

APPENDIX F

ENERGY DATA WORKSHEETS

Harbor-UCLA Medical Center

Draft EIR

Appendix F, Energy Data Worksheets

F.1 Construction Energy Data Worksheets

F.2 Operational Energy Data Worksheets

Appendix F.1

Construction Energy Data

**Harbor-UCLA Master Plan
Construction Energy Demand Estimates**

Summary

Master Plan Project

758,318 gallons of diesel fuel for hauling of demolition debris, grading and excavation materials, and vendor deliveries
971,427 gallons of diesel fuel for heavy-duty construction equipment
3,427,646 gallons of fuel (primarily gasoline) for construction worker trips

1,729,745 Total Gallons Diesel
3,427,646 Total Gallons Gasoline

115,316 Annual Average Gallons Diesel (over 15-year Master Plan construction period)
228,510 Annual Average Gallons Gasoline (over 15-year Master Plan construction period)

LA Biomed

8,375 gallons of diesel fuel for hauling of demolition debris, grading and excavation materials, and vendor deliveries
73,864 gallons of diesel fuel for heavy-duty construction equipment
17,858 gallons of fuel (primarily gasoline) for construction worker trips

82,239 Total Gallons Diesel
17,858 Total Gallons Gasoline

5,483 Annual Average Gallons Diesel (over 15-year Master Plan construction period)
1,191 Annual Average Gallons Gasoline (over 15-year Master Plan construction period)

**Harbor-UCLA Master Plan
Construction Energy Demand Estimates**

Master Plan Project: Off-Road Equipment

Equipment ≤ 50 hp

pounds fuel/hp-hr (OFFROAD2011 model, ≤ 50 hp):	0.408 lb/hp-hr
diesel pounds/gallon (CARB density assumption):	7.07 lb/gal
diesel gallons/hp-hr:	0.0577 gal/hp-hr
Total hp-hr for equipment ≤ 50 hp (cased on CalEEMod run):	927,150 hp-hr
Total diesel gallons:	53,505 gal

Equipment > 50 hp

pounds fuel/hp-hr (OFFROAD2011 model, > 50 hp):	0.367 lb/hp-hr
diesel pounds/gallon (CARB density assumption):	7.07 lb/gal
diesel gallons/hp-hr:	0.0519 gal/hp-hr
Total hp-hr for equipment > 50 hp (based on CalEEMod run):	17,683,139 hp-hr
Total diesel gallons:	917,923 gal

Total diesel gallons (off-road equipment): 971,427 gal

Phase	Equipment	Number	Hours/Day	HP	Load	Days	Total hp-hr
Phase C							-
Demolition	Concrete/Industrial Saws	1	8	81	0.73	139	65,753
Demolition	Excavators	1	8	162	0.38	139	68,455
Demolition	Graders	1	8	174	0.41	139	79,330
Demolition	Rubber Tired Loaders	1	8	199	0.36	139	79,664
Demolition	Tractors/Loaders/Backhoes	4	8	97	0.37	139	159,639
Grading	Air Compressors	1	8	78	0.48	652	195,287
Grading	Concrete/Industrial Saws	1	8	81	0.73	652	308,422
Grading	Cranes	1	8	226	0.29	652	341,857
Grading	Excavators	1	8	162	0.38	652	321,097
Grading	Forklifts	1	8	89	0.2	652	92,845
Grading	Graders	1	8	174	0.41	652	372,109
Grading	Rubber Tired Dozers	1	8	255	0.4	652	532,032
Grading	Rubber Tired Loaders	1	8	199	0.36	652	373,674
Grading	Tractors/Loaders/Backhoes	5	8	97	0.37	652	936,011

Grading	Welders	1	8	46	0.45	652	107,971
SCE SY	Cement and Mortar Mixers	1	8	9	0.56	129	5,201
SCE SY	Generator Sets	1	8	84	0.74	129	64,149
SCE SY	Graders	1	8	174	0.41	129	73,623
SCE SY	Tractors/Loaders/Backhoes	3	7	97	0.37	129	97,226
SCE SY	Welders	1	8	46	0.45	129	21,362
Building Construction	Air Compressors	1	8	78	0.48	911	272,863
Building Construction	Cranes	1	7	226	0.29	911	417,949
Building Construction	Forklifts	1	8	89	0.2	911	129,726
Building Construction	Graders	1	8	174	0.41	911	519,926
Building Construction	Tractors/Loaders/Backhoes	3	7	97	0.37	911	686,612
Building Construction	Welders	1	8	46	0.45	911	150,862
Paving 2	Cement and Mortar Mixers	1	6	9	0.56	36	1,089
Paving 2	Paving Equipment	1	6	130	0.36	36	10,109
Paving 2	Rollers	1	6	80	0.38	36	6,566
Paving 2	Trenchers	1	8	80	0.5	36	11,520
Architectural Coating	Air Compressors	1	6	78	0.48	127	28,529
Paving	Paving Equipment	1	6	130	0.36	84	23,587
Paving	Rollers	1	6	80	0.38	84	15,322
Paving	Tractors/Loaders/Backhoes	2	8	97	0.37	84	48,236
Paving	Trenchers	1	8	80	0.5	84	26,880
Phase M							
Demolition	Concrete/Industrial Saws	2	8	81	0.73	52	49,196
Demolition	Excavators	1	8	162	0.38	52	25,609
Demolition	Tractors/Loaders/Backhoes	1	8	97	0.37	52	14,930
Grading	Excavators	1	8	162	0.38	53	26,101
Grading	Graders	1	8	174	0.41	53	30,248
Grading	Rubber Tired Loaders	1	8	199	0.36	53	30,375
Grading	Tractors/Loaders/Backhoes	3	8	97	0.37	53	45,652
Paving	Cement and Mortar Mixers	2	6	9	0.56	87	5,262
Paving	Tractors/Loaders/Backhoes	4	8	97	0.37	87	99,918
Building Construction	Air Compressors	1	8	78	0.48	95	28,454
Building Construction	Cranes	2	7	226	0.29	95	87,168
Building Construction	Forklifts	1	8	89	0.2	95	13,528
Building Construction	Tractors/Loaders/Backhoes	1	7	97	0.37	95	23,867
Building Construction	Welders	1	8	46	0.45	95	15,732
Paving 2	Paving Equipment	2	6	130	0.36	65	36,504

Paving 2	Tractors/Loaders/Backhoes	1	8	97	0.37	65	18,663
Paving 2	Trenchers	1	8	80	0.5	65	20,800
Phase I							
Demolition	Concrete/Industrial Saws	2	8	81	0.73	122	115,422
Demolition	Excavators	1	8	162	0.38	122	60,083
Demolition	Rubber Tired Dozers	1	8	255	0.4	122	99,552
Demolition	Rubber Tired Loaders	1	8	199	0.36	122	69,921
Demolition	Tractors/Loaders/Backhoes	3	8	97	0.37	122	105,086
Grading	Graders	1	8	174	0.41	64	36,526
Grading	Rubber Tired Dozers	1	8	255	0.4	64	52,224
Grading	Tractors/Loaders/Backhoes	3	8	97	0.37	64	55,127
Building Construction	Cranes	1	7	226	0.29	250	114,695
Building Construction	Forklifts	1	8	89	0.2	250	35,600
Building Construction	Welders	1	8	46	0.45	250	41,400
Paving	Cement and Mortar Mixers	1	8	9	0.56	57	2,298
Paving	Paving Equipment	1	8	130	0.36	57	21,341
Paving	Rollers	1	8	80	0.38	57	13,862
Paving	Tractors/Loaders/Backhoes	1	8	97	0.37	57	16,366
Paving	Trenchers	1	8	80	0.5	57	18,240
Architectural Coating	Air Compressors	1	6	78	0.48	57	12,804
Phase II							
Grading	Rubber Tired Loaders	1	8	199	0.36	64	36,680
Grading	Tractors/Loaders/Backhoes	1	8	97	0.37	64	18,376
Building Construction	Air Compressors	1	8	78	0.48	95	28,454
Building Construction	Cranes	2	7	226	0.29	95	87,168
Building Construction	Forklifts	1	8	89	0.2	95	13,528
Building Construction	Tractors/Loaders/Backhoes	3	7	97	0.37	95	71,601
Building Construction 2	Air Compressors	1	8	78	0.48	108	32,348
Building Construction 2	Cranes	1	7	226	0.29	108	49,548
Building Construction 2	Tractors/Loaders/Backhoes	2	7	97	0.37	108	54,266
Building Construction 3	Air Compressors	1	8	78	0.48	108	32,348
Building Construction 3	Cranes	1	7	226	0.29	108	49,548
Building Construction 3	Forklifts	1	8	89	0.2	108	15,379
Building Construction 3	Tractors/Loaders/Backhoes	3	7	97	0.37	108	81,399
Building Construction 3	Welders	1	8	46	0.45	108	17,885
Building Construction 4	Air Compressors	1	8	78	0.48	202	60,503
Building Construction 4	Cranes	1	7	226	0.29	202	92,674

Building Construction 4	Forklifts	2	8	89	0.2	202	57,530
Building Construction 4	Tractors/Loaders/Backhoes	2	7	97	0.37	202	101,497
Building Construction 4	Welders	2	8	46	0.45	202	66,902
Architectural Coating	Air Compressors	1	6	78	0.48	114	25,609
Paving	Cement and Mortar Mixers	1	8	9	0.56	93	3,750
Paving	Paving Equipment	1	8	130	0.36	93	34,819
Paving	Rollers	1	8	80	0.38	93	22,618
Paving	Tractors/Loaders/Backhoes	1	8	97	0.37	93	26,702
Paving	Trenchers	1	8	80	0.5	93	29,760
Phase III							
Demolition	Concrete/Industrial Saws	2	8	81	0.73	221	209,084
Demolition	Excavators	1	8	162	0.38	221	108,838
Demolition	Rubber Tired Dozers	1	8	255	0.4	221	180,336
Demolition	Rubber Tired Loaders	1	8	199	0.36	221	126,660
Demolition	Tractors/Loaders/Backhoes	3	8	97	0.37	221	190,361
Grading	Graders	1	8	174	0.41	121	69,057
Grading	Rubber Tired Dozers	1	8	255	0.4	121	98,736
Grading	Tractors/Loaders/Backhoes	2	8	97	0.37	121	69,483
Building Construction	Cement and Mortar Mixers	1	8	9	0.56	355	14,314
Building Construction	Cranes	1	7	226	0.29	355	162,867
Building Construction	Forklifts	1	8	89	0.2	355	50,552
Building Construction	Tractors/Loaders/Backhoes	2	7	97	0.37	355	178,373
Building Construction	Welders	1	8	46	0.45	355	58,788
Paving	Cement and Mortar Mixers	1	8	9	0.56	62	2,500
Paving	Paving Equipment	1	8	130	0.36	62	23,213
Paving	Rollers	1	8	80	0.38	62	15,078
Paving	Tractors/Loaders/Backhoes	1	8	97	0.37	62	17,801
Paving	Trenchers	1	8	80	0.5	62	19,840
Architectural Coating	Air Compressors	1	6	78	0.48	62	13,928
Phase IV							
Grading	Graders	1	8	174	0.41	154	87,891
Grading	Rubber Tired Dozers	1	8	255	0.4	154	125,664
Grading	Tractors/Loaders/Backhoes	3	8	97	0.37	154	132,649
Building Construction 2	Air Compressors	2	8	78	0.48	283	169,528
Building Construction 2	Cranes	2	7	226	0.29	283	259,669
Building Construction 2	Forklifts	2	8	89	0.2	283	80,598
Building Construction 2	Rubber Tired Loaders	1	8	199	0.36	283	162,193

Building Construction 2	Tractors/Loaders/Backhoes	8	7	97	0.37	283	568,785
Building Construction 2	Welders	3	8	46	0.45	283	140,594
Building Construction 3	Air Compressors	1	8	78	0.48	305	91,354
Building Construction 3	Cranes	1	7	226	0.29	305	139,928
Building Construction 3	Tractors/Loaders/Backhoes	2	7	97	0.37	305	153,250
Building Construction 3	Welders	2	8	46	0.45	305	101,016
Architectural Coating	Air Compressors	1	6	78	0.48	154	34,595
Paving	Cement and Mortar Mixers	1	8	9	0.56	162	6,532
Paving	Forklifts	1	8	89	0.2	162	23,069
Paving	Paving Equipment	1	8	130	0.36	162	60,653
Paving	Rollers	1	8	80	0.38	162	39,398
Paving	Tractors/Loaders/Backhoes	2	8	97	0.37	162	93,027
Paving	Trenchers	1	8	80	0.5	162	51,840
Paving	Welders	1	8	46	0.45	162	26,827
Phase V							
Grading	Air Compressors	2	8	78	0.48	173	103,634
Grading	Excavators	1	8	162	0.38	173	85,199
Grading	Rubber Tired Loaders	1	8	199	0.36	173	99,150
Grading	Tractors/Loaders/Backhoes	3	8	97	0.37	173	149,015
Building Construction	Cranes	2	7	226	0.29	173	158,738
Building Construction	Forklifts	1	8	89	0.2	173	24,635
Building Construction	Tractors/Loaders/Backhoes	4	7	97	0.37	173	173,851
Building Construction	Welders	1	8	46	0.45	173	28,649
Building Construction 2	Tractors/Loaders/Backhoes	3	7	97	0.37	107	80,645
Building Construction 3	Forklifts	1	8	89	0.2	455	64,792
Building Construction 3	Tractors/Loaders/Backhoes	2	7	97	0.37	455	228,619
Building Construction 4	Cranes	1	7	226	0.29	260	119,283
Building Construction 4	Forklifts	1	8	89	0.2	260	37,024
Building Construction 4	Rubber Tired Loaders	2	8	199	0.36	260	298,022
Building Construction 4	Tractors/Loaders/Backhoes	3	7	97	0.37	260	195,959
Building Construction 4	Welders	1	8	46	0.45	260	43,056
Architectural Coating	Air Compressors	1	6	78	0.48	276	62,001
Building Construction 5	Air Compressors	1	8	78	0.48	86	25,759
Building Construction 5	Cranes	2	7	226	0.29	86	78,910
Building Construction 5	Forklifts	1	8	89	0.2	86	12,246
Building Construction 5	Tractors/Loaders/Backhoes	1	7	97	0.37	86	21,606
Building Construction 6	Cranes	1	7	226	0.29	146	66,982

Building Construction 6	Forklifts	1	8	89	0.2	146	20,790
Building Construction 6	Tractors/Loaders/Backhoes	1	7	97	0.37	146	36,680
Paving	Cement and Mortar Mixers	1	8	9	0.56	80	3,226
Paving	Paving Equipment	1	8	130	0.36	80	29,952
Paving	Rollers	1	8	80	0.38	80	19,456
Paving	Tractors/Loaders/Backhoes	3	8	97	0.37	80	68,909
Paving	Trenchers	2	8	80	0.5	80	51,200
Phase VI							
Demolition	Concrete/Industrial Saws	2	8	81	0.73	85	80,417
Demolition	Excavators	3	8	162	0.38	85	125,582
Demolition	Rubber Tired Dozers	2	8	255	0.4	85	138,720
Demolition	Rubber Tired Loaders	1	8	199	0.36	85	48,715
Demolition	Tractors/Loaders/Backhoes	3	8	97	0.37	85	73,216
Grading	Air Compressors	1	8	78	0.48	675	202,176
Grading	Graders	1	8	174	0.41	675	385,236
Grading	Rubber Tired Loaders	1	8	199	0.36	675	386,856
Grading	Tractors/Loaders/Backhoes	3	8	97	0.37	675	581,418
Building Construction	Air Compressors	1	8	78	0.48	374	112,020
Building Construction	Cranes	1	7	226	0.29	374	171,584
Building Construction	Forklifts	1	8	89	0.2	374	53,258
Building Construction	Tractors/Loaders/Backhoes	3	7	97	0.37	374	281,880
Building Construction	Welders	1	8	46	0.45	374	61,934
Paving	Paving Equipment	1	8	130	0.36	93	34,819
Paving	Rollers	1	8	80	0.38	93	22,618
Paving	Tractors/Loaders/Backhoes	2	8	97	0.37	93	53,404
Paving	Trenchers	1	8	80	0.5	93	29,760
Architectural Coating	Air Compressors	1	6	78	0.48	93	20,892

Total hp-hr for equipment ≤ 50 hp (based on CalEEMod run): 927,150

Total hp-hr for equipment > 50 hp (based on CalEEMod run): 17,683,139

**Harbor-UCLA Master Plan
Construction Gasoline and Diesel Fuel Estimate**

Master Plan Project: Construction Workers

Fuel Consumption Factor:¹ 0.0354 gallons/mile
 Total Worker Trips: 6,589,474 trips
 Trip Distance (CalEEMod assumed value): 14.7 miles/trip
 Total Worker Miles: 96,865,268 miles

Total gallons (workers): 3,427,646 gal (primarily gasoline)

1. California Air Resources Board, EMFAC2014 (South Coast Air Basin; LDA, LDT1, LDT2; Annual; 2016-2030).

Phase	Worker Trips/Day	Days	Total Worker Trips
Phase M			
Demolition	102	52	5,304
Grading	252	53	13,356
Paving	156	87	13,572
Building Construction	150	95	14,250
Paving 2	28	65	1,820
Phase C			
Demolition	80	139	11,120
Grading	174	652	113,448
SCE SY	233	129	30,057
Building Construction	260	911	236,860
Paving 2	28	36	1,008
Architectural Coating	44	127	5,588
Paving	48	84	4,032
Phase I			
Demolition	128	122	15,616
Grading	499	64	31,936
Building Construction	516	250	129,000
Paving	40	57	2,280
Architectural Coating	68	57	3,876

Phase II

Grading	18	64	1,152
Building Construction	270	95	25,650
Building Construction 2	270	108	29,160
Building Construction 3	270	108	29,160
Building Construction 4	455	202	91,910
Architectural Coating	92	114	10,488
Paving	80	93	7,440

Phase III

Demolition	140	221	30,940
Grading	280	121	33,880
Building Construction	715	355	253,825
Paving	48	62	2,976
Architectural Coating	80	62	4,960

Phase IV

Grading	536	154	82,544
Building Construction 2	3,654.00	283	1,034,082
Building Construction 3	3,654.00	305	1,114,470
Architectural Coating	360	154	55,440
Paving	118	162	19,116

Phase V

Grading	486	173	84,078
Building Construction	1,770.00	173	306,210
Building Construction 2	1,770.00	107	189,390
Building Construction 3	1,770.00	455	805,350
Building Construction 4	1,770.00	260	460,200
Architectural Coating	92	276	25,392
Building Construction 5	465	86	39,990
Building Construction 6	465	146	67,890
Paving	26	80	2,080

Phase VI

Demolition	466	85	39,610
Grading	72	675	48,600
Building Construction	2,688.00	374	1,005,312
Paving	540	93	50,220
Architectural Coating	52	93	4,836

Total Worker Trips 6,589,474

**Harbor-UCLA Master Plan
Construction Energy Demand Estimates**

Master Plan Project: On-Road Trucks (Vendors Trucks)

EMFAC2014 Diesel Fuel Consumption Factor:¹ 0.1585 gallons/mile

Vendor Truck Trips (based on CalEEMod run):² 459,781 trips

Trip Distance (CalEEMod assumed value): 6.9 miles/trip

Total diesel gallons (on-road trucks): 502,772 gal

1. California Air Resources Board, EMFAC2014 (South Coast Air Basin; T7 Single Construction; Annual; 2016-2030)
2. This is a highly conservative estimate as it assumes the number of vendor truck trips during a peak day would occur every day throughout the building construction phase.

Phase	Vendor Trips/Day	Days	Total Vendor Trips
Phase M			
Demolition	2	52	104
Grading	2	53	106
Building Construction	27	95	2,565
Phase C			
Demolition	4	139	556
Grading	4	652	2,608
SCE SY	27	129	3,483
Building Construction	25	911	22,775
Paving	2	84	168
Phase I			
Demolition	2	122	244
Grading	2	64	128
Building Construction	49	250	12,250

Phase II			
Grading	2	64	128
Building Construction	38	95	3,610
Building Construction 2	38	108	4,104
Building Construction 3	38	108	4,104
Building Construction 4	40	202	8,080
Phase III			
Demolition	2	221	442
Grading	2	121	242
Building Construction	43	355	15,265
Phase IV			
Grading	2	154	308
Building Construction 2	157	283	44,431
Building Construction 3	157	305	47,885
Phase V			
Grading	4	173	692
Building Construction	151	173	26,123
Building Construction 2	153	107	16,371
Building Construction 3	153	455	69,615
Building Construction 4	151	260	39,260
Building Construction 5	153	86	13,158
Building Construction 6	151	146	22,046
Phase VI			
Demolition	4	85	340
Grading	2	675	1,350
Building Construction	260	374	97,240
		Total	459,781

**Harbor-UCLA Master Plan
Construction Energy Demand Estimates**

Master Plan Project: On-Road Trucks (Haul Trucks)

EMFAC2011 Diesel Fuel Consumption Factor:¹ 0.1585 gallons/mile

Vendor Truck Trips (based on CalEEMod run):² 80,625 trips

Trip Distance (CalEEMod assumed value): 20.0 miles/trip

Total diesel gallons (on-road trucks): 255,546 gal

1. California Air Resources Board, EMFAC2014 (South Coast Air Basin; T7 Single Construction; Annual; 2016-2030)

Phase	Vendor Trips/Day	Days	Total Haul
Phase M			5,198
Phase C			7,482
Phase I			14,355
Phase III			11,889
Phase IV			12,067
Phase V			14,080
Phase VI			15,554
		Total	80,625

**Harbor-UCLA Master Plan
Construction Energy Demand Estimates**

LA Biomed: Off-Road Equipment

Equipment ≤ 50 hp

pounds fuel/hp-hr (OFFROAD2011 model, ≤ 50 hp):	0.408 lb/hp-hr
diesel pounds/gallon (CARB assumption):	7.07 lb/gal
diesel gallons/hp-hr:	0.0577 gal/hp-hr
Total hp-hr for equipment ≤ 50 hp (cased on CalEEMod run):	68,393 hp-hr
Total diesel gallons:	3,947 gal

Equipment > 50 hp

pounds fuel/hp-hr (OFFROAD2011 model, > 50 hp):	0.367 lb/hp-hr
diesel pounds/gallon (CARB assumption):	7.07 lb/gal
diesel gallons/hp-hr:	0.0519 gal/hp-hr
Total hp-hr for equipment > 50 hp (based on CalEEMod run):	1,346,908 hp-hr
Total diesel gallons:	69,917 gal

Total diesel gallons (off-road equipment): 73,864 gal

Phase	Equipment	Number	Hours/Day	HP	Load	Days	Total hp-hr
LA BIOMED							
Architectural Coating	Air Compressors	1	6	78	0.48	130	29,203
Building Construction 2	Cranes	1	7	226	0.29	230	105,519
Building Construction 2	Forklifts	3	8	89	0.2	230	98,256
Grading	Excavators	1	8	162	0.38	77	37,921
Building Construction	Cranes	1	7	226	0.29	183	83,957
Building Construction	Forklifts	3	8	89	0.2	183	78,178
Building Construction	Generator Sets	1	8	84	0.74	183	91,002
Paving	Pavers	2	8	125	0.42	108	90,720
Paving	Rollers	2	8	80	0.38	108	52,531
Building Construction 2	Generator Sets	1	8	84	0.74	230	114,374
Grading	Rubber Tired Dozers	1	8	255	0.4	77	62,832
Building Construction	Tractors/Loaders/Backhoes	3	7	97	0.37	183	137,925
Grading	Graders	1	8	174	0.41	77	43,945
Grading	Tractors/Loaders/Backhoes	3	8	97	0.37	77	66,325
Paving	Paving Equipment	2	8	130	0.36	108	80,870
Building Construction 2	Tractors/Loaders/Backhoes	3	7	97	0.37	230	173,349
Building Construction 2	Welders	1	8	46	0.45	230	38,088
Building Construction	Welders	1	8	46	0.45	183	30,305

Total hp-hr for equipment ≤ 50 hp (cased on CalEEMod run): 68,393
Total hp-hr for equipment > 50 hp (based on CalEEMod run): 1,346,908

**Harbor-UCLA Master Plan
Construction Energy Demand Estimates**

LA Biomed: Construction Workers

Fuel Consumption Factor: ¹	0.0354	gallons/mile
Total Worker Trips:	34,331	trips
Trip Distance (CalEEMod assumed value):	14.7	miles/trip
Total Worker Miles:	504,666	miles
Total gallons (workers):	17,858	gal (primarily gasoline)

1. California Air Resources Board, EMFAC2014 (South Coast Air Basin; LDA, LDT1, LDT2; Annual; 2016-2030).

Phase	Worker Trips/Day	Days	Total Worker Trips
LA BIOMED			
Building Construction 2	72	230	16,560
Grading	15	77	1,155
Building Construction	72	183	13,176
Paving	15	108	1,620
Architectural Coating	14	130	1,820
		Total Worker Trips	34,331

**Harbor-UCLA Master Plan
Construction Energy Demand Estimates**

LA Biomed: On-Road Trucks

EMFAC2011 Diesel Fuel Consumption Factor: ¹	0.1585 gallons/mile
Vendor Truck Trips (based on CalEEMod run): ²	7,659 trips
Trip Distance (CalEEMod assumed value):	6.9 miles/trip
Total diesel gallons (on-road trucks):	8,375 gal

1. California Air Resources Board, EMFAC2014 (South Coast Air Basin; T7 Single Construction; Annual; 2016-2030)
2. This is a highly conservative estimate as it assumes the number of vendor truck trips during a peak day would occur every day throughout the building construction phase.

Phase	Vendor Trips/Day	Days	Total Vendor Trips
LA BIOMED			
Building Construction 2	37	77	2,849
Building Construction	37	130	4,810
		Total	7,659

Appendix F.2
Operational Energy Data Worksheets

**Harbor-UCLA Master Plan
Operational Energy Demand Estimates**

Energy and VMT Estimates

Land Use	Natural Gas	Electricity demand	Electricity demand	Annual VMT
	demand (million kBTU/yr)	(million kWh/yr)	from water demand (million kWh/yr)	
Master Plan	23.64	17.35	3.56	75,933,038
Biomed	4.38	3.27	1.84	8,430,802
	28.02	20.62	5.40	84,363,840

Land Use	Approx. Floor	Natural Gas	Electricity (kWh/yr)	Annual VMT
	Surface Area (sqft)	(kBTU/yr)		
General Light Industry	35,000	1,966,500	1.47E+06	858,267
General Office Building	130,635	1,083,620	1.71E+06	5,180,486
Hospital	129,205	13,898,600	5.69E+06	19,013,040
Library	271,272	342,450	2.56E+05	3,194,737
Medical Office Building	22,500	3,422,500	5.42E+06	38,667,079
Research & Development	412,598	7,229,500	5.40E+06	13,914,128
Strip Mall	45,402	48,913	4.88E+05	2,843,429
Unrefrigerated Warehouse-No Rail	475,000	31,327	1.89E+05	692,675

Land Use	Approx. Floor Surface Area (sqft)
Bioscience Tech Park	250,000
Total Area Master Plan 2030 Total	2,457,355
Total Area Master Plan 2030 excluding Bioscience Tech Park	2,207,355

Land Use	CalEEMod		Total Water Use (Mgal/yr)	Electricity Demand from water Demand (million kWh)
	Indoor Water Use (Mgal/yr)	Outdoor Water Use (Mgal/yr)		
General Light Industry	29.88	0.00	29.88	0.39
General Office Building	23.22	14.23	37.45	0.46
Hospital	34.04	6.48	40.52	0.52
Library	0.70	1.10	1.81	0.02
Medical Office Building	51.77	9.86	61.63	0.78
Research & Development	233.56	0.00	233.56	3.04
Strip Mall	2.59	1.59	4.18	0.05
Unrefrigerated Warehouse-No Rail	10.50	0.00	10.50	0.14

Land Use	CalEEMod			
	Electricity Intensity Factor To Supply (kWh/Mgal)	Electricity Intensity Factor To Treat (kWh/Mgal)	Electricity Intensity Factor To Distribute (kWh/Mgal)	Electricity Intensity Factor For Wastewater Treatment (kWh/Mgal)
General Light Industry	9727	111	1272	1911
General Office Building	9727	111	1272	1911
Hospital	9727	111	1272	1911
Library	9727	111	1272	1911
Medical Office Building	9727	111	1272	1911
Research & Development	9727	111	1272	1911
Strip Mall	9727	111	1272	1911
Unrefrigerated Warehouse-No Rail	9727	111	1272	1911

Source: California Emissions Estimator Model (CalEEMod), Version 2013.2.2.

**Harbor-UCLA Master Plan
Operational Energy Demand Estimates**

Fuel Usage from VMT

Annual VMT (Master Plan Project): 75,933,038 miles/year
 Annual VMT (LA Biomed): 8,430,802 miles/year

Fuel Type: ¹	GAS	DSL	ELEC	
Percent:	85.1%	8.2%	6.7%	
Miles per Gallon Fuel:	31.67	13.38	-	
Annual VMT by Fuel Type (Master Plan Project):	64,643,723	6,226,502	5,062,813	miles/year
Annual VMT by Fuel Type (LA Biomed):	7,177,356	691,325	562,121	miles/year
Annual Fuel Usage (Master Plan Project):	2,041,355	465,237	-	gal/year
Annual Fuel Usage (LA Biomed):	226,651	51,655	-	gal/year
Annual Fuel Savings from Electric Vehicles (Master Plan Project): ²	-	-	159,876	gal/year (assumed to be gasoline)
Annual Fuel Savings from Electric Vehicles (LA Biomed): ²	-	-	17,751	gal/year (assumed to be gasoline)

Notes:

1. California Air Resources Board, EMFAC2014 (South Coast Air Basin; Fleet Average; Annual; 2030).
2. Assumes electric vehicles would replace traditional gasoline-fueled vehicles.