
APPENDIX B

CRITERIA AIR POLLUTANT AND GHG MODELING RESULTS AND ASSESSMENT



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To: Polaris Kinison Brown, Principal Planner
From: Tanya Kalaskar, Associate Planner
Cc: File
Date: July 9, 2020

Re: 1073-1087 South Winchester Boulevard Mixed Use Project – Criteria Air
Pollutant and GHG Emissions Modeling Assessment

PROJECT DESCRIPTION

The proposed project is the demolition of existing office buildings and their replacement with a new six-story commercial and residential mixed-use building on a 0.79-acre project site located at 1073-1087 South Winchester Boulevard in the City of San José.

The existing office buildings are 9,762 square feet. The proposed building would consist of up to 61 apartment units and 17,970 square feet of office uses in up to nine units. A residential lobby, gym, office lobby, three office units, and parking would be located on the ground floor. The second floor would include seven residential units, seating areas, office lobby, and six office units. Floors three through six would consist of the remaining 54 residential units.

A total of 115 vehicle parking spaces are provided. 36 parking spaces covering an area of 13,898 square feet would be tucked under the building on the ground floor. The remaining 79 parking spaces would be located in a 30,214 square foot underground parking garage.

The proposed project includes construction of a sidewalk, 20 feet by 130 feet in size, between the building and the South Winchester Boulevard roadway.

MEMORANDUM

The proposed project includes the removal of 16 trees. The proposed landscape plan includes planting of 78 new trees.

Project construction is estimated to occur over a 20-month period. Grading for the proposed project includes excavation of 10,100 cubic yards of soil to accommodate the proposed underground parking garage and importing 400 cubic yards of fill. Approximately 9,700 cubic yards of excavated soils would be disposed of off-site.

The project site is located within the San Francisco Bay Area Air Basin, which is within the jurisdiction of the Bay Area Air Quality Management District (air district). An initial study is being prepared to evaluate the environmental impacts of the proposed project.

SCOPE OF ASSESSMENT

This assessment provides an estimate of the proposed project's construction and operational criteria air pollutants and greenhouse gas (GHG) emissions using the California Emissions Estimator Model (CalEEMod) version 2016.3.2 software, a modeling platform recommended by the California Air Resources Board (CARB) and accepted by the air district. Model results are attached to this assessment. Unless otherwise noted, data inputs to the model take into account the type and size of existing and proposed uses utilizing CalEEMod default land uses based on the size metrics provided in the project plans (Carpira Design Group 2019) and trip generation information provided in the transportation analysis prepared for the proposed project (Hexagon Transportation Consultants 2020).

Emissions Model

The CalEEMod software utilizes emissions models USEPA AP-42 emission factors, CARB vehicle emission models studies and studies commissioned by other California agencies such as the California Energy Commission and CalRecycle. The CalEEMod platform allows calculations of both construction and operational criteria pollutant and GHG emissions from land use projects. The model also calculates indirect emissions from processes "downstream" of the proposed project such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use.

CalEEMod is capable of estimating changes in the carbon sequestration potential of a site based on changes in natural vegetation communities and the net number of new trees that would be planted as part of the project. The model calculates a one-time only loss in the carbon sequestration potential of the site that would result from changes in land use such as converting vegetation to built or paved surfaces, and can provide an estimate of the change in the carbon sequestration potential that would result from planting new trees greater than the number of trees to be removed (net number of new trees).

The project site is already developed and there are no natural vegetation communities on the site. However, the landscape plan includes proposed tree plantings for the project site (Carpira Design Group 2019). Therefore, this assessment includes quantification of the change in carbon sequestration potential from planting new trees.

Existing and Proposed Emissions Sources

The size and type of the existing and proposed sources of criteria air pollutants and GHG emissions on the project site and their respective CalEEMod land use default categories are presented in [Table 1, Project Characteristics](#).

Table 1 Project Characteristics

Project Components	CalEEMod Land Use ¹	Existing ²	Proposed ²
Office Buildings	General Office Building	9,762	17,970
Residential	Apartments Mid Rise	-	61 units ³
Parking	Enclosed Parking with Elevator	-	115 spaces ⁴
Sidewalk ⁵	Other Non-Asphalt Surfaces	-	2,600 ⁶
Landscaping ⁵	Other Non-Asphalt Surfaces	-	4,409 ⁷

SOURCE: Trinity Consultants 2017, Carpira Design Group 2019.

NOTES:

1. CalEEMod default land use subtype. Descriptions of the model default land use categories and subtypes are found in the User's Guide for CalEEMod Version 2016.3.2 available online at: <http://www.aqmd.gov/caleemod/user's-guide>
2. Expressed in units of square feet unless otherwise noted.
3. The floor area for residential units is approximately 100,733 square feet.
4. The total area covered by parking is the sum of first floor parking and underground parking, or 44,112 square feet.
5. Sidewalks and landscaping are not substantial sources of operational emissions and are included in the model only to capture GHG emissions from construction activities.
6. Area of proposed sidewalk along South Winchester Boulevard = 20 feet x 130 feet = 2,600 square feet
7. From Sheet C4.1, Stormwater Control Details Sheet, proposed landscaped areas equal 4,409 square feet.

METHODOLOGY

Unless otherwise noted, the calculated emissions estimates are based primarily on model default emissions factors for construction and operations of the project. Construction and operational criteria air pollutant and GHG emissions estimates are derived for existing conditions and proposed project conditions based on the size metrics presented in Table 1.

Modeling Scenarios

Two modeling scenarios were conducted for the proposed project: Baseline (Existing) Emissions and Proposed Project Emissions.

Baseline (Existing) Emissions Scenario

Baseline GHG emissions are those generated under existing conditions. This scenario consists of unmitigated GHG emissions volumes that are generated by the existing office buildings on the project site (refer to Table 1). Adjustments are made to the model to account for low carbon intensity efficiencies that are explained in greater detail under the Operational Data Inputs discussion.

Proposed Project Emissions Scenario

This scenario estimates unmitigated emissions anticipated through compliance with state regulations. This scenario includes model adjustments to account for mandatory compliance with State requirements for Model Water Efficient Landscape Ordinance (MWELO) and the current Title 24 Building Energy Efficiency Standards (BEES). These model adjustments are explained in greater detail under the Operational Data Inputs discussion.

Assumptions

Unless otherwise noted, data inputs for the model scenarios are based on the following primary assumptions:

1. Operational GHG emissions generated by the existing office buildings at the project site are estimated using the CalEEMod default land use subtype "General Office Building", which is defined as a building that houses multiple tenants where affairs of

businesses commercial or industrial organizations or professional persons or firms are conducted.

2. Construction of the proposed project is expected to begin in April 2022.
3. The anticipated operational year for the proposed project is 2024.
4. Construction and operational emissions for proposed conditions were estimated as follows:
 - a. Emissions generated by the proposed residential units are assumed to be similar to emissions that would be generated by the CalEEMod default land use subtype "Apartments Mid Rise", which are defined as apartments in a rental building that have between three and 10 levels. The model default trip generation rate for "Apartments Mid Rise" has been modified based on information provided in the transportation analysis prepared for the proposed project (Hexagon Transportation Consultants 2020);
 - b. Emissions generated by the proposed office spaces are assumed to be similar to emissions that would be generated by the CalEEMod default land use subtype "General Office Building". The model default trip generation rate for "General Office Building" has been modified based on information provided in the transportation analysis prepared for the proposed project (Hexagon Transportation Consultants 2020);
 - c. Emissions generated by the proposed underground parking garage are assumed to be similar to emissions that would be generated by the CalEEMod default land use subtype "Enclosed Parking with Elevator", which is defined as an enclosed parking structure that may be above or below the ground, is not covered in asphalt, includes an elevator, and will require lighting and ventilation; and
 - d. Emissions generated by construction and curing of the proposed sidewalks and landscaping are assumed to be similar to emissions that would be generated by the CalEEMod default land use subtype "Other Non-Asphalt Surfaces".

Operational Emissions Data Input

The following adjustments were made to the model inputs:

- Each air district (or county) assigns trip lengths for urban and rural settings, which are incorporated into the CalEEMod defaults. Based on the site's location, the model defaults were set to "urban."
- The model's default CO₂ intensity factor of 641 pounds/megawatt hour is adjusted to 290 pounds/megawatt hour to reflect Pacific Gas & Electric (PG&E) energy intensity projections for 2020, which is the horizon year for the provider's energy intensity factor projections. The intensity factor has been falling, in significant part due to the increasing percentage of Pacific Gas & Electric's energy portfolio obtained from renewable energy. Emissions intensity data is from PG&E's *Greenhouse Gas Factors: Guidance for PG&E Customers*, dated November 2015.
- As noted previously, the model default trip generation rates for the proposed residential units and office spaces are adjusted based on information provided in the transportation analysis prepared for the proposed project (Hexagon Transportation Consultants 2020).
- The Title 24 BEES defaults in CalEEMod Version 2016.3.2 are the 2016 BEES. Title 24 BEES are updated every three years. The 2019 BEES became effective on January 1, 2020. Projects are constructed after January 1, 2020 will be required to comply with the 2019 BEES. Adjustments were made to the energy mitigation screen under the proposed project scenario to account for Title 24 increases in energy efficiencies that have occurred since CalEEMod Version 2016.3.2 was released. Compliance with the 2019 BEES increases building energy efficiencies by 30 percent over the 2016 BEES for non-residential buildings (California Energy Commission 2018).
- The water mitigation screen for the proposed project includes an adjustment to reflect required compliance with the State requirements for MWEL0.

Construction Emissions Data Inputs

CalEEMod default construction parameters allow estimates of short-term construction GHG emissions based upon empirical data collected and analyzed by CARB. CalEEMod estimates

construction emissions associated with land use development projects and allows for the input of project-specific construction information including phasing and equipment information, if known.

Based on the information from the applicant, construction is estimated to occur over a 20-month period and would include typical construction phases such as demolition, site preparation and grading, building construction, paving, and architectural coating. Information regarding type of construction equipment for the proposed project was not yet available in detail sufficient to provide data inputs to the model; therefore, consistent with air district guidance, the model defaults were utilized for construction equipment, based on the project size and land use data presented in Table 1. The modeling results for unmitigated construction emissions volumes are attached to this assessment. The air district recommends amortizing the short-term construction GHG emissions over a 30-year time period to yield an annual emissions volume.

Carbon Sequestration Potential Data Inputs

CalEEMod calculates the change in carbon sequestration potential based upon the net number of trees (the difference between trees removed and new tree plantings) on a site, averaged over a 20-year growth cycle. The proposed project includes removal of 16 existing trees and planting of 78 new trees, for a net total of 62 trees (Carpira Design Group 2020). Changes in sequestration potential are reported in metric tons of carbon dioxide equivalent (MT CO₂e).

RESULTS

Detailed model results for criteria air pollutants and GHG emissions are included as attachments to this assessment.

Criteria Air Pollutants

Construction Emissions

The unmitigated criteria air pollutant emissions resulting from project construction are summarized in [Table 2, Construction Criteria Air Pollutant Emissions](#).

Table 2 Construction Criteria Air Pollutant Emissions

Emissions	Reactive Organic Gases (ROG)	Nitrogen Oxides (NO_x)	Exhaust Respirable Particulate Matter (PM₁₀)	Exhaust Fine Particulate Matter (PM_{2.5})
Total Annual Emissions (tons/year) ¹	1.00	1.85	0.07	0.07
Average Daily Emissions (pounds/day) ^{1,2}	4.54	8.41	0.32	0.32

SOURCE: EMC Planning Group 2020

NOTES:

1. Results may vary due to rounding.
2. CalEEMod estimates construction criteria air pollutant emissions in tons per year. A U.S. ton is equal to 2,000 pounds. The emissions estimates in ton per year are multiplied by 2,000 pounds to arrive at emissions volume in pounds per year. CalEEMod estimates a total of 440 construction days (see Section 3.0 of the attached CalEEMod results). Average daily emissions (in pounds per day) are computed by dividing the annual construction emissions (in pounds per year) by the number of construction days.

Operational Emissions

Unmitigated operational criteria air pollutant emissions generated by the proposed project are summarized in [Table 3, Operational Criteria Air Pollutant Emissions](#).

Table 3 Operational Criteria Air Pollutant Emissions

Emissions	Reactive Organic Gases (ROG)	Nitrogen Oxides (NO_x)	Respirable Particulate Matter (PM₁₀)	Fine Particulate Matter (PM_{2.5})
Total Annual Emissions (tons/year) ¹	0.82	0.53	0.48	0.15
Average Daily Emissions (pounds/day) ^{1,2,3}	4.49	2.90	2.63	0.82

SOURCE: EMC Planning Group 2020

NOTES:

1. Results may vary due to rounding.
2. CalEEMod estimates operational criteria air pollutant emissions in tons per year. A U.S. ton is equal to 2,000 pounds. The emissions estimates in ton per year are multiplied by 2,000 pounds to arrive at emissions volume in pounds per year. Average daily emissions (in pounds per day) are computed by dividing the annual operational emissions (in pounds per year) by the number of operational days (conservatively assuming 365 days of operation).
3. Includes reductions from compliance with 2019 BEES. Compliance with MWELo does not result in reduction of criteria air pollutant emissions.

GHG Emissions

Baseline Emissions

Baseline (existing) uses generate approximately 121.81 MT CO₂e of GHG emissions per year.

Construction Emissions

Construction activity would generate a total of 422.23 MT CO₂e of unmitigated GHG emissions. When averaged over a 30-year operational lifetime, the annual amortized emissions equal 14.07 MT CO₂e per year.

Operational Emissions

The unmitigated operational GHG emissions estimates are summarized in [Table 4, Unmitigated Operational GHG Emissions](#).

Table 4 Annual Operational GHG Emissions

Emissions Sources	GHG Emissions^{1,2}
Area	4.85
Energy ³	132.14
Mobile	439.24
Waste	22.51
Water ⁴	16.85
Total	615.59

SOURCE: EMC Planning Group 2020

NOTES:

1. Results may vary due to rounding.
2. Expressed in MT CO₂e per year.
3. Results include emissions reductions from compliance with 2019 BEES.
4. Results include emissions reductions from compliance with MWEL0.

Carbon Sequestration Potential

Model results indicating the change in carbon sequestration potential on the project site are shown in Section 2.3 of the model results for annual emissions. The model estimates a net gain in sequestration potential of 43.90 MT CO₂e. Averaged over a 30-year lifetime, the annual gain in sequestration potential associated with the proposed project would be equivalent to 1.46 MT

CO₂e per year (43.90 MT CO₂e / 30 years). This amount is deducted from the project's annual operational GHG emissions.

GHG Emissions Attributable to the Proposed Project

The total GHG emissions that would be attributable to the proposed project consist of amortized construction emissions added to the unmitigated operational emissions, less the baseline emissions and amortized annual gain in carbon sequestration potential on the site. The net GHG emissions attributable to the proposed project are presented in [Table 5, Summary of Annual GHG Emissions Attributable to the Project](#).

Table 5 Summary of Annual GHG Emissions Attributable to the Project^{1,2}

Annual Operations ³	Amortized Construction	Annual Project Emissions ⁴	Baseline Emissions ⁵	Sequestration Potential ⁵	Net Project Emissions
615.59	14.07	629.66	<121.81>	<1.46>	506.39

SOURCE: EMC Planning Group 2020

NOTES:

1. Results may vary due to rounding.
2. Expressed in MT CO₂e per year.
3. Unmitigated Operational GHG emissions (See Table 4).
4. Sum of amortized construction and unmitigated operational emissions.
5. <Brackets> Indicate deductions.

SOURCES

1. Trinity Consultants. November 2017. *California Emissions Estimator (CalEEMod) Version 2016.3.2*. Available online at: <http://www.aqmd.gov/caleemod/home>
2. Trinity Consultants. November 2017. *CalEEMod User's Guide (Version 2016.3.2)*. Available online at: <http://www.aqmd.gov/caleemod/user's-guide>
3. Bay Area Air Quality Management District. May 2017. *California Environmental Quality Act Air Quality Guidelines*. http://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en
4. Carpira Design Group. April 2020. *Project Plans*. Concord, CA.

5. Hexagon Transportation Consultants. *1073 South Winchester Mixed-Use Development Transportation Analysis*. May 26, 2020. Gilroy, CA.
6. Pacific Gas & Electric. November 2015. *Greenhouse Gas Factors: Guidance for PG&E Customers*; Accessed December 13, 2019. https://www.ca-ilg.org/sites/main/files/file-attachments/ghg_emission_factor_guidance.pdf?1436996158
7. California Energy Commission. March 2018. *2019 Building Energy Efficiency Standards Frequently Asked Questions*.
https://ww2.energy.ca.gov/title24/2019standards/documents/Title_24_2019_Building_Standards_FAQ_ada.pdf

Winchester Blvd Mixed Use_Existing - Bay Area AQMD Air District, Annual

Winchester Blvd Mixed Use_Existing
Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	9.76	1000sqft	0.22	9,762.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	64
Climate Zone	4			Operational Year	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	290	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E CO2 Intensity for 2020
 Land Use - existing office
 Construction Phase - Existing Conditions. no construction
 Energy Use -

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	0.0432	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7000e-004	1.7000e-004	0.0000	0.0000	1.9000e-004
Energy	8.6000e-004	7.8300e-003	6.5800e-003	5.0000e-005		6.0000e-004	6.0000e-004		6.0000e-004	6.0000e-004	0.0000	31.4234	31.4234	2.4500e-003	6.3000e-004	31.6725
Mobile	0.0241	0.1163	0.2752	8.9000e-004	0.0728	9.9000e-004	0.0738	0.0195	9.3000e-004	0.0205	0.0000	81.3926	81.3926	3.1900e-003	0.0000	81.4723
Waste						0.0000	0.0000		0.0000	0.0000	1.8432	0.0000	1.8432	0.1089	0.0000	4.5664
Water						0.0000	0.0000		0.0000	0.0000	0.5503	1.7242	2.2745	0.0567	1.3700e-003	4.1003
Total	0.0682	0.1241	0.2818	9.4000e-004	0.0728	1.5900e-003	0.0744	0.0195	1.5300e-003	0.0211	2.3935	114.5404	116.9338	0.1713	2.0000e-003	121.8116

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	0.0241	0.1163	0.2752	8.9000e-004	0.0728	9.9000e-004	0.0738	0.0195	9.3000e-004	0.0205	0.0000	81.3926	81.3926	3.1900e-003	0.0000	81.4723
Unmitigated	0.0241	0.1163	0.2752	8.9000e-004	0.0728	9.9000e-004	0.0738	0.0195	9.3000e-004	0.0205	0.0000	81.3926	81.3926	3.1900e-003	0.0000	81.4723

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	107.67	24.01	10.25	195,495	195,495
Total	107.67	24.01	10.25	195,495	195,495

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Office Building	0.573139	0.040894	0.193976	0.114604	0.017740	0.005371	0.017133	0.024527	0.002545	0.002442	0.005942	0.000877	0.000812

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

5.2 Energy by Land Use - Natural Gas

Unmitigated

Land Use	Natural Gas Use kBTU/yr	ROG tons/yr	NOx tons/yr	CO tons/yr	SO2 tons/yr	Fugitive PM10 tons/yr	Exhaust PM10 tons/yr	PM10 Total tons/yr	Fugitive PM2.5 tons/yr	Exhaust PM2.5 tons/yr	PM2.5 Total tons/yr	Bio- CO2 MT/yr	NBio- CO2 MT/yr	Total CO2 MT/yr	CH4 MT/yr	N2O MT/yr	CO2e MT/yr
General Office Building	159804	8.6000e-004	7.8300e-003	6.5800e-003	5.0000e-005		6.0000e-004	6.0000e-004		6.0000e-004	6.0000e-004	0.0000	8.5278	8.5278	1.6000e-004	1.6000e-004	8.5784
Total		8.6000e-004	7.8300e-003	6.5800e-003	5.0000e-005		6.0000e-004	6.0000e-004		6.0000e-004	6.0000e-004	0.0000	8.5278	8.5278	1.6000e-004	1.6000e-004	8.5784

5.3 Energy by Land Use - Electricity

Unmitigated

Land Use	Electricity Use kWh/yr	Total CO2 MT/yr	CH4 MT/yr	N2O MT/yr	CO2e MT/yr
General Office Building	174056	22.8957	2.2900e-003	4.7000e-004	23.0941
Total		22.8957	2.2900e-003	4.7000e-004	23.0941

6.0 Area Detail

6.1 Mitigation Measures Area

6.2 Area by SubCategory

Unmitigated

Land 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
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SubCategory	tons/yr								MT/yr						
Architectural Coating	5.0900e-003					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0381					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	9.0000e-005	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	1.7000e-004	1.7000e-004	0.0000	0.0000	1.9000e-004
Total	0.0432	0.0000	9.0000e-005	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	1.7000e-004	1.7000e-004	0.0000	0.0000	1.9000e-004

7.0 Water Detail

7.1 Mitigation Measures Water

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	1.73468 / 1.06319	2.2745	0.0567	1.3700e-003	4.1003
Total		2.2745	0.0567	1.3700e-003	4.1003

8.0 Waste Detail

8.1 Mitigation Measures Waste

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	9.08	1.8432	0.1089	0.0000	4.5664
Total		1.8432	0.1089	0.0000	4.5664

Winchester Blvd Mixed Use_Proposed - Bay Area AQMD Air District, Annual

**Winchester Blvd Mixed Use_Proposed
Bay Area AQMD Air District, Annual**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	17.97	1000sqft	0.00	17,970.00	0
Enclosed Parking with Elevator	115.00	Space	0.63	44,112.00	0
Other Non-Asphalt Surfaces	2.60	1000sqft	0.06	2,600.00	0
Other Non-Asphalt Surfaces	4.41	1000sqft	0.10	4,409.00	0
Apartments Mid Rise	61.00	Dwelling Unit	0.00	100,733.00	174

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	64
Climate Zone	4	Operational Year		2024	
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	290	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted PG&E CO2 Intensity Factor for 2020

Land Use - from site plans

zero out acreage of residential and office component so as to not over calculate construction emissions. Adjusted acreage of parking because site is 0.79 acres

Construction Phase - adjusted for 20-month construction period

Demolition - demolition of existing buildings

Grading - Cut = 10,100 CY, Fill = 400 CY, Export = 9,700 CY

Vehicle Trips - trip rates adjusted per traffic consultant

Energy Use -

Land Use Change -

Sequestration - net new trees planted = 62

Area Mitigation -

Energy Mitigation - adjusted to account for 2019 BEES

Water Mitigation - Adjusted for MWEL0

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	20.00
tblConstructionPhase	NumDays	1.00	10.00
tblConstructionPhase	NumDays	2.00	20.00
tblConstructionPhase	NumDays	100.00	350.00
tblConstructionPhase	NumDays	5.00	20.00
tblConstructionPhase	NumDays	5.00	20.00
tblGrading	AcresOfGrading	5.00	0.50
tblGrading	MaterialExported	0.00	9,700.00
tblLandUse	LandUseSquareFeet	46,000.00	44,112.00
tblLandUse	LandUseSquareFeet	4,410.00	4,409.00
tblLandUse	LandUseSquareFeet	61,000.00	100,733.00
tblLandUse	LotAcreage	0.41	0.00
tblLandUse	LotAcreage	1.03	0.63
tblLandUse	LotAcreage	1.61	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblSequestration	NumberOfNewTrees	0.00	62.00
tblTripsAndVMT	HaulingTripNumber	1,213.00	1,212.00
tblVehicleTrips	ST_TR	6.39	5.44
tblVehicleTrips	ST_TR	2.46	9.74
tblVehicleTrips	SU_TR	5.86	5.44
tblVehicleTrips	SU_TR	1.05	9.74

tblVehicleTrips	WD_TR	6.65	5.44
tblVehicleTrips	WD_TR	11.03	9.74

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					
2022	0.0917	0.9763	0.8750	2.3500e-003	0.0754	0.0364	0.1118	0.0219	0.0337	0.0556	0.0000	214.5785	214.5785	0.0337	0.0000	215.4221
2023	0.9099	0.8718	0.9915	2.2900e-003	0.0715	0.0364	0.1078	0.0193	0.0336	0.0529	0.0000	205.8449	205.8449	0.0386	0.0000	206.8096
Maximum	0.9099	0.9763	0.9915	2.3500e-003	0.0754	0.0364	0.1118	0.0219	0.0337	0.0556	0.0000	214.5785	214.5785	0.0386	0.0000	215.4221

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	4-1-2022	6-30-2022	0.4160	0.4160
2	7-1-2022	9-30-2022	0.3239	0.3239
3	10-1-2022	12-31-2022	0.3258	0.3258
4	1-1-2023	3-31-2023	0.2830	0.2830
5	4-1-2023	6-30-2023	0.2846	0.2846
6	7-1-2023	9-30-2023	0.2878	0.2878
		Highest	0.4160	0.4160

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	0.7027	8.4700e-003	0.6478	4.1000e-004		0.0302	0.0302		0.0302	0.0302	2.7810	1.8846	4.6656	5.1900e-003	1.8000e-004	4.8496

Energy	3.4100e-003	0.0298	0.0169	1.9000e-004		2.3600e-003	2.3600e-003		2.3600e-003	2.3600e-003	0.0000	131.0910	131.0910	0.0104	2.6300e-003	132.1350
Mobile	0.1089	0.4961	1.2360	4.7700e-003	0.4408	3.8900e-003	0.4447	0.1183	3.6300e-003	0.1219	0.0000	438.8710	438.8710	0.0149	0.0000	439.2435
Waste						0.0000	0.0000		0.0000	0.0000	9.0879	0.0000	9.0879	0.5371	0.0000	22.5149
Water						0.0000	0.0000		0.0000	0.0000	2.2742	7.0317	9.3058	0.2343	5.6600e-003	16.8498
Total	0.8150	0.5343	1.9007	5.3700e-003	0.4408	0.0365	0.4773	0.1183	0.0362	0.1545	14.1430	578.8783	593.0214	0.8018	8.4700e-003	615.5928

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	43.8960
Total	43.8960

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	4/1/2022	4/28/2022	5	20	
2	Site Preparation	Site Preparation	4/29/2022	5/12/2022	5	10	
3	Grading	Grading	5/13/2022	6/9/2022	5	20	
4	Building Construction	Building Construction	6/9/2022	10/11/2023	5	350	
5	Paving	Paving	10/12/2023	11/8/2023	5	20	
6	Architectural Coating	Architectural Coating	11/9/2023	12/6/2023	5	20	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.79

Residential Indoor: 203,984; Residential Outdoor: 67,995; Non-Residential Indoor: 26,955; Non-Residential Outdoor: 8,985; Striped

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
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	4	10.00	0.00	44.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	1,212.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	71.00	18.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

Worker	2.9000e-004	1.9000e-004	2.0600e-003	1.0000e-005	7.9000e-004	1.0000e-005	8.0000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.6435	0.6435	1.0000e-005	0.0000	0.6438
Total	4.7900e-003	0.1505	0.0363	4.8000e-004	0.0110	4.4000e-004	0.0115	3.0300e-003	4.1000e-004	3.4400e-003	0.0000	45.8656	45.8656	2.2900e-003	0.0000	45.9231

3.5 Building Construction - 2022

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	0.0504	0.5164	0.5257	8.4000e-004		0.0273	0.0273		0.0252	0.0252	0.0000	73.6086	73.6086	0.0238	0.0000	74.2037
Total	0.0504	0.5164	0.5257	8.4000e-004		0.0273	0.0273		0.0252	0.0252	0.0000	73.6086	73.6086	0.0238	0.0000	74.2037

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	3.9200e-003	0.1309	0.0324	3.5000e-004	8.6800e-003	2.6000e-004	8.9400e-003	2.5100e-003	2.5000e-004	2.7600e-003	0.0000	33.9748	33.9748	1.6100e-003	0.0000	34.0151
Worker	0.0149	9.9100e-003	0.1076	3.7000e-004	0.0412	2.6000e-004	0.0415	0.0110	2.4000e-004	0.0112	0.0000	33.5811	33.5811	7.0000e-004	0.0000	33.5986
Total	0.0189	0.1408	0.1400	7.2000e-004	0.0499	5.2000e-004	0.0504	0.0135	4.9000e-004	0.0140	0.0000	67.5559	67.5559	2.3100e-003	0.0000	67.6137

3.5 Building Construction - 2023

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	0.0642	0.6515	0.7204	1.1600e-003		0.0325	0.0325		0.0299	0.0299	0.0000	101.7116	101.7116	0.0329	0.0000	102.5340
Total	0.0642	0.6515	0.7204	1.1600e-003		0.0325	0.0325		0.0299	0.0299	0.0000	101.7116	101.7116	0.0329	0.0000	102.5340

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	4.0600e-003	0.1393	0.0401	4.7000e-004	0.0120	1.6000e-004	0.0121	3.4700e-003	1.5000e-004	3.6200e-003	0.0000	45.6026	45.6026	1.9000e-003	0.0000	45.6501
Worker	0.0193	0.0123	0.1366	4.9000e-004	0.0569	3.6000e-004	0.0573	0.0152	3.3000e-004	0.0155	0.0000	44.5979	44.5979	8.7000e-004	0.0000	44.6196
Total	0.0233	0.1516	0.1767	9.6000e-004	0.0689	5.2000e-004	0.0694	0.0186	4.8000e-004	0.0191	0.0000	90.2005	90.2005	2.7700e-003	0.0000	90.2696

3.6 Paving - 2023

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	6.1100e-003	0.0551	0.0702	1.1000e-004		2.6400e-003	2.6400e-003		2.4700e-003	2.4700e-003	0.0000	9.3992	9.3992	2.7400e-003	0.0000	9.4677
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	6.1100e-003	0.0551	0.0702	1.1000e-004		2.6400e-003	2.6400e-003		2.4700e-003	2.4700e-003	0.0000	9.3992	9.3992	2.7400e-003	0.0000	9.4677

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	4.8000e-004	3.1000e-004	3.4100e-003	1.0000e-005	1.4200e-003	1.0000e-005	1.4300e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1139	1.1139	2.0000e-005	0.0000	1.1145
Total	4.8000e-004	3.1000e-004	3.4100e-003	1.0000e-005	1.4200e-003	1.0000e-005	1.4300e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1139	1.1139	2.0000e-005	0.0000	1.1145

3.7 Architectural Coating - 2023

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	0.8135					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9200e-003	0.0130	0.0181	3.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	2.5533	2.5533	1.5000e-004	0.0000	2.5571
Total	0.8154	0.0130	0.0181	3.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	2.5533	2.5533	1.5000e-004	0.0000	2.5571

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	3.7000e-004	2.4000e-004	2.6500e-003	1.0000e-005	1.1100e-003	1.0000e-005	1.1100e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.8664	0.8664	2.0000e-005	0.0000	0.8668
Total	3.7000e-004	2.4000e-004	2.6500e-003	1.0000e-005	1.1100e-003	1.0000e-005	1.1100e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.8664	0.8664	2.0000e-005	0.0000	0.8668

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	0.1089	0.4961	1.2360	4.7700e-003	0.4408	3.8900e-003	0.4447	0.1183	3.6300e-003	0.1219	0.0000	438.8710	438.8710	0.0149	0.0000	439.2435
Unmitigated	0.1089	0.4961	1.2360	4.7700e-003	0.4408	3.8900e-003	0.4447	0.1183	3.6300e-003	0.1219	0.0000	438.8710	438.8710	0.0149	0.0000	439.2435

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated Annual VMT	Mitigated Annual VMT
	Weekday	Saturday	Sunday		

Hearth	0.1408	3.2400e-003	0.1938	3.9000e-004		0.0277	0.0277		0.0277	0.0277	2.7810	1.1423	3.9233	4.4700e-003	1.8000e-004	4.0893
Landscaping	0.0137	5.2300e-003	0.4540	2.0000e-005		2.5100e-003	2.5100e-003		2.5100e-003	2.5100e-003	0.0000	0.7424	0.7424	7.2000e-004	0.0000	0.7603
Total	0.7027	8.4700e-003	0.6478	4.1000e-004		0.0302	0.0302		0.0302	0.0302	2.7810	1.8846	4.6656	5.1900e-003	1.8000e-004	4.8496

7.0 Water Detail

7.1 Mitigation Measures Water

Use Water Efficient Irrigation System

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	3.9744 / 2.35276	5.1730	0.1299	3.1400e-003	9.3558
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	3.19388 / 1.83813	4.1329	0.1044	2.5200e-003	7.4940
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		9.3058	0.2343	5.6600e-003	16.8498

8.0 Waste Detail

8.1 Mitigation Measures Waste

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			

Apartments Mid Rise	28.06	5.6959	0.3366	0.0000	14.1114
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	16.71	3.3920	0.2005	0.0000	8.4035
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		9.0879	0.5371	0.0000	22.5149

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	43.8960	0.0000	0.0000	43.8960

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Miscellaneous	62	43.8960	0.0000	0.0000	43.8960
Total		43.8960	0.0000	0.0000	43.8960