Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2010 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Condo/townhouse general	30.44	5.06	dwelling units	487.00	2,464.22	21,068.34
Hotel		6.74	rooms	169.00	1,139.06	8,494.54
Regnl shop. center		35.02	1000 sq ft	663.34	23,230.17	171,740.63
Cinema (unit type is screen)		58.06	1000 sq ft	6.00	348.36	2,597.89
					27,181.81	203,901.40

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	50.9	1.4	98.2	0.4
Light Truck < 3750 lbs	13.3	2.3	93.9	3.8
Light Truck 3751-5750 lbs	20.3	0.5	99.5	0.0
Med Truck 5751-8500 lbs	7.7	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.1	0.0	72.7	27.3
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	0.7	0.0	14.3	85.7
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.0	0.0	0.0	0.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.7	67.6	32.4	0.0
School Bus	0.4	0.0	0.0	100.0

Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Hotel				5.0	2.5	92.5
Regnl shop. center				2.0	1.0	97.0
Cinema (unit type is screen)				5.0	2.5	92.5

Urbemis 2007 Version 9.2.0

Combined Summer Emissions Reports (Pounds/Day)

File Name: E:\MBA\San Ramon\24910007 San Ramon City Center\New URBEMIS Results\CC Opt 2 2010 OP-M.urb9

Project Name: CC Opt 2 2010 OP-M

Project Location: Contra Costa 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)	32.85	11.56	14.30	0.00	0.04	0.04	14,065.03
TOTALS (lbs/day, mitigated)	32.68	9.26	12.67	0.00	0.04	0.04	11,254.27
Percent Reduction	0.52	19.90	11.40	########	0.00	0.00	19.98

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	134.76	163.70	1,646.21	1.37	245.60	47.09	138,641.47
TOTALS (lbs/day, mitigated)	134.76	163.70	1,646.21	1.37	245.60	47.09	138,641.47
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	167.61	175.26	1,660.51	1.37	245.64	47.13	152,706.50
TOTALS (lbs/day, mitigated)	65.36	18.52	25.34	0.00	0.08	0.08	22,508.54
Percent Reduction	61.00	89.43	98.47	100.00	99.97	99.83	85.26

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	0.85	11.48	8.12	0.00	0.02	0.02	14,053.79
Hearth - No Summer Emissions							
Landscape	0.49	0.08	6.18	0.00	0.02	0.02	11.24
Consumer Products	23.83						
Architectural Coatings	7.68						
TOTALS (lbs/day, unmitigated)	32.85	11.56	14.30	0.00	0.04	0.04	14,065.03

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.68	9.18	6.49	0.00	0.02	0.02	11,243.03
Hearth - No Summer Emissions							
Landscape	0.49	0.08	6.18	0.00	0.02	0.02	11.24
Consumer Products	23.83						
Architectural Coatings	7.68						
TOTALS (lbs/day, mitigated)	32.68	9.26	12.67	0.00	0.04	0.04	11,254.27

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 35% to 0%

Percentage of residences with wood fireplaces changed from 10% to 0%

Percentage of residences with natural gas fireplaces changed from 55% to 100%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Condo/townhouse general	16.36	14.86	156.31	0.13	22.43	4.31	12,777.15
Hotel	6.21	6.01	60.37	0.05	9.02	1.73	5,090.46
Regnl shop. center	109.93	139.85	1,399.61	1.17	209.68	40.19	118,251.51
Cinema (unit type is screen)	2.26	2.98	29.92	0.02	4.47	0.86	2,522.35
TOTALS (lbs/day, unmitigated)	134.76	163.70	1,646.21	1.37	245.60	47.09	138,641.47

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Condo/townhouse general	16.36	14.86	156.31	0.13	22.43	4.31	12,777.15
Hotel	6.21	6.01	60.37	0.05	9.02	1.73	5,090.46
Regnl shop. center	109.93	139.85	1,399.61	1.17	209.68	40.19	118,251.51
Cinema (unit type is screen)	2.26	2.98	29.92	0.02	4.47	0.86	2,522.35
TOTALS (lbs/day, mitigated)	134.76	163.70	1,646.21	1.37	245.60	47.09	138,641.47

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2010 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Condo/townhouse general	30.44	3.13	dwelling units	487.00	1,524.31	13,032.39
Hotel		4.16	rooms	169.00	703.04	5,242.92
Regnl shop. center		24.85	1000 sq ft	663.34	16,484.00	121,866.21
Cinema (unit type is screen)		58.06	1000 sq ft	6.00	348.36	2,597.89
					19,059.71	142,739.41

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	50.9	1.4	98.2	0.4
Light Truck < 3750 lbs	13.3	2.3	93.9	3.8
Light Truck 3751-5750 lbs	20.3	0.5	99.5	0.0
Med Truck 5751-8500 lbs	7.7	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.1	0.0	72.7	27.3
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	0.7	0.0	14.3	85.7
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.0	0.0	0.0	0.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.7	67.6	32.4	0.0
School Bus	0.4	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Hotel				5.0	2.5	92.5
Regnl shop. center				2.0	1.0	97.0
Cinema (unit type is screen)				5.0	2.5	92.5

Urbemis 2007 Version 9.2.0

Combined Summer Emissions Reports (Pounds/Day)

File Name: E:\MBA\San Ramon\24910007 San Ramon City Center\New URBEMIS Results\CC Ent 2010 OP-U.urb9

Project Name: CC Entitlement 2010 OP-U

Project Location: Contra Costa 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)	2.54	2.57	3.69	0.00	0.01	0.01	3,060.41

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	36.07	42.65	444.82	0.36	64.35	12.35	36,573.56

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	38.61	45.22	448.51	0.36	64.36	12.36	39,633.97

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	0.18	2.55	2.14	0.00	0.00	0.00	3,057.60
Hearth - No Summer Emissions							
Landscape	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Consumer Products	0.00						
Architectural Coatings	2.24						
TOTALS (lbs/day, unmitigated)	2.54	2.57	3.69	0.00	0.01	0.01	3,060.41

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 35% to 0%

Percentage of residences with wood fireplaces changed from 10% to 0%

Percentage of residences with natural gas fireplaces changed from 55% to 100%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Office park	36.07	42.65	444.82	0.36	64.35	12.35	36,573.56
TOTALS (lbs/day, unmitigated)	36.07	42.65	444.82	0.36	64.35	12.35	36,573.56

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2010 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Office park		11.67	1000 sq ft	382.20	4,460.27	37,386.02
					4,460.27	37,386.02

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	50.9	1.4	98.2	0.4
Light Truck < 3750 lbs	13.3	2.3	93.9	3.8
Light Truck 3751-5750 lbs	20.3	0.5	99.5	0.0
Med Truck 5751-8500 lbs	7.7	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.1	0.0	72.7	27.3
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	0.7	0.0	14.3	85.7
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.0	0.0	0.0	0.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.7	67.6	32.4	0.0
School Bus	0.4	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Office park				48.0	24.0	28.0

Urbemis 2007 Version 9.2.0

Combined Summer Emissions Reports (Pounds/Day)

File Name: E:\MBA\San Ramon\24910007 San Ramon City Center\New URBEMIS Results\CC Ent 2010 OP-M.urb9

Project Name: CC Entitlement 2010 OP-M

Project Location: Contra Costa 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)	2.54	2.57	3.69	0.00	0.01	0.01	3,060.41
TOTALS (lbs/day, mitigated)	2.51	2.06	3.26	0.00	0.01	0.01	2,448.89
Percent Reduction	1.18	19.84	11.65	0.00	0.00	0.00	19.98

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	30.61	35.37	368.97	0.30	53.38	10.24	30,336.94
TOTALS (lbs/day, mitigated)	29.60	34.03	354.96	0.29	51.35	9.86	29,185.05
Percent Reduction	3.30	3.79	3.80	3.33	3.80	3.71	3.80

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	33.15	37.94	372.66	0.30	53.39	10.25	33,397.35
TOTALS (lbs/day, mitigated)	32.11	36.09	358.22	0.29	51.36	9.87	31,633.94
Percent Reduction	3.14	4.88	3.87	3.33	3.80	3.71	5.28

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	0.18	2.55	2.14	0.00	0.00	0.00	3,057.60
Hearth - No Summer Emissions							
Landscape	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Consumer Products	0.00						
Architectural Coatings	2.24						
TOTALS (lbs/day, unmitigated)	2.54	2.57	3.69	0.00	0.01	0.01	3,060.41

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.15	2.04	1.71	0.00	0.00	0.00	2,446.08
Hearth - No Summer Emissions							
Landscape	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Consumer Products	0.00						
Architectural Coatings	2.24						
TOTALS (lbs/day, mitigated)	2.54	2.57	3.69	0.00	0.01	0.01	3,060.41

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 35% to 0%

Percentage of residences with wood fireplaces changed from 10% to 0%

Percentage of residences with natural gas fireplaces changed from 55% to 100%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Office park	30.61	35.37	368.97	0.30	53.38	10.24	30,336.94
TOTALS (lbs/day, unmitigated)	30.61	35.37	368.97	0.30	53.38	10.24	30,336.94

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Office park	29.60	34.03	354.96	0.29	51.35	9.86	29,185.05
TOTALS (lbs/day, mitigated)	29.60	34.03	354.96	0.29	51.35	9.86	29,185.05

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2010 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Office park		9.68	1000 sq ft	382.20	3,559.22	29,833.37
					3,559.22	29,833.37

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	50.9	1.4	98.2	0.4
Light Truck < 3750 lbs	13.3	2.3	93.9	3.8
Light Truck 3751-5750 lbs	20.3	0.5	99.5	0.0
Med Truck 5751-8500 lbs	7.7	0.0	100.0	0.0

Lite-Heavy Truck 8501-10,000 lbs	1.1	0.0	72.7	27.3
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	0.7	0.0	14.3	85.7
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.0	0.0	0.0	0.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.7	67.6	32.4	0.0
School Bus	0.4	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Office park				48.0	24.0	28.0

Appendix B: Low-OFP Trees Listed in EBMUD's "Plants and Landscapes for Summer-Dry Climates"

Ozone Forming Potential (OFP) of EBMUD Recommended Trees

Ozone Forming Potential (OFP) Level is the biogenic volatile organic compounds emissions as represented by isoprene and monoterpene, which are considered precursors to ozone formation. A combination of sources were used to develop this list and categorize these species of trees listed in the "Plants and Landscapes for Summer-Dry Climates" (EBMUD 2004) for Climate Zone 14. Sources of information are listed below.

Trees with Low OFP

Names		
Genus	**Species**	**Common**
Arbutus	*manzanita 'dr. hurd'*	Dr. Hurd manzanita
Arbutus	*menziesii*	madrone
Arbutus	*unedo*	strawberry madrone
Calocedrus	*decurrens*	incense-cedar
Cedrus	*atlantica*	atlas cedar
Cedrus	*deodara*	deodar cedar
Celtis	*occidentalis*	common hackberry
Celtis	*sinensis*	Chinese hackberry
Cercis	*occidentalis*	western redbud
Cercocarpus	*betuloides*	mountain mahogany
Cercocarpus	*ledifolius*	curly-leaf mountain mahogany
Chamaecyparis	*lawsoniana*	Port Orford cedar
Cinnamomum	*camphora*	camphor tree
Cupressocyparis	*leylandii*	cupressocyparis
Cupressus	*glabra*	smooth Arizona cypress
Cupressus	*macnabiana*	MacNab cypress
Cupressus	*sempervirens*	Italian cypress
Eriobotrya	*deflexa*	bronze loquat
Fraxinus	*uhdei*	evergreen ash
Fraxinus	*velutina*	Arizona ash
Fraxinus	*velutina coriacea*	Montebello ash

Trees with Low OFP *(cont)*

Names		
Genus	**Species**	**Common**
Fraxinus	*velutina 'modesto'*	Modesto ash
Heteromeles	*arbutifolia*	toyon
Jacaranda	*mimosifolia*	jacaranda
Juniperus	*californica*	California juniper
Juniperus	*occidentalis*	western juniper
Lagerstroemia	*indica*	crape myrtle
Laurus	*nobilis*	sweet bay
Lynothamnus	*floribundis*	Catalina ironwood
Nerium	*oleander*	oleander
Olea	*europaea*	fruiting olive
Osmanthus	*fragrans*	sweet olive
Pinus	*sabiniana*	foorhill (gray) pine
Pittosporum	*tobira*	tobira
Pittosporum	*undulatum*	Victorian box
Podocarpus	*macrophyllus*	yew pine
Prunus	*caroliniana*	Carolina laurel cherry
Prunus	*ilicifolia*	hollyleaf cherry
Prunus	*lusitanica*	Portugal laurel
Prunus	*lyonii*	Catalina cherry
Prunus	*subcordata*	Sierra plum
Pyrus	*calleryana 'aristocrat'*	aristocrat flowering pear
Pyrus	*calleryana 'bradford'*	Bradford pear
Rhus	*glabra*	smooth sumac
Rhus	*lancea*	African sumac
Sambucus	*mexicana*	Mexican or hairy blue elderberry
Ulmus	*parvifolia*	Chinese elm

Trees with Medium OFP

Names		
Genus	**Species**	**Common**
Acacia	*smallii*	acacia
Chilopsis	*linearis*	desert willow
Eriobotrya	*japonica*	loquat
Ginko	*bilboa*	maidenhair tree
Grevillea	*robusta*	silk oak
Pinus	*attenuata*	knobcone pine
Pinus	*canariensis*	Canary Island pine
Pinus	*coulteri*	Coulter pine
Pinus	*edulis*	pinyon pine
Pinus	*halepensis*	Aleppo pine
Pistacia	*chinensis*	Chinese pistache
Schinus	*molle*	California (Peruvian) pepper tree
Sequoia	*sempervirens*	coastal redwood
Styphnolobium	*japonicum*	Japanese pagoda tree
Xylosma	*congestum*	xylosma

Trees with High OFP

Names		
Genus	**Species**	**Common**
Albizia	*julibrissin*	silk tree
Casuarina	*littoralis*	black she-oak
Casuarina	*stricta*	mountain she-oak
Eucalyptus	*cinerea*	silver dollar gum
Eucalyptus	*gunnii*	cider gum
Eucalyptus	*leucoxylon*	white ironbark
Eucalyptus	*nicholii*	willowleaf peppermint
Eucalyptus	*sideroxylon*	red ironbark

Trees with High OFP *(cont)*

Names		
Genus	**Species**	**Common**
Feijoa	*sellowiana*	pineapple guava
Koelreuteria	*paniculata*	goldenrain tree
Lophostemon	*confertus*	Brisbane box
Melaleuca	*linariifolia*	flaxleaf paperbark
Melaleuca	*quinquenervia*	cajeput tree
Metrosideros	*excelsus*	New Zealand Christmas Tree
Myrica	*californica*	Pacific wax myrtle
Platanus	*acerifolia*	London plane tree
Platanus	*racemosa*	California sycamore

Trees with Very High or Ultra High OFP

Names		
Genus	**Species**	**Common**
Ligustrum	*lucidum*	glossy privet
Nyssa	*sylvatica*	sour gum
Quercus	*agrifolia*	coast live oak
Quercus	*chrysolepsis*	canyon live oak
Quercus	*douglasii*	blue oak
Quercus	*garryanna*	Oregon white (Garry) oak
Quercus	*kelloggii*	California black oak
Quercus	*lobata*	valley oak

Trees with Unknown OFP

Names		
Genus	**Species**	**Common**
Acacia	*baileyana*	Bailey acacia
Acacia	*cultriformis*	knife acacia
Acacia	*glaucoptera*	clay wattle
Acacia	*pravissima*	ovens wattle
Acacia	*redolens*	prostrate acacia
Acacia	*stenophylla*	shoestring acacia
Aesculus	*californica*	buckeye
Brachyhiton	*populneus*	bottle tree
Celtis	*australis*	European hackberry
Cercis	*silaquastrum*	Judas tree
Cotinus	*coggygria*	smoke tree
Crataegus	*crus-galli*	cockspur thorn
Crataegus	*phaenopyrum*	Washington hawthorn
Cupressus	*arizonica*	Arizona cypress
Fraxinus	*angustifolia*	Raywood ash
Fraxinus	*dipetala*	California ash
Leptospermum	*laevigatum*	Australian tea tree
Leptospermum	*rotundifolium*	tea tree
Leptospermum	*scoparium*	New Zealand tree
Leucadendron	*argenteum*	silver tree
Luma	*apiculata*	Chilean myrtle
Melaleuca	*decussata*	lilac melaleuca
Melaleuca	*styphelioides*	prickly melaleuca
Photinia	*serratifolia*	Chinese photinia
Pinus	*eldarica*	Afghan (Mondell) pine
Pinus	*mugo mugo*	mugho pine
Pittosporum	*crassifolium*	seaside pittosporum

Trees with Unknown OFP *(cont)*

Names		
Genus	**Species**	**Common**
Pittosporum	*eugenioides*	pittosporum
Pittosporum	*phillyraeoides*	willow pittosporum
Pittosporum	*tenuifolium*	Tarata pittosporum
Prunus	*cerasifera 'atropurpurea'*	purple leaf plum
x Chitalpa	*tashkentensis*	chitalpa

Sources

SelecTree = Urban Forest Ecosystems Institute (http://www.ufei.org/)

iTree = USDA Forest Service Research, State and Private Forestry, and other cooperators (www.itreetools.org).

Data Compiled by Michael Brandman Associates 2007

Appendix C:
Greenhouse Gas Calculations

Summary of Greenhouse Gases

Mitigated

San Ramon City Center

Prepared by Michael Brandman Associates

Buildout Year 2010

Source (units)	Carbon Dioxide	Nitrous Oxide	Methane	Total
Area Sources (pounds per day)	16,435	0.0228	1.14	
Operational (pounds per day)	224,499	45.91	93.41	
Total (pounds per day)	240,934	45.93	94.55	
Total (tons per year)	43,970	8.38	17.25	
Global Warming Potential	1	310	21	
Total (metric tons per year)	39,890	8	16	
Total (Tg CO_2 Eq. per year)	3.99E-02	2.36E-03	3.29E-04	4.26E-02
California Emissions in 2004 (Tg CO_2 Eq./yr)				492
Project percent of California Emissions				0.00865%
Bay Area Emissions in 2002 (Tg CO_2 Eq./yr)	76.79	4.26	3.83	84.88
Project percent of Bay Area Emissions	0.0519%	0.0553%	0.00858%	0.0502%

Mobile Emissions - Methane ***Mitigated*** Page 1
San Ramon City Center 7-Aug-07
Prepared by Michael Brandman Associates
Buildout Year 2010 **Vehicle Miles Traveled** 312,174

Starting Emissions	4.48	lbs/day	0.0022	tons/day	0.82	tons/year
Running Emissions	88.93	lbs/day	0.0445	tons/day	16.23	tons/year
Total	93.41	lbs/day	0.0467	tons/day	17.05	tons/year

Vehicle Percentages

Vehicle Type	Percent	Non-Catalyst	Catalyst	Diesel
Light Auto	50.9%	1.4%	98.2%	0.4%
Light Truck < 3,750 lbs	13.3%	2.3%	93.9%	3.8%
Light Truck 3,751- 5,750	20.3%	0.5%	99.5%	0.0%
Med Truck 5,751- 8,500	7.7%	0.0%	100.0%	0.0%
Lite-Heavy 8,501-10,000	1.1%	0.0%	72.7%	27.3%
Lite-Heavy 10,001-14,000	0.6%	0.0%	50.0%	50.0%
Med-Heavy 14,001-33,000	0.7%	0.0%	14.3%	85.7%
Heavy-Heavy 33,001-60,000	0.4%	0.0%	0.0%	100.0%
Line Haul > 60,000 lbs	0.0%	0.0%	0.0%	100.0%
Urban Bus	0.1%	0.0%	0.0%	100.0%
Motorcycle	3.7%	67.6%	32.4%	0.0%
School Bus	0.4%	0.0%	0.0%	100.0%
Motor Home	0.8%	0.0%	87.5%	12.5%

Running Emission Factors (g/mile)

Vehicle Type	Type	Non-Catalyst	Catalyst	Diesel
Light Auto	LDA	0.1931	0.1127	0.0161
Light Truck < 3,750 lbs	LDT1	0.2253	0.1448	0.0161
Light Truck 3,751- 5,750	LDT2	0.2253	0.1448	0.0161
Med Truck 5,751- 8,500	MDV	0.2253	0.1448	0.0161
Lite-Heavy 8,501-10,000	LHDT1	0.2012	0.1448	0.0805
Lite-Heavy 10,001-14,000	LHDT2	0.2012	0.1448	0.0805
Med-Heavy 14,001-33,000	MHDT	0.2012	0.1448	0.0805
Heavy-Heavy 33,001-60,000	HHDT	0.2012	0.1448	0.0805
Line Haul > 60,000 lbs	LHV	0.2012	0.1448	0.0805
Urban Bus	UB	0.2012	0.1448	0.0805
Motorcycle	MCY	0.2092	0.2092	0.2092
School Bus	SBUS	0.2012	0.1448	0.0805
Motor Home	MH	0.2012	0.1448	0.0805

Running Emissions (pounds per day)

Vehicle Type	Non-Catalyst	Catalyst	Diesel
Light Auto	0.95	38.69	0.02
Light Truck < 3,750 lbs	0.47	12.42	0.06
Light Truck 3,751- 5,750	0.16	20.09	0.00
Med Truck 5,751- 8,500	0.00	7.66	0.00
Lite-Heavy 8,501-10,000	0.00	0.80	0.17
Lite-Heavy 10,001-14,000	0.00	0.30	0.17
Med-Heavy 14,001-33,000	0.00	0.10	0.33
Heavy-Heavy 33,001-60,000	0.00	0.00	0.22
Line Haul > 60,000 lbs	0.00	0.00	0.00
Urban Bus	0.00	0.00	0.06
Motorcycle	3.59	1.72	0.00
School Bus	0.00	0.00	0.22
Motor Home	0.00	0.70	0.06
Total	5.17	82.46	1.29

Mobile Emissions - Methane

San Ramon City Center
Prepared by Michael Brandman Associates
Buildout Year 2010 **Total Trips** 40703

Starting Emission Factors (g/start)

Vehicle Type	Type	Non-Catalyst	Catalyst	Diesel
Light Auto	LDA	0.059	0.009	-0.003
Light Truck < 3,750 lbs	LDT1	0.067	0.099	-0.004
Light Truck 3,751- 5,750	LDT2	0.067	0.099	-0.004
Med Truck 5,751- 8,500	MDV	0.067	0.099	-0.004
Lite-Heavy 8,501-10,000	LHDT1	0.147	0.215	-0.004
Lite-Heavy 10,001-14,000	LHDT2	0.147	0.215	-0.004
Med-Heavy 14,001-33,000	MHDT	0.147	0.215	-0.004
Heavy-Heavy 33,001-60,000	HHDT	0.147	0.215	-0.004
Line Haul > 60,000 lbs	LHV	0.147	0.215	-0.004
Urban Bus	UB	0.147	0.215	-0.004
Motorcycle	MCY	0.024	0.024	0.033
School Bus	SBUS	0.147	0.215	-0.004
Motor Home	MH	0.147	0.215	-0.004

Trip Distribution

Vehicle Type	Type	Non-Catalyst	Catalyst	Diesel
Light Auto	LDA	290.0	20344.7	82.9
Light Truck < 3,750 lbs	LDT1	124.5	5083.2	205.7
Light Truck 3,751- 5,750	LDT2	41.3	8221.3	0.0
Med Truck 5,751- 8,500	MDV	0.0	3134.1	0.0
Lite-Heavy 8,501-10,000	LHDT1	0.0	325.5	122.2
Lite-Heavy 10,001-14,000	LHDT2	0.0	122.1	122.1
Med-Heavy 14,001-33,000	MHDT	0.0	40.7	244.2
Heavy-Heavy 33,001-60,000	HHDT	0.0	0.0	162.8
Line Haul > 60,000 lbs	LHV	0.0	0.0	0.0
Urban Bus	UB	0.0	0.0	40.7
Motorcycle	MCY	1018.1	487.9	0.0
School Bus	SBUS	0.0	0.0	162.8
Motor Home	MH	0.0	284.9	40.7
Total		1473.9	38044.6	1184.1

Starting Emissions (pounds per day)

Vehicle Type	Type	Non-Catalyst	Catalyst	Diesel
Light Auto	LDA	0.0376	0.4028	-0.0005
Light Truck < 3,750 lbs	LDT1	0.0184	1.1071	-0.0018
Light Truck 3,751- 5,750	LDT2	0.0061	1.7906	0.0000
Med Truck 5,751- 8,500	MDV	0.0000	0.6826	0.0000
Lite-Heavy 8,501-10,000	LHDT1	0.0000	0.1540	-0.0011
Lite-Heavy 10,001-14,000	LHDT2	0.0000	0.0578	-0.0011
Med-Heavy 14,001-33,000	MHDT	0.0000	0.0193	-0.0021
Heavy-Heavy 33,001-60,000	HHDT	0.0000	0.0000	-0.0014
Line Haul > 60,000 lbs	LHV	0.0000	0.0000	0.0000
Urban Bus	UB	0.0000	0.0000	-0.0004
Motorcycle	MCY	0.0538	0.0258	0.0000
School Bus	SBUS	0.0000	0.0000	-0.0014
Motor Home	MH	0.0000	0.1348	-0.0004
Total		0.1158	4.3747	-0.0102

- Source of running emission factors: U.S. Environmental Protection Agency. Climate Leaders Greenhouse Gas Inventory Protocol, Core Module Guidance. Direct Emissions from Mobile Combustion Sources. October 2004.
- Source of vehicle percentages: URBEMIS2007 default values.
- Source of starting emissions: U.S. Environmental Protection Agency. Prepared by ICF Consulting. EPA420-P-04-016. Update of Methane and Nitrous Oxide Emission Factors for On-Highway Vehicles. November 2004.

Mobile Emissions - Nitrous Oxide ***Mitigated*** Page 1
San Ramon City Center 7-Aug-07
Prepared by Michael Brandman Associates
Buildout Year 2010 **Vehicle Miles Traveled** 312,174

Starting Emissions	6.98	lbs/day	0.0035	tons/day	1.27	tons/year
Running Emissions	38.93	lbs/day	0.0195	tons/day	7.10	tons/year
Total	45.91	lbs/day	0.0230	tons/day	8.38	tons/year

Vehicle Percentages

Vehicle Type	Percent	Non-Catalyst	Catalyst	Diesel
Light Auto	50.9%	1.4%	98.2%	0.4%
Light Truck < 3,750 lbs	13.3%	2.3%	93.9%	3.8%
Light Truck 3,751- 5,750	20.3%	0.5%	99.5%	0.0%
Med Truck 5,751- 8,500	7.7%	0.0%	100.0%	0.0%
Lite-Heavy 8,501-10,000	1.1%	0.0%	72.7%	27.3%
Lite-Heavy 10,001-14,000	0.6%	0.0%	50.0%	50.0%
Med-Heavy 14,001-33,000	0.7%	0.0%	14.3%	85.7%
Heavy-Heavy 33,001-60,000	0.4%	0.0%	0.0%	100.0%
Line Haul > 60,000 lbs	0.0%	0.0%	0.0%	100.0%
Urban Bus	0.1%	0.0%	0.0%	100.0%
Motorcycle	3.7%	67.6%	32.4%	0.0%
School Bus	0.4%	0.0%	0.0%	100.0%
Motor Home	0.8%	0.0%	87.5%	12.5%

Running Emission Factors (g/mile)

Vehicle Type	Type	Non-Catalyst	Catalyst	Diesel
Light Auto	LDA	0.0166	0.0518	0.0161
Light Truck < 3,750 lbs	LDT1	0.0208	0.0649	0.0322
Light Truck 3,751- 5,750	LDT2	0.0208	0.0649	0.0322
Med Truck 5,751- 8,500	MDV	0.0208	0.0649	0.0322
Lite-Heavy 8,501-10,000	LHDT1	0.0480	0.1499	0.0483
Lite-Heavy 10,001-14,000	LHDT2	0.0480	0.1499	0.0483
Med-Heavy 14,001-33,000	MHDT	0.0480	0.1499	0.0483
Heavy-Heavy 33,001-60,000	HHDT	0.0480	0.1499	0.0483
Line Haul > 60,000 lbs	LHV	0.0480	0.1499	0.0483
Urban Bus	UB	0.0480	0.1499	0.0483
Motorcycle	MCY	0.0073	0.0073	0.0073
School Bus	SBUS	0.0480	0.1499	0.0483
Motor Home	MH	0.0480	0.1499	0.0483

Running Emissions (pounds per day)

Vehicle Type	Non-Catalyst	Catalyst	Diesel
Light Auto	0.08	17.78	0.02
Light Truck < 3,750 lbs	0.04	5.57	0.11
Light Truck 3,751- 5,750	0.01	9.00	0.00
Med Truck 5,751- 8,500	0.00	3.43	0.00
Lite-Heavy 8,501-10,000	0.00	0.82	0.10
Lite-Heavy 10,001-14,000	0.00	0.31	0.10
Med-Heavy 14,001-33,000	0.00	0.10	0.20
Heavy-Heavy 33,001-60,000	0.00	0.00	0.13
Line Haul > 60,000 lbs	0.00	0.00	0.00
Urban Bus	0.00	0.00	0.03
Motorcycle	0.13	0.06	0.00
School Bus	0.00	0.00	0.13
Motor Home	0.00	0.72	0.03
Total	0.26	37.80	0.86

Mobile Emissions - Nitrous Oxide

San Ramon City Center

Prepared by Michael Brandman Associates

Buildout Year 2010 **Total Trips** 40703

Starting Emission Factors (g/start)

Vehicle Type	Type	Non-Catalyst	Catalyst	Diesel
Light Auto	LDA	0.028	0.072	0.000
Light Truck < 3,750 lbs	LDT1	0.032	0.093	-0.001
Light Truck 3,751- 5,750	LDT2	0.032	0.093	-0.001
Med Truck 5,751- 8,500	MDV	0.032	0.093	-0.001
Lite-Heavy 8,501-10,000	LHDT1	0.070	0.194	-0.002
Lite-Heavy 10,001-14,000	LHDT2	0.070	0.194	-0.002
Med-Heavy 14,001-33,000	MHDT	0.070	0.194	-0.002
Heavy-Heavy 33,001-60,000	HHDT	0.070	0.194	-0.002
Line Haul > 60,000 lbs	LHV	0.070	0.194	-0.002
Urban Bus	UB	0.070	0.194	-0.002
Motorcycle	MCY	0.012	0.012	0.012
School Bus	SBUS	0.070	0.194	-0.002
Motor Home	MH	0.070	0.194	-0.002

Trip Distribution

Vehicle Type	Type	Non-Catalyst	Catalyst	Diesel
Light Auto	LDA	290.0	20344.7	82.9
Light Truck < 3,750 lbs	LDT1	124.5	5083.2	205.7
Light Truck 3,751- 5,750	LDT2	41.3	8221.3	0.0
Med Truck 5,751- 8,500	MDV	0.0	3134.1	0.0
Lite-Heavy 8,501-10,000	LHDT1	0.0	325.5	122.2
Lite-Heavy 10,001-14,000	LHDT2	0.0	122.1	122.1
Med-Heavy 14,001-33,000	MHDT	0.0	40.7	244.2
Heavy-Heavy 33,001-60,000	HHDT	0.0	0.0	162.8
Line Haul > 60,000 lbs	LHV	0.0	0.0	0.0
Urban Bus	UB	0.0	0.0	40.7
Motorcycle	MCY	1018.1	487.9	0.0
School Bus	SBUS	0.0	0.0	162.8
Motor Home	MH	0.0	284.9	40.7
Total		1473.9	38044.6	1184.1

Starting Emissions (pounds per day)

Vehicle Type	Type	Non-Catalyst	Catalyst	Diesel
Light Auto	LDA	0.0179	3.2226	0.0000
Light Truck < 3,750 lbs	LDT1	0.0088	1.0400	-0.0005
Light Truck 3,751- 5,750	LDT2	0.0029	1.6821	0.0000
Med Truck 5,751- 8,500	MDV	0.0000	0.6412	0.0000
Lite-Heavy 8,501-10,000	LHDT1	0.0000	0.1389	-0.0005
Lite-Heavy 10,001-14,000	LHDT2	0.0000	0.0521	-0.0005
Med-Heavy 14,001-33,000	MHDT	0.0000	0.0174	-0.0011
Heavy-Heavy 33,001-60,000	HHDT	0.0000	0.0000	-0.0007
Line Haul > 60,000 lbs	LHV	0.0000	0.0000	0.0000
Urban Bus	UB	0.0000	0.0000	-0.0002
Motorcycle	MCY	0.0269	0.0129	0.0000
School Bus	SBUS	0.0000	0.0000	-0.0007
Motor Home	MH	0.0000	0.1216	-0.0002
Total		0.0564	6.9289	-0.0044

- Source of running emission factors: U.S. Environmental Protection Agency. Climate Leaders Greenhouse Gas Inventory Protocol, Core Module Guidance. Direct Emissions from Mobile Combustion Sources. October 2004.
- Source of vehicle percentages: URBEMIS2002 default values.
- Source of starting emissions: U.S. Environmental Protection Agency. Prepared by ICF Consulting. EPA420-P-04-016. Update of Methane and Nitrous Oxide Emission Factors for On-Highway Vehicles. November 2004.

Natural Gas Combustion

San Ramon City Center
Prepared by Michael Brandman Associates
8/7/2007

Gas	Type of Land Use	Square Feet or Units	Natural Gas Usage Factor* (SCF/square foot or unit/month)	Natural Gas Usage for Project (SCF/month)	Natural Gas usage for Project (SCF/year)	Emission Factor (g/MMBTU)**	Heating Value of Natural Gas (BTU/SCF)**	Emissions (tons per year)	Emissions (pounds per day)
Methane	Office	681.77	2.0	1363.54	16362.48	4.75	1020	0.00	0.00
	Retail/Shopping	663.341	2.9	1923.6889	23084.267	4.75	1020	0.00	0.00
	Residential	487	6665	3245855	38950260	4.75	1020	0.21	1.14
	Industrial	0	241611	0	0	4.75	1020	0.00	0.00
	Multi-family	0	4011.5	0	0	4.75	1020	0.00	0.00
Nitrous Oxide	Office	681.77	2.0	1363.54	16362.48	0.095	1020	0.00	0.00
	Retail/Shopping	663.341	2.9	1923.6889	23084.267	0.095	1020	0.00	0.00
	Residential	487	6665	3245855	38950260	0.095	1020	0.00	0.02
	Industrial	0	241611	0	0	0.095	1020	0.00	0.00
	Multi-family	0	4011.5	0	0	0.095	1020	0.00	0.00

Total

Units	Mitigation Reduction	Nitrous Oxide	Methane
pounds per day	0%	0.02	1.14
tons per year		0	0
GWP		310	21
Tg CO2 Eq/year		0.000001	0.000004

* Natural gas usage factor from URBEMIS2007 default
** USEPA, 2004: Direct Emissions from Stationary Combustion Sources, Climate Leaders Greenhouse Inventory Protocol, Core Model Guidance, October 2004
Emissions of CH4, N2O = Emission Factor x Heating Value of Natural Gas x Natural Gas Usage x Number of Units/Square Feet