

The Village at Playa Vista

Appendix E-6

Alternative Analysis

E-6a - Remaining Existing Specific Plan

- Operations Summary
- Electricity and Natural Gas Usage
- URBEMIS2002 Output Files
- Miscellaneous Sources Emissions Worksheets

E-6a

Remaining Existing Specific Plan

Playa Vista Area D - Remaining Existing Specific Plan

Regional Emission Calculations (lbs/day)

	CO	NOx	PM10	ROG	SOx
Project					
Area	1431	105	192	566	33
Mobile	2525	382	361	233	2
Stationary	26	150	4	2	12
Total Project	3982	637	557	801	47
SCAQMD Standard	550	55	150	55	150
Difference	3,432	582	407	746	(103)
Significant?	Yes	Yes	Yes	Yes	No

Electricity Usage

<u>Land Use</u>	<u>1,000 Sqft</u>	Electricity	Total Electricity Usage		Emission Factors (lbs/MWh) ^b				
		Usage Rate ^a	(KWh/year)	(MWh/Day)	CO	ROC	NOx	PM10	SOx
		(kWh/sq.ft/yr)			<u>0.2</u>	<u>0.01</u>	<u>1.15</u>	<u>0.04</u>	<u>0.12</u>
Project									
Office	1758.1	12.95	22,766,748	62.375	12.475	0.624	71.731	2.495	7.485
Retail	615.0	13.55	8,333,250	22.831	4.566	0.228	26.255	0.913	2.740
Hotel/Motel	600.0	9.95	5,970,000	16.356	3.271	0.164	18.810	0.654	1.963
Miscellaneous	20.0	10.5	210,000	0.575	0.115	0.006	0.662	0.023	0.069
Total Project			37,279,998	102.137	20.43	1.02	117.46	4.09	12.26
Net Emissions From Electricity Usage					20.43	1.02	117.46	4.09	12.26

Natural Gas Usage

<u>Land Use</u>	<u>1,000 Sqft</u>	Natural Gas	Total Natural Gas Usage		Emission Factors (lbs/MCuf) ^d				
		Usage Rate ^c	(cu.ft/mo)	(cu.ft/DAY)	CO	ROC	NOx	PM10	SOx
		(cu.ft/sq.ft/mo)			<u>20</u>	<u>5.3</u>	<u>120/80 ^e</u>	<u>0.2</u>	<u>0</u>
Project									
Office	1758.1	2.0	3,516,100	117,203	2.344	0.621	14.064	0.023	--
Retail	615.0	2.9	1,783,500	59,450	1.189	0.315	7.134	0.012	--
Hotel/Motel	600.0	4.8	2,880,000	96,000	1.920	0.509	11.520	0.019	--
Miscellaneous	20.0	2.9	58,000	1,933	0.039	0.010	0.232	0.000	--
Total Project			8,237,600	274,587	5.49	1.46	32.95	0.05	--
Net Emissions From Natural Gas Usage					5.49	1.46	32.95	0.05	--

Summary of Stationary Emissions

	<u>CO</u>	<u>ROC</u>	<u>NOx</u>	<u>PM10</u>	<u>SOx</u>
Total Existing Emissions (lbs/day)	0.00	0.00	0.00	0.00	0.00
Total Project Emissions (lbs/day)	25.92	2.48	150.41	4.14	12.26
Total Net Emissions (lbs/day)	25.92	2.48	150.41	4.14	12.26

^a Electricity Usage Rates from Table A9-11-A, CEQA Air Quality Handbook, SCAQMD, 1993.^b Emission Factors from Table A9-11-B, CEQA Air Quality Handbook, SCAQMD, 1993.^c Natural Gas Usage Rates from Table A9-12-A, CEQA Air Quality Handbook, SCAQMD, 1993.^d Emission Factors from Table A9-12-B, CEQA Air Quality Handbook, SCAQMD, 1993.^e The emission factors for NOx in lbs per million cuft of natural gas are 120 for nonresidential uses and 80 for residential uses.

File Name: V:\PROJECTS\AIR QUALITY DIVISION\Projects\Playa Vista 2002\D Only\Regional Ops\2003 Worksheets\URBEMIS 2002\Area D Existing
 Specific Plan.urb
 Project Name: Area D Exiting Specific Plan
 Project Location: South Coast Air Basin (Los Angeles area)
 On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
 (Pounds/Day - Winter)

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Hotel	30.21	49.54	346.69	0.24	46.55
Strip mall	106.42	178.52	1,248.57	0.87	167.26
General office building	90.75	151.33	1,063.73	0.76	145.31
Government (civic center)	1.50	2.50	17.49	0.01	2.36
TOTAL EMISSIONS (lbs/day)	228.88	381.89	2,676.48	1.88	361.47

Does not include correction for passby trips.
 Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2010 Temperature (F): 60 Season: Winter

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Total Trips
Hotel	8.92 trips / rooms	600.00	5,352.00
Strip mall	32.08 trips / 1000 sq. ft.	615.00	19,726.99
General office building	7.60 trips / 1000 sq. ft.	1,758.05	13,356.96
Government (civic center)	13.00 trips / 1000 sq. ft.	20.00	260.00

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	54.70	1.10	98.70	0.20
Light Truck < 3,750 lbs	15.20	2.00	96.00	2.00
Light Truck 3,751- 5,750	16.20	1.20	98.10	0.70
Med Truck 5,751- 8,500	7.30	1.40	95.90	2.70
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.20	0.00	50.00	50.00
Motorcycle	1.60	68.80	31.20	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.40	7.10	85.70	7.20

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Rural Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Trip Speeds (mph)	35.0	40.0	40.0	40.0	40.0	40.0
% of Trips - Residential	20.0	37.0	43.0			

% of Trips - Commercial (by land use)

Hotel	5.0	2.5	92.5
Strip mall	2.0	1.0	97.0
General office building	35.0	17.5	47.5
Government (civic center)	10.0	5.0	85.0

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Operations

The operational emission year changed from 2004 to 2010.
 The operational winter temperature changed from 50 to 60.
 The operational summer temperature changed from 90 to 75.
 The operational summer selection item changed from 8 to 5.

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 Project Location: South Coast Air Basin (Los Angeles area)
 On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
 (Pounds/Day - Summer)

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Hotel	28.80	42.68	324.99	0.26	46.55
Strip mall	92.95	153.82	1,167.68	0.94	167.26
General office building	86.88	130.18	1,015.67	0.82	145.31
Government (civic center)	1.38	2.15	16.45	0.01	2.36
TOTAL EMISSIONS (lbs/day)	210.01	328.84	2,524.79	2.04	361.47

Does not include correction for passby trips.
 Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2010 Temperature (F): 75 Season: Summer

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Total Trips
Hotel	8.92 trips / rooms	600.00	5,352.00
Strip mall	32.08 trips / 1000 sq. ft.	615.00	19,726.99
General office building	7.60 trips / 1000 sq. ft.	1,758.05	13,356.96
Government (civic center)	13.00 trips / 1000 sq. ft.	20.00	260.00

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	54.70	1.10	98.70	0.20
Light Truck < 3,750 lbs	15.20	2.00	96.00	2.00
Light Truck 3,751- 5,750	16.20	1.20	98.10	0.70
Med Truck 5,751- 8,500	7.30	1.40	95.90	2.70
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.20	0.00	50.00	50.00
Motorcycle	1.60	68.80	31.20	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.40	7.10	85.70	7.20

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Rural Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Trip Speeds (mph)	35.0	40.0	40.0	40.0	40.0	40.0
% of Trips - Residential	20.0	37.0	43.0			

% of Trips - Commercial (by land use)

Hotel	5.0	2.5	92.5
Strip mall	2.0	1.0	97.0
General office building	35.0	17.5	47.5
Government (civic center)	10.0	5.0	85.0

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Operations

The operational emission year changed from 2004 to 2010.
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DETAIL REPORT
 (Pounds/Day - Summer)

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Hotel	32.70	39.42	366.36	0.27	46.55
Strip mall	100.77	142.08	1,315.37	0.96	167.26
General office building	98.31	120.10	1,151.36	0.84	145.31
Government (civic center)	1.53	1.99	18.57	0.01	2.36
TOTAL EMISSIONS (lbs/day)	233.31	303.59	2,851.65	2.08	361.47

Does not include correction for passby trips.
 Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

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

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Total Trips
Hotel	8.92 trips / rooms	600.00	5,352.00
Strip mall	32.08 trips / 1000 sq. ft.	615.00	19,726.99
General office building	7.60 trips / 1000 sq. ft.	1,758.05	13,356.96
Government (civic center)	13.00 trips / 1000 sq. ft.	20.00	260.00

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent	Type	Non-Catalyst	Catalyst	Diesel
Light Auto	54.70		1.10	98.70	0.20
Light Truck < 3,750 lbs	15.20		2.00	96.00	2.00
Light Truck 3,751- 5,750	16.20		1.20	98.10	0.70
Med Truck 5,751- 8,500	7.30		1.40	95.90	2.70
Lite-Heavy 8,501-10,000	1.10		0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.30		0.00	66.70	33.30
Med-Heavy 14,001-33,000	1.00		0.00	20.00	80.00
Heavy-Heavy 33,001-60,000	0.90		0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00		0.00	0.00	100.00
Urban Bus	0.20		0.00	50.00	50.00
Motorcycle	1.60		68.80	31.20	0.00
School Bus	0.10		0.00	0.00	100.00
Motor Home	1.40		7.10	85.70	7.20

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Rural Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Trip Speeds (mph)	35.0	40.0	40.0	40.0	40.0	40.0
% of Trips - Residential	20.0	37.0	43.0			

% of Trips - Commercial (by land use)

Hotel	5.0	2.5	92.5
Strip mall	2.0	1.0	97.0
General office building	35.0	17.5	47.5
Government (civic center)	10.0	5.0	85.0

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Operations

The operational emission year changed from 2004 to 2010.
 The operational winter temperature changed from 50 to 60.
 The operational summer temperature changed from 90 to 85.
 The operational summer selection item changed from 8 to 6.

Playa Vista Area D - Remaining Existing Specific Plan

Summary of Area Source Emissions

Population: ^a

Project
9252

	Emissions (lbs/day)				
	CO	ROC	NO _x	PM ₁₀	SO _x
Solvent Usage	--	161	--	--	--
Surface Coating	--	176	--	--	--
Forklifts	939	36	47	4	--
Charbroilers	--	3	--	22	--
Emergency Generators	10	1.1	23	102	22
Landscaping and Garden	6	0.7	0.06	0.0013	0
Miscellaneous Sources ^b	477	189	35	64	11
Total	1431	566	105	192	33

^a Population equals 9,252 employees.

^b Miscellaneous sources equal 0.5 all area sources to account for unforeseen sources.

Playa Vista Area D - Remaining Existing Specific Plan

Commercial/ Consumer Solvent Use

AP-42 Section 4.10

WITH PROJECT

Number of People	9252
Nonmethane VOC emissions per capita (lb/day)	0.0252
Nonmethane VOC emissions (lb/day)	233.1504

VOC EMISSIONS 233.2

ROC EMISSIONS (69% of VOC) 160.9

a Includes emissions from aerosol products, household products, toiletries, rubbing compounds, windshield washing, polishes and waxes, nonindustrial adhesives, space deodorant, moth control, and laundry detergent.

Nonindustrial Surface Coating

AP-42 Section 4.2.1

	Architectural Surface Coating	Automobile Refinishing
WITH PROJECT		
Number of People	9252	9252
VOC emissions per capita (lb/day)	0.013	0.006
VOC emissions (lb/day)	120.276	55.512
VOC EMISSIONS	120.3	55.5
TOTAL VOC EMISSIONS (surface coating + auto refinishing)		<u>175.8</u>

Charbroilers

Source: SCAQMD, 1997

Number of Restaurants	4
Lbs of meat cooked per day per restaurant ^b	166
Emission factors (lbs/ 1000 lbs cooked)	
ROC (assumed to be equivalent to VOC)	3.94
PM	32.67
Emissions (lbs/day)	
ROC	<u>2.6</u>
PM	<u>21.7</u>

b based on information provided at www.burgerking.com

Playa Vista Area D - Remaining Existing Specific Plan

Forklifts

CEQA Handbook Table A9-8-A

	Number	Hours per Day	Emission Factors (lbs/hr)				Emissions (lbs/day)			
			CO	ROC	NOx	PM10	CO	ROC	NOx	PM10
GAS										
Fork Lift - 50 Hp	2	8	14.0	0.5	0.018	0.003	224.0	8	0.288	0.048
Fork Lift - 175 Hp	2	8	43.97	1.53	0.92	0.123	703.52	24.48	14.72	1.968
DIESEL										
Fork Lift - 50 Hp	2	8	0.18	0.053	0.441	0.031	2.88	0.848	7.056	0.496
Fork Lift - 175 Hp	2	8	0.52	0.17	1.54	0.093	8.32	2.72	24.64	1.488
TOTAL	8	32					938.7	36.0	46.7	4.0

Diesel-Powered Emergency Generators

AP-42 Section 3.4.1

Power Rating: 350 kW

Annual Hours of Use: 500^a

% Sulfur in fuel oil: 1.5

	Number	Emission Factors (lbs/hp-hr)							Emissions (lbs/day)						
		CO	TOC	Non-methane TOC	NOx	NOx (controlled)	PM10	SOx	CO	TOC	Non-methane TOC	NOx	NOx (controlled)	PM10	SOx
Diesel Generator	5	0.0055	7.05E-04	6.42E-04	0.024	0.013	0.0573	0.0121	9.8	1.3	1.1	42.9	23.2	102.4	21.7

^a Calculating Potential to Emit for Emergency Generators, EPA, September 1995.

Playa Vista Area D - Remaining Existing Specific Plan

Analysis of Emissions from Landscaping Operations

Landscaped Acreage Calculations

Use	Proposed Action (Area D)
Active Park Acreage	0
Total Developed Acreage	102.6
Total Landscaped Acreage	43.6
{50%(Total Developed Area) + Active Park Area}* *Total Developed Area is multiplied by 50% based on average lot coverage restrictions for the area.	

Lawn & Garden Engine Emissions

Statewide 2005

Emissions in tons/day (from Table K-3, Appendix M, Offroad Vehicle Emissions Inventory and CO Credits)

	Engine Population	% of Total	Fuel Consump.	Exhaust PM	Exhaust PM10 =19% PM*	Exhaust Nox	Exhaust CO	Exhaust ROG	Evap ROG	Container ROG	Dist. S&T ROG	Sum ROG
2-stroke < 25 hp	2153439	40.52%	63293	0.16	0.03	0.61	71.78	23.33	1.17	1.90	0.11	26.50
4-stroke < 25 hp	3097046	58.28%	117964	0.13	0.02	2.42	241.63	9.33	4.66	3.54	0.20	17.74
2-stroke > 25 hp	497	0.01%	2167	0.00	0.00	0.04	2.84	0.07	0.00	0.02	0.00	0.10
4-stroke > 25 hp	63540	1.20%	30515	0.17	0.03	1.10	65.21	1.75	0.88	0.88	0.05	2.98
Total	5314522	100.00%	213939	0.46	0.09	4.17	381.46	34.48	6.71	6.34	0.36	47.32
Avg. Emissions per Engine in tons/ day (fuel in gal./day)			0.040256	8.66E-08	1.64E-08	7.85E-07	7.18E-05	6.49E-06	1.26E-06	1.19E-06	6.77E-08	8.9E-06
Engine Population for Proposed Action =	40	**										
Emissions per Day for Proposed Action in tons/ day (fuel in gal./day)			1.610222	3.46E-06	6.58E-07	3.14E-05	0.002871	0.00026	5.05E-05	4.77E-05	2.71E-06	0.000356
Emissions per Day for Proposed Action in pounds/ day (fuel in gal./day)			1.6	0.007	0.0013	0.06	5.7	0.5	0.10	0.10	0.005	0.7

*Source: CEPA ARB, "A Report to the California Legislature on the Potential Health and Environmental Impacts of Leaf Blowers", Mobile Source Control Division, February 2000.

**Assuming 3 min engine use/100 sf landscaping, biweekly maintenance; Source: January 8, 1998 press release from Aero Air Pollution, Los Angeles.