

Appendix E

Energy Modeling Calculations

Construction Fuel Use

Construction Offroad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Number of days	Average Daily Factor	Diesel Fuel Usage
Phase 1: Highway 59 Terminus	Cranes	1	8.00	231	0.29	132	0.6	2,122
Phase 1: Highway 59 Terminus	Tractors/Loaders/Backhoes	2	8.00	97	0.37	132	0.6	2,274
Phase 2: UC Merced Terminus	Cranes	1	8.00	231	0.29	131	0.6	2,106
Phase 2: UC Merced Terminus	Tractors/Loaders/Backhoes	2	8.00	97	0.37	131	0.6	2,257
Phase 3: Pipeline	Cement and Mortar Mixers	2	8.00	9	0.56	88	0.6	213
Phase 3: Pipeline	Rollers	1	8.00	80	0.38	88	0.6	642
Phase 3: Pipeline	Tractors/Loaders/Backhoes	2	8.00	97	0.37	88	0.6	1,516
TOTAL								11,130

Notes: Equipment assumptions are consistent with CalEEMod. Fuel usage average of 0.05 gallons of diesel fuel per horsepower-hour is from the SCAQMD CEQA Air Quality Handbook, Table A9-3E.

Trips and VMT

Phase Name	Daily Worker Trip	Daily Vendor Trip	Daily Haul Trip	Days per Year	Total Worker Trips	Total Vendor Trips	Total Haul Trips	Worker Trip Length (miles)	Vendor Trip Length (miles)	Haul Trip Length (miles)	Total Worker Trip Length (miles)	Total Vendor Trip Length (miles)	Total Haul Trip Length (miles)	Average Daily Factor	Total gallons of gasoline (on-road)	Total gallons of diesel (on-road)
Phase 1: Highway 59 Terminus	34	2	2	132	4488	264	264	16.80	6.60	20.00	75398.4	1742.4	5280	0.6	1,143,400	16,362
Phase 2: UC Merced Terminus	34	2	2	131	4454	262	262	16.80	6.60	20.00	74827.2	1729.2	5240	0.6	1,134,738	16,238
Phase 3: Pipeline	34	2	2	88	2992	176	176	16.80	6.60	20.00	50265.6	1161.6	3520	0.6	762,267	10,908
TOTAL														3,040,405	43,509	
															(+ off-road equipment)	54,639

Notes: Consistent with CalEEMod, worker vehicles assumed to be gasoline and 50% LDA, 25% LDT1, and 25% LDT2. Vendor and haul trips are assumed to be 100% diesel Heavy-Duty Trucks (T7).

EMFAC2017 (v1.0.2) Emissions Inventory

Region Type: County

Region: MERCED

Calendar Year: 2019

Season: Annual

Vehicle Classification: EMFAC2011 Categories

Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	CalYr	VehClass	MdYr	Speed miles/hr	Fuel	Population vehicles	VMT miles/day	Trips trips/day	Fuel gas 1000 gallons/	Diesel gas 1000 gallons/	Miles per gallon	Gasoline miles per	Diesel miles per
Merced	2019	LDA	Aggregated	Aggregated	GAS	95357.67	4052304	442577.5	143.68024	0	28.20	25.27	5.16
Merced	2019	LDT1	Aggregated	Aggregated	GAS	10189.13	345290.5	44452.87	14.710132	0	23.47		
Merced	2019	LDT2	Aggregated	Aggregated	GAS	32968.21	1210418	149772.3	57.045939	0	21.22		
Merced	2019	T7 tractor	Aggregated	Aggregated	DSL	436.5207	30596.29	1973.493	0	5.923937	5.16		

Notes: Consistent with CalEEMod, worker vehicles assumed to be gasoline and 50% LDA, 25% LDT1, and 25% LDT2. Vendor and haul trips are assumed to be 100% diesel Heavy-Duty Trucks (T7).