

Appendix C

CalEEMod Output

Old Arcata Road Improvements - Humboldt County, Annual

**Old Arcata Road Improvements
Humboldt County, Annual**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Parking	2.50	User Defined Unit	2.50	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	103
Climate Zone	1			Operational Year	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	641.35	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction-Only

Land Use - 1 Mile Long, Appx. 20 feet wide of Pavement = 2.5 acres of Roadway

Construction Phase - Project-specific phasing

Off-road Equipment - Project-specific fleet

Grading - Materials movement unknown, assumed nominal amount (80 cy) for each Grubbing and Grading

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	14.00
tblConstructionPhase	NumDays	6.00	21.00
tblConstructionPhase	NumDays	10.00	14.00
tblConstructionPhase	NumDays	3.00	14.00

tblConstructionPhase	PhaseEndDate	8/19/2019	2/11/2021
tblConstructionPhase	PhaseEndDate	8/30/2019	4/1/2021
tblConstructionPhase	PhaseEndDate	7/17/2020	5/31/2021
tblConstructionPhase	PhaseEndDate	8/22/2019	3/4/2021
tblConstructionPhase	PhaseStartDate	7/23/2019	1/23/2021
tblConstructionPhase	PhaseStartDate	8/23/2019	3/4/2021
tblConstructionPhase	PhaseStartDate	7/4/2020	5/12/2021
tblConstructionPhase	PhaseStartDate	8/20/2019	2/13/2021
tblGrading	MaterialExported	0.00	80.00
tblGrading	MaterialExported	0.00	80.00
tblLandUse	LotAcreage	0.00	2.50
tblOffRoadEquipment	HorsePower	65.00	89.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes

tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Rough Terrain Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.0616	0.5443	0.6340	1.0100e-003	5.9000e-003	0.0280	0.0339	1.5700e-003	0.0262	0.0278	0.0000	87.4498	87.4498	0.0218	0.0000	87.9947
Maximum	0.0616	0.5443	0.6340	1.0100e-003	5.9000e-003	0.0280	0.0339	1.5700e-003	0.0262	0.0278	0.0000	87.4498	87.4498	0.0218	0.0000	87.9947

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/23/2021	2/11/2021	5	14	
2	Grubbing/Land Clearing	Site Preparation	2/13/2021	3/4/2021	5	14	
3	Grading/Excavation	Grading	3/4/2021	4/1/2021	5	21	
4	Paving	Paving	5/12/2021	5/31/2021	5	14	
5	Drainage/Utilities/Subgrade	Trenching	4/2/2021	4/21/2021	5	14	
6	Trenching (Trenchless)	Trenching	4/22/2021	5/11/2021	5	14	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 2.5

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Excavators	1	8.00	158	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grubbing/Land Clearing	Excavators	1	8.00	158	0.38
Grubbing/Land Clearing	Generator Sets	1	8.00	84	0.74
Grubbing/Land Clearing	Signal Boards	2	8.00	6	0.82
Grubbing/Land Clearing	Skid Steer Loaders	1	8.00	65	0.37
Grubbing/Land Clearing	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading/Excavation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading/Excavation	Excavators	2	8.00	158	0.38
Grading/Excavation	Rollers	2	8.00	80	0.38
Grading/Excavation	Signal Boards	2	8.00	6	0.82

Drainage/Utilities/Subgrade	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Drainage/Utilities/Subgrade	Excavators	1	8.00	158	0.38
Drainage/Utilities/Subgrade	Generator Sets	1	8.00	84	0.74
Drainage/Utilities/Subgrade	Plate Compactors	2	8.00	8	0.43
Drainage/Utilities/Subgrade	Rough Terrain Forklifts	1	8.00	100	0.40
Drainage/Utilities/Subgrade	Signal Boards	2	8.00	6	0.82
Drainage/Utilities/Subgrade	Skid Steer Loaders	1	8.00	65	0.37
Trenching (Trenchless)	Excavators	1	8.00	158	0.38
Trenching (Trenchless)	Generator Sets	1	8.00	84	0.74
Trenching (Trenchless)	Skid Steer Loaders	1	8.00	89	0.37
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Signal Boards	2	8.00	6	0.82

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class	
Demolition		4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grubbing/Land Clearing		6	15.00	0.00	10.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading/Excavation		8	20.00	0.00	10.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Drainage/Utilities/Subgrade		9	23.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving		8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Trenching (Trenchless)		3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0129	0.1264	0.0927	1.6000e-004		6.4500e-003	6.4500e-003		6.0300e-003	6.0300e-003	0.0000	14.1047	14.1047	3.5600e-003	0.0000	14.1938
Total	0.0129	0.1264	0.0927	1.6000e-004		6.4500e-003	6.4500e-003		6.0300e-003	6.0300e-003	0.0000	14.1047	14.1047	3.5600e-003	0.0000	14.1938

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5000e-004	4.7000e-004	3.8200e-003	1.0000e-005	5.4000e-004	1.0000e-005	5.5000e-004	1.4000e-004	0.0000	1.5000e-004	0.0000	0.4856	0.4856	3.0000e-005	0.0000	0.4864
Total	5.5000e-004	4.7000e-004	3.8200e-003	1.0000e-005	5.4000e-004	1.0000e-005	5.5000e-004	1.4000e-004	0.0000	1.5000e-004	0.0000	0.4856	0.4856	3.0000e-005	0.0000	0.4864

3.3 Grubbing/Land Clearing - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.7500e-003	0.0626	0.0785	1.3000e-004		3.1700e-003	3.1700e-003		3.0300e-003	3.0300e-003	0.0000	10.9520	10.9520	2.3300e-003	0.0000	11.0102
Total	6.7500e-003	0.0626	0.0785	1.3000e-004	0.0000	3.1700e-003	3.1700e-003	0.0000	3.0300e-003	3.0300e-003	0.0000	10.9520	10.9520	2.3300e-003	0.0000	11.0102

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	1.5300e-003	2.5000e-004	0.0000	8.0000e-005	1.0000e-005	9.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.3768	0.3768	1.0000e-005	0.0000	0.3771
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.2000e-004	7.1000e-004	5.7300e-003	1.0000e-005	8.1000e-004	1.0000e-005	8.2000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7284	0.7284	5.0000e-005	0.0000	0.7296
Total	8.6000e-004	2.2400e-003	5.9800e-003	1.0000e-005	8.9000e-004	2.0000e-005	9.1000e-004	2.4000e-004	2.0000e-005	2.5000e-004	0.0000	1.1052	1.1052	6.0000e-005	0.0000	1.1067

3.4 Grading/Excavation - 2021
Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0139	0.1327	0.1618	2.4000e-004		7.2800e-003	7.2800e-003		6.7200e-003	6.7200e-003	0.0000	21.0281	21.0281	6.5900e-003	0.0000	21.1930
Total	0.0139	0.1327	0.1618	2.4000e-004	0.0000	7.2800e-003	7.2800e-003	0.0000	6.7200e-003	6.7200e-003	0.0000	21.0281	21.0281	6.5900e-003	0.0000	21.1930

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	1.5300e-003	2.5000e-004	0.0000	8.0000e-005	1.0000e-005	9.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.3768	0.3768	1.0000e-005	0.0000	0.3771
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6400e-003	1.4100e-003	0.0115	2.0000e-005	1.6200e-003	2.0000e-005	1.6400e-003	4.3000e-004	1.0000e-005	4.5000e-004	0.0000	1.4567	1.4567	1.0000e-004	0.0000	1.4592
Total	1.6800e-003	2.9400e-003	0.0117	2.0000e-005	1.7000e-003	3.0000e-005	1.7300e-003	4.5000e-004	2.0000e-005	4.8000e-004	0.0000	1.8335	1.8335	1.1000e-004	0.0000	1.8363

3.5 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.1500e-003	0.0903	0.1003	1.5000e-004		4.9600e-003	4.9600e-003		4.5800e-003	4.5800e-003	0.0000	13.0697	13.0697	4.0900e-003	0.0000	13.1719
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	9.1500e-003	0.0903	0.1003	1.5000e-004		4.9600e-003	4.9600e-003		4.5800e-003	4.5800e-003	0.0000	13.0697	13.0697	4.0900e-003	0.0000	13.1719

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0900e-003	9.4000e-004	7.6400e-003	1.0000e-005	1.0800e-003	1.0000e-005	1.0900e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.9711	0.9711	7.0000e-005	0.0000	0.9728
Total	1.0900e-003	9.4000e-004	7.6400e-003	1.0000e-005	1.0800e-003	1.0000e-005	1.0900e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.9711	0.9711	7.0000e-005	0.0000	0.9728

3.6 Drainage/Utilities/Subgrade - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.1800e-003	0.0774	0.0976	1.6000e-004		3.7400e-003	3.7400e-003		3.5700e-003	3.5700e-003	0.0000	13.5123	13.5123	3.0600e-003	0.0000	13.5887
Total	8.1800e-003	0.0774	0.0976	1.6000e-004		3.7400e-003	3.7400e-003		3.5700e-003	3.5700e-003	0.0000	13.5123	13.5123	3.0600e-003	0.0000	13.5887

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2600e-003	1.0800e-003	8.7900e-003	1.0000e-005	1.2400e-003	1.0000e-005	1.2500e-003	3.3000e-004	1.0000e-005	3.4000e-004	0.0000	1.1168	1.1168	7.0000e-005	0.0000	1.1187
Total	1.2600e-003	1.0800e-003	8.7900e-003	1.0000e-005	1.2400e-003	1.0000e-005	1.2500e-003	3.3000e-004	1.0000e-005	3.4000e-004	0.0000	1.1168	1.1168	7.0000e-005	0.0000	1.1187

3.7 Trenching (Trenchless) - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.8300e-003	0.0469	0.0621	1.0000e-004		2.3000e-003	2.3000e-003		2.2100e-003	2.2100e-003	0.0000	8.8824	8.8824	1.8000e-003	0.0000	8.9273
Total	4.8300e-003	0.0469	0.0621	1.0000e-004		2.3000e-003	2.3000e-003		2.2100e-003	2.2100e-003	0.0000	8.8824	8.8824	1.8000e-003	0.0000	8.9273

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.4000e-004	3.8000e-004	3.0600e-003	0.0000	4.3000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3885	0.3885	3.0000e-005	0.0000	0.3891
Total	4.4000e-004	3.8000e-004	3.0600e-003	0.0000	4.3000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3885	0.3885	3.0000e-005	0.0000	0.3891