Appendix A:
Air Quality and GHG

Ruschin Drive - Construction Unmitigated

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	85.00	Dwelling Unit	10.10	153,000.00	243

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2016
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Based on project site acreage.

Construction Phase -

Demolition - Based on estimated square foot of building to be demolished and pavement to be removed.

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	27.60	10.10
tblProjectCharacteristics	OperationalYear	2014	2016

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					
2015	0.4976	4.6752	3.3166	4.3700e-003	0.2904	0.2709	0.5613	0.1181	0.2529	0.3709	0.0000	401.5003	401.5003	0.0965	0.0000	403.5257
2016	1.3948	2.6309	1.9083	2.8800e-003	0.0292	0.1743	0.2035	7.8800e-003	0.1636	0.1715	0.0000	256.6270	256.6270	0.0564	0.0000	257.8109
Total	**1.8924**	**7.3061**	**5.2249**	**7.2500e-003**	**0.3196**	**0.4452**	**0.7648**	**0.1259**	**0.4164**	**0.5424**	**0.0000**	**658.1272**	**658.1272**	**0.1528**	**0.0000**	**661.3367**

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 - Building	Demolition	3/1/2015	3/27/2015	5	20	
2	Demolition - Pavement	Demolition	3/28/2015	4/24/2015	5	20	
3	Site Preparation	Site Preparation	4/25/2015	5/8/2015	5	10	
4	Grading	Grading	5/9/2015	6/19/2015	5	30	
5	Building Construction	Building Construction	6/20/2015	8/12/2016	5	300	
6	Paving	Paving	8/13/2016	9/9/2016	5	20	
7	Architectural Coating	Architectural Coating	9/10/2016	10/7/2016	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 309,825; Residential Outdoor: 103,275; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition - Building	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition - Building	Excavators	3	8.00	162	0.38
Demolition - Building	Rubber Tired Dozers	2	8.00	255	0.40
Demolition - Pavement	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition - Pavement	Excavators	3	8.00	162	0.38
Demolition - Pavement	Rubber Tired Dozers	2	8.00	255	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40

Grading	Scrapers	2	8.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

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 - Building	6	15.00	0.00	171.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition - Pavement	6	15.00	0.00	173.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	31.00	9.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	6.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - Building - 2015

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					0.0185	0.0000	0.0185	2.8000e-003	0.0000	2.8000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0451	0.4836	0.3607	4.0000e-004		0.0245	0.0245		0.0229	0.0229	0.0000	37.4413	37.4413	0.0102	0.0000	37.6544
Total	**0.0451**	**0.4836**	**0.3607**	**4.0000e-004**	**0.0185**	**0.0245**	**0.0430**	**2.8000e-003**	**0.0229**	**0.0257**	**0.0000**	**37.4413**	**37.4413**	**0.0102**	**0.0000**	**37.6544**

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	2.2000e-003	0.0298	0.0227	6.0000e-005	1.4400e-003	4.5000e-004	1.8900e-003	4.0000e-004	4.1000e-004	8.1000e-004	0.0000	5.9717	5.9717	5.0000e-005	0.0000	5.9727
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	6.4000e-004	9.5000e-004	9.2000e-003	2.0000e-005	1.3600e-003	1.0000e-005	1.3700e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.2825	1.2825	8.0000e-005	0.0000	1.2841
Total	**2.8400e-003**	**0.0308**	**0.0319**	**8.0000e-005**	**2.8000e-003**	**4.6000e-004**	**3.2600e-003**	**7.6000e-004**	**4.2000e-004**	**1.1800e-003**	**0.0000**	**7.2542**	**7.2542**	**1.3000e-004**	**0.0000**	**7.2569**

3.3 Demolition - Pavement - 2015

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					0.0187	0.0000	0.0187	2.8300e-003	0.0000	2.8300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0451	0.4836	0.3607	4.0000e-004		0.0245	0.0245		0.0229	0.0229	0.0000	37.4413	37.4413	0.0102	0.0000	37.6544
Total	**0.0451**	**0.4836**	**0.3607**	**4.0000e-004**	**0.0187**	**0.0245**	**0.0432**	**2.8300e-003**	**0.0229**	**0.0257**	**0.0000**	**37.4413**	**37.4413**	**0.0102**	**0.0000**	**37.6544**

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	2.2200e-003	0.0302	0.0230	7.0000e-005	1.4600e-003	4.5000e-004	1.9100e-003	4.0000e-004	4.2000e-004	8.2000e-004	0.0000	6.0415	6.0415	5.0000e-005	0.0000	6.0426
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	6.4000e-004	9.5000e-004	9.2000e-003	2.0000e-005	1.3600e-003	1.0000e-005	1.3700e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.2825	1.2825	8.0000e-005	0.0000	1.2841
Total	**2.8600e-003**	**0.0311**	**0.0322**	**9.0000e-005**	**2.8200e-003**	**4.6000e-004**	**3.2800e-003**	**7.6000e-004**	**4.3000e-004**	**1.1900e-003**	**0.0000**	**7.3240**	**7.3240**	**1.3000e-004**	**0.0000**	**7.3267**

3.4 Site Preparation - 2015

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					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0263	0.2845	0.2132	2.0000e-004		0.0154	0.0154		0.0142	0.0142	0.0000	18.6506	18.6506	5.5700e-003	0.0000	18.7675
Total	**0.0263**	**0.2845**	**0.2132**	**2.0000e-004**	**0.0903**	**0.0154**	**0.1058**	**0.0497**	**0.0142**	**0.0639**	**0.0000**	**18.6506**	**18.6506**	**5.5700e-003**	**0.0000**	**18.7675**

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	3.9000e-004	5.7000e-004	5.5200e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.2000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7695	0.7695	5.0000e-005	0.0000	0.7705
Total	**3.9000e-004**	**5.7000e-004**	**5.5200e-003**	**1.0000e-005**	**8.2000e-004**	**1.0000e-005**	**8.2000e-004**	**2.2000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.7695**	**0.7695**	**5.0000e-005**	**0.0000**	**0.7705**

3.5 Grading - 2015

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					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1016	1.1857	0.7626	9.3000e-004		0.0570	0.0570		0.0525	0.0525	0.0000	88.2633	88.2633	0.0264	0.0000	88.8167
Total	**0.1016**	**1.1857**	**0.7626**	**9.3000e-004**	**0.1301**	**0.0570**	**0.1871**	**0.0540**	**0.0525**	**0.1064**	**0.0000**	**88.2633**	**88.2633**	**0.0264**	**0.0000**	**88.8167**

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	1.2900e-003	1.9000e-003	0.0184	3.0000e-005	2.7200e-003	2.0000e-005	2.7500e-003	7.2000e-004	2.0000e-005	7.5000e-004	0.0000	2.5650	2.5650	1.5000e-004	0.0000	2.5683
Total	**1.2900e-003**	**1.9000e-003**	**0.0184**	**3.0000e-005**	**2.7200e-003**	**2.0000e-005**	**2.7500e-003**	**7.2000e-004**	**2.0000e-005**	**7.5000e-004**	**0.0000**	**2.5650**	**2.5650**	**1.5000e-004**	**0.0000**	**2.5683**

3.6 Building Construction - 2015

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	0.2543	2.0871	1.3028	1.8600e-003		0.1471	0.1471		0.1383	0.1383	0.0000	169.5761	169.5761	0.0426	0.0000	170.4695
Total	**0.2543**	**2.0871**	**1.3028**	**1.8600e-003**		**0.1471**	**0.1471**		**0.1383**	**0.1383**	**0.0000**	**169.5761**	**169.5761**	**0.0426**	**0.0000**	**170.4695**

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	8.5300e-003	0.0728	0.0965	1.5000e-004	4.0400e-003	1.1900e-003	5.2300e-003	1.1600e-003	1.0900e-003	2.2600e-003	0.0000	13.7940	13.7940	1.2000e-004	0.0000	13.7966
Worker	9.2600e-003	0.0136	0.1321	2.3000e-004	0.0196	1.8000e-004	0.0197	5.2000e-003	1.6000e-004	5.3600e-003	0.0000	18.4211	18.4211	1.1100e-003	0.0000	18.4443
Total	**0.0178**	**0.0864**	**0.2286**	**3.8000e-004**	**0.0236**	**1.3700e-003**	**0.0250**	**6.3600e-003**	**1.2500e-003**	**7.6200e-003**	**0.0000**	**32.2151**	**32.2151**	**1.2300e-003**	**0.0000**	**32.2409**

3.6 Building Construction - 2016

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	0.2742	2.2948	1.4898	2.1600e-003		0.1584	0.1584		0.1488	0.1488	0.0000	194.9336	194.9336	0.0484	0.0000	195.9489
Total	**0.2742**	**2.2948**	**1.4898**	**2.1600e-003**		**0.1584**	**0.1584**		**0.1488**	**0.1488**	**0.0000**	**194.9336**	**194.9336**	**0.0484**	**0.0000**	**195.9489**

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	8.6800e-003	0.0733	0.1038	1.7000e-004	4.6800e-003	1.1000e-003	5.7900e-003	1.3500e-003	1.0100e-003	2.3600e-003	0.0000	15.7887	15.7887	1.3000e-004	0.0000	15.7914
Worker	9.5500e-003	0.0141	0.1363	2.7000e-004	0.0227	1.9000e-004	0.0228	6.0200e-003	1.8000e-004	6.2000e-003	0.0000	20.6038	20.6038	1.1700e-003	0.0000	20.6282
Total	**0.0182**	**0.0874**	**0.2401**	**4.4000e-004**	**0.0273**	**1.2900e-003**	**0.0286**	**7.3700e-003**	**1.1900e-003**	**8.5600e-003**	**0.0000**	**36.3924**	**36.3924**	**1.3000e-003**	**0.0000**	**36.4196**

3.7 Paving - 2016

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	0.0209	0.2239	0.1482	2.2000e-004		0.0126	0.0126		0.0116	0.0116	0.0000	21.0138	21.0138	6.3400e-003	0.0000	21.1469
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0209**	**0.2239**	**0.1482**	**2.2000e-004**		**0.0126**	**0.0126**		**0.0116**	**0.0116**	**0.0000**	**21.0138**	**21.0138**	**6.3400e-003**	**0.0000**	**21.1469**

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	5.7000e-004	8.5000e-004	8.1900e-003	2.0000e-005	1.3600e-003	1.0000e-005	1.3700e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.2385	1.2385	7.0000e-005	0.0000	1.2399
Total	**5.7000e-004**	**8.5000e-004**	**8.1900e-003**	**2.0000e-005**	**1.3600e-003**	**1.0000e-005**	**1.3700e-003**	**3.6000e-004**	**1.0000e-005**	**3.7000e-004**	**0.0000**	**1.2385**	**1.2385**	**7.0000e-005**	**0.0000**	**1.2399**

3.8 Architectural Coating - 2016

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					
Archit. Coating	1.0770					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6800e-003	0.0237	0.0188	3.0000e-005		1.9700e-003	1.9700e-003		1.9700e-003	1.9700e-003	0.0000	2.5533	2.5533	3.0000e-004	0.0000	2.5596
Total	**1.0807**	**0.0237**	**0.0188**	**3.0000e-005**		**1.9700e-003**	**1.9700e-003**		**1.9700e-003**	**1.9700e-003**	**0.0000**	**2.5533**	**2.5533**	**3.0000e-004**	**0.0000**	**2.5596**

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	2.3000e-004	3.4000e-004	3.2800e-003	1.0000e-005	5.4000e-004	0.0000	5.5000e-004	1.4000e-004	0.0000	1.5000e-004	0.0000	0.4954	0.4954	3.0000e-005	0.0000	0.4960
Total	**2.3000e-004**	**3.4000e-004**	**3.2800e-003**	**1.0000e-005**	**5.4000e-004**	**0.0000**	**5.5000e-004**	**1.4000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.4954**	**0.4954**	**3.0000e-005**	**0.0000**	**0.4960**

Ruschin Drive - Construction Mitigated

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	85.00	Dwelling Unit	10.10	153,000.00	243

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2016
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Based on project site acreage.

Demolition - Based on estimated square foot of building to be demolished and pavement to be removed.

Construction Off-road Equipment Mitigation - Mitigation for Construction Toxic Air Contaminants Generation: all equipment engine Tier 4

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblLandUse	LotAcreage	27.60	10.10
tblProjectCharacteristics	OperationalYear	2014	2016

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					
2015	0.4976	4.6752	3.3166	4.3700e-003	0.2904	0.2709	0.5613	0.1181	0.2529	0.3709	0.0000	401.5003	401.5003	0.0965	0.0000	403.5257
2016	1.3948	2.6309	1.9083	2.8800e-003	0.0292	0.1743	0.2035	7.8800e-003	0.1636	0.1715	0.0000	256.6270	256.6270	0.0564	0.0000	257.8109
Total	**1.8924**	**7.3061**	**5.2249**	**7.2500e-003**	**0.3196**	**0.4452**	**0.7648**	**0.1259**	**0.4164**	**0.5424**	**0.0000**	**658.1272**	**658.1272**	**0.1528**	**0.0000**	**661.3367**

Mitigated 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					
2015	0.0711	0.4062	2.6310	4.3700e-003	0.2904	8.2400e-003	0.2986	0.1181	8.0500e-003	0.1261	0.0000	401.4998	401.4998	0.0965	0.0000	403.5253
2016	1.1254	0.2812	1.8407	2.8800e-003	0.0292	4.9900e-003	0.0342	7.8800e-003	4.8800e-003	0.0128	0.0000	256.6267	256.6267	0.0564	0.0000	257.8107
Total	**1.1964**	**0.6873**	**4.4717**	**7.2500e-003**	**0.3196**	**0.0132**	**0.3329**	**0.1259**	**0.0129**	**0.1389**	**0.0000**	**658.1266**	**658.1266**	**0.1528**	**0.0000**	**661.3360**

	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**	**N20**	**CO2e**
Percent Reduction	**36.78**	**90.59**	**14.41**	**0.00**	**0.00**	**97.03**	**56.48**	**0.00**	**96.90**	**74.40**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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 - Building	Demolition	3/1/2015	3/27/2015	5	20	
2	Demolition - Pavement	Demolition	3/28/2015	4/24/2015	5	20	
3	Site Preparation	Site Preparation	4/25/2015	5/8/2015	5	10	
4	Grading	Grading	5/9/2015	6/19/2015	5	30	
5	Building Construction	Building Construction	6/20/2015	8/12/2016	5	300	
6	Paving	Paving	8/13/2016	9/9/2016	5	20	
7	Architectural Coating	Architectural Coating	9/10/2016	10/7/2016	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 309,825; Residential Outdoor: 103,275; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition - Building	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition - Building	Excavators	3	8.00	162	0.38
Demolition - Building	Rubber Tired Dozers	2	8.00	255	0.40
Demolition - Pavement	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition - Pavement	Excavators	3	8.00	162	0.38
Demolition - Pavement	Rubber Tired Dozers	2	8.00	255	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40

Grading	Scrapers	2	8.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

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 - Building	6	15.00	0.00	171.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition - Pavement	6	15.00	0.00	173.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	31.00	9.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	6.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Clean Paved Roads

3.2 Demolition - Building - 2015

Mitigated 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					0.0185	0.0000	0.0185	2.8000e-003	0.0000	2.8000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.7400e-003	0.0205	0.2383	4.0000e-004		6.3000e-004	6.3000e-004		6.3000e-004	6.3000e-004	0.0000	37.4412	37.4412	0.0102	0.0000	37.6544
Total	**4.7400e-003**	**0.0205**	**0.2383**	**4.0000e-004**	**0.0185**	**6.3000e-004**	**0.0192**	**2.8000e-003**	**6.3000e-004**	**3.4300e-003**	**0.0000**	**37.4412**	**37.4412**	**0.0102**	**0.0000**	**37.6544**

Mitigated 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	2.2000e-003	0.0298	0.0227	6.0000e-005	1.4400e-003	4.5000e-004	1.8900e-003	4.0000e-004	4.1000e-004	8.1000e-004	0.0000	5.9717	5.9717	5.0000e-005	0.0000	5.9727
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	6.4000e-004	9.5000e-004	9.2000e-003	2.0000e-005	1.3600e-003	1.0000e-005	1.3700e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.2825	1.2825	8.0000e-005	0.0000	1.2841
Total	**2.8400e-003**	**0.0308**	**0.0319**	**8.0000e-005**	**2.8000e-003**	**4.6000e-004**	**3.2600e-003**	**7.6000e-004**	**4.2000e-004**	**1.1800e-003**	**0.0000**	**7.2542**	**7.2542**	**1.3000e-004**	**0.0000**	**7.2569**

3.3 Demolition - Pavement - 2015

Mitigated 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					0.0187	0.0000	0.0187	2.8300e-003	0.0000	2.8300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.7400e-003	0.0205	0.2383	4.0000e-004		6.3000e-004	6.3000e-004		6.3000e-004	6.3000e-004	0.0000	37.4412	37.4412	0.0102	0.0000	37.6544
Total	**4.7400e-003**	**0.0205**	**0.2383**	**4.0000e-004**	**0.0187**	**6.3000e-004**	**0.0193**	**2.8300e-003**	**6.3000e-004**	**3.4600e-003**	**0.0000**	**37.4412**	**37.4412**	**0.0102**	**0.0000**	**37.6544**

Mitigated 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	2.2200e-003	0.0302	0.0230	7.0000e-005	1.4600e-003	4.5000e-004	1.9100e-003	4.0000e-004	4.2000e-004	8.2000e-004	0.0000	6.0415	6.0415	5.0000e-005	0.0000	6.0426
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	6.4000e-004	9.5000e-004	9.2000e-003	2.0000e-005	1.3600e-003	1.0000e-005	1.3700e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.2825	1.2825	8.0000e-005	0.0000	1.2841
Total	**2.8600e-003**	**0.0311**	**0.0322**	**9.0000e-005**	**2.8200e-003**	**4.6000e-004**	**3.2800e-003**	**7.6000e-004**	**4.3000e-004**	**1.1900e-003**	**0.0000**	**7.3240**	**7.3240**	**1.3000e-004**	**0.0000**	**7.3267**

3.4 Site Preparation - 2015

Mitigated 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					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.3800e-003	0.0103	0.1062	2.0000e-004		3.2000e-004	3.2000e-004		3.2000e-004	3.2000e-004	0.0000	18.6505	18.6505	5.5700e-003	0.0000	18.7675
Total	**2.3800e-003**	**0.0103**	**0.1062**	**2.0000e-004**	**0.0903**	**3.2000e-004**	**0.0907**	**0.0497**	**3.2000e-004**	**0.0500**	**0.0000**	**18.6505**	**18.6505**	**5.5700e-003**	**0.0000**	**18.7675**

Mitigated 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	3.9000e-004	5.7000e-004	5.5200e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.2000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7695	0.7695	5.0000e-005	0.0000	0.7705
Total	**3.9000e-004**	**5.7000e-004**	**5.5200e-003**	**1.0000e-005**	**8.2000e-004**	**1.0000e-005**	**8.2000e-004**	**2.2000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.7695**	**0.7695**	**5.0000e-005**	**0.0000**	**0.7705**

3.5 Grading - 2015

Mitigated 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					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0114	0.0492	0.5217	9.3000e-004		1.5100e-003	1.5100e-003		1.5100e-003	1.5100e-003	0.0000	88.2632	88.2632	0.0264	0.0000	88.8166
Total	**0.0114**	**0.0492**	**0.5217**	**9.3000e-004**	**0.1301**	**1.5100e-003**	**0.1316**	**0.0540**	**1.5100e-003**	**0.0555**	**0.0000**	**88.2632**	**88.2632**	**0.0264**	**0.0000**	**88.8166**

Mitigated 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	1.2900e-003	1.9000e-003	0.0184	3.0000e-005	2.7200e-003	2.0000e-005	2.7500e-003	7.2000e-004	2.0000e-005	7.5000e-004	0.0000	2.5650	2.5650	1.5000e-004	0.0000	2.5683
Total	**1.2900e-003**	**1.9000e-003**	**0.0184**	**3.0000e-005**	**2.7200e-003**	**2.0000e-005**	**2.7500e-003**	**7.2000e-004**	**2.0000e-005**	**7.5000e-004**	**0.0000**	**2.5650**	**2.5650**	**1.5000e-004**	**0.0000**	**2.5683**

3.6 Building Construction - 2015

Mitigated 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	0.0227	0.1549	1.2101	1.8600e-003		2.8200e-003	2.8200e-003		2.8200e-003	2.8200e-003	0.0000	169.5759	169.5759	0.0426	0.0000	170.4693
Total	**0.0227**	**0.1549**	**1.2101**	**1.8600e-003**		**2.8200e-003**	**2.8200e-003**		**2.8200e-003**	**2.8200e-003**	**0.0000**	**169.5759**	**169.5759**	**0.0426**	**0.0000**	**170.4693**

Mitigated 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	8.5300e-003	0.0728	0.0965	1.5000e-004	4.0400e-003	1.1900e-003	5.2300e-003	1.1600e-003	1.0900e-003	2.2600e-003	0.0000	13.7940	13.7940	1.2000e-004	0.0000	13.7966
Worker	9.2600e-003	0.0136	0.1321	2.3000e-004	0.0196	1.8000e-004	0.0197	5.2000e-003	1.6000e-004	5.3600e-003	0.0000	18.4211	18.4211	1.1100e-003	0.0000	18.4443
Total	**0.0178**	**0.0864**	**0.2286**	**3.8000e-004**	**0.0236**	**1.3700e-003**	**0.0250**	**6.3600e-003**	**1.2500e-003**	**7.6200e-003**	**0.0000**	**32.2151**	**32.2151**	**1.2300e-003**	**0.0000**	**32.2409**

3.6 Building Construction - 2016

Mitigated 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	0.0263	0.1794	1.4016	2.1600e-003		3.2700e-003	3.2700e-003		3.2700e-003	3.2700e-003	0.0000	194.9334	194.9334	0.0484	0.0000	195.9487
Total	**0.0263**	**0.1794**	**1.4016**	**2.1600e-003**		**3.2700e-003**	**3.2700e-003**		**3.2700e-003**	**3.2700e-003**	**0.0000**	**194.9334**	**194.9334**	**0.0484**	**0.0000**	**195.9487**

Mitigated 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	8.6800e-003	0.0733	0.1038	1.7000e-004	4.6800e-003	1.1000e-003	5.7900e-003	1.3500e-003	1.0100e-003	2.3600e-003	0.0000	15.7887	15.7887	1.3000e-004	0.0000	15.7914
Worker	9.5500e-003	0.0141	0.1363	2.7000e-004	0.0227	1.9000e-004	0.0228	6.0200e-003	1.8000e-004	6.2000e-003	0.0000	20.6038	20.6038	1.1700e-003	0.0000	20.6282
Total	**0.0182**	**0.0874**	**0.2401**	**4.4000e-004**	**0.0273**	**1.2900e-003**	**0.0286**	**7.3700e-003**	**1.1900e-003**	**8.5600e-003**	**0.0000**	**36.3924**	**36.3924**	**1.3000e-003**	**0.0000**	**36.4196**

3.7 Paving - 2016

Mitigated 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	2.7500e-003	0.0119	0.1693	2.2000e-004		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004	0.0000	21.0138	21.0138	6.3400e-003	0.0000	21.1469
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.7500e-003**	**0.0119**	**0.1693**	**2.2000e-004**		**3.7000e-004**	**3.7000e-004**		**3.7000e-004**	**3.7000e-004**	**0.0000**	**21.0138**	**21.0138**	**6.3400e-003**	**0.0000**	**21.1469**

Mitigated 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	5.7000e-004	8.5000e-004	8.1900e-003	2.0000e-005	1.3600e-003	1.0000e-005	1.3700e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.2385	1.2385	7.0000e-005	0.0000	1.2399
Total	**5.7000e-004**	**8.5000e-004**	**8.1900e-003**	**2.0000e-005**	**1.3600e-003**	**1.0000e-005**	**1.3700e-003**	**3.6000e-004**	**1.0000e-005**	**3.7000e-004**	**0.0000**	**1.2385**	**1.2385**	**7.0000e-005**	**0.0000**	**1.2399**

3.8 Architectural Coating - 2016

Mitigated 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					
Archit. Coating	1.0770					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0000e-004	1.2900e-003	0.0183	3.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.5533	2.5533	3.0000e-004	0.0000	2.5596
Total	**1.0773**	**1.2900e-003**	**0.0183**	**3.0000e-005**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**	**0.0000**	**2.5533**	**2.5533**	**3.0000e-004**	**0.0000**	**2.5596**

Mitigated 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	2.3000e-004	3.4000e-004	3.2800e-003	1.0000e-005	5.4000e-004	0.0000	5.5000e-004	1.4000e-004	0.0000	1.5000e-004	0.0000	0.4954	0.4954	3.0000e-005	0.0000	0.4960
Total	**2.3000e-004**	**3.4000e-004**	**3.2800e-003**	**1.0000e-005**	**5.4000e-004**	**0.0000**	**5.5000e-004**	**1.4000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.4954**	**0.4954**	**3.0000e-005**	**0.0000**	**0.4960**

Ruschin Drive - Operational 2005

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	85.00	Dwelling Unit	10.10	153,000.00	243

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2005
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Land Use - Based on project site acreage.

Vehicle Trips - Daily rate based on traffic study

Energy Use - 2005

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	27.60	10.10
tblProjectCharacteristics	OperationalYear	2014	2005
tblVehicleTrips	WD_TR	9.57	9.52

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	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					
Area											11.7667	4.3263	16.0929	0.0270	6.2000e-004	16.8525
Energy											0.0000	427.7753	427.7753	0.0127	6.2800e-003	429.9902
Mobile											0.0000	961.2739	961.2739	0.0947	0.0000	963.2620
Waste											20.7173	0.0000	20.7173	1.2244	0.0000	46.4287
Water											1.7570	12.2726	14.0295	0.1810	4.3800e-003	19.1873
Total											**34.2409**	**1,405.6480**	**1,439.8889**	**1.5398**	**0.0113**	**1,475.7206**

3.0 Construction Detail

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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					
Mitigated											0.0000	961.2739	961.2739	0.0947	0.0000	963.2620
Unmitigated											0.0000	961.2739	961.2739	0.0947	0.0000	963.2620

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	809.20	856.80	745.45	1,801,280	1,801,280
Total	809.20	856.80	745.45	1,801,280	1,801,280

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	12.40	4.30	5.40	26.10	29.10	44.80	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.514795	0.122199	0.202623	0.071970	0.010436	0.006310	0.019893	0.038012	0.001148	0.004559	0.005916	0.000316	0.001823

5.0 Energy Detail

Historical Energy Use: Y

5.1 Mitigation Measures Energy

	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					
Electricity Mitigated											0.0000	173.7600	173.7600	7.8600e-003	1.6300e-003	174.4289
Electricity Unmitigated											0.0000	173.7600	173.7600	7.8600e-003	1.6300e-003	174.4289
NaturalGas Mitigated											0.0000	254.0153	254.0153	4.8700e-003	4.6600e-003	255.5612
NaturalGas Unmitigated											0.0000	254.0153	254.0153	4.8700e-003	4.6600e-003	255.5612

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	4.76007e+006											0.0000	254.0153	254.0153	4.8700e-003	4.6600e-003	255.5612
Total												**0.0000**	**254.0153**	**254.0153**	**4.8700e-003**	**4.6600e-003**	**255.5612**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	597295	173.7600	7.8600e-003	1.6300e-003	174.4289
Total		**173.7600**	**7.8600e-003**	**1.6300e-003**	**174.4289**

6.0 Area Detail

6.1 Mitigation Measures Area

	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					
Mitigated											11.7667	4.3263	16.0929	0.0270	6.2000e-004	16.8525
Unmitigated											11.7667	4.3263	16.0929	0.0270	6.2000e-004	16.8525

6.2 Area by SubCategory

Unmitigated

	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
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											11.7667	3.2953	15.0620	0.0253	6.2000e-004	15.7868
Landscaping											0.0000	1.0310	1.0310	1.6500e-003	0.0000	1.0656
Total											**11.7667**	**4.3263**	**16.0929**	**0.0270**	**6.2000e-004**	**16.8525**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	14.0295	0.1810	4.3700e-003	19.1845
Unmitigated	14.0295	0.1810	4.3800e-003	19.1873

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	5.53809 / 3.49141	14.0295	0.1810	4.3800e-003	19.1873
Total		**14.0295**	**0.1810**	**4.3800e-003**	**19.1873**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Unmitigated	20.7173	1.2244	0.0000	46.4287
Mitigated	20.7173	1.2244	0.0000	46.4287

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	102.06	20.7173	1.2244	0.0000	46.4287
Total		**20.7173**	**1.2244**	**0.0000**	**46.4287**

Ruschin Drive - Operational 2020

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	85.00	Dwelling Unit	10.10	153,000.00	243

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	491.65	**CH4 Intensity (lb/MWhr)**	0.022	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2020 emission factors: BAU emissions factors for Energy minus 33 percent for compliance with RPS

Land Use - Based on project site acreage.

Vehicle Trips - Daily rate based on traffic study

Energy Use - 2020

Energy Mitigation - Newest Title 24 (2013) is not accounted for in this version of CalEEMod. Title 24 2013 is 25% more efficient than the previous Title 24 2008 standards for residential buildings.

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	27.60	10.10
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOnRoadDust	HaulingPercentPave	100.00	0.00
tblOnRoadDust	VendorPercentPave	100.00	0.00
tblOnRoadDust	WorkerPercentPave	100.00	0.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.022
tblProjectCharacteristics	CO2IntensityFactor	641.35	491.65
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblProjectCharacteristics	OperationalYear	2014	2020
tblVehicleTrips	WD_TR	9.57	9.52

2.0 Emissions Summary

2.1 Overall Construction

Not Applicable

2.2 Overall Operational

Mitigated Operational

	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					
Area											11.7667	4.3170	16.0836	0.0263	6.2000e-004	16.8293
Energy											0.0000	311.2289	311.2289	9.3100e-003	4.6400e-003	312.8625
Mobile											0.0000	689.7473	689.7473	0.0241	0.0000	690.2532
Waste											20.7173	0.0000	20.7173	1.2244	0.0000	46.4287
Water											1.7570	9.2417	10.9987	0.1809	4.3500e-003	16.1448
Total											**34.2409**	**1,014.5349**	**1,048.7758**	**1.4649**	**9.6100e-003**	**1,082.5185**

3.0 Construction Detail

Not Applicable

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Increase Transit Accessibility

Improve Pedestrian Network

	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					
Mitigated											0.0000	689.7473	689.7473	0.0241	0.0000	690.2532
Unmitigated											0.0000	736.7513	736.7513	0.0256	0.0000	737.2884

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	809.20	856.80	745.45	1,801,280	1,681,552
Total	809.20	856.80	745.45	1,801,280	1,681,552

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	12.40	4.30	5.40	26.10	29.10	44.80	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.543091	0.062201	0.166716	0.110184	0.030625	0.004564	0.019041	0.050825	0.001789	0.003661	0.005684	0.000199	0.001418

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	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					
Electricity Mitigated											0.0000	130.6391	130.6391	5.8500e-003	1.3300e-003	131.1737
NaturalGas Mitigated											0.0000	180.5898	180.5898	3.4600e-003	3.3100e-003	181.6888

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	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
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	3.38412e+006											0.0000	180.5898	180.5898	3.4600e-003	3.3100e-003	181.6888
Total												**0.0000**	**180.5898**	**180.5898**	**3.4600e-003**	**3.3100e-003**	**181.6888**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	585803	130.6391	5.8500e-003	1.3300e-003	131.1737
Total		**130.6391**	**5.8500e-003**	**1.3300e-003**	**131.1737**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

	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					
Mitigated											11.7667	4.3170	16.0836	0.0263	6.2000e-004	16.8293

6.2 Area by SubCategory

Mitigated

	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
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											11.7667	3.2953	15.0620	0.0253	6.2000e-004	15.7868
Landscaping											0.0000	1.0217	1.0217	9.9000e-004	0.0000	1.0425
Total											**11.7667**	**4.3170**	**16.0836**	**0.0263**	**6.2000e-004**	**16.8293**

7.0 Water Detail

7.1 Mitigation Measures Water

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	10.9987	0.1809	4.3500e-003	16.1448

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	5.53809 / 3.27843	10.9987	0.1809	4.3500e-003	16.1448
Total		**10.9987**	**0.1809**	**4.3500e-003**	**16.1448**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	20.7173	1.2244	0.0000	46.4287

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	102.06	20.7173	1.2244	0.0000	46.4287
Total		**20.7173**	**1.2244**	**0.0000**	**46.4287**

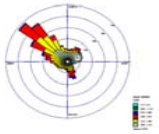
Construction Health Risk Assessment Screening Tool

Air District: Bay Area Air Quality Management District

Project Location: Newark
Project Name: Ruschin Unmitigated
Meteorological Data Used: BAAQMD NUMMI 2002-2005

Construction Health Risk Assessment Summary

		BAAQMD Significance Threshold	Project Exceeds Threshold ?
Maximum Annual PM2.5 Concentration	0.32 ug/m3	0.3 ug/m3	Yes
Total Increased Cancer Risk for A Child	46.8 risk per million	10 in a million	Yes
Total Increased Cancer Risk for An Adult	2.4 risk per million	10 in a million	No
Chronic Non-Cancer Hazard Index	0.06	1	No
Acute Non-Cancer Hazard Index	0.62	1	No

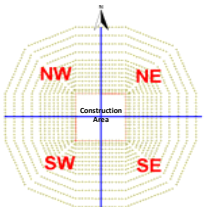


Wind Rose for NUMMI Station (direction FROM which the wind is blowing)

Estimation of Project PM2.5 (DPM) Air Concentration Impacts

Enter data in the highlighted cells for up to 5 years

Year	Size of Construction Area (acres)	Distance to Receptor Location (meters)	Receptor Location Sector	Annual Total PM2.5 Emissions (tons/year)	Annual Average Total PM2.5 Emissions (g/sec)	PM2.5 Concentration with Unit Emissions (ug/m3)	PM2.5 Concentration with Actual Emissions (ug/m3)	
1	10	25	SE	0.2529	0.0307	428000	0.324	2
2	10	25	SE	0.1636	0.0198	428000	0.210	2
3								
4								
5								



Receptor Location Quadrants

Estimation of Cancer Risk by Year

CR = Concentration x CPF x DBR x ED x EF /AT x ASF

CR = Cancer Risk in units of Risk per Million		
Concentration	Annual PM2.5 Concentration (ug/m3 calculated from above)	
CPF = Cancer Potency Factor	1.1	((mg/kg-day)^1 - do not change)
DBR = Daily Breathing Rate	581	((liters/kg-day) - do not change - assumed rate for a child)
DBR = Daily Breathing Rate	302	(liters/kg-day - do not change - assumed rate for an adult)
ED = Exposure Duration	1	(years - assumes a minumum of 1 year of construction)
EF = Exposure Frequency	350	(days/year - assumes 350 days of exposure)
AT = Averaging Period	25550	(days - do not change)
ASF = Age Sensitivity Factor		

Year	Exposure Duration (years)	Annual PM2.5 Concentration (ug/m3)	Child Exposures		Adult Exposures	
			Age Sensitivity Factor	Child Cancer Risk (per million)	Age Sensitivity Factor	Adult Cancer Risk (per million)
1	1	0.324	10	28.4	1	1.5
2	1	0.210	10	18.4	1	1.0
3	1		4.75	0.0	1	0.0
4	1		3	0.0	1	0.0
5	1		3	0.0	1	0.0
Total Increased Cancer Risk				**46.8**		**2.4**

Estimation of Chronic Non-Cancer Hazard Index

Chronic Non-Cancer Hazard Index = Max Annual PM2.5 concentration in ug/m3 divided by 5 ug/m3 for diesel particulate matter

Chronic Non-Cancer Hazard Index = **0.06**

Air Dispersion Model Calculation Matrix (used to estimate the annual PM2.5 concentration for a total construction emission of 0.00001 grams/m2-sec)

Downwind Distance to Receptor (meters)	0.5 Acres				1 Acres				2 Acres			
	NE	SE	SW	NW	NE	SE	SW	NW	NE	SE	SW	NW
25	0.92	1.08	0.24	0.38	1.31	1.61	0.35	0.54	2.17	2.30	0.72	0.94
50	0.43	0.54	0.11	0.19	0.66	0.81	0.16	0.30	1.15	1.25	0.38	0.52
75	0.24	0.32	0.07	0.11	0.39	0.52	0.11	0.18	0.70	0.79	0.19	0.32
100	0.15	0.22	0.04	0.07	0.26	0.36	0.08	0.12	0.47	0.57	0.12	0.22
125	0.11	0.15	0.03	0.04	0.18	0.26	0.06	0.09	0.33	0.43	0.09	0.16
150	0.07	0.11	0.02	0.04	0.14	0.20	0.04	0.07	0.25	0.33	0.07	0.12
175	0.06	0.09	0.02	0.03	0.10	0.16	0.03	0.05	0.19	0.27	0.06	0.09
200	0.05	0.07	0.02	0.02	0.08	0.13	0.03	0.04	0.16	0.22	0.05	0.08
250	0.03	0.03	0.01	0.02	0.06	0.09	0.02	0.03	0.11	0.15	0.03	0.05
300	0.03	0.03	0.01	0.01	0.04	0.06	0.01	0.02	0.08	0.11	0.03	0.04

Estimation of Acute Non-Cancer Hazard Index

Enter data in the highlighted cells

Year	Size of Construction Area (acres)	Distance to Receptor Location (meters)	Annual Total ROG Emissions (tons/year)	Max 1-hour ROG Emissions (g/sec)	Max 1-hour ROG Concentration with Unit Emissions (ug/m3)	Max 1-hour ROG Concentration with Actual Emissions (ug/m3)
1	10	25	0.4976	0.060	16910000	25.21
2	10	25	1.3948	0.169	16910000	70.65
3						
4						
5						

Air Dispersion Model Calculation Matrix (used to estimate the Maximum 1-hour ROG concentration for a total construction emission of 0.00001 grams/m2-sec)

Downwind Distance to Receptor (meters)	0.5 Acre	1 Acre	2 Acres	3 Acres	4 Acres	5 Acres	6 Acres	7 Acres	8 Acres	9 Acres	10 Acres	12 Acres
	Maximum 1-hour ROG Concentrations in ug/m3 for a 1 g/sec Total Area Construction Emission Source											
25	47.1	67.8	93.6	110.7	123.5	130.3	139.3	150.6	153.4	163.5	169.1	179.2
50	45.8	64.6	87.5	103.1	114.7	122.3	130.4	139.3	143.4	151.5	156.6	165.5
75	38.8	55.5	76.6	90.8	101.3	109.9	117.6	124.4	129.7	135.5	140.4	149.1
100	32.0	47.0	65.9	78.8	88.7	97.0	104.4	110.3	115.9	121.3	125.7	134.3
125	26.4	39.6	57.1	69.3	78.6	86.1	92.8	98.7	103.9	108.8	113.1	121.3
150	21.8	34.1	50.1	61.1	69.9	77.2	83.7	89.1	94.2	98.5	102.0	110.4
175	18.3	29.4	44.3	54.8	62.9	70.0	75.9	81.2	85.9	90.3	94.2	101.7
200	15.5	25.6	39.3	49.1	57.0	63.6	68.4	74.2	78.9	83.2	86.9	93.9
250	11.5	19.8	31.7	40.7	47.7	53.5	58.9	63.4	67.7	71.5	75.1	81.5
300	8.9	15.7	26.1	34.1	40.5	46.1	50.9	55.1	59.0	62.7	66.0	72.1

Max 1 hour ROG Concentration During Construction 70.7 ug/m3
TOG Emissions = 1.1 x ROG Emissions
Max 1 hour TOG Concentration During Construction 77.7 ug/m3

TOG Speciation Profile for Off-Road Diesel Emissions CARB speciation Profile 818 (Building Construction - Diesel)

Chemical Species	Fraction of TOG	Acute REL	Chemical Species Concentration (ug/m3)	Acute HI
acetaldehyde	0.07353	470	5.715	0.012
acrolein	0.01297	2.5	1.008	0.403
benzahdehyde	0.00699		0.543	
benzene	0.02001	1300	1.555	0.001
ethanol	0.00009		0.007	
ethylbenzene	0.00305		0.237	
ethylene	0.14377		11.174	
formaldehyde	0.14714	55	11.436	0.208
isobutane	0.01222		0.950	
isopentane	0.00602		0.468	
methane	0.04084		3.174	
methyl ethyl ketone	0.01477	13000	1.148	0.000
methylcyclopentane	0.00149		0.116	
m-xylene	0.00611	22000	0.475	0.000
n-butane	0.00104		0.081	
n-hexane	0.00157		0.122	
n-pentane	0.00175		0.136	
o-xylene	0.00335	22000	0.260	0.000
propionaldehyde	0.0097		0.754	
propylene	0.02597		2.018	
toluene	0.01473	37000	1.145	0.000
			Aggregated Acute HI	**0.625**

Size of the Construction Area (acres)																
3 Acres				4 Acres				5 Acres				6 Acres				
Annual Average PM2.5 Concentrations in ug/m3 for a 0.00001 g/m2-sec Total Area Construction Emission Source																
NE	SE	SW	NW	NE	SE	SW	NW	NE	SE	SW	NW	NE	SE	SW	NW	NE
2.48	2.80	0.84	1.09	2.97	3.06	1.19	1.33	3.09	3.32	1.13	1.36	3.41	3.57	1.36	1.67	3.72
1.38	1.58	0.41	0.63	1.73	1.83	0.57	0.79	1.83	2.01	0.74	0.82	2.21	2.25	0.84	1.03	2.33
0.87	1.01	0.25	0.41	1.11	1.21	0.33	0.52	1.32	1.38	0.36	0.52	1.47	1.52	0.49	0.69	1.57
0.60	0.72	0.17	0.29	0.77	0.85	0.22	0.35	0.84	0.98	0.24	0.40	1.04	1.10	0.32	0.49	1.12
0.44	0.55	0.12	0.21	0.56	0.65	0.16	0.25	0.68	0.75	0.18	0.32	0.78	0.83	0.23	0.37	0.84
0.33	0.44	0.10	0.16	0.43	0.53	0.12	0.20	0.52	0.61	0.14	0.25	0.60	0.68	0.17	0.28	0.65
0.26	0.35	0.07	0.13	0.34	0.43	0.09	0.16	0.41	0.50	0.11	0.20	0.47	0.56	0.13	0.23	0.52
0.21	0.29	0.07	0.10	0.27	0.36	0.08	0.13	0.33	0.42	0.09	0.16	0.39	0.47	0.11	0.19	0.43
0.15	0.21	0.05	0.07	0.19	0.26	0.06	0.09	0.23	0.31	0.06	0.11	0.27	0.35	0.07	0.13	0.30
0.11	0.16	0.04	0.06	0.14	0.20	0.05	0.07	0.17	0.23	0.05	0.08	0.15	0.27	0.05	0.10	0.22

0.1691

70.654

Size of the Construction Area (acres)

14 Acres	16 Acres	18 Acres	20 Acres
183.7	191.2	197.7	207.5
171.5	178.9	185.5	193.4
156.7	163.1	168.8	175.7
141.4	148.3	153.5	159.2
128.4	134.9	140.1	145.4
117.0	122.3	128.5	133.7
108.1	113.9	118.9	124
100.0	105.8	110.6	115.4
87.3	92.7	97.3	101.7
77.4	82.6	86.9	91.1

7 Acres			8 Acres				9 Acres				10 Acres			
SE	SW	NW	NE	SE	SW	NW	NE	SE	SW	NW	NE	SE	SW	NW
3.78	1.61	1.72	3.89	3.95	1.70	1.83	3.93	4.05	1.72	1.85	4.23	4.28	2.01	2.09
2.41	0.85	1.08	2.48	2.55	0.92	1.16	2.53	2.67	0.93	1.18	2.77	2.83	1.18	1.35
1.66	0.51	0.73	1.69	1.78	0.56	0.79	2.74	1.87	0.58	0.82	1.93	2.01	0.75	0.95
1.21	0.34	0.53	1.22	1.31	0.38	0.58	1.26	1.39	0.39	0.60	1.31	1.49	0.52	0.71
0.92	0.24	0.40	0.92	1.00	0.27	0.44	0.96	1.07	0.29	0.46	1.08	1.15	0.38	0.54
0.74	0.18	0.31	0.72	0.79	0.21	0.35	0.75	0.85	0.22	0.37	0.85	0.92	0.29	0.43
0.62	0.15	0.25	0.57	0.67	0.16	0.28	0.61	0.71	0.17	0.30	0.69	0.76	0.22	0.35
0.52	0.12	0.21	0.47	0.56	0.13	0.23	0.50	0.61	0.14	0.25	0.57	0.65	0.19	0.29
0.39	0.08	0.15	0.33	0.42	0.90	0.16	0.36	0.46	0.10	0.18	0.40	0.49	0.13	0.21
0.30	0.06	0.11	0.25	0.33	0.07	0.12	0.27	0.36	0.08	0.13	0.30	0.38	0.10	0.16

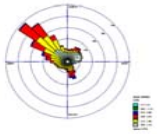
Construction Health Risk Assessment Screening Tool

Air District: Bay Area Air Quality Management District

Project Location: Newark
Project Name: Ruschin Mitigated
Meteorological Data Used: BAAQMD NUMMI 2002-2005

Construction Health Risk Assessment Summary

		BAAQMD Significance Threshold	Project Exceeds Threshold ?
Maximum Annual PM2.5 Concentration	0.01 ug/m3	0.3 ug/m3	No
Total Increased Cancer Risk for A Child	1.5 risk per million	10 in a million	No
Total Increased Cancer Risk for An Adult	0.1 risk per million	10 in a million	No
Chronic Non-Cancer Hazard Index	0.00	1	No
Acute Non-Cancer Hazard Index	0.50	1	No

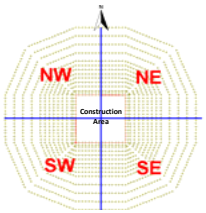


Wind Rose for NUMMI Station (direction FROM which the wind is blowing)

Estimation of Project PM2.5 (DPM) Air Concentration Impacts

Enter data in the highlighted cells for up to 5 years

Year	Size of Construction Area (acres)	Distance to Receptor Location (meters)	Receptor Location Sector	Annual Total PM2.5 Emissions (tons/year)	Annual Average Total PM2.5 Emissions (g/sec)	PM2.5 Concentration with Unit Emissions (ug/m3)	PM2.5 Concentration with Actual Emissions (ug/m3)	
1	10	25	SE	0.00805	0.0010	428000	0.010	2
2	10	25	SE	0.00488	0.0006	428000	0.006	2
3								
4								
5								



Receptor Location Quadrants

Estimation of Cancer Risk by Year

CR = Concentration x CPF x DBR x ED x EF /AT x ASF

CR = Cancer Risk in units of Risk per Million		
Concentration	Annual PM2.5 Concentration (ug/m3 calculated from above)	
CPF = Cancer Potency Factor	1.1	((mg/kg-day)^1 - do not change)
DBR = Daily Breathing Rate	581	((liters/kg-day) - do not change - assumed rate for a child)
DBR = Daily Breathing Rate	302	(liters/kg-day - do not change - assumed rate for an adult)
ED = Exposure Duration	1	(years - assumes a minumum of 1 year of construction)
EF = Exposure Frequency	350	(days/year - assumes 350 days of exposure)
AT = Averaging Period	25550	(days - do not change)
ASF = Age Sensitivity Factor		

Year	Exposure Duration (years)	Annual PM2.5 Concentration (ug/m3)	Child Exposures		Adult Exposures	
			Age Sensitivity Factor	Child Cancer Risk (per million)	Age Sensitivity Factor	Adult Cancer Risk (per million)
1	1	0.010	10	0.9	1	0.0
2	1	0.006	10	0.5	1	0.0
3	1		4.75	0.0	1	0.0
4	1		3	0.0	1	0.0
5	1		3	0.0	1	0.0
Total Increased Cancer Risk				**1.5**		**0.1**

Estimation of Chronic Non-Cancer Hazard Index

Chronic Non-Cancer Hazard Index = Max Annual PM2.5 concentration in ug/m3 divided by 5 ug/m3 for diesel particulate matter

Chronic Non-Cancer Hazard Index = **0.00**

Air Dispersion Model Calculation Matrix (used to estimate the annual PM2.5 concentration for a total construction emission of 0.00001 grams/m2-sec)

Downwind Distance to Receptor (meters)	0.5 Acres				1 Acres				2 Acres			
	NE	SE	SW	NW	NE	SE	SW	NW	NE	SE	SW	NW
25	0.92	1.08	0.24	0.38	1.31	1.61	0.35	0.54	2.17	2.30	0.72	0.94
50	0.43	0.54	0.11	0.19	0.66	0.81	0.16	0.30	1.15	1.25	0.38	0.52
75	0.24	0.32	0.07	0.11	0.39	0.52	0.11	0.18	0.70	0.79	0.19	0.32
100	0.15	0.22	0.04	0.07	0.26	0.36	0.08	0.12	0.47	0.57	0.12	0.22
125	0.11	0.15	0.03	0.04	0.18	0.26	0.06	0.09	0.33	0.43	0.09	0.16
150	0.07	0.11	0.02	0.04	0.14	0.20	0.04	0.07	0.25	0.33	0.07	0.12
175	0.06	0.09	0.02	0.03	0.10	0.16	0.03	0.05	0.19	0.27	0.06	0.09
200	0.05	0.07	0.02	0.02	0.08	0.13	0.03	0.04	0.16	0.22	0.05	0.08
250	0.03	0.03	0.01	0.02	0.06	0.09	0.02	0.03	0.11	0.15	0.03	0.05
300	0.03	0.03	0.01	0.01	0.04	0.06	0.01	0.02	0.08	0.11	0.03	0.04

Estimation of Acute Non-Cancer Hazard Index

Enter data in the highlighted cells

Year	Size of Construction Area (acres)	Distance to Receptor Location (meters)	Annual Total ROG Emissions (tons/year)	Max 1-hour ROG Emissions (g/sec)	Max 1-hour ROG Concentration with Unit Emissions (ug/m3)	Max 1-hour ROG Concentration with Actual Emissions (ug/m3)
1	10	25	0.0711	0.009	16910000	3.60
2	10	25	1.1254	0.136	16910000	57.01
3						
4						
5						

Air Dispersion Model Calculation Matrix (used to estimate the Maximum 1-hour ROG concentration for a total construction emission of 0.00001 grams/m2-sec)

Downwind Distance to Receptor (meters)	0.5 Acre	1 Acre	2 Acres	3 Acres	4 Acres	5 Acres	6 Acres	7 Acres	8 Acres	9 Acres	10 Acres	12 Acres
	Maximum 1-hour ROG Concentrations in ug/m3 for a 1 g/sec Total Area Construction Emission Source											
25	47.1	67.8	93.6	110.7	123.5	130.3	139.3	150.6	153.4	163.5	169.1	179.2
50	45.8	64.6	87.5	103.1	114.7	122.3	130.4	139.3	143.4	151.5	156.6	165.5
75	38.8	55.5	76.6	90.8	101.3	109.9	117.6	124.4	129.7	135.5	140.4	149.1
100	32.0	47.0	65.9	78.8	88.7	97.0	104.4	110.3	115.9	121.3	125.7	134.3
125	26.4	39.6	57.1	69.3	78.6	86.1	92.8	98.7	103.9	108.8	113.1	121.3
150	21.8	34.1	50.1	61.1	69.9	77.2	83.7	89.1	94.2	98.5	102.0	110.4
175	18.3	29.4	44.3	54.8	62.9	70.0	75.9	81.2	85.9	90.3	94.2	101.7
200	15.5	25.6	39.3	49.1	57.0	63.6	68.4	74.2	78.9	83.2	86.9	93.9
250	11.5	19.8	31.7	40.7	47.7	53.5	58.9	63.4	67.7	71.5	75.1	81.5
300	8.9	15.7	26.1	34.1	40.5	46.1	50.9	55.1	59.0	62.7	66.0	72.1

Max 1 hour ROG Concentration During Construction 57.0 ug/m3
TOG Emissions = 1.1 x ROG Emissions
Max 1 hour TOG Concentration During Construction 62.7 ug/m3

TOG Speciation Profile for Off-Road Diesel Emissions CARB speciation Profile 818 (Building Construction - Diesel)

Chemical Species	Fraction of TOG	Acute REL	Chemical Species Concentration (ug/m3)	Acute HI
acetaldehyde	0.07353	470	4.611	0.010
acrolein	0.01297	2.5	0.813	0.325
benzahdehyde	0.00699		0.438	
benzene	0.02001	1300	1.255	0.001
ethanol	0.00009		0.006	
ethylbenzene	0.00305		0.191	
ethylene	0.14377		9.016	
formaldehyde	0.14714	55	9.227	0.168
isobutane	0.01222		0.766	
isopentane	0.00602		0.378	
methane	0.04084		2.561	
methyl ethyl ketone	0.01477	13000	0.926	0.000
methylcyclopentane	0.00149		0.093	
m-xylene	0.00611	22000	0.383	0.000
n-butane	0.00104		0.065	
n-hexane	0.00157		0.098	
n-pentane	0.00175		0.110	
o-xylene	0.00335	22000	0.210	0.000
propionaldehyde	0.0097		0.608	
propylene	0.02597		1.629	
toluene	0.01473	37000	0.924	0.000
			Aggregated Acute HI	**0.504**

												Size of the Construction Area (acres)				
3 Acres				4 Acres				5 Acres				6 Acres				
Annual Average PM2.5 Concentrations in ug/m3 for a 0.00001 g/m2-sec Total Area Construction Emission Source																
NE	SE	SW	NW	NE	SE	SW	NW	NE	SE	SW	NW	NE	SE	SW	NW	NE
2.48	2.80	0.84	1.09	2.97	3.06	1.19	1.33	3.09	3.32	1.13	1.36	3.41	3.57	1.36	1.67	3.72
1.38	1.58	0.41	0.63	1.73	1.83	0.57	0.79	1.83	2.01	0.74	0.82	2.21	2.25	0.84	1.03	2.33
0.87	1.01	0.25	0.41	1.11	1.21	0.33	0.52	1.32	1.38	0.36	0.52	1.47	1.52	0.49	0.69	1.57
0.60	0.72	0.17	0.29	0.77	0.85	0.22	0.35	0.84	0.98	0.24	0.40	1.04	1.10	0.32	0.49	1.12
0.44	0.55	0.12	0.21	0.56	0.65	0.16	0.25	0.68	0.75	0.18	0.32	0.78	0.83	0.23	0.37	0.84
0.33	0.44	0.10	0.16	0.43	0.53	0.12	0.20	0.52	0.61	0.14	0.25	0.60	0.68	0.17	0.28	0.65
0.26	0.35	0.07	0.13	0.34	0.43	0.09	0.16	0.41	0.50	0.11	0.20	0.47	0.56	0.13	0.23	0.52
0.21	0.29	0.07	0.10	0.27	0.36	0.08	0.13	0.33	0.42	0.09	0.16	0.39	0.47	0.11	0.19	0.43
0.15	0.21	0.05	0.07	0.19	0.26	0.06	0.09	0.23	0.31	0.06	0.11	0.27	0.35	0.07	0.13	0.30
0.11	0.16	0.04	0.06	0.14	0.20	0.05	0.07	0.17	0.23	0.05	0.08	0.15	0.27	0.05	0.10	0.22

0.1365

57.007

Size of the Construction Area (acres)

14 Acres	16 Acres	18 Acres	20 Acres
183.7	191.2	197.7	207.5
171.5	178.9	185.5	193.4
156.7	163.1	168.8	175.7
141.4	148.3	153.5	159.2
128.4	134.9	140.1	145.4
117.0	122.3	128.5	133.7
108.1	113.9	118.9	124
100.0	105.8	110.6	115.4
87.3	92.7	97.3	101.7
77.4	82.6	86.9	91.1

7 Acres			8 Acres				9 Acres				10 Acres			
SE	SW	NW	NE	SE	SW	NW	NE	SE	SW	NW	NE	SE	SW	NW
3.78	1.61	1.72	3.89	3.95	1.70	1.83	3.93	4.05	1.72	1.85	4.23	4.28	2.01	2.09
2.41	0.85	1.08	2.48	2.55	0.92	1.16	2.53	2.67	0.93	1.18	2.77	2.83	1.18	1.35
1.66	0.51	0.73	1.69	1.78	0.56	0.79	2.74	1.87	0.58	0.82	1.93	2.01	0.75	0.95
1.21	0.34	0.53	1.22	1.31	0.38	0.58	1.26	1.39	0.39	0.60	1.31	1.49	0.52	0.71
0.92	0.24	0.40	0.92	1.00	0.27	0.44	0.96	1.07	0.29	0.46	1.08	1.15	0.38	0.54
0.74	0.18	0.31	0.72	0.79	0.21	0.35	0.75	0.85	0.22	0.37	0.85	0.92	0.29	0.43
0.62	0.15	0.25	0.57	0.67	0.16	0.28	0.61	0.71	0.17	0.30	0.69	0.76	0.22	0.35
0.52	0.12	0.21	0.47	0.56	0.13	0.23	0.50	0.61	0.14	0.25	0.57	0.65	0.19	0.29
0.39	0.08	0.15	0.33	0.42	0.90	0.16	0.36	0.46	0.10	0.18	0.40	0.49	0.13	0.21
0.30	0.06	0.11	0.25	0.33	0.07	0.12	0.27	0.36	0.08	0.13	0.30	0.38	0.10	0.16

Ruschin Drive - CalEEMod Methodology and Assumptions

Energy Emission Intensity Factor Modifications

The default CalEEMod emission factors for Pacific Gas & Electric (from the CEC's year 2006 data) are as follows:

- Carbon dioxide: 641.35 pounds per megawatt hour (lbs/MWh)
- Methane: 0.029 lbs/MWh
- Nitrous oxide: 0.006 lbs/MWh

It is assumed that the Renewable Electricity Standards would have taken effect by 2020. The Renewable Electricity Standard requires that electricity providers include a minimum of 33 percent renewable energy in their portfolios by the year 2020. In 2006, Pacific Gas & Electric had 12.6 percent renewable energy in its portfolio (California Public Utilities Commission 2011). Therefore, without the renewable energy, PG&E's emission factors in 2006 would have been (unadjusted energy intensity):

- Carbon dioxide: 733.81 lb/MWh
- Methane: 0.033 lb/MWh
- Nitrous oxide: 0.007 lb/MWh

The required 33 percent reduction would be anticipated by the year 2020. The emission factors for 2020 therefore are estimated by reducing the unadjusted 2006 emission factors by 33 percent and are as follows:

- Carbon dioxide: 491.65 lb/MWh
- Methane: 0.022 lb/MWh
- Nitrous oxide: 0.005 lb/MWh