APPENDIX G:
ENERGY CALCULATIONS

Metrowalk SCEA

Energy Calculations

Land Use		Natural Gas Use		Electricity Use	
		(kBTU/yr)	(Therms)	(kWh/yr)	(MWh/yr)
Warehouse	Apartment Mid Rise	4,661,870	46,619	-	-
	Condo/Townhouse High Rise	2,009,430	20,094	-	-
	Enclosed Parking Structure	-	-	680,400	680
	Parking Lot	-	-	84,280	84
Totals		**6,671,300**	**66,713**	**764,680**	**765**

1 kBTU = 0.01 therms

Energy Type	Project Annual Energy Consumption	Los Angeles County Annual Energy Consumption (2019)	Percentage increase countywide
Electricity (MWh/YR)	765	46,556,118	0.0016%
Natural Gas (Therms)	66,713	1,812,591,714	0.0037%

Source: Refer to CalEEMod outputs in Appendix E for assumptions used in this analysis.

Metrowalk SCEA
Project
Energy Calculations

Vehicle Type	Percent of Vehicle Trips[1]	Daily Trips[2]	Annual Vehicle Miles Traveled[3]	Average Fuel Economy (miles per gallon)[4]	Total Annual Fuel Consumption (gallons)[5]
Warehouse					
Passenger Cars	0.41	254	3,165,624	22	143,892
Light/Medium Trucks	0.26	162	2,024,266	17.3	117,010
Heavy Trucks/Other	0.33	206	2,565,590	6.4	400,873
WAREHOUSE TOTAL [6]	*1.00*	622	*7,755,480*	*--*	*661,775*
PROJECT TOTAL					*661,775*

Notes:

1. Percent of Vehicle Trip distribution based on trip characteristics in the Traffic Impact Study and within the CalEEMod model.

2. Daily Trips calculated by multiplying the total daily trips by percent vehicle trips (i.e., Daily Trips x percent of Vehicle Trips).

3. Daily Vehicle Miles Traveled (VMT) calculated by multiplying percent vehicle trips by total VMT (i.e., VMT x percent of Vehicle Trips).

4. Average fuel economy derived from the Department of Transportation.

5. Total Daily Fuel Consumption calculated by dividing the daily VMT by the average fuel economy (i.e., VMT/Average Fuel Economy).

6. Values may be slightly off due to rounding.

Source: Refer to CalEEMod outputsin Appendix E for assumptions used in this analysis.

Metrowalk SCEA Project
Energy Calculations

WORKER TRIPS

Phase	Phase Length (# days)	# Worker Trips	Worker Trip Length	Total VMT	Fuel Consumption Factor (Miles/Gallon/Day)	Total Fuel Consumption
Site Preparation	40	5	14.7	2940		118.06
Grading	80	30	14.7	35280		1416.71
Utility Improvements	120	5	14.7	8820		354.18
Paving	15	8	14.7	1764		70.84
Building Construction	1085	510	14.7	8134245	24.90284233	326639.22
AC4	1005	102	14.7	1506897		60511.04
AC1	200	0	14.7	0		0.00
AC2	200	0	14.7	0		0.00
AC3	200	0	14.7	0		0.00
						389110.04

VENDOR TRIPS

Phase	Phase Length (# days)	# Vendor Trips	Vendor Trip Length	Total VMT	Fuel Consumption Factor (Miles/Gallon/Day)	Total Fuel Consumption
Site Preparation	40	2	6.9	14		1.64
Grading	80	0	6.9	0		0.00
Utility Improvements	120	0	6.9	0		0.00
Paving	15	0	6.9	0		0.00
Building Construction	1085	112	6.9	773	8.43886151	91.58
AC4	1005	0	6.9	0		0.00
AC1	200	0	6.9	0		0.00
AC2	200	0	6.9	0		0.00
AC3	200	0	6.9	0		0.00
						93.21

HAULING TRIPS

Phase	Phase Length (# days)	# Hauling Trips	Hauling Trip Length	Total VMT	Fuel Consumption Factor (Miles/Gallon/Day)[1]	Total Fuel Consumption
Site Preparation	0	0	20	0		0.00
Grading	0	0	20	0		0.00
Utility Improvements	0	0	20	0		0.00
Paving	0	0	20	0		0.00
Building Construction	0	0	20	0	8.34886151	0.00
AC4	0	0	20	0		0.00
AC1	0	0	20	0		0.00
AC2	0	0	20	0		0.00
AC3	0	0	20	0		0.00
						0.00

TOTAL OFF-SITE MOBILE GALLONS CONSUMED DURING CONSTRUCTION	**389,203.25**

Metrowalk SCEA Project
Energy Calculations

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Fuel Consumption Rate (gallons per hour)	Duration (total hours/day)	# days	Total Fuel Consumption (gallons)
Site Preparation	Rubber Tired Dozers	1	8	200	0.40	3.2	8	40	1024.00
Site Preparation	Tractors/Loaders/Backhoes	1	8	50	0.37	0.74	8	40	236.80
Grading	Graders	1	4	165	0.41	2.706	4	80	865.92
Grading	Off-Highway Trucks	1	4	402	0.38	6.1104	4	80	1955.33
Grading	Plate Compactors	1	4	450	0.43	7.74	4	80	2476.80
Grading	Rubber Tired Dozers	1	4	200	0.40	3.2	4	80	1024.00
Grading	Rubber Tired Dozers	1	4	310	0.40	4.96	4	80	1587.20
Grading	Rubber Tired Dozers	1	4	410	0.40	6.56	4	80	2099.20
Grading	Rubber Tired Loaders	1	4	130	0.36	1.872	4	80	599.04
Grading	Scrapers	4	4	600	0.48	11.52	16	80	14745.60
Grading	Tractors/Loaders/Backhoes	1	4	50	0.37	0.74	4	80	236.80
Utility Improvements	Rubber Tired Dozers	1	8	200	0.40	3.2	8	120	3072.00
Utility Improvements	Tractors/Loaders/Backhoes	1	8	50	0.37	0.74	8	120	710.40
Paving	Pavers	1	8	130	0.42	2.184	8	15	262.08
Paving	Paving Equipment	1	8	132	0.36	1.9008	8	15	228.10
Paving	Rollers	1	8	80	0.38	1.216	8	15	145.92
Building Construction	Air Compressors	4	8	78	0.48	1.4976	32	1085	51996.67
Building Construction	Excavators	2	4	158	0.38	2.4016	8	1085	20845.89
Building Construction	Generator Sets	4	8	84	0.74	2.4864	32	1085	86327.81
Building Construction	Rough Terrain Forklifts	2	4	100	0.40	1.6	8	1085	13888.00
Building Construction	Rubber Tired Loaders	1	4	130	0.36	1.872	4	1085	8124.48
Building Construction	Skid Steer Loaders	4	4	65	0.37	0.962	16	1085	16700.32
Building Construction	Tractors/Loaders/Backhoes	3	7	50	0.37	0.74	21	1085	16860.90
Building Construction	Trenchers	1	4	78	0.50	1.56	4	1085	6770.40
AC4	Air Compressors	4	6	78	0.48	1.4976	24	1005	36122.11
AC4	Generator Sets	4	6	84	0.74	2.4864	24	1005	59971.97
AC4	Rough Terrain Forklifts	2	6	100	0.40	1.6	12	1005	19296.00
AC4	Rubber Tired Loaders	1	6	203	0.36	2.9232	6	1005	17626.90
AC4	Skid Steer Loaders	4	6	65	0.37	0.962	24	1005	23203.44
AC1	Air Compressors	1	0	78	0.48	1.4976	0	200	0.00
AC2	Air Compressors	1	0	78	0.48	1.4976	0	200	0.00
AC3	Air Compressors	1	0	78	0.48	1.4976	0	200	0.00

	Total:	420,133
	Off-Site Mobile Construction Total:	389,203
	TOTAL:	**809,336**

Notes:

Fuel Consumption Rate = Horsepower x Load Factor x Fuel Consumption Factor

Where:

Fuel Consumption Factor for a diesel engine is 0.04 gallons per horsepower per hour (gal/hp/hr) and a gasoline engine is 0.06 gal/hp/hr.

Source: Refer to CalEEMod outputs in Appendix E for assumptions used in this analysis.