	0.00	0.00	0.00	0.00	0.00	metric tons

** Throughout this report, please note that HFCs and PFCs are classes of greenhouse gases that include many compounds. These columns may reflect the total emissions of multiple HFC and PFC compounds, each with a unique Global Warming Potential (GWP). The values you see in these columns represent the total metric tons of multiple HFC or PFC compounds summed together, not the metric tons of the individuals gases.*

Comments:

Indirect Emissions from Owned Facilities	CO_2e	CO_2	CH_4	N_2O	Unit
Electricity Purchased and Consumed	**0.00**	0.00	0.00	0.00	metric tons
Steam Purchased and Consumed	**0.00**	0.00	0.00	0.00	metric tons
Heat Purchased and Consumed	**0.00**	0.00	0.00	0.00	metric tons
Cooling Purchased and Consumed	**0.00**	0.00	0.00	0.00	metric tons
Total Transmission and Distribution Losses	**1,985,658.20**	1,982,911.00	14.20	7.90	metric tons
from Purchased Power	1,454,248.20	1,452,267.00	10.20	5.70	metric tons
from Wheeled Power (excluding Direct Access)	222,461.70	222,147.00	1.70	0.90	metric tons
from Direct Access	308,948.30	308,497.00	2.30	1.30	metric tons
TOTAL INDIRECT EMISSIONS	**1,985,658**	1,982,911.00	14.20	7.90	metric tons

Comments:

De Minimis Emissions	CO_2e	CO_2	CH_4	N_2O	HFCs*	PFCs*	SF_6	Unit
TOTAL DE MINIMIS EMISSIONS	**60,105**	0.00	259.61	8.26	31.51	0.00	0.00	metric tons

Notes: Emissions reported in this section are estimated; these estimates are reviewed by the verifier and found to be less than 5% of the total entity's emissions.

Comments:
These estimates are conservatively estimated per the GRP. For example, although some HFC leakage is assumed for the largest of SCE facilities, the General Office Complex, it in fact had no HFC leaks that required refills in 2007.

GENERATION & PURCHASED POWER INFORMATION	Amount	Unit	CO_2	Unit
Owned Generation Total (Net)	########	**MWh**	**6,827,012.00**	**metric tons**
Fossil Generation (Net)	11,339,359.00	MWh	6,827,012.00	metric tons
Biogenic Generation (Net)	0.00	MWh	0.00	metric tons
Geothermal Generation (Net)	0.00	MWh	0.00	metric tons
Other Renewable Generation (Net)	360,138.00	MWh	0.00	metric tons
Zero Emission Generation (Net)	19,604,576.00	MWh	0.00	metric tons
Co-generation (Net)	0.00	MWh	0.00	metric tons
Purchased Generation Total (Net)	########	**MWh**	########	**metric tons**
Purchased Fossil Generation (Net)	20,658,274.00	MWh	8,755,072.00	metric tons
Purchased Biogenic Generation (Net)	1,241,931.00	MWh	22,534.00	metric tons
Purchased Geothermal Generation (Net)	7,469,380.00	MWh	-	metric tons
Purchased Other Renewable Generation (Net)	3,404,770.00	MWh	0.00	metric tons
Purchased Zero Emission Generation (Net)	1,078,118.00	MWh	0.00	metric tons
Purchased Co-generation (Net)	12,831,457.00	MWh	6,064,179.00	metric tons
Purchased Wholesale Power (Net)	5,970,767.00	MWh	2,379,845.00	metric tons
TOTAL FOSSIL GENERATION/PURCHASES	########	**MWh**	########	**metric tons**
TOTAL FROM BIOGENIC SOURCES	**1,241,931.00**	**MWh**	**22,534.00**	**metric tons**
TOTAL OTHER GENERATION/PURCHASES	########	**MWh**	**8,444,024.00**	**metric tons**
TOTAL FROM ALL GENERATION SOURCES	########	**MWh**	########	**metric tons**
TOTAL FROM RETAIL SALES	0.00	MWh	0.00	metric tons

Note: CO_2 from biogenic sources (indicated in green) are not included in entity's total CO_2, nor used to calculate efficiency metrics. Biogenic Generation consists of biomass, landfill gas, waste-to-energy. Renewable Generation consists of small hydro, solar, wind. Zero Emission Generation consists of large hydro and nuclear. Co-generation consists of the electricity component only. CO_2 from Geothermal includes anthropogenic process emissions. Purchased Wholesale Power consists of Spot Market purchases.

Comments:
The goethermal CO2 emissions are estimated to be 508,217 metric tons. These emissions are excluded from the worksheet to be consistent with the PUP that states that only emissions from stationary sources should be included in the metric.

OTHER BIOGENIC EMISSIONS	CO_2e	CO_2	CH_4	N_2O	Unit
Stationary Combustion	0.00	0.00	0.00	0.00	metric tons
Mobile Combustion	0.00	0.00	0.00	0.00	metric tons
Process Emissions	0.00	0.00	0.00	0.00	metric tons
Fugitive Emissions	0.00	0.00	0.00	0.00	metric tons
TOTAL OTHER BIOGENIC EMISSIONS	0	0.00	0.00	0.00	metric tons

Note: Other Biogenic Emissions sources include non-generation stationary combustion or mobile combustion (ethanol or biodiesel vehicles).
Comments:

Do you deliver power to an end-user/retail customer? (Enter yes or no) **Yes**

EMISSIONS EFFICIENCY METRICS	Ratio
Electricity Deliveries:	630.89 lbs CO_2/MWh delivered *(includes CO_2 from owned and purchased generation)*
Net Generation:	480.80 lbs CO_2/MWh net owned generation *(fossil, geothermal, hydroelectric, nuclear, solar, etc.)*
Net Fossil Generation:	1,327.32 lbs CO_2/MWh net owned fossil generation only

Note: Efficiency metrics are calculated using CO_2 emissions from stationary combustion for purposes of electricity generation. CO_2 emissions from biogenic sources are not included in the Electricity Deliveries metric; however MWh from biogenic and all other generation sources are included. Geothermal generation CO_2 emissions and MWh are included in Net Generation metric but not Net Fossil Generation metric. Combustion sources related to any non-electricity generating natural gas operations are not included.

Comments:

OPTIONAL INFORMATION

Information in this section is voluntarily provided by the participant for public information, but is not required and is not verified under the California Registry protocols.

Optional Emissions	CO_2e	CO_2	CH_4	N_2O	HFCs*	PFCs*	SF_6	Unit
TOTAL OPTIONAL EMISSIONS	**0**	0.00	0.00	0.00	0.00	0.00	0.00	metric tons

Comments:

Information on Environmental Goals and Programs:

Information on GHG Risk and Liability:

Company Activities Related to Renewable Energy

Purchases of Tradable Renewable Certificates: metric tons CO_2e

Sales of Tradable Renewable Certificates: metric tons CO_2e

Purpose of Transaction:

Geographic Origin of Certificates:

Parties Notified of Transaction(s):

Comments:

Company Activities to Offset GHG Emissions

Purchases of GHG Emission Offsets: metric tons CO_2e

Sales of GHG Emission Offsets: metric tons CO_2e

Type of Project(s):

Terms of Purchase/Sale:

Parties Notified of Transaction(s):

Comments:

Company Activities to Improve Energy Efficiency

Description:

Estimated Annual Energy Efficiency Savings: MWh

therms

Reasons for Undertaking Energy Efficiency Programs:

Comments:

Other Company Actions to Reduce GHG Emissions:

Benefits of Actions:

Other Emissions Efficiency Metric(s):

Greenhouse Gas Emissions Summary

Existing GHG Emissions Inventory

Source	*CO_{2e} Emissions Tons/Year* [1]	*CO_{2e} Emissions MTons/Year* [1]	*Percent of Total*
Transportation Sector[1]	152,741	138,564	73%
Electricity Sector			
Water Demand and Treatment[3]	863	783	0%
Purchased Energy[2]	40,519	36,758	19%
Total Energy Emissions	41,382	37,541	20%
Recycling and Waste Sector[4]	4,264	3,868	2%
Area Sources Sector[5]	12,160	11,032	6%
Annual Average Construction[6]	0	0	0%
Total all Sectors	**210,547**	**191,005**	**100%**
Employees + Residents	**15,407**	**15,407**	
Per-Capita	13.7	12.4	

Adopted Business As Usual GHG Emissions Inventory

Source	*CO_{2e} Emissions Tons/Year* [1]	*CO_{2e} Emissions MTons/Year* [1]	*Percent of Total*
Transportation Sector[1]	401,737	364,449	71%
Electricity Sector			
Water Demand and Treatment[3]	2,637	2,392	0%
Purchased Energy[2]	93,077	84,438	16%
Total Energy Emissions	95,714	86,830	17%
Recycling and Waste Sector[4]	12,111	10,987	2%
Area Sources Sector[5]	35,804	32,481	6%
Annual Average Construction[6]	22,342	20,268	4%
Total all Sectors	**567,708**	**515,016**	**100%**
Employees + Residents	**30,039**	**30,039**	
Per-Capita	18.9	17.1	

Amendment to the PTMLUP Business As Usual GHG Emissions Inventory

Source	*CO_{2e} Emissions Tons/Year* [1]	*CO_{2e} Emissions MTons/Year* [1]	*Percent of Total*
Transportation Sector[1]	734,105	665,969	66%
Electricity Sector			
Water Demand and Treatment[3]	5,786	5,249	1%
Purchased Energy[2]	210,131	190,628	19%
Total Energy Emissions	215,917	195,877	19%
Recycling and Waste Sector[4]	30,248	27,441	3%
Area Sources Sector[5]	77,088	69,933	7%
Annual Average Construction[6]	53,346	48,394	5%
Total all Sectors	**1,110,703**	**1,007,613**	**100%**
Employees + Residents	**64,864**	**64,864**	
Per-Capita	17.1	15.5	

Net Increase in GHG Emissions from Existing

Source	*Existing CO_{2e} Emissions MTons/Year* [1]	*Amendment to MLUP CO_{2e} Emissions MTons/Year* [1]	*Net Increase CO_{2e} Emissions MTons/Year* [1]
Transportation Sector[1]	138,564	665,969	527,405
Electricity Sector			
Water Demand and Treatment[3]	783	5,249	4,466
Purchased Energy[2]	36,758	190,628	153,869
Total Energy Emissions	37,541	195,877	158,335
Recycling and Waste Sector[4]	3,868	27,441	23,572
Area Sources Sector[5]	11,032	69,933	58,901
Annual Average Construction[6]	0	48,394	48,394
Total all Sectors	191,005	1,007,613	816,608

Net Increase in GHG Emissions from Adopted

Source	Adopted CO_{2e} Emissions MTons/Year [1]	Amendment to MLUP CO_{2e} Emissions MTons/Year [1]	Net Increase CO_{2e} Emissions MTons/Year [1]
Transportation Sector[1]	364,449	665,969	301,519
Electricity Sector	0	0	
Water Demand and Treatment[3]	2,392	5,249	2,857
Purchased Energy[2]	84,438	190,628	106,190
Total Energy Emissions	86,830	195,877	109,046
Recycling and Waste Sector[4]	10,987	27,441	16,454
Area Sources Sector[5]	32,481	69,933	37,452
Annual Average Construction[6]	20,268	48,394	28,126
Total all Sectors	515,016	1,007,613	492,597
Employees + Residents	**30,039**	**64,864**	
Per-Capita	17.1	15.5	-1.6

1 URBEMIS2007, Version 9.2.4. Assumes CO_2 represents 99.6 percent of total CO_2e emissions from gasoline while CH_4, N_2O, and Fluorinated Gases comprise the remaining percent (BAAQMD 2008).

2. Includes energy required for water conveyance, treatment, distribution, and wastewater treatment. Water use estimated from SCAQMD Water and Electricity Usage in Southern California. CO_{2e} emissions calculated using energy usage factors and emission rates from the United States Department of Energy, Southern California Edison. Based on California Energy Commission. 2005, November. California's Water-Energy Relationship. CEC-700.2005-011-SF.

3. CO_{2e} emissions calculated using energy usage factors and emission rates from the United States Department of Energy, EIA, and Southern California Edison. Based on the EIA 2003 Commercial Building Energy Consumption, December 2006, Table C14 and C20. Note: Does not take into account increase in appliance and building energy efficiency.

4. CO_{2e} emissions from waste generation are based on the Waste Reduction Model (WARM) created by the USEPA and the waste stream jurisdictional profile for the City of Anaheim (CIWMB)

5. Service population includes people who live (residents) and work (employees) in the Platinum Triangle. The Adopted MLUP generates 15,399 residents and 14,640 employees for a service population of 30,039 people. The Amendment to the MLUP would generate 23,364 residents and 41,500 employees for a service population of 64,864 people.

6. URBEMIS2007, Version 9.2.4. Based on the default construction equipment mix and assumes CO2 represents 99.7 percent of total from diesel CO_{2e} while CH_4, N_2O, and fluorinated gases comprise the remaining percent (BAAQMD 2008). Does not include a reduction in GHG emissions from implementation of the low carbon fuel standard which would reduce the carbon content of fuel proposed by year 2020, thereby reducing GHG emissions from fuel from construction equipment by 10 percent.

Note CARB CO2e based on fuel consumption and not EMFAC

1 short ton (Ton) equals 0.9071847

GREENHOUSE GAS BEST MANAGEMENT PRACTICES

	Future No Project Reductions CO_{2e} Emissions MTons/Year [1] 2030	Future With Project Reductions CO_{2e} Emissions MTons/Year [1] 2030	Based on 2020 reductions
15% above 2005 Title 24- Area Sources[1]	3,217	8,835	
15% above 2005 Title 24- Energy[1]	7,152	23,080	
Renewable Energy Portfolio - Energy	16,230	35,185	
Renewable Energy Portfolio - Water	502	1,102	
Transportation - increase in Fuel Efficiency Year	155,984	285,035	
Total Reductions from BAU - Year 2012	183,086	353,237	

[1] Based on a 42.8 percent increase in fuel efficiency in passenger vehicles from 2008 to 2020 in the CARB 2008 Technical Advisory. Pavley 2 would require an average fleet fuel economy of new cars of 42.5 mpg by 2020 compared to an existing average of 24.4 mpg (CARB 2008b).

[2] Based on an increase in renewable energy use from 12 percent to 33 percent by 2020. (CARB 2008a)

[3] Based on an increase in 15 percent energy efficiency from the 2005 to 2008 Building and Energy Efficiency Standards (Title 24, California Building

GHG Emissions Inventory with Scoping Plan Reductions			
	Adpoted	*Amendment to MLUP*	
Source	*CO_{2e} Emissions MTons/Year [1] 2030*	*CO_{2e} Emissions MTons/Year [1] 2030*	*Percent of Total*
Transportation Sector[1]	208,465	380,934	58%
Electricity Sector			
Water Demand and Treatment[3]	1,890	4,147	1%
Purchased Energy[2]	61,056	132,362	20%
Total Energy Emissions	62,946	136,509	21%
Recycling and Waste Sector[4]	10,987	27,441	4%
Area Sources Sector[5]	29,264	61,098	9%
Annual Average Construction[6]	20,268	48,394	7%
Total all Sectors	**331,930**	**654,375**	**100%**
Employees + Residents	**30,039**	**64,864**	
Per-Capita	11.0	10.1	
Percent Decrease from BAU	**36%**	**35%**	
Increase from Existing		**463,371**	
PercentIncrease from Existing		243%	

Service Population

	Existing	Adopted	MLUP
Residents	585	15399	23364
Employees	14,822	14640	41500
	15407	30039	64864

GHG Emissions Analysis -- Summary Report

Version 8 (5/06)

GHG Emissions Waste Management Analysis for
Prepared by:
Project Period for this Analysis: 01/00/00 to 01/00/00

GHG Emissions from Baseline Waste Management ($MTCO_2E$): 3,868

Commodity	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total $MTCO_2E$
Glass	-	663	-	NA	25
Mixed Paper, Broad	-	6,220	-	NA	2,166
Mixed Metals	-	1,184	-	NA	45
Mixed Plastics	-	1,867	-	NA	71
Mixed Organics	NA	5,864	-	-	1,385
Mixed MSW	NA	205	-	NA	87
Concrete	-	2,325	NA	NA	88

GHG Emissions Analysis -- Summary Report

Version 8 (5/06)

GHG Emissions Waste Management Analysis for
Prepared by:
Project Period for this Analysis: 01/00/00 to 01/00/00

GHG Emissions from Baseline Waste Management ($MTCO_2E$): 12,111

Commodity	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total $MTCO_2E$
Glass	-	2,094	-	NA	80
Mixed Paper, Broad	-	17,397	-	NA	6,058
Mixed Metals	-	3,170	-	NA	120
Mixed Plastics	-	5,345	-	NA	203
Mixed Organics	NA	20,682	-	-	4,886
Mixed MSW	NA	1,335	-	NA	566
Concrete	-	5,207	NA	NA	198

GHG Emissions Analysis -- Summary Report

Version 8 (5/06)

GHG Emissions Waste Management Analysis for
Prepared by:
Project Period for this Analysis: 01/00/00 to 01/00/00

GHG Emissions from Baseline Waste Management ($MTCO_2E$): 30,248

Commodity	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total $MTCO_2E$
Glass	-	5,216	-	NA	198
Mixed Paper, Broad	-	44,998	-	NA	15,668
Mixed Metals	-	8,317	-	NA	316
Mixed Plastics	-	13,723	-	NA	522
Mixed Organics	NA	49,928	-	-	11,796
Mixed MSW	NA	2,819	-	NA	1,195
Concrete	-	14,548	NA	NA	553

California Integrated Waste Management Board

Jurisdiction Profile for City of Anaheim

General Information

Jurisdiction:	Anaheim
County:	Orange
Size:	44.0 Sq./Miles
Geographic Area:	Southern California
Rural/Urban:	Urban
(L)EA:	CIWMB

State Representatives

5 Senate District(s) More...

Ashburn, Roy (R)	Senate District 18
Correa, Lou (D)	Senate District 34
Florez, Dean (D)	Senate District 16
Huff, Bob (R)	Senate District 29
Walters, Mimi (R)	Senate District 33

9 Assembly District(s) More...

Conway, Connie (R)	Assembly District 34
Duvall, Michael D. (R)	Assembly District 72
Fuller, Jean (R)	Assembly District 32
Hagman, Curt (R)	Assembly District 60
Mendoza, Tony (D)	Assembly District 56
Miller, Jeff (R)	Assembly District 71
Silva, Jim (R)	Assembly District 67
Solorio, Jose (D)	Assembly District 69
Tran, Van (R)	Assembly District 68

US Senate Information | US Representative Information

County Information | City Information

Household Materials Generators (2004)

	Amount	Rank (of 530)
Population:	310,700	16
Population Density:	7,061 /sq mile	
Single Family Units:	49,188	24
Multi-Family Units:	46,077	13
Mobile Home Units:	4,086	35

Business Materials Generators

Taxable Sales (2000):	$4,263,199,000
Employment (2000):	146,426
Businesses (2000):	10,576

Household Materials Collection

Data not available

Business Materials Collection

Commercial On-Site Recyclable Pickup: No

Commercial On-Site Greenwaste Pickup: No

Top 4 Specific Materials in Household Disposal

(Based on 1999 Statewide Estimates)

Top 4 Specific Materials in Business Disposal

(Based on 1999 Statewide Estimates)

Specific Material Type	%	Tons
Food	20.0%	24,314
Leaves and Grass	10.5%	12,742
Remainder/Composite Organic	9.5%	11,523
Remainder/Composite Paper	8.1%	9,797

More...

Specific Material Type	%	Tons/Yr
Food	16.0%	34,503
Remainder/Composite Paper	10.3%	22,248
Uncoated Corrugated Cardboard	6.7%	14,400
Lumber	6.3%	13,509

More...

Household Disposal by Overall Materials
(Based on 2000 Statewide Estimates)

Material General Category	%	Tons
Other Organic	45.0%	54,700
Paper	27.5%	33,369
Plastic	8.8%	10,754
Metal	4.6%	5,625
Construction and Demolition	4.5%	5,445
Glass	4.0%	4,906
Mixed Residue	4.0%	4,864
Household Hazardous Waste	0.3%	393
Special Waste	0.0%	29

Business Disposal By General Material Category
(Based on 1999 Statewide Estimates)

Material Category	%	Tons
Paper	32.4%	69,983
Glass	3.4%	7,249
Metal	6.2%	13,457
Plastic	9.7%	20,861
Other Organic	29.6%	63,857
Construction and Demolition	12.4%	26,679
Household Hazardous Waste	0.2%	431
Special Waste	0.1%	168
Mixed Residue	0.6%	1,401

Household Disposal Rates (2008)
33% of overall disposal

Total Household Waste Disposal (Tons/Yr.)	0

Top 4 Business Types with the Most Disposal
(Based on 2000 Statewide Estimates)

Sector	%	Tons/Yr
Construction	12.9%	27,039
Retail Trade-Restaurants	12.7%	26,595
Services-Hotels / Lodging	8.3%	17,367
Services-Medical / Health	7.3%	15,252

More...

Business Disposal Rates (2004)
67.0% of overall disposal

Total Business Waste Disposal (Tons/Yr)	--

Waste Stream Information Profiles http://www.ciwmb.ca.gov/Profiles/
CIWMB Webmaster: webmaster@ciwmb.ca.gov (916) 341-6141 Disclaimer Information

Energy From Waste Disposal - Existing

Jurisdiction Profile for the City of Anaheim		
	Business	Household
Other Organic	29.6%	45.0%
Paper	32.4%	27.5%
Plastic	9.7%	8.8%
Metal	6.2%	4.6%
Construction and Demolition	12.4%	4.5%
Glass	3.4%	4.0%
Mixed Residue	0.6%	4.0%
Household Hazardous Waste	0.2%	0.3%
Special Waste	0.1%	0.0%
Source: California Integrated Waste Management Board. 2009. Jurisdiction Profile for City of Anahiem. Based on 1999 (business) and 2000 (household) Statewide Estimates http://www.ciwmb.ca.gov/Profiles/Juris/JurProfile1.asp?RG=C&JURID=15&JUR=Anaheim		

Project-Generated Solid Waste		
	lbs/day	
Commercial/Business		100,930
Total Business		100,930
Household		5,014
Total Household		5,014
Total		105,944

Project-Generated Solid Waste by Type		
	lbs/day	tons/year
Other Organic	32,132	5,864
Paper	34,080	6,220
Plastic	10,231	1,867
Metal	6,488	1,184
Construction and Demolition	12,741	2,325
Glass	3,632	663
Mixed Residue	806	147
Household Hazardous Waste	217	40
Special Waste	101	18
	100,429	18,328
Conversion	0.0005	tons/lbs

WARM FIELDS		
Glass	663	
Mixed Paper (general)	6,220	
Mixed Metals	1,184	
Mixed Plastics	1,867	
Mixed Organics	5,864	
Mixed MSW	205	
Concrete[1]	2,325	
FROM WARM	**3,868**	**Metric Tons of CO2e**
	4,264	**Short Tons of CO2e**
metric tons to short tons conversion	1.102311	tons/metric ton

Energy From Waste Disposal - Future No Project

Jurisdiction Profile for the City of Anaheim		
	Business	Household
Other Organic	29.6%	45.0%
Paper	32.4%	27.5%
Plastic	9.7%	8.8%
Metal	6.2%	4.6%
Construction and Demolition	12.4%	4.5%
Glass	3.4%	4.0%
Mixed Residue	0.6%	4.0%
Household Hazardous Waste	0.2%	0.3%
Special Waste	0.1%	0.0%
Source: California Integrated Waste Management Board. 2009. Jurisdiction Profile for City of Anahiem. Based on 1999 (business) and 2000 (household) Statewide Estimates http://www.ciwmb.ca.gov/Profiles/Juris/JurProfile1.asp?RG=C&JURID=15&JUR=Anaheim		

Project-Generated Solid Waste		
	lbs/day	
Commercial/Business		182,190
Total Business		182,190
Household		131,991
Total Household		131,991
Total		314,181

Project-Generated Solid Waste by Type		
	lbs/day	tons/year
Other Organic	113,324	20,682
Paper	95,327	17,397
Plastic	29,288	5,345
Metal	17,367	3,170
Construction and Demolition	28,531	5,207
Glass	11,474	2,094
Mixed Residue	6,373	1,163
Household Hazardous Waste	760	139
Special Waste	182	33
	302,627	55,229
Conversion	0.0005	tons/lbs

WARM FIELDS		
Glass	2,094	
Mixed Paper (general)	17,397	
Mixed Metals	3,170	
Mixed Plastics	5,345	
Mixed Organics	20,682	
Mixed MSW	1,335	
Concrete[1]	5,207	
FROM WARM	**12,111**	**Metric Tons of CO2e**
	13,350	**Short Tons of CO2e**
metric tons to short tons conversion	1.102311	tons/metric ton

Energy From Waste Disposal - Future PTMLUP

Jurisdiction Profile for the City of Anaheim		
	Business	Household
Other Organic	29.6%	45.0%
Paper	32.4%	27.5%
Plastic	9.7%	8.8%
Metal	6.2%	4.6%
Construction and Demolition	12.4%	4.5%
Glass	3.4%	4.0%
Mixed Residue	0.6%	4.0%
Household Hazardous Waste	0.2%	0.3%
Special Waste	0.1%	0.0%
Source: California Integrated Waste Management Board. 2009. Jurisdiction Profile for City of Anahiem. Based on 1999 (business) and 2000 (household) Statewide Estimates http://www.ciwmb.ca.gov/Profiles/Juris/JurProfile1.asp?RG=C&JURID=15&JUR=Anaheim		

Project-Generated Solid Waste		
	lbs/day	
Commercial/Business		554,647
Total Business		554,647
Household		243,116
Total Household		243,116
Total		797,763

Project-Generated Solid Waste by Type		
	lbs/day	tons/year
Other Organic	273,578	49,928
Paper	246,563	44,998
Plastic	75,195	13,723
Metal	45,571	8,317
Construction and Demolition	79,716	14,548
Glass	28,583	5,216
Mixed Residue	13,053	2,382
Household Hazardous Waste	1,839	336
Special Waste	555	101
	764,652	139,549
Conversion	0.0005	tons/lbs

WARM FIELDS			
Glass	5,216		
Mixed Paper (general)	44,998		
Mixed Metals	8,317		
Mixed Plastics	13,723		
Mixed Organics	49,928		
Mixed MSW	2,819		
Concrete[1]	14,548		
FROM WARM	**30,248**		**Metric Tons of CO2e**
	33,343		**Short Tons of CO2e**
metric tons to short tons conversion		1.102311	tons/metric ton

Energy Use from Project-Related Water Demand - Existing

Total project-related water demand	588,942	gallons per day
	214,963,830	gallons per year
	215.0	million gallons per day
Energy-intensity	2,730,041	Kwh/MG

CO2 Emissions from Water Demand

	1,726,239	lbs of CO2e/year
	4,729	lbs of CO2e/day
Project-related water-energy	863	tons of CO2e/year
	783	metrics tons of CO2e/year

Table 1-3: Electricity Use in Typical Urban Water Systems	Kwh/MG	
	Northern California	Southern California
Water Supply and Conveyance	150	8,900
Water Treatement	100	100
Water Distribution	1,200	1,200
Wastewater Treatment	2,500	2,500
Total	3,950	12,700

California Energy Emission Factors		
0.631	lbs of CO2/kwh	Southern California Edison*
0.0000067	lbs of CH4/kwh	For California
0.00000378	lbs of N20/kwh	For California
Coversion to CO2e	CH4	N20
	21	310
lbs of CO2e/kwh	**0.632**	

* As reported to California Climate Action Registry (CCAR) and for SCE

Sources

California Energy Commission. 2005, November. California's Water-Energy Relationship. CEC-700.2005-011-SF.

US Energy Information Administration (US EIA). 2002, April. Voluntary Reporting of Greenhouse Gases Program, Average Electricty Factors by State and Region. http://www.eia.doe.gov/oiaf/1605/ee-factors.html

Energy Intensity: Amount of energy consumed per unit of water to perform water management-related actions (i.e., desalting, pumping, presurizing, groundwater extraction, conveyance, and treatment)
Kwh/MG: kilowatt hours per million gallon of water

Conversion:	0.0005	lbs in a ton
	0.9071847	tons in a Metric Ton

Assumptions for water demand: Based on the Initial Study, USS section.

[1] LA CEQA Thresholds Guide, Exhibit M.2-12, p. M.2-25. http://www.ci.la.ca.us/ead/EADWeb-AQD/thresholdsguide.htm.

[2] Water consumption is estimated to be approximately 125 percent of the estimated wastewater generated (per Program EIR p. 3.15-18).

[3] Not including commercial structures.

[4] 230 gpd is the wastewater generation factor for a three-bedroom single-family residence (LA CEQA Thresholds Guide, 2006).

[5] 160 gpd is the wastewater generation factor for a two-bedroom multifamily residential unit (LA CEQA Thresholds Guide, 2006).

Energy Use from Project-Related Water Demand - Future No Project

Total project-related water demand	1,799,215	gallons per day
	656,713,475	gallons per year
	656.7	million gallons per day
Energy-intensity	8,340,261	Kwh/MG

CO2 Emissions from Water Demand

	5,273,651	lbs of CO2e/year
	14,448	lbs of CO2e/day
Project-related water-energy	2,637	tons of CO2e/year
	2,392	metrics tons of CO2e/year

Table 1-3: Electricity Use in Typical Urban Water Systems	Kwh/MG	
	Northern California	Southern California
Water Supply and Conveyance	150	8,900
Water Treatement	100	100
Water Distribution	1,200	1,200
Wastewater Treatment	2,500	2,500
Total	3,950	12,700

California Energy Emission Factors		
0.631	lbs of CO2/kwh	Southern California Edison*
0.0000067	lbs of CH4/kwh	For California
0.00000378	lbs of N20/kwh	For California
Coversion to CO2e	CH4	N20
	21	310
lbs of CO2e/kwh	**0.632**	

* As reported to California Climate Action Registry (CCAR) and for SCE

Sources

California Energy Commission. 2005, November. California's Water-Energy Relationship. CEC-700.2005-011-SF.

US Energy Information Administration (US EIA). 2002, April. Voluntary Reporting of Greenhouse Gases Program, Average Electricty Factors by State and Region. http://www.eia.doe.gov/oiaf/1605/ee-factors.html

Energy Intensity: Amount of energy consumed per unit of water to perform water management-related actions (i.e., desalting, pumping, presurizing, groundwater extraction, conveyance, and treatment)
Kwh/MG: kilowatt hours per million gallon of water

Conversion:	0.0005	lbs in a ton
	0.9071847	tons in a Metric Ton

Assumptions for water demand: Based on the Initial Study, USS section.

[1] LA CEQA Thresholds Guide, Exhibit M.2-12, p. M.2-25. http://www.ci.la.ca.us/ead/EADWeb-AQD/thresholdsguide.htm.

[2] Water consumption is estimated to be approximately 125 percent of the estimated wastewater generated (per Program EIR p. 3.15-18).

[3] Not including commercial structures.

[4] 230 gpd is the wastewater generation factor for a three-bedroom single-family residence (LA CEQA Thresholds Guide, 2006).

[5] 160 gpd is the wastewater generation factor for a two-bedroom multifamily residential unit (LA CEQA Thresholds Guide, 2006).

Energy Use from Project-Related Water Demand - Future With Project

Total project-related water demand	3,948,335	gallons per day
	1,441,142,275	gallons per year
	1441.1	million gallons per day
Energy-intensity	18,302,507	Kwh/MG

CO2 Emissions from Water Demand

	11,572,904	lbs of CO2e/year
	31,707	lbs of CO2e/day
Project-related water-energy	5,786	tons of CO2e/year
	5,249	metrics tons of CO2e/year

Table 1-3: Electricity Use in Typical Urban Water Systems	Kwh/MG	
	Northern California	Southern California
Water Supply and Conveyance	150	8,900
Water Treatement	100	100
Water Distribution	1,200	1,200
Wastewater Treatment	2,500	2,500
Total	3,950	12,700

California Energy Emission Factors		
0.631	lbs of CO2/kwh	Southern California Edison*
0.0000067	lbs of CH4/kwh	For California
0.00000378	lbs of N20/kwh	For California
Coversion to CO2e	CH4	N20
	21	310
lbs of CO2e/kwh	**0.632**	

* As reported to California Climate Action Registry (CCAR) and for SCE

Sources

California Energy Commission. 2005, November. California's Water-Energy Relationship. CEC-700.2005-011-SF.

US Energy Information Administration (US EIA). 2002, April. Voluntary Reporting of Greenhouse Gases Program, Average Electricty Factors by State and Region. http://www.eia.doe.gov/oiaf/1605/ee-factors.html

Energy Intensity: Amount of energy consumed per unit of water to perform water management-related actions (i.e., desalting, pumping, presurizing, groundwater extraction, conveyance, and treatment)
Kwh/MG: kilowatt hours per million gallon of water

Conversion:	0.0005	lbs in a ton
	0.9071847	tons in a Metric Ton

Assumptions for water demand: Based on the Initial Study, USS section.

[1] LA CEQA Thresholds Guide, Exhibit M.2-12, p. M.2-25. http://www.ci.la.ca.us/ead/EADWeb-AQD/thresholdsguide.htm.

[2] Water consumption is estimated to be approximately 125 percent of the estimated wastewater generated (per Program EIR p. 3.15-18).

[3] Not including commercial structures.

[4] 230 gpd is the wastewater generation factor for a three-bedroom single-family residence (LA CEQA Thresholds Guide, 2006).

[5] 160 gpd is the wastewater generation factor for a two-bedroom multifamily residential unit (LA CEQA Thresholds Guide, 2006).

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: P:\COA-51.0E\Technical Studies\AIr\URBEMIS\FutureNP.urb924
Project Name: PTMLUP-FutureNoProject
Project Location: Orange County
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006
Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	109.44	28.55	17.20	0.00	0.05	0.05	35,661.67

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	109.44	28.55	17.20	0.00	0.05	0.05	35,661.67

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	2.16	28.51	16.34	0.00	0.05	0.05	35,623.90
Hearth	0.08	0.03	0.01	0.00	0.00	0.00	36.23
Landscape	0.07	0.01	0.85	0.00	0.00	0.00	1.54
Consumer Products	96.11						
Architectural Coatings	11.02						
TOTALS (tons/year, unmitigated)	109.44	28.55	17.20	0.00	0.05	0.05	35,661.67

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 10% to 0%
Percentage of residences with wood fireplaces changed from 5% to 0%
Percentage of residences with natural gas fireplaces changed from 85% to 100%

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: P:\COA-51.0E\Technical Studies\AIr\URBEMIS\FutureNP.urb924
Project Name: PTMLUP-FutureNoProject
Project Location: Orange County
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006
Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	599.19	156.30	94.17	0.00	0.31	0.31	195,207.89

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	599.19	156.30	94.17	0.00	0.31	0.31	195,207.89

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	11.81	156.24	89.53	0.00	0.29	0.29	195,199.46
Hearth - No Summer Emissions							
Landscape	0.37	0.06	4.64	0.00	0.02	0.02	8.43
Consumer Products	526.65						
Architectural Coatings	60.36						
TOTALS (lbs/day, unmitigated)	599.19	156.30	94.17	0.00	0.31	0.31	195,207.89

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 10% to 0%
Percentage of residences with wood fireplaces changed from 5% to 0%
Percentage of residences with natural gas fireplaces changed from 85% to 100%

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Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: P:\COA-51.0E\Technical Studies\AIr\URBEMIS\FutureNP.urb924
Project Name: PTMLUP-FutureNoProject
Project Location: Orange County
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006
Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	602.14	213.00	113.69	0.36	4.88	4.83	267,665.34

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	602.14	213.00	113.69	0.36	4.88	4.83	267,665.34

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	11.81	156.24	89.53	0.00	0.29	0.29	195,199.46
Hearth	3.32	56.76	24.16	0.36	4.59	4.54	72,465.88
Landscaping - No Winter Emissions							
Consumer Products	526.65						
Architectural Coatings	60.36						
TOTALS (lbs/day, unmitigated)	602.14	213.00	113.69	0.36	4.88	4.83	267,665.34

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 10% to 0%
Percentage of residences with wood fireplaces changed from 5% to 0%
Percentage of residences with natural gas fireplaces changed from 85% to 100%

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: P:\COA-51.0E\Technical Studies\AIr\URBEMIS\FutureWP.urb924
Project Name: PTMLUP-FutureWithProject
Project Location: Orange County
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006
Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	210.07	61.84	39.01	0.00	0.12	0.11	76,780.70

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	210.07	61.84	39.01	0.00	0.12	0.11	76,780.70

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	4.64	61.77	37.86	0.00	0.12	0.11	76,711.91
Hearth	0.26	0.05	0.02	0.00	0.00	0.00	66.74
Landscape	0.09	0.02	1.13	0.00	0.00	0.00	2.05
Consumer Products	177.03						
Architectural Coatings	28.05						
TOTALS (tons/year, unmitigated)	210.07	61.84	39.01	0.00	0.12	0.11	76,780.70

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 10% to 0%
Percentage of residences with wood fireplaces changed from 5% to 0%
Percentage of residences with natural gas fireplaces changed from 85% to 100%

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: P:\COA-51.0E\Technical Studies\AIr\URBEMIS\FutureWP.urb924
Project Name: PTMLUP-FutureWithProject
Project Location: Orange County
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006
Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1,149.66	338.53	213.64	0.00	0.65	0.64	420,350.45

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1,149.66	338.53	213.64	0.00	0.65	0.64	420,350.45

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	25.43	338.45	207.46	0.00	0.63	0.62	420,339.21
Hearth - No Summer Emissions							
Landscape	0.49	0.08	6.18	0.00	0.02	0.02	11.24
Consumer Products	970.03						
Architectural Coatings	153.71						
TOTALS (lbs/day, unmitigated)	1,149.66	338.53	213.64	0.00	0.65	0.64	420,350.45

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 10% to 0%
Percentage of residences with wood fireplaces changed from 5% to 0%
Percentage of residences with natural gas fireplaces changed from 85% to 100%

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Combined Winter Emissions Reports (Pounds/Day)

File Name: P:\COA-51.0E\Technical Studies\AIr\URBEMIS\FutureWP.urb924
Project Name: PTMLUP-FutureWithProject
Project Location: Orange County
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006
Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1,155.29	443.01	251.95	0.67	9.08	8.98	553,814.50

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1,155.29	443.01	251.95	0.67	9.08	8.98	553,814.50

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	25.43	338.45	207.46	0.00	0.63	0.62	420,339.21
Hearth	6.12	104.56	44.49	0.67	8.45	8.36	133,475.29
Landscaping - No Winter Emissions							
Consumer Products	970.03						
Architectural Coatings	153.71						
TOTALS (lbs/day, unmitigated)	1,155.29	443.01	251.95	0.67	9.08	8.98	553,814.50

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 10% to 0%
Percentage of residences with wood fireplaces changed from 5% to 0%
Percentage of residences with natural gas fireplaces changed from 85% to 100%

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Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: P:\COA-51.0E\Technical Studies\AIr\URBEMIS\sampleconstruction.urb924

Project Name: Construction Sample

Project Location: Orange County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (tons/year unmitigated)	17.95	82.44	214.38	0.31	350.90	3.69	354.59	73.47	3.35	76.82	32,436.33
2010 TOTALS (tons/year mitigated)	17.95	82.44	214.38	0.31	58.43	3.69	62.12	12.39	3.35	15.74	32,436.33
Percent Reduction	0.00	0.00	0.00	0.00	83.35	0.00	82.48	83.13	0.00	79.51	0.00
2011 TOTALS (tons/year unmitigated)	28.77	127.00	337.67	0.52	592.43	5.77	598.20	124.05	5.22	129.27	54,753.79
2011 TOTALS (tons/year mitigated)	28.77	127.00	337.67	0.52	98.65	5.77	104.42	20.93	5.22	26.15	54,753.79
Percent Reduction	0.00	0.00	0.00	0.00	83.35	0.00	82.54	83.13	0.00	79.77	0.00
2012 TOTALS (tons/year unmitigated)	27.40	115.60	315.61	0.52	594.71	5.30	600.01	124.52	4.79	129.31	54,958.62
2012 TOTALS (tons/year mitigated)	27.40	115.60	315.61	0.52	99.03	5.30	104.33	21.01	4.79	25.79	54,958.62
Percent Reduction	0.00	0.00	0.00	0.00	83.35	0.00	82.61	83.13	0.00	80.05	0.00
2013 TOTALS (tons/year unmitigated)	26.01	104.30	293.34	0.52	594.71	4.85	599.56	124.52	4.37	128.90	54,955.64
2013 TOTALS (tons/year mitigated)	26.01	104.30	293.34	0.52	99.03	4.85	103.88	21.01	4.37	25.38	54,955.64
Percent Reduction	0.00	0.00	0.00	0.00	83.35	0.00	82.67	83.13	0.00	80.31	0.00
2014 TOTALS (tons/year unmitigated)	24.75	93.55	273.40	0.52	594.71	4.42	599.13	124.52	3.97	128.49	54,952.81
2014 TOTALS (tons/year mitigated)	24.75	93.55	273.40	0.52	99.03	4.42	103.45	21.01	3.97	24.98	54,952.81
Percent Reduction	0.00	0.00	0.00	0.00	83.35	0.00	82.73	83.13	0.00	80.56	0.00

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2015 TOTALS (tons/year unmitigated)	23.53	83.48	254.55	0.52	594.71	4.05	598.76	124.52	3.63	128.16	54,950.73
2015 TOTALS (tons/year mitigated)	23.53	83.48	254.55	0.52	99.03	4.05	103.08	21.01	3.63	24.64	54,950.73
Percent Reduction	0.00	0.00	0.00	0.00	83.35	0.00	82.78	83.13	0.00	80.77	0.00
2016 TOTALS (tons/year unmitigated)	22.49	75.14	238.10	0.52	594.71	3.73	598.44	124.52	3.34	127.86	54,946.79
2016 TOTALS (tons/year mitigated)	22.49	75.14	238.10	0.52	99.03	3.73	102.76	21.01	3.34	24.34	54,946.79
Percent Reduction	0.00	0.00	0.00	0.00	83.35	0.00	82.83	83.13	0.00	80.96	0.00
2017 TOTALS (tons/year unmitigated)	21.49	67.67	221.71	0.52	592.43	3.45	595.88	124.05	3.08	127.12	54,733.77
2017 TOTALS (tons/year mitigated)	21.49	67.67	221.71	0.52	98.65	3.45	102.10	20.93	3.08	24.00	54,733.77
Percent Reduction	0.00	0.00	0.00	0.00	83.35	0.00	82.87	83.13	0.00	81.12	0.00
2018 TOTALS (tons/year unmitigated)	20.72	61.66	208.14	0.52	594.71	3.21	597.93	124.52	2.86	127.39	54,942.57
2018 TOTALS (tons/year mitigated)	20.72	61.66	208.14	0.52	99.03	3.21	102.25	21.01	2.86	23.87	54,942.57
Percent Reduction	0.00	0.00	0.00	0.00	83.35	0.00	82.90	83.13	0.00	81.26	0.00
2019 TOTALS (tons/year unmitigated)	19.96	56.11	194.79	0.52	594.71	2.99	597.70	124.52	2.66	127.18	54,941.55
2019 TOTALS (tons/year mitigated)	19.96	56.11	194.79	0.52	99.03	2.99	102.02	21.01	2.66	23.66	54,941.55
Percent Reduction	0.00	0.00	0.00	0.00	83.35	0.00	82.93	83.13	0.00	81.39	0.00
2020 TOTALS (tons/year unmitigated)	19.30	51.47	183.07	0.53	596.99	2.87	599.86	125.00	2.54	127.54	55,151.14
2020 TOTALS (tons/year mitigated)	19.30	51.47	183.07	0.53	99.41	2.87	102.28	21.09	2.54	23.63	55,151.14
Percent Reduction	0.00	0.00	0.00	0.00	83.35	0.00	82.95	83.13	0.00	81.47	0.00
2021 TOTALS (tons/year unmitigated)	17.29	40.83	138.27	0.52	594.71	2.61	597.32	124.52	2.30	126.82	54,934.43
2021 TOTALS (tons/year mitigated)	17.29	40.83	138.27	0.52	99.03	2.61	101.64	21.01	2.30	23.31	54,934.43
Percent Reduction	0.00	0.00	0.00	0.00	83.35	0.00	82.98	83.13	0.00	81.62	0.00
2022 TOTALS (tons/year unmitigated)	17.23	40.68	137.74	0.52	592.43	2.60	595.03	124.05	2.29	126.34	54,723.95
2022 TOTALS (tons/year mitigated)	17.23	40.68	137.74	0.52	98.65	2.60	101.25	20.93	2.29	23.22	54,723.95
Percent Reduction	0.00	0.00	0.00	0.00	83.35	0.00	82.98	83.13	0.00	81.62	0.00
2023 TOTALS (tons/year unmitigated)	17.23	40.68	137.74	0.52	592.43	2.60	595.03	124.05	2.29	126.34	54,723.95
2023 TOTALS (tons/year mitigated)	17.23	40.68	137.74	0.52	98.65	2.60	101.25	20.93	2.29	23.22	54,723.95
Percent Reduction	0.00	0.00	0.00	0.00	83.35	0.00	82.98	83.13	0.00	81.62	0.00
2024 TOTALS (tons/year unmitigated)	17.36	40.99	138.80	0.53	596.99	2.62	599.61	125.00	2.31	127.31	55,144.90
2024 TOTALS (tons/year mitigated)	17.36	40.99	138.80	0.53	99.41	2.62	102.03	21.09	2.31	23.40	55,144.90
Percent Reduction	0.00	0.00	0.00	0.00	83.35	0.00	82.98	83.13	0.00	81.62	0.00

2025 TOTALS (tons/year unmitigated)	17.29	40.83	138.27	0.52	594.71	2.61	597.32	124.52	2.30	126.82	54,934.43
2025 TOTALS (tons/year mitigated)	17.29	40.83	138.27	0.52	99.03	2.61	101.64	21.01	2.30	23.31	54,934.43
Percent Reduction	0.00	0.00	0.00	0.00	83.35	0.00	82.98	83.13	0.00	81.62	0.00
2026 TOTALS (tons/year unmitigated)	16.33	36.90	115.11	0.52	594.71	2.51	597.22	124.52	2.21	126.74	54,931.79
2026 TOTALS (tons/year mitigated)	16.33	36.90	115.11	0.52	99.03	2.51	101.54	21.01	2.21	23.22	54,931.79
Percent Reduction	0.00	0.00	0.00	0.00	83.35	0.00	83.00	83.13	0.00	81.68	0.00
2027 TOTALS (tons/year unmitigated)	16.33	36.90	115.11	0.52	594.71	2.51	597.22	124.52	2.21	126.74	54,931.79
2027 TOTALS (tons/year mitigated)	16.33	36.90	115.11	0.52	99.03	2.51	101.54	21.01	2.21	23.22	54,931.79
Percent Reduction	0.00	0.00	0.00	0.00	83.35	0.00	83.00	83.13	0.00	81.68	0.00
2028 TOTALS (tons/year unmitigated)	16.27	36.76	114.67	0.52	592.43	2.50	594.93	124.05	2.20	126.25	54,721.32
2028 TOTALS (tons/year mitigated)	16.27	36.76	114.67	0.52	98.65	2.50	101.15	20.93	2.20	23.13	54,721.32
Percent Reduction	0.00	0.00	0.00	0.00	83.35	0.00	83.00	83.13	0.00	81.68	0.00
2029 TOTALS (tons/year unmitigated)	16.33	36.90	115.11	0.52	594.71	2.51	597.22	124.52	2.21	126.74	54,931.79
2029 TOTALS (tons/year mitigated)	16.33	36.90	115.11	0.52	99.03	2.51	101.54	21.01	2.21	23.22	54,931.79
Percent Reduction	0.00	0.00	0.00	0.00	83.35	0.00	83.00	83.13	0.00	81.68	0.00
2030 TOTALS (tons/year unmitigated)	6.82	15.41	48.07	0.22	248.37	1.05	249.41	52.00	0.92	52.93	22,940.86
2030 TOTALS (tons/year mitigated)	6.82	15.41	48.07	0.22	41.36	1.05	42.41	8.77	0.92	9.70	22,940.86
Percent Reduction	0.00	0.00	0.00	0.00	83.35	0.00	83.00	83.13	0.00	81.68	0.00

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Combined Annual Emissions Reports (Tons/Year)

File Name: P:\COA-51.0E\Technical Studies\AIr\URBEMIS\sampleconstruction_adopted.urb924
Project Name: Construction Sample - Adopted MLUP
Project Location: Orange County
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006
Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (tons/year unmitigated)	7.05	39.51	85.84	0.12	63.65	1.88	65.53	13.37	1.71	15.08	13,152.25
2010 TOTALS (tons/year mitigated)	7.05	39.51	85.84	0.12	10.46	1.88	12.34	2.26	1.71	3.97	13,152.25
Percent Reduction	0.00	0.00	0.00	0.00	83.57	0.00	81.16	83.10	0.00	73.66	0.00
2011 TOTALS (tons/year unmitigated)	11.21	61.14	135.45	0.20	107.46	2.95	110.41	22.57	2.68	25.25	22,201.76
2011 TOTALS (tons/year mitigated)	11.21	61.14	135.45	0.20	17.66	2.95	20.61	3.81	2.68	6.50	22,201.76
Percent Reduction	0.00	0.00	0.00	0.00	83.57	0.00	81.33	83.10	0.00	74.27	0.00
2012 TOTALS (tons/year unmitigated)	10.58	55.95	126.87	0.20	107.87	2.71	110.58	22.65	2.46	25.11	22,285.00
2012 TOTALS (tons/year mitigated)	10.58	55.95	126.87	0.20	17.73	2.71	20.43	3.83	2.46	6.28	22,285.00
Percent Reduction	0.00	0.00	0.00	0.00	83.57	0.00	81.52	83.10	0.00	74.97	0.00
2013 TOTALS (tons/year unmitigated)	9.96	50.80	118.20	0.20	107.87	2.48	110.35	22.65	2.24	24.90	22,283.91
2013 TOTALS (tons/year mitigated)	9.96	50.80	118.20	0.20	17.73	2.48	20.21	3.83	2.24	6.07	22,283.91
Percent Reduction	0.00	0.00	0.00	0.00	83.57	0.00	81.69	83.10	0.00	75.61	0.00
2014 TOTALS (tons/year unmitigated)	9.38	45.86	110.43	0.20	107.87	2.25	110.12	22.65	2.03	24.68	22,282.87
2014 TOTALS (tons/year mitigated)	9.38	45.86	110.43	0.20	17.73	2.25	19.97	3.83	2.03	5.86	22,282.87
Percent Reduction	0.00	0.00	0.00	0.00	83.57	0.00	81.86	83.10	0.00	76.27	0.00
2015 TOTALS (tons/year unmitigated)	8.82	41.12	103.08	0.20	107.87	2.06	109.93	22.65	1.86	24.51	22,282.12
2015 TOTALS (tons/year mitigated)	8.82	41.12	103.08	0.20	17.73	2.06	19.79	3.83	1.86	5.69	22,282.12
Percent Reduction	0.00	0.00	0.00	0.00	83.57	0.00	82.00	83.10	0.00	76.80	0.00
2016 TOTALS (tons/year unmitigated)	8.34	37.13	96.69	0.20	107.87	1.88	109.75	22.65	1.69	24.35	22,280.66
2016 TOTALS (tons/year mitigated)	8.34	37.13	96.69	0.20	17.73	1.88	19.61	3.83	1.69	5.52	22,280.66
Percent Reduction	0.00	0.00	0.00	0.00	83.57	0.00	82.13	83.10	0.00	77.32	0.00
2017 TOTALS (tons/year unmitigated)	7.88	33.51	90.30	0.20	107.46	1.72	109.18	22.57	1.55	24.12	22,194.38
2017 TOTALS (tons/year mitigated)	7.88	33.51	90.30	0.20	17.66	1.72	19.38	3.81	1.55	5.36	22,194.38
Percent Reduction	0.00	0.00	0.00	0.00	83.57	0.00	82.25	83.10	0.00	77.76	0.00

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2018 TOTALS (tons/year unmitigated)	7.50	30.56	85.06	0.20	107.87	1.59	109.46	22.65	1.43	24.08	22,279.14
2018 TOTALS (tons/year mitigated)	7.50	30.56	85.06	0.20	17.73	1.59	19.32	3.83	1.43	5.26	22,279.14
Percent Reduction	0.00	0.00	0.00	0.00	83.57	0.00	82.35	83.10	0.00	78.18	0.00
2019 TOTALS (tons/year unmitigated)	7.15	27.83	79.88	0.20	107.87	1.46	109.33	22.65	1.31	23.96	22,278.78
2019 TOTALS (tons/year mitigated)	7.15	27.83	79.88	0.20	17.73	1.46	19.19	3.83	1.31	5.14	22,278.78
Percent Reduction	0.00	0.00	0.00	0.00	83.57	0.00	82.45	83.10	0.00	78.56	0.00
2020 TOTALS (tons/year unmitigated)	6.83	25.53	75.37	0.20	108.29	1.39	109.67	22.74	1.24	23.98	22,363.83
2020 TOTALS (tons/year mitigated)	6.83	25.53	75.37	0.20	17.80	1.39	19.18	3.84	1.24	5.08	22,363.83
Percent Reduction	0.00	0.00	0.00	0.00	83.57	0.00	82.51	83.10	0.00	78.81	0.00
2021 TOTALS (tons/year unmitigated)	6.05	21.24	58.25	0.20	107.87	1.28	109.15	22.65	1.14	23.79	22,276.24
2021 TOTALS (tons/year mitigated)	6.05	21.24	58.25	0.20	17.73	1.28	19.01	3.83	1.14	4.97	22,276.24
Percent Reduction	0.00	0.00	0.00	0.00	83.57	0.00	82.59	83.10	0.00	79.12	0.00
2022 TOTALS (tons/year unmitigated)	6.03	21.16	58.02	0.20	107.46	1.27	108.73	22.57	1.13	23.70	22,190.89
2022 TOTALS (tons/year mitigated)	6.03	21.16	58.02	0.20	17.66	1.27	18.93	3.81	1.13	4.95	22,190.89
Percent Reduction	0.00	0.00	0.00	0.00	83.57	0.00	82.59	83.10	0.00	79.12	0.00
2023 TOTALS (tons/year unmitigated)	6.03	21.16	58.02	0.20	107.46	1.27	108.73	22.57	1.13	23.70	22,190.89
2023 TOTALS (tons/year mitigated)	6.03	21.16	58.02	0.20	17.66	1.27	18.93	3.81	1.13	4.95	22,190.89
Percent Reduction	0.00	0.00	0.00	0.00	83.57	0.00	82.59	83.10	0.00	79.12	0.00
2024 TOTALS (tons/year unmitigated)	6.07	21.32	58.47	0.20	108.29	1.28	109.57	22.74	1.14	23.88	22,361.59
2024 TOTALS (tons/year mitigated)	6.07	21.32	58.47	0.20	17.80	1.28	19.08	3.84	1.14	4.99	22,361.59
Percent Reduction	0.00	0.00	0.00	0.00	83.57	0.00	82.59	83.10	0.00	79.12	0.00
2025 TOTALS (tons/year unmitigated)	6.05	21.24	58.25	0.20	107.87	1.28	109.15	22.65	1.14	23.79	22,276.24
2025 TOTALS (tons/year mitigated)	6.05	21.24	58.25	0.20	17.73	1.28	19.01	3.83	1.14	4.97	22,276.24
Percent Reduction	0.00	0.00	0.00	0.00	83.57	0.00	82.59	83.10	0.00	79.12	0.00
2026 TOTALS (tons/year unmitigated)	5.68	19.67	49.41	0.20	107.87	1.24	109.11	22.65	1.10	23.76	22,275.31
2026 TOTALS (tons/year mitigated)	5.68	19.67	49.41	0.20	17.73	1.24	18.97	3.83	1.10	4.93	22,275.31
Percent Reduction	0.00	0.00	0.00	0.00	83.57	0.00	82.62	83.10	0.00	79.25	0.00
2027 TOTALS (tons/year unmitigated)	5.68	19.67	49.41	0.20	107.87	1.24	109.11	22.65	1.10	23.76	22,275.31
2027 TOTALS (tons/year mitigated)	5.68	19.67	49.41	0.20	17.73	1.24	18.97	3.83	1.10	4.93	22,275.31
Percent Reduction	0.00	0.00	0.00	0.00	83.57	0.00	82.62	83.10	0.00	79.25	0.00
2028 TOTALS (tons/year unmitigated)	5.65	19.59	49.22	0.20	107.46	1.23	108.69	22.57	1.10	23.66	22,189.96
2028 TOTALS (tons/year mitigated)	5.65	19.59	49.22	0.20	17.66	1.23	18.89	3.81	1.10	4.91	22,189.96
Percent Reduction	0.00	0.00	0.00	0.00	83.57	0.00	82.62	83.10	0.00	79.25	0.00
2029 TOTALS (tons/year unmitigated)	5.68	19.67	49.41	0.20	107.87	1.24	109.11	22.65	1.10	23.76	22,275.31
2029 TOTALS (tons/year mitigated)	5.68	19.67	49.41	0.20	17.73	1.24	18.97	3.83	1.10	4.93	22,275.31
Percent Reduction	0.00	0.00	0.00	0.00	83.57	0.00	82.62	83.10	0.00	79.25	0.00

2030 TOTALS (tons/year unmitigated)	2.37	8.21	20.64	0.08	45.05	0.52	45.57	9.46	0.46	9.92	9,302.72
2030 TOTALS (tons/year mitigated)	2.37	8.21	20.64	0.08	7.40	0.52	7.92	1.60	0.46	2.06	9,302.72
Percent Reduction	0.00	0.00	0.00	0.00	83.57	0.00	82.62	83.10	0.00	79.25	0.00

Phase Assumptions

Phase: Demolition 6/1/2010 - 6/1/2030 - Default Demolition Description
Building Volume Total (cubic feet): 2613813
Building Volume Daily (cubic feet): 37.57
On Road Truck Travel (VMT): 0.75
Off-Road Equipment:
3 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

Phase: Mass Grading 6/1/2010 - 6/1/2030 - Default Mass Site Grading/Excavation Description
Total Acres Disturbed: 820
Maximum Daily Acreage Disturbed: 41
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 13.69
Off-Road Equipment:
1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day
3 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 6/1/2010 - 6/1/2030 - Default Trenching Description
Off-Road Equipment:
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 6/1/2010 - 6/1/2030 - Default Paving Description
Acres to be Paved: 57.62
Off-Road Equipment:
1 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day
2 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day

Phase: Building Construction 6/1/2010 - 6/1/2030 - Default Building Construction Description
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day
3 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 6/1/2010 - 6/1/2030 - Default Architectural Coating Description
Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100
Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50
Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250
Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 6/1/2010 - 6/1/2030 - Default Mass Site Grading/Excavation Description
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:
PM10: 5% PM25: 5%
For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:
PM10: 69% PM25: 69%
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:
PM10: 44% PM25: 44%
For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

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Combined Annual Emissions Reports (Tons/Year)

File Name: P:\COA-51.0E\Technical Studies\AIr\URBEMIS\sampleconstruction.urb924
Project Name: Construction Sample - Amendment to MLUP
Project Location: Orange County
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006
Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (tons/year unmitigated)	17.07	72.97	210.38	0.30	64.44	3.35	67.79	13.65	3.03	16.68	31,405.90
2010 TOTALS (tons/year mitigated)	17.07	72.97	210.38	0.30	11.26	3.35	14.60	2.54	3.03	5.57	31,405.90
Percent Reduction	0.00	0.00	0.00	0.00	82.53	0.00	78.46	81.38	0.00	66.59	0.00
2011 TOTALS (tons/year unmitigated)	27.39	112.18	331.50	0.51	108.80	5.25	114.05	23.04	4.75	27.79	53,014.11
2011 TOTALS (tons/year mitigated)	27.39	112.18	331.50	0.51	19.00	5.25	24.25	4.29	4.75	9.04	53,014.11
Percent Reduction	0.00	0.00	0.00	0.00	82.53	0.00	78.74	81.38	0.00	67.48	0.00
2012 TOTALS (tons/year unmitigated)	26.08	101.87	309.96	0.52	109.22	4.82	114.04	23.13	4.34	27.48	53,212.25
2012 TOTALS (tons/year mitigated)	26.08	101.87	309.96	0.52	19.08	4.82	23.89	4.31	4.34	8.65	53,212.25
Percent Reduction	0.00	0.00	0.00	0.00	82.53	0.00	79.05	81.38	0.00	68.51	0.00
2013 TOTALS (tons/year unmitigated)	24.74	91.66	288.20	0.52	109.22	4.41	113.63	23.13	3.97	27.10	53,209.27
2013 TOTALS (tons/year mitigated)	24.74	91.66	288.20	0.52	19.08	4.41	23.49	4.31	3.97	8.28	53,209.27
Percent Reduction	0.00	0.00	0.00	0.00	82.53	0.00	79.33	81.38	0.00	69.46	0.00
2014 TOTALS (tons/year unmitigated)	23.55	82.05	268.70	0.52	109.22	4.01	113.23	23.13	3.60	26.73	53,206.44
2014 TOTALS (tons/year mitigated)	23.55	82.05	268.70	0.52	19.08	4.01	23.09	4.31	3.60	7.91	53,206.44
Percent Reduction	0.00	0.00	0.00	0.00	82.53	0.00	79.61	81.38	0.00	70.42	0.00
2015 TOTALS (tons/year unmitigated)	22.40	73.03	250.25	0.52	109.22	3.69	112.91	23.13	3.30	26.43	53,204.37
2015 TOTALS (tons/year mitigated)	22.40	73.03	250.25	0.52	19.08	3.69	22.76	4.31	3.30	7.61	53,204.37
Percent Reduction	0.00	0.00	0.00	0.00	82.53	0.00	79.84	81.38	0.00	71.22	0.00
2016 TOTALS (tons/year unmitigated)	21.43	65.59	234.15	0.52	109.22	3.39	112.60	23.13	3.02	26.15	53,200.43
2016 TOTALS (tons/year mitigated)	21.43	65.59	234.15	0.52	19.08	3.39	22.46	4.31	3.02	7.33	53,200.43
Percent Reduction	0.00	0.00	0.00	0.00	82.53	0.00	80.05	81.38	0.00	71.98	0.00
2017 TOTALS (tons/year unmitigated)	20.48	58.97	218.08	0.51	108.80	3.13	111.93	23.04	2.79	25.83	52,994.10
2017 TOTALS (tons/year mitigated)	20.48	58.97	218.08	0.51	19.00	3.13	22.14	4.29	2.79	7.08	52,994.10
Percent Reduction	0.00	0.00	0.00	0.00	82.53	0.00	80.22	81.38	0.00	72.59	0.00

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2018 TOTALS (tons/year unmitigated)	19.76	53.66	204.74	0.52	109.22	2.93	112.15	23.13	2.60	25.73	53,196.21
2018 TOTALS (tons/year mitigated)	19.76	53.66	204.74	0.52	19.08	2.93	22.01	4.31	2.60	6.91	53,196.21
Percent Reduction	0.00	0.00	0.00	0.00	82.53	0.00	80.38	81.38	0.00	73.16	0.00
2019 TOTALS (tons/year unmitigated)	19.04	48.78	191.61	0.52	109.22	2.73	111.95	23.13	2.42	25.55	53,195.19
2019 TOTALS (tons/year mitigated)	19.04	48.78	191.61	0.52	19.08	2.73	21.81	4.31	2.42	6.73	53,195.19
Percent Reduction	0.00	0.00	0.00	0.00	82.53	0.00	80.52	81.38	0.00	73.67	0.00
2020 TOTALS (tons/year unmitigated)	18.43	44.73	180.07	0.52	109.64	2.63	112.27	23.22	2.33	25.55	53,398.09
2020 TOTALS (tons/year mitigated)	18.43	44.73	180.07	0.52	19.15	2.63	21.78	4.32	2.33	6.65	53,398.09
Percent Reduction	0.00	0.00	0.00	0.00	82.53	0.00	80.60	81.38	0.00	73.97	0.00
2021 TOTALS (tons/year unmitigated)	16.47	34.68	135.49	0.52	109.22	2.39	111.61	23.13	2.10	25.24	53,188.07
2021 TOTALS (tons/year mitigated)	16.47	34.68	135.49	0.52	19.08	2.39	21.47	4.31	2.10	6.41	53,188.07
Percent Reduction	0.00	0.00	0.00	0.00	82.53	0.00	80.77	81.38	0.00	74.59	0.00
2022 TOTALS (tons/year unmitigated)	16.41	34.55	134.97	0.51	108.80	2.38	111.18	23.04	2.10	25.14	52,984.29
2022 TOTALS (tons/year mitigated)	16.41	34.55	134.97	0.51	19.00	2.38	21.39	4.29	2.10	6.39	52,984.29
Percent Reduction	0.00	0.00	0.00	0.00	82.53	0.00	80.77	81.38	0.00	74.59	0.00
2023 TOTALS (tons/year unmitigated)	16.41	34.55	134.97	0.51	108.80	2.38	111.18	23.04	2.10	25.14	52,984.29
2023 TOTALS (tons/year mitigated)	16.41	34.55	134.97	0.51	19.00	2.38	21.39	4.29	2.10	6.39	52,984.29
Percent Reduction	0.00	0.00	0.00	0.00	82.53	0.00	80.77	81.38	0.00	74.59	0.00
2024 TOTALS (tons/year unmitigated)	16.53	34.81	136.01	0.52	109.64	2.40	112.04	23.22	2.11	25.33	53,391.86
2024 TOTALS (tons/year mitigated)	16.53	34.81	136.01	0.52	19.15	2.40	21.55	4.32	2.11	6.44	53,391.86
Percent Reduction	0.00	0.00	0.00	0.00	82.53	0.00	80.77	81.38	0.00	74.59	0.00
2025 TOTALS (tons/year unmitigated)	16.47	34.68	135.49	0.52	109.22	2.39	111.61	23.13	2.10	25.24	53,188.07
2025 TOTALS (tons/year mitigated)	16.47	34.68	135.49	0.52	19.08	2.39	21.47	4.31	2.10	6.41	53,188.07
Percent Reduction	0.00	0.00	0.00	0.00	82.53	0.00	80.77	81.38	0.00	74.59	0.00
2026 TOTALS (tons/year unmitigated)	15.52	30.93	112.42	0.52	109.22	2.30	111.52	23.13	2.02	25.15	53,185.44
2026 TOTALS (tons/year mitigated)	15.52	30.93	112.42	0.52	19.08	2.30	21.38	4.31	2.02	6.33	53,185.44
Percent Reduction	0.00	0.00	0.00	0.00	82.53	0.00	80.83	81.38	0.00	74.84	0.00
2027 TOTALS (tons/year unmitigated)	15.52	30.93	112.42	0.52	109.22	2.30	111.52	23.13	2.02	25.15	53,185.44
2027 TOTALS (tons/year mitigated)	15.52	30.93	112.42	0.52	19.08	2.30	21.38	4.31	2.02	6.33	53,185.44
Percent Reduction	0.00	0.00	0.00	0.00	82.53	0.00	80.83	81.38	0.00	74.84	0.00
2028 TOTALS (tons/year unmitigated)	15.46	30.82	111.99	0.51	108.80	2.29	111.09	23.04	2.01	25.06	52,981.66
2028 TOTALS (tons/year mitigated)	15.46	30.82	111.99	0.51	19.00	2.29	21.30	4.29	2.01	6.31	52,981.66
Percent Reduction	0.00	0.00	0.00	0.00	82.53	0.00	80.83	81.38	0.00	74.84	0.00

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2029 TOTALS (tons/year unmitigated)	15.52	30.93	112.42	0.52	109.22	2.30	111.52	23.13	2.02	25.15	53,185.44
2029 TOTALS (tons/year mitigated)	15.52	30.93	112.42	0.52	19.08	2.30	21.38	4.31	2.02	6.33	53,185.44
Percent Reduction	0.00	0.00	0.00	0.00	82.53	0.00	80.83	81.38	0.00	74.84	0.00
2030 TOTALS (tons/year unmitigated)	6.48	12.92	46.95	0.22	45.61	0.96	46.57	9.66	0.84	10.51	22,211.54
2030 TOTALS (tons/year mitigated)	6.48	12.92	46.95	0.22	7.97	0.96	8.93	1.80	0.84	2.64	22,211.54
Percent Reduction	0.00	0.00	0.00	0.00	82.53	0.00	80.83	81.38	0.00	74.84	0.00

Phase Assumptions

Phase: Demolition 6/1/2010 - 6/1/2030 - Default Demolition Description
Building Volume Total (cubic feet): 1477273
Building Volume Daily (cubic feet): 21.97
On Road Truck Travel (VMT): 0.44
Off-Road Equipment:
3 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

Phase: Mass Grading 6/1/2010 - 6/1/2030 - Default Mass Site Grading/Excavation Description
Total Acres Disturbed: 820
Maximum Daily Acreage Disturbed: 41
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 13.69
Off-Road Equipment:
1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day
3 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 6/1/2010 - 6/1/2030 - Default Trenching Description
Off-Road Equipment:
4 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
2 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 6/1/2010 - 6/1/2030 - Default Paving Description
Acres to be Paved: 225.45
Off-Road Equipment:
1 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day
2 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day

Phase: Building Construction 6/1/2010 - 6/1/2030 - Default Building Construction Description
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day
3 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 6/1/2010 - 6/1/2030 - Default Architectural Coating Description
Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100
Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50
Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250
Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 6/1/2010 - 6/1/2030 - Default Mass Site Grading/Excavation Description
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:
PM10: 5% PM25: 5%
For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:
PM10: 69% PM25: 69%
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:
PM10: 44% PM25: 44%
For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

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Combined Summer Emissions Reports (Pounds/Day)

File Name: P:\COA-51.0E\Technical Studies\AIr\URBEMIS\sampleconstruction_adopted.urb924
Project Name: Construction Sample - Adopted MLUP
Project Location: Orange County
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006
Off-Road Vehicle Emissions Based on: OFFROAD2007

Phase Assumptions

Phase: Demolition 6/1/2010 - 6/1/2030 - Default Demolition Description
Building Volume Total (cubic feet): 2613813
Building Volume Daily (cubic feet): 37.57
On Road Truck Travel (VMT): 0.75
Off-Road Equipment:
3 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

Phase: Mass Grading 6/1/2010 - 6/1/2030 - Default Mass Site Grading/Excavation Description
Total Acres Disturbed: 820
Maximum Daily Acreage Disturbed: 41
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 13.69
Off-Road Equipment:
1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day
3 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 6/1/2010 - 6/1/2030 - Default Trenching Description
Off-Road Equipment:
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 6/1/2010 - 6/1/2030 - Default Paving Description
Acres to be Paved: 57.62
Off-Road Equipment:
1 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day
2 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day

Phase: Building Construction 6/1/2010 - 6/1/2030 - Default Building Construction Description
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day
3 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 6/1/2010 - 6/1/2030 - Default Architectural Coating Description
Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100
Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50
Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250
Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:
CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 6/1/2010-12/31/2010 Active	91.56	513.10	1,114.75	1.55	135.85	24.45	160.30	29.33	22.26	51.59	170,808.46
Asphalt 06/01/2010-06/01/2030	3.28	19.36	11.75	0.00	0.01	1.69	1.70	0.00	1.55	1.56	1,591.17
Paving Off-Gas	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	3.20	19.17	10.47	0.00	0.00	1.68	1.68	0.00	1.55	1.55	1,418.81
Paving On Road Diesel	0.01	0.12	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00	16.80
Paving Worker Trips	0.04	0.07	1.23	0.00	0.01	0.00	0.01	0.00	0.00	0.01	155.56
Building 06/01/2010-06/01/2030	50.67	333.33	1,016.49	1.54	6.55	14.96	21.51	2.32	13.53	15.86	153,797.61
Building Off Road Diesel	4.08	23.31	14.31	0.00	0.00	1.67	1.67	0.00	1.54	1.54	2,259.28
Building Vendor Trips	21.80	263.08	197.62	0.48	1.75	10.65	12.40	0.59	9.77	10.36	49,838.64
Building Worker Trips	24.79	46.94	804.56	1.06	4.80	2.64	7.44	1.73	2.23	3.96	101,699.69
Coating 06/01/2010-06/01/2030	18.64	0.04	0.61	0.00	0.00	0.00	0.01	0.00	0.00	0.00	77.44
Architectural Coating	18.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.04	0.61	0.00	0.00	0.00	0.01	0.00	0.00	0.00	77.44
Demolition 06/01/2010-06/01/2030	5.58	46.53	27.46	0.00	0.02	2.23	2.25	0.01	2.05	2.06	4,291.17
Fugitive Dust	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00
Demo Off Road Diesel	5.54	46.44	26.23	0.00	0.00	2.22	2.22	0.00	2.05	2.05	4,132.45
Demo On Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.16
Demo Worker Trips	0.04	0.07	1.23	0.00	0.01	0.00	0.01	0.00	0.00	0.01	155.56
Mass Grading 06/01/2010-	11.30	96.09	49.23	0.00	129.26	4.69	133.95	27.00	4.31	31.31	9,211.98
Mass Grading Dust	0.00	0.00	0.00	0.00	129.24	0.00	129.24	26.99	0.00	26.99	0.00
Mass Grading Off Road Diesel	11.19	95.53	46.62	0.00	0.00	4.66	4.66	0.00	4.29	4.29	8,842.87
Mass Grading On Road Diesel	0.03	0.42	0.15	0.00	0.00	0.02	0.02	0.00	0.02	0.02	58.01
Mass Grading Worker Trips	0.08	0.14	2.46	0.00	0.01	0.01	0.02	0.01	0.01	0.01	311.11
Trenching 06/01/2010-06/01/2030	2.09	17.75	9.20	0.00	0.01	0.88	0.89	0.00	0.81	0.81	1,839.08
Trenching Off Road Diesel	2.06	17.69	8.22	0.00	0.00	0.88	0.88	0.00	0.81	0.81	1,714.64
Trenching Worker Trips	0.03	0.06	0.98	0.00	0.01	0.00	0.01	0.00	0.00	0.00	124.44

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 6/1/2010 - 6/1/2030 - Default Mass Site Grading/Excavation Description

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:
PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:
PM10: 69% PM25: 69%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:
PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: P:\COA-51.0E\Technical Studies\AIr\URBEMIS\sampleconstruction.urb924
Project Name: Construction Sample - Amendment to MLUP
Project Location: Orange County
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006
Off-Road Vehicle Emissions Based on: OFFROAD2007

Phase Assumptions

Phase: Demolition 6/1/2010 - 6/1/2030 - Default Demolition Description
Building Volume Total (cubic feet): 1477273
Building Volume Daily (cubic feet): 21.97
On Road Truck Travel (VMT): 0.44
Off-Road Equipment:
3 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

Phase: Mass Grading 6/1/2010 - 6/1/2030 - Default Mass Site Grading/Excavation Description
Total Acres Disturbed: 820
Maximum Daily Acreage Disturbed: 41
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 13.69
Off-Road Equipment:
1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day
3 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 6/1/2010 - 6/1/2030 - Default Trenching Description
Off-Road Equipment:
4 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
2 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 6/1/2010 - 6/1/2030 - Default Paving Description
Acres to be Paved: 225.45
Off-Road Equipment:
1 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day
2 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day

Phase: Building Construction 6/1/2010 - 6/1/2030 - Default Building Construction Description
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day
3 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 6/1/2010 - 6/1/2030 - Default Architectural Coating Description
Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100
Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50
Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250
Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:
CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 6/1/2010-12/31/2010 Active	**221.73**	**947.70**	**2,732.23**	**3.96**	146.17	**43.47**	189.64	33.01	**39.37**	72.38	**407,868.85**
Asphalt 06/01/2010-06/01/2030	3.39	19.71	11.88	0.00	0.01	1.70	1.71	0.00	1.57	1.57	1,640.09
Paving Off-Gas	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	3.20	19.17	10.47	0.00	0.00	1.68	1.68	0.00	1.55	1.55	1,418.81
Paving On Road Diesel	0.03	0.47	0.17	0.00	0.00	0.02	0.02	0.00	0.02	0.02	65.72
Paving Worker Trips	0.04	0.07	1.23	0.00	0.01	0.00	0.01	0.00	0.00	0.01	155.56
Building 06/01/2010-06/01/2030	120.33	749.78	2,623.63	3.95	16.86	33.09	49.95	6.00	29.82	35.82	388,842.56
Building Off Road Diesel	4.08	23.31	14.31	0.00	0.00	1.67	1.67	0.00	1.54	1.54	2,259.28
Building Vendor Trips	49.90	600.85	456.15	1.10	4.02	24.34	28.36	1.36	22.32	23.68	114,414.50
Building Worker Trips	66.35	125.62	2,153.17	2.85	12.85	7.07	19.92	4.64	5.96	10.60	272,168.78
Coating 06/01/2010-06/01/2030	76.96	0.10	1.63	0.00	0.01	0.01	0.02	0.00	0.00	0.01	206.19
Architectural Coating	76.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.05	0.10	1.63	0.00	0.01	0.01	0.02	0.00	0.00	0.01	206.19
Demolition 06/01/2010-06/01/2030	5.58	46.52	27.46	0.00	0.02	2.23	2.24	0.00	2.05	2.05	4,289.86
Fugitive Dust	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
Demo Off Road Diesel	5.54	46.44	26.23	0.00	0.00	2.22	2.22	0.00	2.05	2.05	4,132.45
Demo On Road Diesel	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.85
Demo Worker Trips	0.04	0.07	1.23	0.00	0.01	0.00	0.01	0.00	0.00	0.01	155.56
Mass Grading 06/01/2010-	11.30	96.09	49.23	0.00	129.26	4.69	133.95	27.00	4.31	31.31	9,211.98
Mass Grading Dust	0.00	0.00	0.00	0.00	129.24	0.00	129.24	26.99	0.00	26.99	0.00
Mass Grading Off Road Diesel	11.19	95.53	46.62	0.00	0.00	4.66	4.66	0.00	4.29	4.29	8,842.87
Mass Grading On Road Diesel	0.03	0.42	0.15	0.00	0.00	0.02	0.02	0.00	0.02	0.02	58.01
Mass Grading Worker Trips	0.08	0.14	2.46	0.00	0.01	0.01	0.02	0.01	0.01	0.01	311.11
Trenching 06/01/2010-06/01/2030	4.18	35.49	18.40	0.00	0.01	1.76	1.77	0.00	1.62	1.62	3,678.17
Trenching Off Road Diesel	4.12	35.38	16.43	0.00	0.00	1.75	1.75	0.00	1.61	1.61	3,429.28
Trenching Worker Trips	0.06	0.11	1.97	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.89

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 6/1/2010 - 6/1/2030 - Default Mass Site Grading/Excavation Description

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:
PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:
PM10: 69% PM25: 69%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:
PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: P:\COA-51.0E\Technical Studies\AIr\URBEMIS\Existing.urb924
Project Name: PTMLUP-Existing
Project Location: Orange County
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006
Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	12.49	10.06	9.00	0.00	0.02	0.02	12,111.86

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	12.49	10.06	9.00	0.00	0.02	0.02	12,111.86

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.73	10.05	8.15	0.00	0.02	0.02	12,108.94
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	1.38
Landscape	0.07	0.01	0.85	0.00	0.00	0.00	1.54
Consumer Products	3.65						
Architectural Coatings	8.04						
TOTALS (tons/year, unmitigated)	12.49	10.06	9.00	0.00	0.02	0.02	12,111.86

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 10% to 0%
Percentage of residences with wood fireplaces changed from 5% to 0%
Percentage of residences with natural gas fireplaces changed from 85% to 100%

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: P:\COA-51.0E\Technical Studies\AIr\URBEMIS\Existing.urb924
Project Name: PTMLUP-Existing
Project Location: Orange County
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006
Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	68.43	55.11	49.30	0.00	0.12	0.12	66,358.79

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	68.43	55.11	49.30	0.00	0.12	0.12	66,358.79

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	4.01	55.05	44.66	0.00	0.10	0.10	66,350.36
Hearth - No Summer Emissions							
Landscape	0.37	0.06	4.64	0.00	0.02	0.02	8.43
Consumer Products	20.01						
Architectural Coatings	44.04						
TOTALS (lbs/day, unmitigated)	68.43	55.11	49.30	0.00	0.12	0.12	66,358.79

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 10% to 0%
Percentage of residences with wood fireplaces changed from 5% to 0%
Percentage of residences with natural gas fireplaces changed from 85% to 100%

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Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: P:\COA-51.0E\Technical Studies\AIr\URBEMIS\Existing.urb924
Project Name: PTMLUP-Existing
Project Location: Orange County
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006
Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	68.19	57.21	45.58	0.01	0.27	0.27	69,103.30

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	68.19	57.21	45.58	0.01	0.27	0.27	69,103.30

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	4.01	55.05	44.66	0.00	0.10	0.10	66,350.36
Hearth	0.13	2.16	0.92	0.01	0.17	0.17	2,752.94
Landscaping - No Winter Emissions							
Consumer Products	20.01						
Architectural Coatings	44.04						
TOTALS (lbs/day, unmitigated)	68.19	57.21	45.58	0.01	0.27	0.27	69,103.30

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 10% to 0%
Percentage of residences with wood fireplaces changed from 5% to 0%
Percentage of residences with natural gas fireplaces changed from 85% to 100%

ANAHEIM, CALIFORNIA

Period of Record General Climate Summary - Temperature

Station:(040192) ANAHEIM

From Year=1989 To Year=2008

	Monthly Averages			Daily Extremes				Monthly Extremes				Max. Temp.		M Te
	Max.	Min.	Mean	High	Date	Low	Date	Highest Mean	Year	Lowest Mean	Year	>= 90 F	<= 32 F	<= 32 F
	F	F	F	F	dd/yyyy or yyyymmdd	F	dd/yyyy or yyyymmdd	F	-	F	-	# Days	# Days	# Days
January	69.6	47.4	58.5	95	31/2003	30	30/2002	64.8	2003	55.4	2001	0.2	0.0	0.1
February	70.1	48.3	59.2	94	12/2006	30	15/1990	63.2	1995	55.3	2001	0.7	0.0	0.1
March	72.3	50.5	61.4	97	19/1997	37	18/2002	66.9	2004	55.8	1999	0.9	0.0	0.0
April	74.4	52.7	63.6	106	26/2004	38	02/1999	67.6	2008	59.1	1999	1.5	0.0	0.0
May	77.0	57.3	67.1	106	03/2004	45	01/1999	71.8	2004	62.6	1995	2.1	0.0	0.0
June	80.2	60.5	70.4	104	27/1990	50	17/1995	76.1	2006	66.6	1999	2.6	0.0	0.0
July	85.2	64.2	74.7	107	22/2006	54	24/1999	82.6	2006	71.3	1991	6.8	0.0	0.0
August	86.9	64.3	75.6	102	12/1994	53	23/2002	78.9	1992	71.4	2002	9.1	0.0	0.0
September	86.1	62.5	74.3	108	30/1999	51	13/1991	77.9	1997	71.1	1999	9.6	0.0	0.0
October	81.3	57.7	69.5	107	10/1991	45	31/1991	74.7	2008	63.2	2002	5.1	0.0	0.0
November	75.3	51.8	63.6	99	02/1997	33	19/1994	68.5	2008	57.9	1994	1.3	0.0	0.0
December	69.9	46.9	58.4	89	10/2004	32	23/1998	61.6	2005	55.0	2002	0.0	0.0	0.1
Annual	77.3	55.3	66.3	108	19990930	30	19900215	67.7	2004	64.2	2002	40.0	0.0	0.2
Winter	69.8	47.5	58.7	95	20030131	30	19900215	61.2	2006	56.7	2001	0.8	0.0	0.2
Spring	74.6	53.5	64.0	106	20040426	37	20020318	68.6	2004	59.4	1999	4.5	0.0	0.0
Summer	84.1	63.0	73.6	107	20060722	50	19950617	78.6	2006	70.7	1999	18.5	0.0	0.0
Fall	80.9	57.4	69.1	108	19990930	33	19941119	73.3	2008	66.2	2000	16.1	0.0	0.0

Table updated on Aug 27, 2009

For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered
Seasons are climatological not calendar seasons

Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May

Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Western Regional Climate Center, wrcc@dri.edu

ANAHEIM, CALIFORNIA (040192)

Period of Record Monthly Climate Summary

Period of Record : 8/ 1/1989 to 12/31/2008

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	69.6	70.1	72.3	74.4	77.0	80.2	85.2	86.9	86.1	81.3	75.3	69.9	77.3
Average Min. Temperature (F)	47.4	48.3	50.5	52.7	57.3	60.5	64.2	64.3	62.5	57.7	51.8	46.9	55.3
Average Total Precipitation (in.)	2.85	3.66	1.89	0.81	0.38	0.16	0.04	0.01	0.09	0.64	0.82	1.58	12.92
Average Total SnowFall (in.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 99.8% Min. Temp.: 99.7% Precipitation: 100% Snowfall: 100% Snow Depth: 100%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu